UNIVERSAL DESIGN FOR LEARNING AND SECONDARY TRANSITION PLANNING FOR STUDENTS WITH DISABILITIES: 101

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What Is It?

Universal Design

The Universal Design Alliance (2010) defines Universal Design as designing products and environments to be usable by all people, to the greatest extent possible, without adaptation or specialized design. It is a user-friendly approach to designing living environments where people of any culture, age, size, weight, race, gender, and ability can experience an environment that promotes their health, safety, and welfare today and in the future.

What Is Universal Design for Learning?

- The Center for Applied Special Technology (CAST, 2010) defines Universal Design for Learning (UDL) as "a set of principles for curriculum development that give all individuals equal opportunities to learn. UDL provides a blueprint for creating instructional goals, methods, materials, and assessments that work for everyone--not a single, one-size-fits-all solution but rather flexible approaches that can be customized and adjusted for individual needs." UDL has three guiding principles which include three guidelines. The three key principles are:
    - Principle 1: Provide multiple means of representation
        - Perception
        - Language and symbols
        - Comprehension
    - Principle 2: Provide multiple means of action and expression
        - Physical action
        - Expressive skills and fluency
        - Executive function
    - Principle 3: Provide multiple means of engagement
        - Recruiting interest
        - Sustaining effort and persistence
        - Self-regulation

- In terms of learning, Universal Design means designing instructional materials and activities in a way that allows learning goals to be achievable by individuals with wide differences in their abilities to see, hear, speak, move, read, write, understand English, attend, organize, engage, and remember. UDL is achieved using flexible curricular materials and activities that provide alternatives for students regardless of disparities in abilities and backgrounds (Orkwis & McLane, 1998).

- UDL provides access to education for all students including those with cognitive, physical, and emotional disabilities. This approach to instructional design builds

accommodations into the design of instructional materials. UDL focuses on the entire education process including (a) representing information in multiple formats and media, (b) providing multiple pathways for students' actions and expressions, and (c) providing multiple ways to engage students' interests and motivation (Council for Exceptional Children, 2005).

What Does Law/Policy Require?

- **The Assistive Technology Act, 1998**
  - The Assistive Technology Act states, "the term universal design means a concept or philosophy for designing and delivering products and services that are usable by people with the widest possible range of functional capabilities, which include products and services that are directly accessible (without requiring assistive technologies) and products and services that are interoperable with assistive technologies."

- **Individuals with Disabilities Education Improvement Act, 2004**
  - When defining Universal Design, IDEA (2004) states, "The term 'universal design' has the meaning given the term in Section 3 of the Assistive Technology Act of 1998 (29 U.S.C. 3002)" (20 U.S.C. 1401 [35]).
  - With reference to accessing the general education curriculum, IDEA (2004) provides funds "to support the use of technology, including technology with universal design principles and assistive technology devices, to maximize accessibility to the general education curriculum for children with disabilities" (20 U.S.C. 1411 [e] [2] [C] [v]).
  - With reference to designing and administering assessments, IDEA (2004) requires, "he State educational agency (or, in the case of a district wide assessment, the local educational agency) shall, to the extent feasible, use universal design principles in developing and administering any assessments…" (20 U.S.C. 1412 [a] [16] [E]).
  - Additionally, Part D of IDEA makes several provisions for universal design including, "supporting research, development, and dissemination of technology…support…to improve technological resources and integrate technology…preparing personnel in the innovative uses and application of technology…conducting research on and promoting the demonstration and use of…by improving the transfer of technology from research and development to practice…promote the development and use of technologies with universal design…to maximize children with disabilities' access to and participation in the general education curriculum…" (20 U.S.C. 1450 [12]).

- **Higher Education Opportunity Act, 1998**
  - The Higher Education Opportunity Act references the Assistive Technology Act (1998) when defining universal design.
  - Higher Education Opportunity Act defines UDL as "a scientifically valid framework for guiding educational practice that (a) provides flexibility in the ways students respond or demonstrate knowledge and skills, and in the ways

students are engaged; and (b) reduces barriers in instruction, provides appropriate accommodations, supports, and challenges, and maintains high achievement expectations for all students, including students with disabilities and students who are limited English proficient" (H.R. 4137-11, 102 [d] [24]).

