

Introduction to Universal Design for Learning

LEVinar

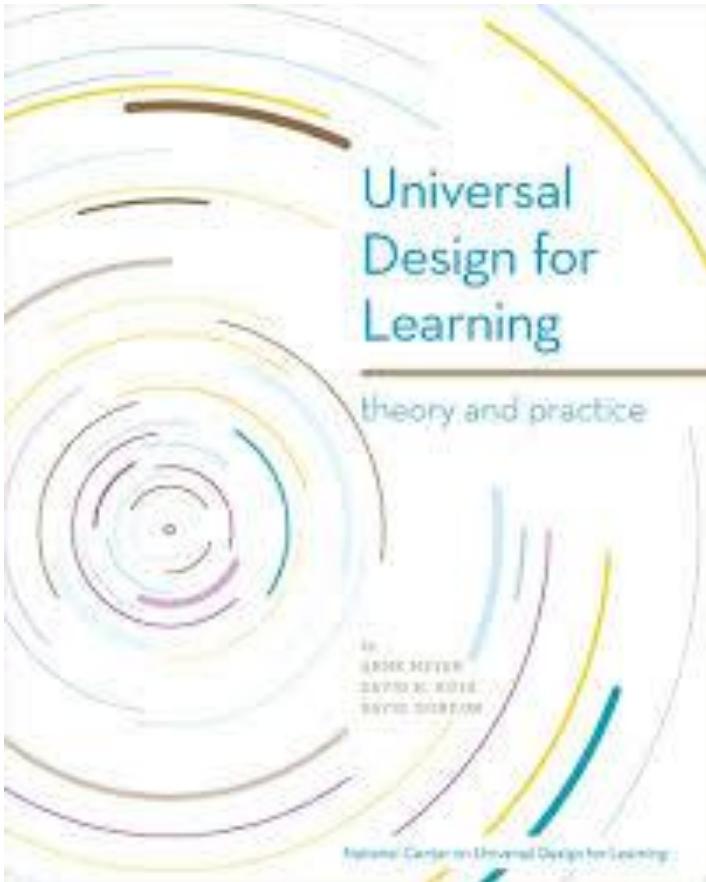
November 18, 2019

Introducing the Presenter



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Schools Association
diana@wacharters.org

Sources



CAST About CAST ▾ Our Work ▾ Work With Us ▾ News & Resources ▾

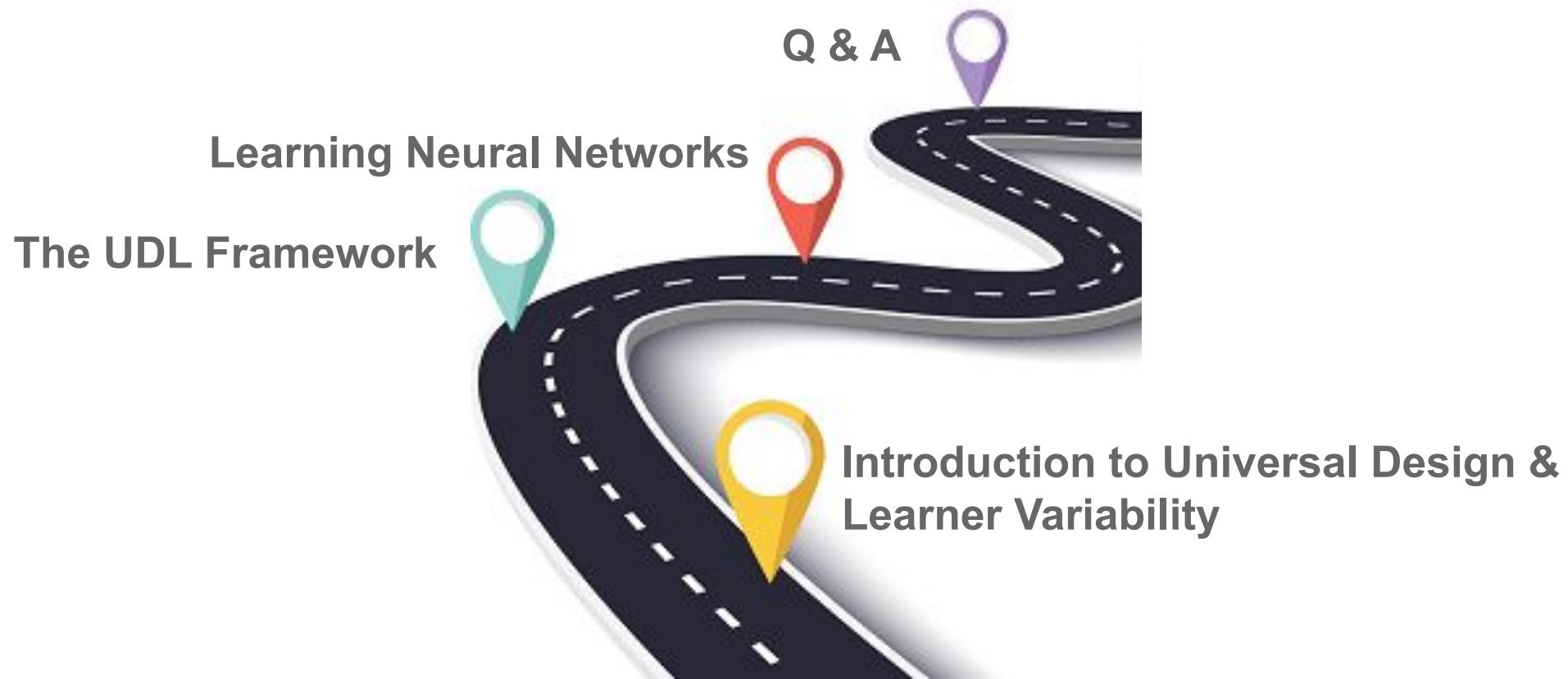
▶ □ 🔎

Until learning has no limits

Get Inspired.

