


# Executive Functioning and the ASD Student

How UDL Can Support Skill Development and Engagement



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## Today we'll discuss:

- What is autism spectrum disorder (ASD)?
- How does autism affect the individual?
- What is Executive Functioning (EF)?
- Are EF skills important in the educational setting?
- What is universal design for learning (UDL)?
- What is it NOT?
- How does UDL support student engagement? And why?

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## WV Autism Training Center

- The mission of the WV Autism Training Center is to provide support to individuals with ASD as they pursue a life of quality.
- The WV Autism Training Center was established in 1983 by the WV Legislature through the efforts of parents of children with autism.
- Anyone, regardless of age, who has a diagnosis of autism and lives in WV is eligible to apply for services.
- To apply for services, call 304-696-2332 or visit our website to access and complete the [online registration form](#).



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### WV ATC Direct Services



- Criteria for registration
- Family Initiated
- Consultation Services
- WV Autism Mentor Course
- Community Outreach and Trainings

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### What is Autism Spectrum Disorder?



#### Definition

A complex neurodevelopmental disorder that affects the functioning of the brain and how an individual takes in information and interacts with the world.



#### Onset

Appears during the first 3 years of life. Usually diagnosed by 8 years of age.



#### Prognosis

ASD is a lifelong condition. There is no "cure" for autism but impacts can be minimized through education and use of strategies.

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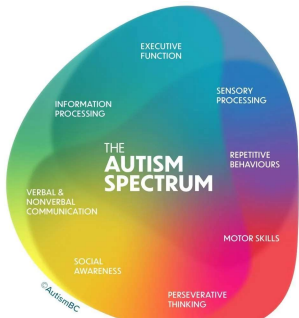
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### THE AUTISM SPECTRUM



### Why is autism considered a spectrum disorder?

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## ASD Levels of Severity

Level 1	Level 2	Level 3
<p><b>Needs support.</b></p> <p>Individual's social and communication skills and repetitive behaviors are only noticeable without support.</p>	<p><b>Needs substantial support.</b></p> <p>Individual's social and communication skills and repetitive behaviors are still obvious to the casual observer, even with support in place.</p>	<p><b>Needs very substantial support.</b></p> <p>Individual's social and communication skills and repetitive behaviors severely impair daily life.</p>

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## Prevalence


ASD continues to be the fastest growing developmental disability in the US.




**1 in 36 8-year-olds in the US meet the criteria for ASD.**



**over 30% increase since 1994 (1 in 150)**



**more common in boys than girls (1 in 34 vs 1 in 145)**



**diagnosed among all racial, ethnic, religious, and socioeconomic groups**

Source: CDC Morbidity and Mortality Weekly Report (MMWR), March 2023

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## CDC Key Findings Full Report





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## Characteristics of Autism

- Deficits in social skills
- Deficits in communication skills
- Restricted, repetitive patterns of behavior, interests, or activities

*\* Characteristics from each of the 3 main categories must be present to a clinically significant degree.*

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## Social Interaction Difficulties

- Responding to emotional or social cues
- Making appropriate eye contact
- Making and keeping friends
- Shared attention (sharing focus on an object, activity, or area with another person)
- Difficulty with "Theory of Mind"



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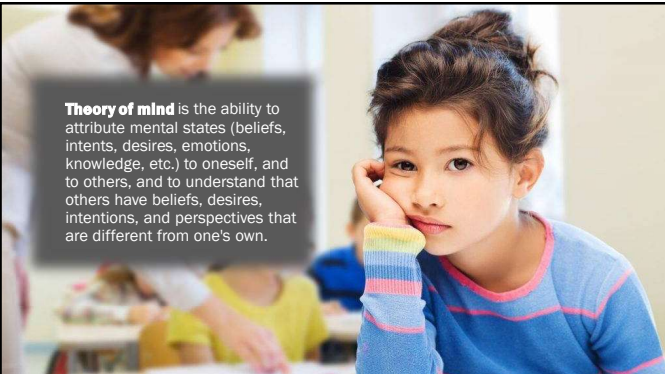
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**Theory of mind** is the ability to attribute mental states (beliefs, intents, desires, emotions, knowledge, etc.) to oneself, and to others, and to understand that others have beliefs, desires, intentions, and perspectives that are different from one's own.

