Neurodiversity and Universal Design for Learning

CEE Faculty Meeting/DEI Presentation

March 2022

Jennie Saxe (she/her)

UNIVERSITY OF DELAWARE
ENGINEERING

UNIVERSITY OF DELAWARE
ENGINEERING

- I am <u>not</u> an expert in this area!
- I am just scratching the surface
- My terminology may not be perfect
- Intent: awareness of student diversity to spur reflection on how we teach

- Neurodiversity refers to differences in ways people interact with and experience the world

- Includes differences in learning, behavior, and thinking

Harvard Health

UNIVERSITY OF DELAWARE
ENGINEERING

- Our default "implied student" is likely neurotypical
    - Neurotypical ≠ Normal

Landin and Schirmer (2020)

- Sometimes used to refer to people with autism ("neurological minorities")
  - Can also include Asperger's and ADHD

What is ASD?	ASD is a life-long neurodevelopmental condition that presents with differences in **social interactions**, **communication**, **executive function** and **behavior**
"If you've met one person with autism, you've met one person with autism…"	Common co-occurring conditions include **anxiety**, **depression**, **bi-polar**, **Tourette's Syndrome** and **ADHD** (Levy et al., 2010) It's a **spectrum** which contains a wide range of talents & strengths

Scientific American; **UD Spectrum Scholars**

UNIVERSITY OF DELAWARE
ENGINEERING

- Medical terminology vs. neurodiversity approach

Disorder	Disability
Difference	Disease

UNIVERSITY OF DELAWARE
ENGINEERING

- # General population
  - – 1 in 44 children (2.3%)

- # Higher education students (reported)
  - – 1 in 244 students (0.44%)

- # Why the difference?
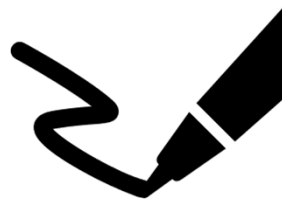 - – Lack of reporting, lack of diagnosis

- ## Universal Design for Learning (UDL)
  - Promotes inclusion and belonging for all students
  - Requires awareness of your biases as an instructor
  - Increases likelihood of student success
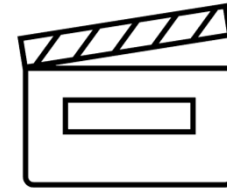 - Involves deliberate attention to instructional design

UDL employs multiple methods of:

Engagement

Representation

Action & expression

The Universal Design for Learning Guidelines

CAST | Until learning has no limits

Provide multiple means of Engagement
Affective Networks
The "WHY" of Learning

Provide multiple means of Representation
Recognition Networks
The "WHAT" of Learning

Provide multiple means of Action & Expression
Strategic Networks
The "HOW" of Learning

Access

Provide options for **Recruiting Interest** (7)
- Optimize individual choice and autonomy (7.1)
- Optimize relevance, value, and authenticity (7.2)
- Minimize threats and distractions (7.3)

Provide options for **Perception** (1)
- Offer ways of customizing the display of information (1.1)
- Offer alternatives for auditory information (1.2)
- Offer alternatives for visual information (1.3)

Provide options for **Physical Action** (4)
- Vary the methods for response and navigation (4.1)
- Optimize access to tools and assistive technologies (4.2)

Build

Provide options for **Sustaining Effort & Persistence** (8)
- Heighten salience of goals and objectives (8.1)
- Vary demands and resources to optimize challenge (8.2)
- Foster collaboration and community (8.3)
- Increase mastery-oriented feedback (8.4)

Provide options for **Language & Symbols** (2)
- Clarify vocabulary and symbols (2.1)
- Clarify syntax and structure (2.2)
- Support decoding of text, mathematical notation, and symbols (2.3)
- Promote understanding across languages (2.4)
- Illustrate through multiple media (2.5)

Provide options for **Expression & Communication** (5)
- Use multiple media for communication (5.1)
- Use multiple tools for construction and composition (5.2)
- Build fluencies with graduated levels of support for practice and performance (5.3)

Internalize

Provide options for **Self Regulation** (9)
- Promote expectations and beliefs that optimize motivation (9.1)
- Facilitate personal coping skills and strategies (9.2)
- Develop self-assessment and reflection (9.3)

Provide options for **Comprehension** (3)
- Activate or supply background knowledge (3.1)
- Highlight patterns, critical features, big ideas, and relationships (3.2)
- Guide information processing and visualization (3.3)
- Maximize transfer and generalization (3.4)

Provide options for **Executive Functions** (6)
- Guide appropriate goal-setting (6.1)
- Support planning and strategy development (6.2)
- Facilitate managing information and resources (6.3)
- Enhance capacity for monitoring progress (6.4)

Goal

Expert learners who are...

| **Purposeful & Motivated** | **Resourceful & Knowledgeable** | **Strategic & Goal-Directed** |

udlguidelines.cast.org | © CAST, Inc. 2018 | Suggested Citation: CAST (2018). Universal design for learning guidelines version 2.2 [graphic organizer]. Wakefield, MA: Author.