A graphic of a row of colorful books, including pink, orange, green, and yellow ones, arranged horizontally. The background of the entire section is a dark purple gradient.

45 Minute Road Trip



Learning Objectives

- Participants will gain a basic understanding of the framework of Universal Design for Learning (UDL)
- Participants will gain an understanding of the neural networks that are involved in learning.



How familiar are you with UDL?

One-to-Five



Universal Design for Learning

Universal Design for Learning (UDL) is an educational framework based on research in learning sciences, including cognitive neuroscience, that guides the development of flexible learning environments that can accommodate individual learning differences.





**“Hey Siri,
read that text
to me.”**

Roots in Architecture & Product Development

Universal Design in architecture and product development illustrates that designing for variability from the beginning is more practical, elegant and effective approach than adding it on.



VS.





**“Consider the needs of the
broadest possible range of users
from the beginning.”**

Ron Mace

Core Concept:

What is necessary for some is beneficial for everyone.



Learner Variability

Exploring Variability: Attention Test



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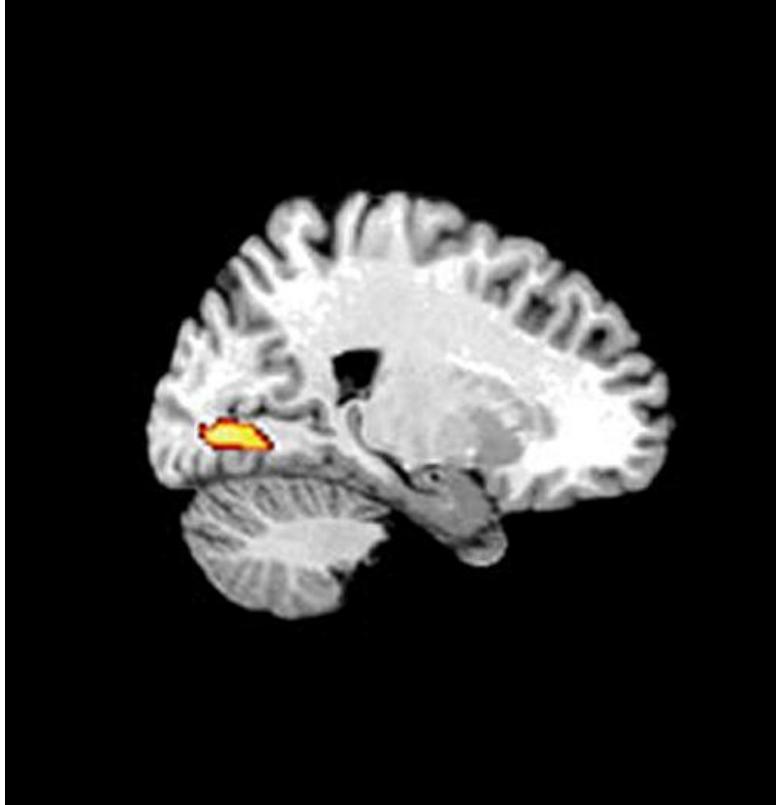
(Meyer et. al., 2014)