- Higher Education Opportunity Act identifies the requirements for partnership grants and model demonstration grants "implementing reforms…within each teacher preparation program….preparing new or prospective teachers…to understand empirically-based practice and scientifically valid research related to teaching and learning and the applicability of such practice and research, including through the effective use of technology, instructional techniques, and strategies consistent with the principles of universal design for learning" (H.R. 4137-59, 202 [d] [1] [B]).

What Is the Evidence to Support UDL?

The Center for Applied Special Technology (CAST), the research and development organization that works towards expanding learning opportunities for all students, conducted a review of the literature on UDL across multiple stages and in a variety of disciplines. Stage one consisted of a review of research which primarily came from learning sciences such as neuroscience and neuropsychology that was used to develop the framework of UDL. Stage two of the review investigated the three principles and established the nine guidelines (i.e., three guidelines per principle). Finally, stage three consisted of identifying research meant to reduce barriers in accessing instruction. Findings from these reviews have been organized into Checkpoints for each guideline. So, rather than presenting research that supports UDL as a framework, CAST identified research that supported the practices of each principle of UDL. Both experimental and quantitative literature has been identified along with scholarly reviews and expert opinion. For example, for Checkpoint 1.1: Offer ways of customizing the display of information, CAST has listed nine experimental and/or quantitative pieces of literature along with 15 pieces of scholarly review and/or opinion. This checkpoint falls under Guideline one: Provide options for perception and both this guideline and checkpoint fall under Principle 1: provide multiple means of representation.
Summaries of available research on each of the UDL checkpoints can be found at: http://www.udlcenter.org/research/researchevidence.

Is UDL an Evidence-Based Practice?

Given the definition of an evidence-based practice (EBP) used by the National Secondary Transition Technical Assistance Center, as a practice where the supporting research has (a) undergone a systematic review, (b) is based on rigorous research designs, and (c) has demonstrated a record of success for improving student outcomes, while many of the UDL instructional strategies are research-supported, UDL cannot be considered an evidence-based practice, since the practice has not undergone such a systematic review of the quality of its research studies (Test, 2011).

What Are Examples of UDL?

Examples of UDL Applied to Academic Content

In a study of perceptions of students who participated in universally designed algebra and biology instruction, Kortering, McClannon, and Braziel (2008) provided example activities based on the three principles of UDL (p. 356).

Multiple means of representation	Algebra	Students reviewed for the end of course test by using the *Academic Learning Software* program on the computer.
	Biology	Students completed a Water Olympics activity from an Internet resource to study properties of water for living cells.
Multiple means of expression	Algebra	Note card-problems: Selected problems are put on cards and answers are put on separate cards. Students are put into small groups to solve problems. Once the problems are solved, students search the room for cards containing their answers
	Biology	3D model: Students created a 3D model of a plant or animal cell using common household objects.
Multiple means of engagement	Algebra	Flip charts: Students created flip charts to record notes and examples of rules relating to exponents. These flip charts provided students with easy access to review information.
	Biology	Charting: Students charted specific traits within their general school population to visualize and identify recessive traits such as widow's peak, rolling tongue, blue eyes, and blonde hair.

Examples of UDL Applied To Secondary Transition

- ***Principle I: Provide multiple means of representation***
  - *Speech to Text*
    - Voki: http://www.voki.com/
      - Voki is a text to speech generator that allows the user to create a personal speaking avatar that can be embedded in a website. The site offers a high level of customization ranging from the overall look of the Voki to the sound of its voice.
      - Transition Application: Teachers can use Vokis on a portable computer to provide auditory prompts for a variety of transition-based activities including food preparation, employment, and making purchases.
  - *Enhance vocabulary*
    - Vocab Ahead: http://www.vocabahead.com/
      - Vocab Ahead goes beyond a single text definition to increase depth of word knowledge by also supplying visual

representations, models of pronunciation, and examples that show how the word is used in a real context.
- Transition Application: Teachers can use Vocab Ahead to enhance vocabulary used in recipes when providing instruction in food preparation.

- ***Principle 2: Provide multiple means of action and expression***
  - *Enhance ways to type responses*
    - Microsoft Accessibility Options: http://www.microsoft.com/enable/training/windowsxp/
      - The options described in the tutorial, such as StickyKeys, MouseKeys, FilterKeys, and selecting cursor size and color options are examples of providing options in the mode of response.
      - Transition Application: Teachers can use Microsoft Accessability Options to help students compose written materials including filling out a job application or writing IEP goals/objectives.
  - *Communicating ideas through visuals*
    - ToonDoo: http://www.toondoo.com/
      - ToonDoo is a website that allows users to generate their own comic strips. You can create your own characters by selecting basic traits from an extensive list. You can also upload your own images. ToonDoo also offers community features such as voting, commenting, and sharing.
      - Transition Application: Teachers can use ToonDoo to provide alternative ways for students to express their post school goals. For example, students can create a ToonDoo about themselves attending college or obtaining employment.