CAST

UNIVERSITY OF DELAWARE
ENGINEERING

Other UDL practices that are especially helpful to learner groups often challenged by traditional classroom styles.	auditory impaired	students with anxiety	cognitively impaired	English language learners	extroverts	introverts	international students	non-traditional students	under-achieving students	non-proficient readers	visually impaired	working students
1. Create text-based resources that learners can vary the size of text.											✓	
2. Provide text or spoken equivalents of images, graphics, videos, or animation.			✓					✓	✓	✓	✓	
3. Use visual (read: non-language based) resources to clarify vocabulary terms.	✓			✓			✓			✓		
4. Use a variety of familiar contexts to ground new concepts, or ask learners to situate key ideas in their own contexts.				✓			✓	✓				✓
5. Highlight to learners the connections between any information provided as a text and the accompanying representation (e.g. image, video, diagram)	✓		✓	✓			✓			✓	✓	

Oakland University

UNIVERSITY OF DELAWARE
ENGINEERING

Other UDL practices that are especially helpful to learner groups often challenged by traditional classroom styles.	auditory impaired	students with anxiety	cognitively impaired	English language learners	extroverts	introverts	international students	non-proficient readers	non-traditional students	under-achieving students	visually impaired
1. Create resources with text that can be resized.											✓
2. Provide text/spoken equivalents of visuals.						✓	✓	✓		✓	
3. Use physical objects to show perspective/interactions.	✓			✓			✓	✓			
4. Hyperlink/footnote content.			✓	✓			✓	✓		✓	
5. Use visual resources to clarify vocab.	✓			✓			✓	✓			
6. Highlight connections between text and visual representations.	✓		✓	✓			✓	✓		✓	✓
7. Use many cultural contexts to ground new concepts.				✓			✓		✓		

Oakland University

Other UDL practices that are especially helpful to learner groups often challenged by traditional classroom styles. *From the National Center on UDL, 2014*	auditory impaired	students with anxiety	cognitively impaired	English language learners	extroverts	introverts	international students	non-proficient readers	non-traditional students	under-achieving students	visually impaired
1. Use online discussion tools.	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
2. Have students create mind maps to structure understanding.		✓		✓			✓	✓		✓	
3. Give time/effort/difficulty estimates.		✓		✓	✓	✓	✓	✓	✓	✓	
4. Reiterate objectives and outcomes and connect activities to these learning goals.		✓	✓	✓			✓	✓		✓	
5. Prompt students to "stop and think" or "show and explain."		✓		✓		✓	✓			✓	
6. Use technology that is compatible with screen readers.	✓		✓	✓			✓	✓			✓
7. Share alternative keyboard options.	✓		✓	✓			✓				
8. Allow students to use technology tools (text-to-speech software, translation tools).	✓		✓	✓			✓	✓	✓	✓	✓

Oakland University

UNIVERSITY OF DELAWARE
ENGINEERING

- BBC: https://www.bbc.com/future/article/20191008-why-the-normal-brain-is-just-a-myth
- Scientific American: https://blogs.scientificamerican.com/observations/the-concept-of-neurodiversity-is-dividing-the-autism-community/

A COLLEGE-TO-CAREER INITIATIVE FOR STUDENTS WITH AUTISM

SPECTRUM SCHOLARS OFFERS SUPPORTS TO AUTISTIC STUDENTS AND THE CAMPUS COMMUNITY

SUPPORTS FOR SPECTRUM SCHOLARS

- Weekly coaching in academics, organization, social relationships, campus life and self-advocacy
- Peer mentoring
- Progressive internship and other career development experiences

SUPPORTS FOR AUTISTIC STUDENTS ACROSS CAMPUS

- Workshops to build skills for college and career success
- Group supports conducted in collaboration with other UD departments
- Connections to campus and community resources

SUPPORTS FOR UD FACULTY, STAFF, STUDENTS, BUSINESSES & THE COMMUNITY

- Trainings to work effectively with people on the autism spectrum
- Resources to support autistic students, colleagues and community members
- Individual consultation opportunities