Moving from disability to Variability mindset

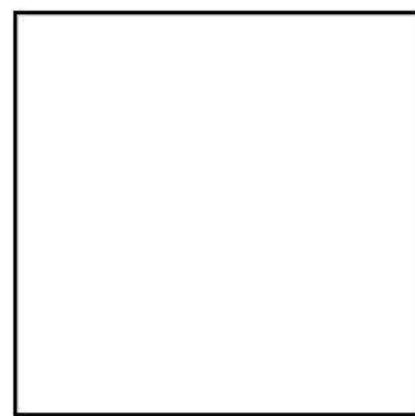
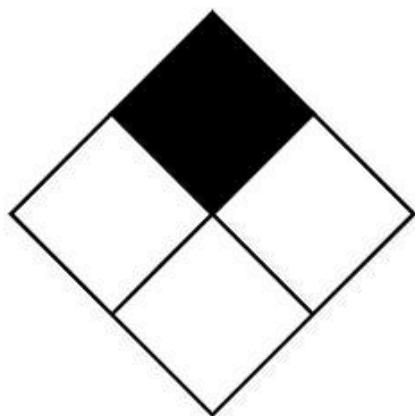
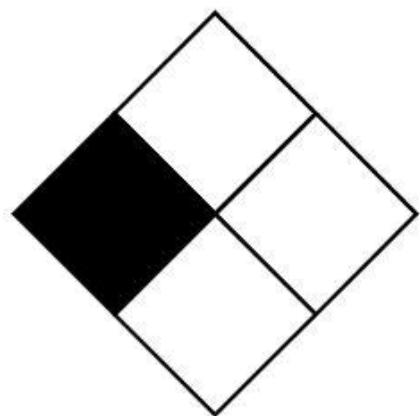
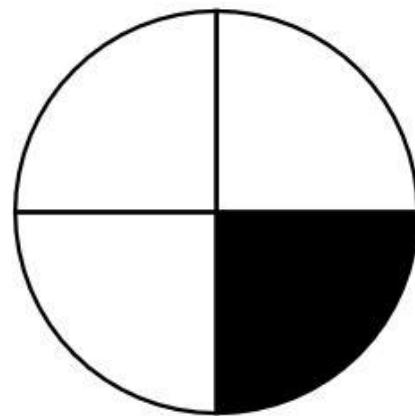
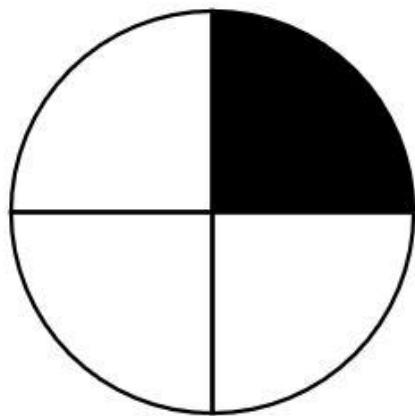
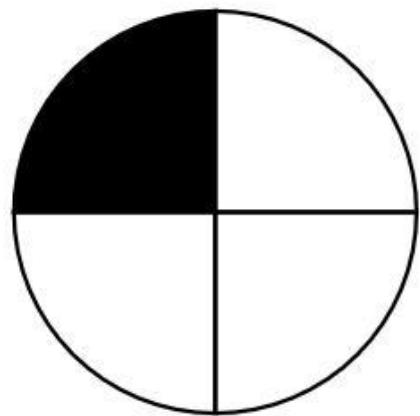
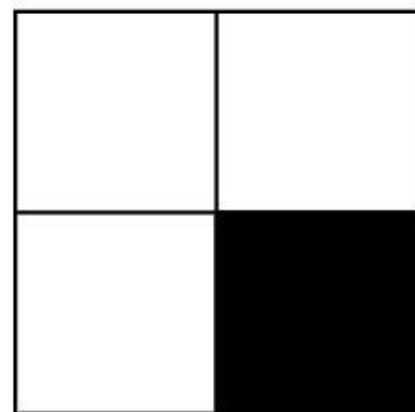
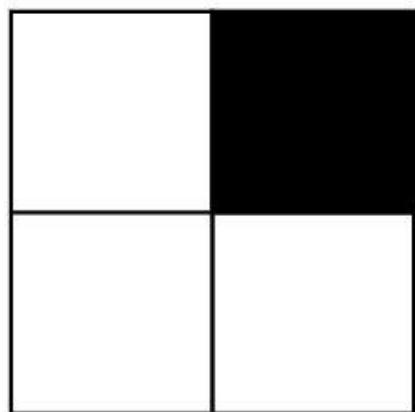
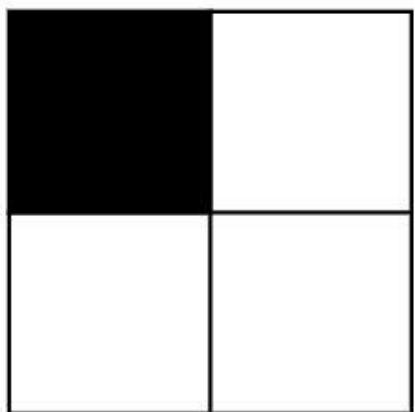


Recent advances in neuroscience have provided different understanding of individual differences, characterizing them instead as predictable, normal **variability** that exists across the population.

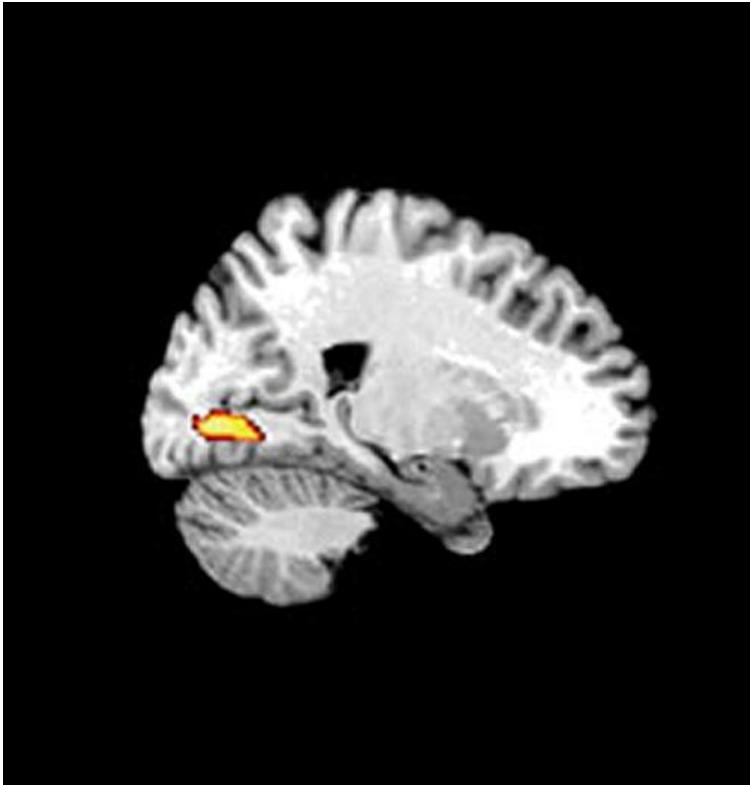
Brain Variability



- Individuals with and without autism were asked to complete an intelligence measure called the Raven's Progressive Matrices.
- There was little difference in most parts of the brain....
- Except in the area of complex visual cortex – highlighted in yellow.