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### Communication Difficulties

- Starting or ending a conversation
- Continuing a conversation
- Understanding humor or figures of speech
- Understanding and using gestures
- Using words that seem odd or out of place, or have special meaning to just them
- Interpreting communication literally



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### Restricted/Repetitive Behaviors

- Repeat movements**
  - Hand flapping
  - Eye blinking
  - Rocking
- Preference for routine**
  - Insist on sameness
  - Follow rituals
  - Arrange objects in stacks or lines
- Difficulty with change**
  - Routines
  - People
  - Places
- Restricted Interests**
  - Limited focus on activities or topics
  - Preoccupation with details of objects, games, or programs
- Self-injurious behavior for sensory input or regulation**
  - Head banging
  - Biting themselves
  - Picking their skin

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### Common Related Conditions

- Sleep disorders
- Dietary challenges
- Allergies
- Sensory processing difficulties
- Anxiety disorders
- Genetic disorders
- Excessive fear or lack of fear
- Learning disorders
- Executive functioning deficits



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## Executive Functioning

*"is an umbrella term utilized to capture a set of neurocognitive abilities involved in regulating goal-directed cognitive activity, as well as emotional and behavioral responses."*

(Aita et al., 2022)



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## Executive Functions

-  **Activation/Planning**
  - Organizing
  - Prioritizing
  - Getting to Work
-  **Emotions**
  - Managing Frustrations
  - Modulating Emotions
-  **Focus**
  - Sustaining Focus
  - Alertness
  - Sustaining Effort
-  **Self-Monitoring**
  - Monitoring and Regulating Actions
-  **Memory**
  - Utilizing Working Memory
-  **Flexibility**
  - Shifting Attention
  - Shifting Tasks

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### Impact on Learning...



**Planning & completing** projects, homework



**Communicating** in an organized and sequential manner



**Determining** how long a task might take (time blind)



**Retaining** information to use it (working memory)



**Initiating** tasks independently



**Transitioning** from one activity to another

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### Universal Design for Learning



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### Accessible to ALL Learners



Image retrieved from <https://www.centerforufl.org/online-design/indicators/door-handles/>

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*“Importantly, inclusion must be recognized as a complex process and not a static state...  
**Equal treatment is not the same as equal opportunity to learn...**Therefore, inclusion is more than placement.”*

(Goodall, 2015, page 306)

*“Children with ASD provide an excellent example of where significant cracks exist in the system, to detriment of those who fall between them.”*

(Goodall, 2015, page 308)

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### The Science behind UDL

Strategic networks  
"how"

Affective networks  
"why"

Recognition networks  
"what"

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### Core Principles of UDL

<p><b>AFFECTIVE NETWORKS:</b> THE <b>WHY</b> OF LEARNING</p> <p><b>Engagement</b> For purposeful, motivated learners, stimulate interest and motivation for learning.</p>	<p><b>RECOGNITION NETWORKS:</b> THE <b>WHAT</b> OF LEARNING</p> <p><b>Representation</b> For resourceful, knowledgeable learners, present information and content in different ways.</p>	<p><b>STRATEGIC NETWORKS:</b> THE <b>HOW</b> OF LEARNING</p> <p><b>Action &amp; Expression</b> For strategic, goal-directed learners, differentiate the ways that students can express what they know.</p>
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Image retrieved from: <https://www.cast.org/products-services/resources/2018/udl-tips-learning-environments>

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**What is UDL NOT?**

- Only for students in special education with exceptional learning needs
- A set curriculum that comes with prepared lessons and explicit instructions
- A quick fix that can be fully implemented overnight

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**“UDL is not just about providing tools for students to access learning experiences and managing your classroom. It’s about eliminating barriers so every student can succeed.”**

*Katie Novak, UDL Now*

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**Universal Design for Learning (UDL)** is a way of thinking about teaching and learning that **helps give all students an equal opportunity to succeed.** This approach offers flexibility in the ways students access material, engage with it and show what they know. Developing lesson plans this way helps all kids, but it may be especially helpful for kids with learning and attention issues.