- ***Principle 3: Provide multiple means of engagement***
  - *Goal setting*
    - Goal setting worksheets: http://worksheetplace.com/index.php?function=DisplayCategory&showCategory=Y&links=2&id=279&link1=31&link2=279
      - Goal setting worksheets can be used with your students to support their organizational skills.
      - Transition Application: Teachers can use these worksheets to help students record their goals they have set in a variety of areas including academics, employment, behavior, etc.
  - *Monitoring Progress*
    - Create a Graph: http://nces.ed.gov/nceskids/createAgraph/default.aspx
      - Create a Graph can be used to support students in tracking their progress using charts and graphs.

        - Transition Application: Teachers can use Create a Graph to help students monitor their progress towards achieving goals.
    - *Develop Self-Assessment and Reflection*
        - Knowing How You Learn: http://www.edutopia.org/gateway-brain-learning-styles-video
            - Knowing How You Learn is a website where students can view an example of a school that focuses on how students learn rather than their disabilities
            - Transition Application: Teachers can use Knowing How You Learn as a context to provide students with instruction on identifying strengths and needs for their IEPs.

What Are Universally Designed Assessments?

Universally designed assessments have been recommended by both the Council for Exceptional Children (2010) and the National Universal Design for Learning Task Force (2010). Universally designed assessments include (a) an inclusive test population; (b) precisely defined constructs, (c) accessible, non-biased items; (d) tests that are amenable to accommodations; (e) simple, clear, and intuitive instructions and procedures; (f) maximum readability and comprehensibility; and (g) maximum eligibility.

What Is Universal Design For Secondary Transition?

Universal Design for Transition (UDT) was created as a framework for applying UDL to secondary transition. UDT focuses on creating accessible opportunities related to transition from school to post-school services for students with disabilities including the design, delivery, and assessment of services. UDT creates links between academic content and transition planning, instruction, and goals. Finally, UDT expands the definition of UDL by adding (a) multiple life domains, (b) multiple means of assessment, (c) student self-determination, and (d) multiple resources/perspectives. UDT provides a framework for educators to merge instruction on both academic and transition education by asking such questions as:

- What are the overall goals of the lesson?
- How can multiple transition domains be addressed in this lesson?
- How can self-determination be addressed in this lesson?
- How can students be provided with multiple means of representation, engagement, and expression?

Thoma, Bartholomew, and Scott (2009) provide an example of UDT in teaching a lesson on hurricanes (pp 21-22).

Planning Questions for UDT	Lesson Content

What are the overall goals of the lesson?	1. Develop functional understanding of hurricanes and natural disasters 2. Learn importance of tracking hurricanes, learn intensity scales of hurricanes and how to prepare for these disasters
How can multiple transition domains be addressed in this lesson?	1. Preparation, critical thinking, and problem-solving skills needed to get ready for a natural disaster 2. Learning to work as part of a team; working together to solve problems by performing group-related work during the lesson 3. Employment: careers in weather, disaster relief, disaster preparation 4. Community living: preparing home and community for disasters and/or severe weather; volunteering to help victims of natural disasters
How can self-determination be addressed in this lesson?	After exposing students to basic information, provide students with opportunities to choose their own learning goals, using the Self-Determined Learning Model of Instruction (SDLMI; Wehmeyer, Sands, Knowlton, & Kozleski, 2002), possibly targeting what is known about their desired transition outcomes. For example: • Two students indicate a desire to live on their own in the community • One student desires a career in a field where responding to emergencies is a main requirement (police officer) • Three students indicate they would like to help others
How can students be provided with multiple means of representation, engagement, and expression?	*Representation* • Read-aloud book presentation (or electronic book with read-aloud software program) and guest speaker • Computer research activity and video presentation of hurricane disasters • Classroom discussion and brainstorming *Engagement* • Group practice activities (e.g., read-aloud and book activity) • Technology-driven activities (e.g., video clips and internet resources) • SDLMI with individualized focus for learning, assessment, and strategies *Expressions* • Group brainstorming and class discussions • Jeopardy review game

	• Hands-on classroom-based thinking activity with hurricane tracking chart

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