Brain Variability



- The highlighted yellow portion does not indicate damage or dysfunction.
- Individuals with autism generally show superior performance on this task.

This is not disability.

This is variability!

Systematic Learning Variability

“We’ve identified three dimensions of systematic variability that will exist in every learning environment at every age. Differences in terms of the way that people **receive information**, differences in the way that they **engage with the material**, and differences in the way that they can **act upon material and show what they know.**”

- Dr. Todd Rose

Core Concept:

Variability is Predictable



UDL as a Framework

Eliminating barriers

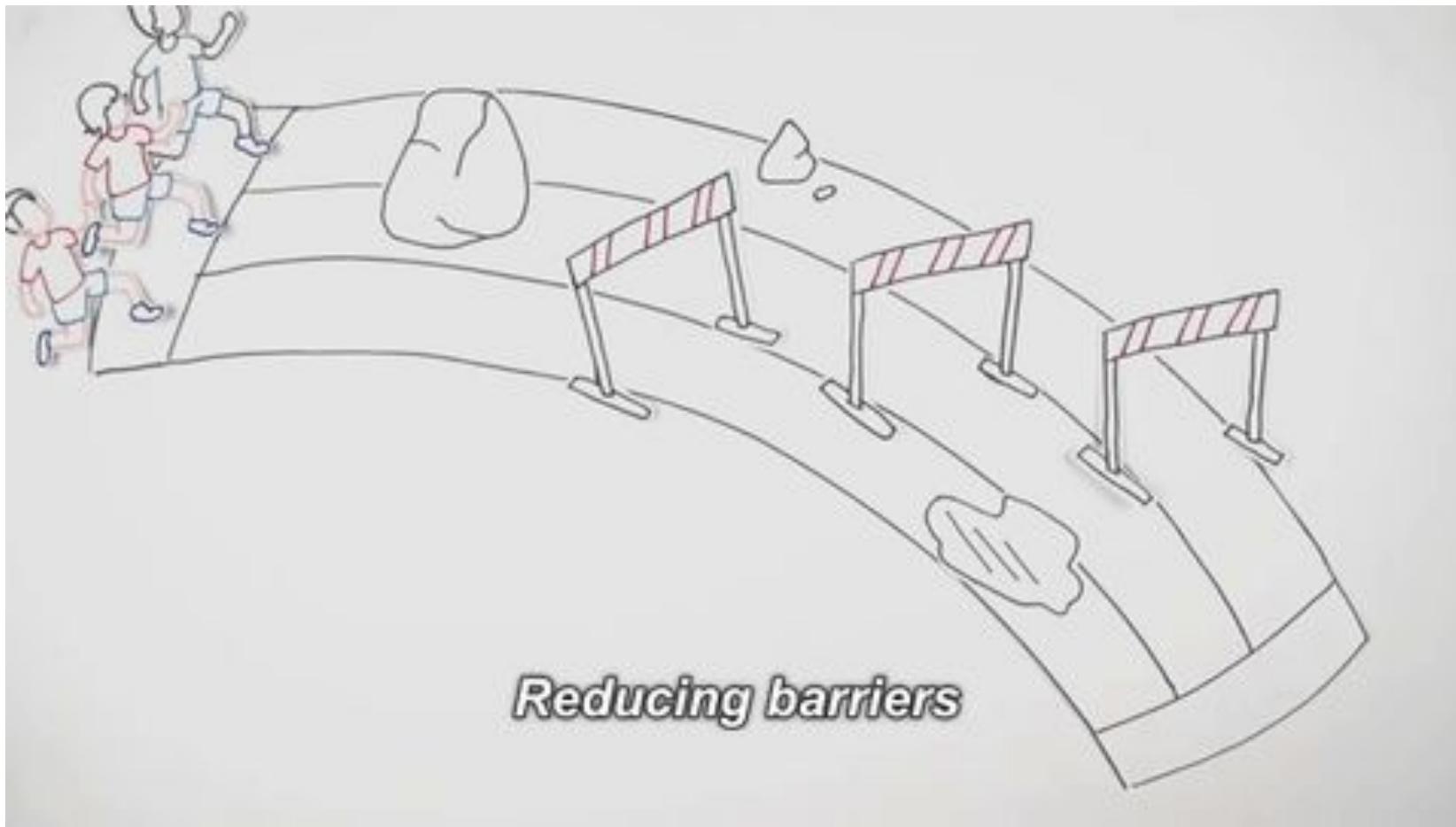
Eliminate Barriers

Universal Design for Learning seeks to **illuminate** the barriers from the inception of a lesson plan.



UDL maximizes the 3 networks in the brain that allow groups of learners the flexibility of taking in information in a way that is unique to their individual needs.