*(Morin, 2018)*

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## Understanding the UDL Guidelines

- Separated into 3 categories based on neural networks
- Provides educators with concrete suggestions
- Encourages proactive approach to identifying barriers and planning meaningful learning opportunities
- Acknowledges need for support as well as promotes academic challenge
- Intentionally designed to build skills toward development of “expert learners”

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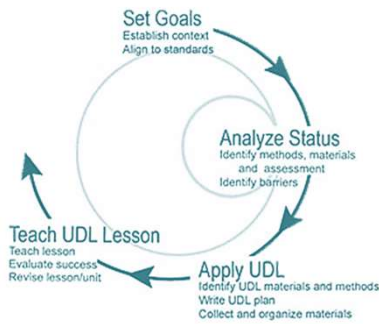
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## 4-Step Process for Designing & Implementing UDL



(Graphic from Hall et al., 2014)

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## Common UDL Supports for Students with ASD

Source: (Mitchell, 2023 as adapted from "The UDL Guidelines" by CAST, 2011)

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
<b>Provide options for Recruiting Interest</b> <ul style="list-style-type: none"> <li>*Optimize individual device &amp; sensory (color, sound, vibration) settings, preferred topics, individualized equipment, the plan</li> <li>*Optimize relevance, value &amp; authenticity (cultural, socially, age and ability appropriate)</li> <li>*Minimize threats and distractions (considering acoustics, lighting, smells, heat, noise, sight, touch, sensory options)</li> </ul>	<b>Provide options for Perception</b> <ul style="list-style-type: none"> <li>*Offer ways of conveying the depth of information (digital text, schedule, online text, high contrast text, audio systems, visual cue cards)</li> <li>*Offer alternatives for auditory information (closed captions, New Zealand Sign Language, sensory bins)</li> <li>*Offer alternatives for visual information (audio books, large colored high contrast materials, text-to-speech)</li> </ul>	<b>Provide options for Physical Action</b> <ul style="list-style-type: none"> <li>*Vary the methods for response and navigation (adapted equipment, and use pointers, handwriting adaptives, physical accessibility for work)</li> <li>*Checkbars usability, speech bubbles, prompt cards)</li> <li>*Optimize access to tools and assistive technologies (communication board, adaptive switches, speech to text, text to speech, word prediction software)</li> </ul>
<b>Provide options for Sustaining Effort &amp; Persistence</b> <ul style="list-style-type: none"> <li>*Highlight the relevance of goals and objectives (visual cue cards, tables, progress monitoring)</li> <li>*Vary demands and resources to optimize challenge (adapted equipment, menu of options, modified assignments, reading progress)</li> <li>*Foster collaboration &amp; community (big books, active learning, book buddies, one-to-one social supports)</li> <li>*Increase mastery-oriented feedback (individual conferences, peer activities for feedback, modeling behaviors)</li> </ul>	<b>Provide options for Language &amp; Symbols</b> <ul style="list-style-type: none"> <li>*Clarify vocabulary and symbols, picture and diagram (pictures, audio, dictionary, word wall, vocabulary preview)</li> <li>*Highlight patterns, critical features, big ideas, and relationships (graphic charts, comic strips, modified writing, shared reading, word walls)</li> <li>*Provide information processing and visualization (diagrams, explicit instruction, guided questions, imaginative play, KWL charts, multiple-choice charts)</li> <li>*Maximize transfer and generalization (scenario cards, modeling, KWL charts, graphic organizers)</li> </ul>	<b>Provide options for Expression &amp; Communication</b> <ul style="list-style-type: none"> <li>*Vary multiple modes for communication (via assignment or other submission, sticky notes, story play, poster activities)</li> <li>*Multiple tasks for communication and composition (graphic books, dice, math games, letter word tiles, sentence starters, manipulatives)</li> <li>*Provide flexible work (graded levels of support for process and performance (complex, multiple choices, participation strips, mini lessons, interactive activities)</li> </ul>
<b>Provide options for Self Regulation</b> <ul style="list-style-type: none"> <li>*Promote expectations and beliefs that optimize motivation (team books, conferences, task variation, visible boundaries, first then task boards)</li> <li>*Facilitate personal coping skills and strategies (selfy breathing, finger tape, coloring strategies and spaces, movement breaks, mindfulness)</li> <li>*Self-assessment and reflection (check-in check-out, online tools, problem-solving checklists, goal setting, thinking routines)</li> </ul>	<b>Provide options for Comprehension</b> <ul style="list-style-type: none"> <li>*Activate or supply background knowledge (brainstorming, photos, pre-reading, verbal prompting, visual cues)</li> <li>*Highlight patterns, critical features, big ideas, and relationships (graphic charts, comic strips, modified writing, shared reading, word walls)</li> <li>*Clarify information processing and visualization (diagrams, explicit instruction, guided questions, imaginative play, KWL charts, multiple-choice charts)</li> <li>*Maximize transfer and generalization (scenario cards, modeling, KWL charts, graphic organizers)</li> </ul>	<b>Provide options for Executive Functions</b> <ul style="list-style-type: none"> <li>*Make appropriate goal setting (rubrics, visual, explicit instruction, goal setting)</li> <li>*Support planning and strategy development (templates, outlines, graphic organizers)</li> <li>*Clarify organizing information and resources (index cards, books, outlines, story maps, on-line, visual task scheduling)</li> <li>*Maximize capacity for monitoring progress (goals, tables, marking guides, help signal/visual, clearly space, visual task scheduling)</li> </ul>