The barrier is in the environment, not the learner



UDL: The Process

Set Clear, Rigorous,
Relevant Goals



Anticipate Barriers
(Think about Learner
Variability)



Design Options to
Reduce Barriers for All



Students will write a 5-paragraph essay describing the phases of butterfly metamorphosis



Students will demonstrate understanding of the phases of butterfly metamorphosis



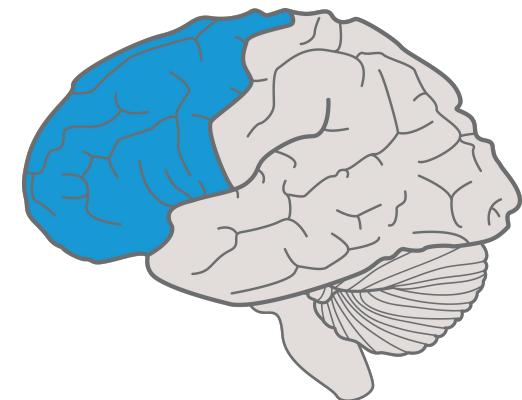
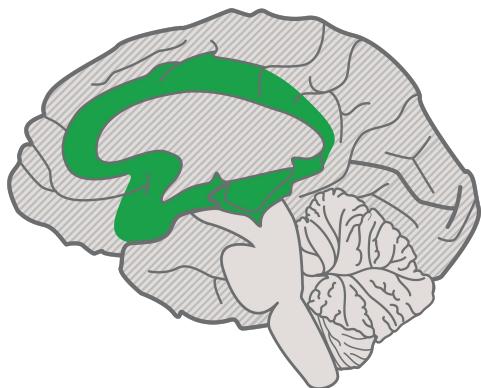
Goals: Clarifying Expectations

Core Concept:

UDL seeks to anticipate barriers within the design of the lesson and maximize flexibility to provide access to all learners



Introduction to the UDL Guidelines



The Goal of the UDL Guidelines: Expert Learning

Provide multiple means of
Engagement



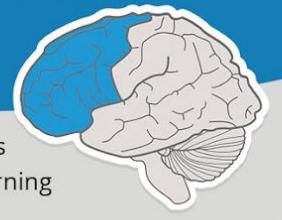
Affective Networks
The "WHY" of Learning

Provide multiple means of
Representation



Recognition Networks
The "WHAT" of Learning

Provide multiple means of
Action & Expression



Strategic Networks
The "HOW" of Learning

Expert learners who are...

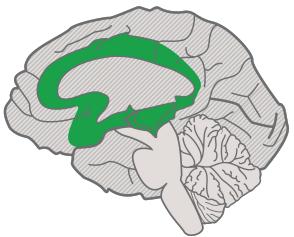
Purposeful & Motivated

Resourceful & Knowledgeable

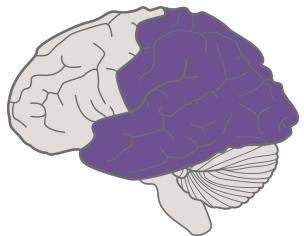
Strategic & Goal-Directed

Goal

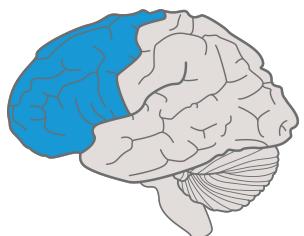
Three primary classes of learning neural networks



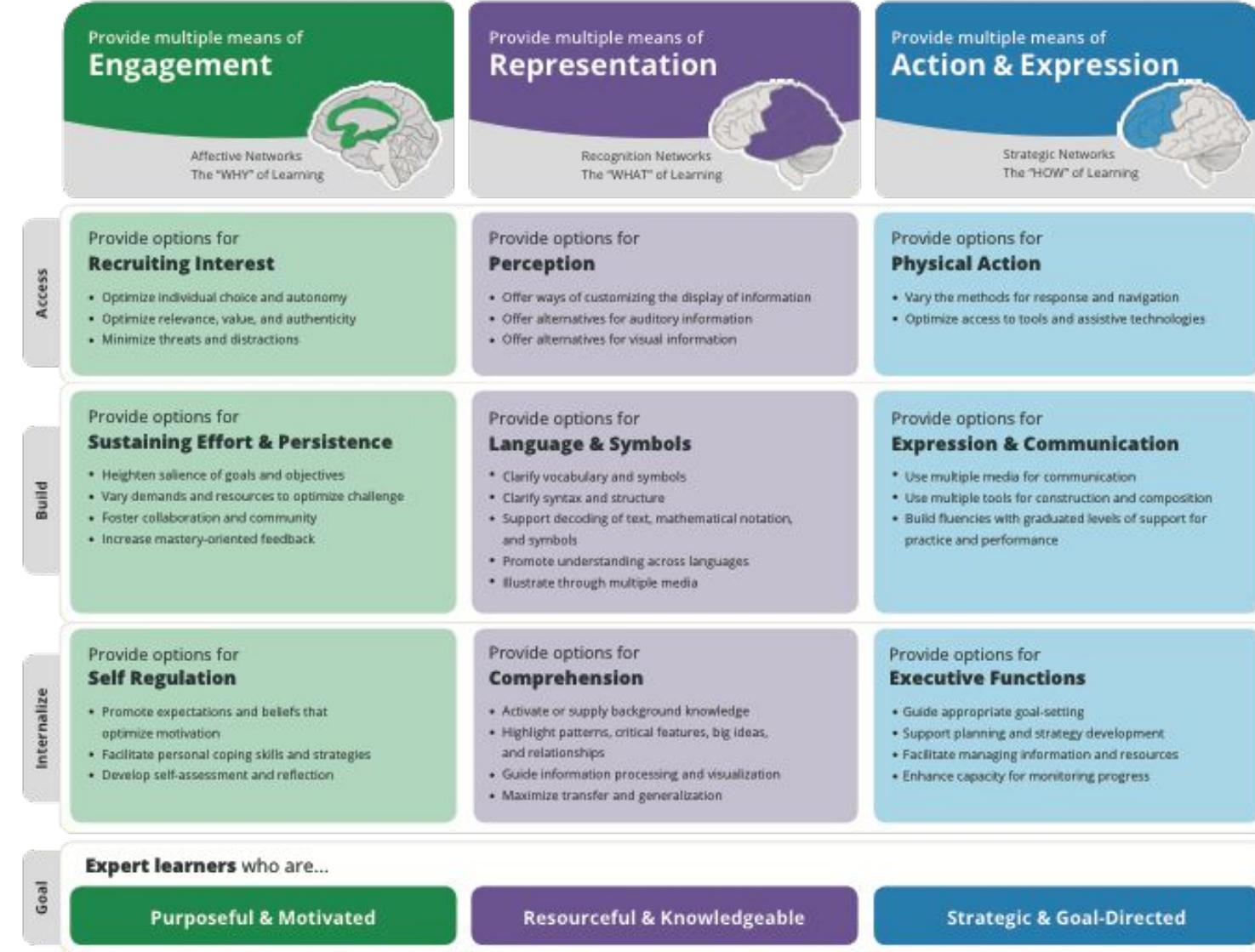
Affective networks monitor internal and external environments to set priorities, to motivate, and to engage the learner.



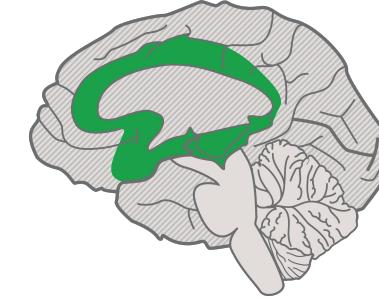
Recognition networks that sense and perceive information in the environment and transform it into usable knowledge.



Strategic networks that plan, organize and initiate purposeful actions in the environment.



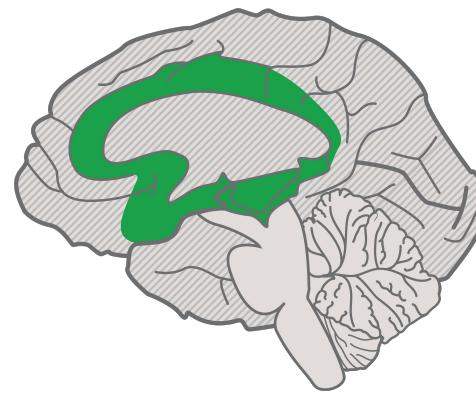
Affective neural networks



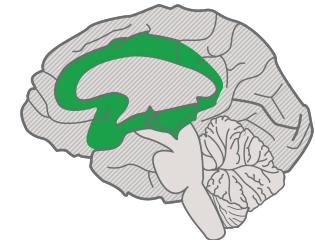
- Affective networks are specialized – they are composed of many parts that all serve a specific purpose – example: amygdala and fear
- Certain stimuli can initiate powerful feelings of fear.
- The amygdala relies on the cerebral cortex to evaluate information as threatening or benign.
- Bi-directionality in the nervous system suggests that emotion and cognition are completely intertwined. Separating them is not practical or useful!

Affective networks | An Unexpected Visitor

- Experience your own affective networks at work
- Review the painting on the next slide
- Please make a mental note of what object or person you notice first.



(Meyers et.al, 2014)



An Unexpected Visitor

Alfred Yarbus
1967

0:15

(Meyers et.al, 2014)



An Unexpected Visitor

Alfred Yarbus

1967

What did you notice first?

- A. The man in the coat
- B. The maid at the door
- C. The child in white
- D. None of these

(Meyers et.al, 2014)

Provide multiple means of
Engagement



Affective Networks
The "WHY" of Learning

Access

Provide options for
Recruiting Interest

- Optimize individual choice and autonomy
- Optimize relevance, value, and authenticity
- Minimize threats and distractions

Build

Provide options for
Sustaining Effort & Persistence

- Heighten salience of goals and objectives
- Vary demands and resources to optimize challenge
- Foster collaboration and community
- Increase mastery-oriented feedback

Internalize

Provide options for
Self Regulation

- Promote expectations and beliefs that optimize motivation
- Facilitate personal coping skills and strategies
- Develop self-assessment and reflection

Goal

Expert learners who are...

Purposeful & Motivated

What options could be added to **recruit the interest** of learners in the goal?

What options could be added to support learners to **sustain effort and persistence** in working toward the goal?

What options could be added to support learners to **self-regulate** during the activity?

Provide multiple means of Engagement



Affective Networks
The "WHY" of Learning

Provide options for Recruiting Interest

- Optimize individual choice and autonomy
- Optimize relevance, value, and authenticity
- Minimize threats and distractions

Provide options for Sustaining Effort & Persistence

- Heighten salience of goals and objectives
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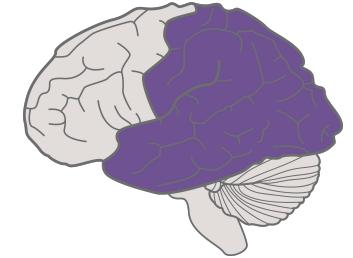
Provide options for Self Regulation

- Promote expectations and beliefs that optimize motivation
- Facilitate personal coping skills and strategies
- Develop self-assessment and reflection