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The Universal Design for Learning Guidelines CAST | with learning-by-design

<b>Provide multiple means of Engagement</b> <small>Affective Networks: The "WHY" of Learning</small>	<b>Provide multiple means of Representation</b> <small>Recognition Networks: The "WHAT" of Learning</small>	<b>Provide multiple means of Action &amp; Expression</b> <small>Strategic Networks: The "HOW" of Learning</small>
<b>Provide options for Recruiting Interest</b> <ul style="list-style-type: none"> <li>Optimize relevance, value, and authenticity</li> <li>Increase breadth and elaboration</li> </ul>	<b>Provide options for Perception</b> <ul style="list-style-type: none"> <li>Offer ways of representing the display of information</li> <li>Offer alternatives for auditory information</li> <li>Offer alternatives for visual information</li> </ul>	<b>Provide options for Physical Action</b> <ul style="list-style-type: none"> <li>Engage methods for response and navigation</li> <li>Optimize access to tools and assistive technologies</li> </ul>
<b>Provide options for Sustaining Effort &amp; Persistence</b> <ul style="list-style-type: none"> <li>Increase relevance of goals and objectives</li> <li>Key elements and resources to optimize challenge</li> <li>Foster collaboration and peer-learning</li> <li>Increase mastery-oriented feedback</li> </ul>	<b>Provide options for Language &amp; Symbols</b> <ul style="list-style-type: none"> <li>Clarify vocabulary and symbols</li> <li>Clarify syntax and structure</li> <li>Support learning of critical mathematical notation, and symbols</li> <li>Provide understanding across languages</li> <li>Access through multiple media</li> </ul>	<b>Provide options for Expression &amp; Communication</b> <ul style="list-style-type: none"> <li>Use multiple modes for communication</li> <li>Use multiple tools for construction and composition</li> <li>Build fluency with graduated levels of support for practice and performance</li> </ul>
<b>Provide options for Self-Regulation</b> <ul style="list-style-type: none"> <li>Provide expectations and models due to explicit instruction</li> <li>Facilitate personalizing goals and strategies</li> <li>Encourage self-assessment and reflection</li> </ul>	<b>Provide options for Comprehension</b> <ul style="list-style-type: none"> <li>Address or supply background knowledge</li> <li>Highlight systems, critical features, big ideas, and relationships</li> <li>Guide information processing and visualization</li> <li>Maximize transfer and generalization</li> </ul>	<b>Provide options for Executive Functions</b> <ul style="list-style-type: none"> <li>Guide appropriate goal setting</li> <li>Support planning and strategic performance</li> <li>Facilitate managing information and resources</li> <li>Enhance capacity for monitoring progress</li> </ul>
<b>Expert learners who are...</b>		
Purposeful & Motivated	Resourceful & Knowledgeable	Strategic & Goal-Directed

© 2018 CAST. All rights reserved. | Suggested Citation: CAST (2018). Universal Design for Learning guidelines version 2.2 (graphic organizer). Wakefield, MA: Author.

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## Thank you!

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AUTISM TRAINING CENTER**  
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