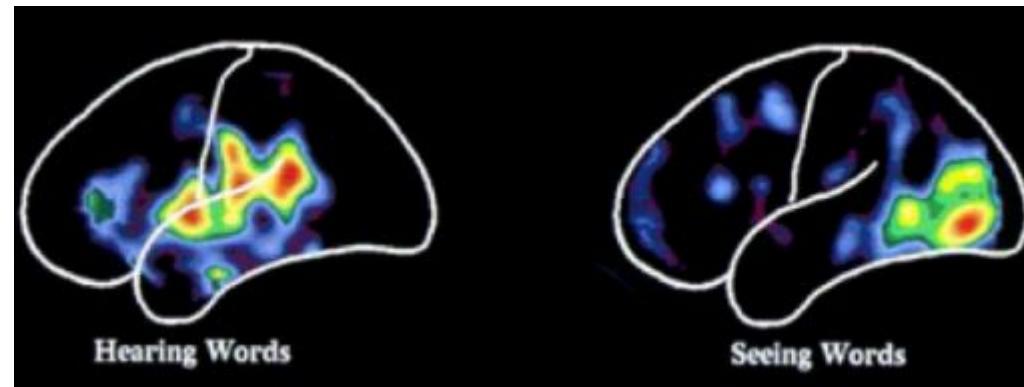
Strategies for Success

- Offer flexible workspaces
- Provide mastery oriented feedback
- Promote growth mindset for students and staff

Recognition neural networks

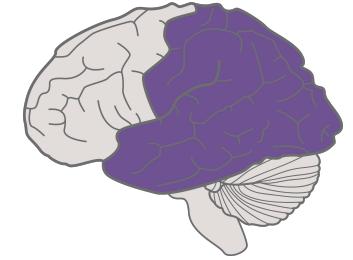


- Our expectations about what we are seeing can warp what we do see.
- Contextual factors have been shown to have a strong influence on perception and recognition
- Different representations are recognized in different parts of the brain

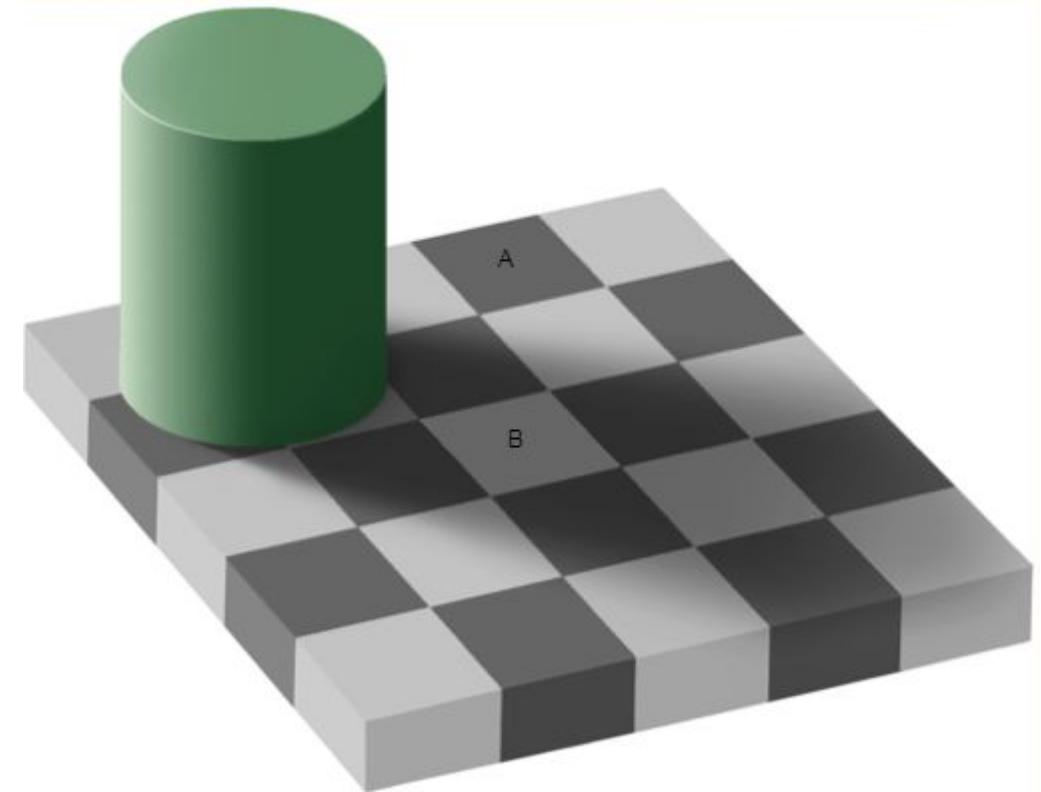


(Meyers et.al, 2014)

Recognition networks



<http://www.michaelbach.de/ot/lum-adelsonCheckShadow/>



(Meyers et.al, 2014)

Recognition networks

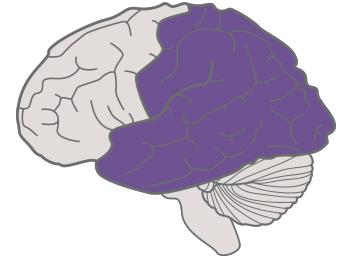
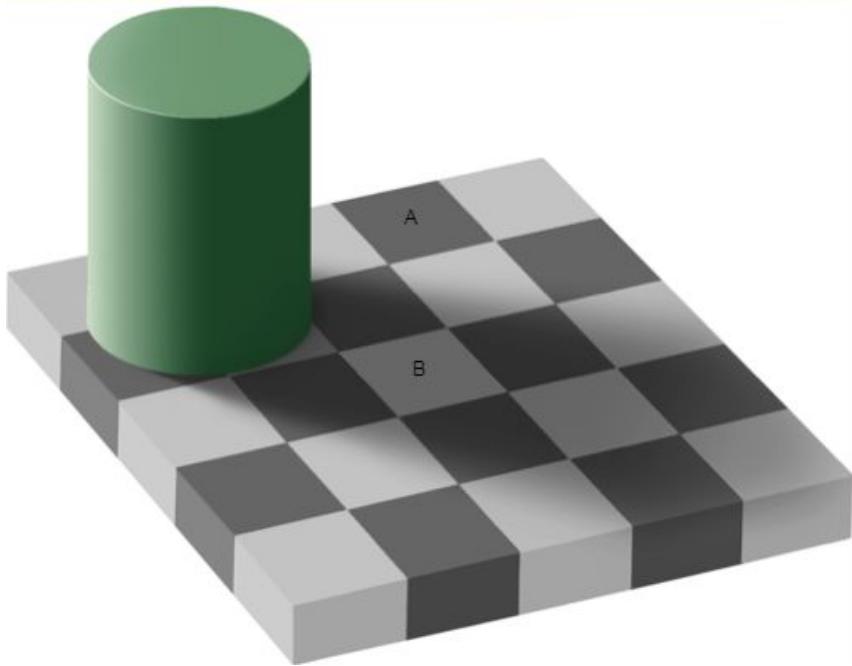
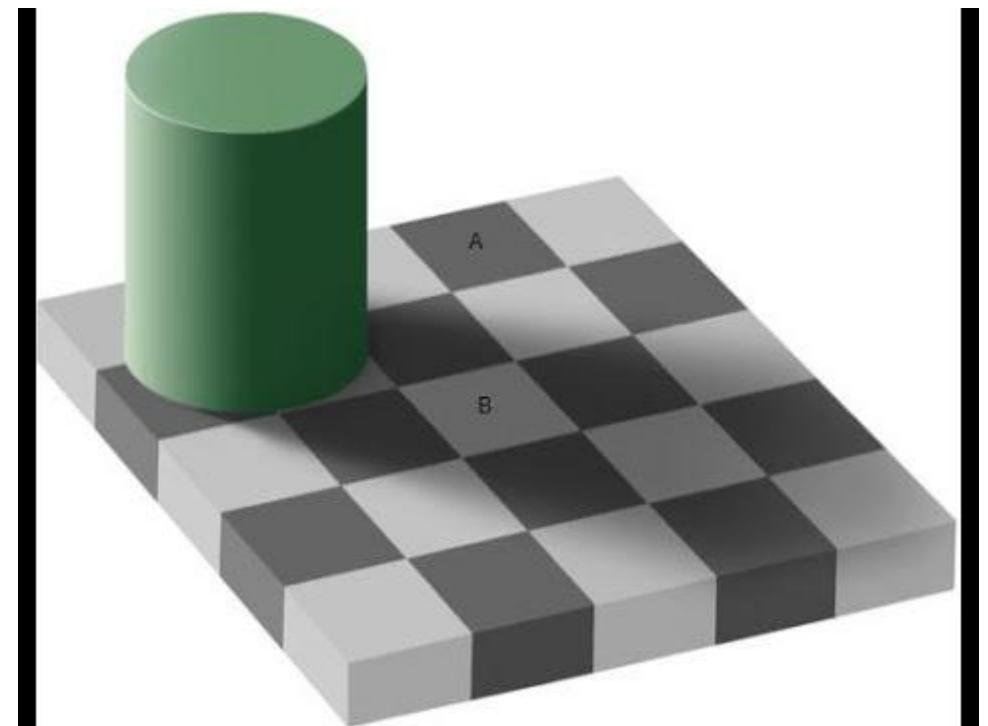


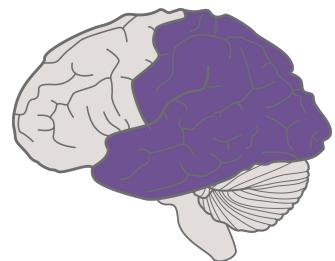
Image of the checkerboard



Cover drawn



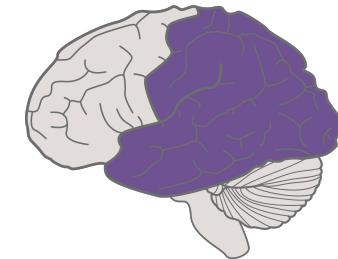
(Meyers et.al, 2014)



An Unexpected Visitor

Alfred Yarbus
1967

(Meyers et.al, 2014)



**An Unexpected
Visitor**
Alfred Yarbus
1967

(Meyers et.al, 2014)

Provide multiple means of Representation

Recognition Networks
The "WHAT" of Learning



Provide options for Perception

- Offer ways of customizing the display of information
- Offer alternatives for auditory information
- Offer alternatives for visual information

Provide options for Language & Symbols

- Clarify vocabulary and symbols
- Clarify syntax and structure
- Support decoding of text, mathematical notation, and symbols
- Promote understanding across languages
- Illustrate through multiple media

Provide options for Comprehension

- Activate or supply background knowledge
- Highlight patterns, critical features, big ideas, and relationships
- Guide information processing and visualization
- Maximize transfer and generalization

Resourceful & Knowledgeable

What options could be added to ensure all learners can perceive the information?

What options could be added to ensure all learners understand the language and symbols?

What options could be added to ensure all learners are able to comprehend the information?

Provide multiple means of
Representation



Provide options for
Perception

- Offer ways of customizing the display of information
- Offer alternatives for auditory information
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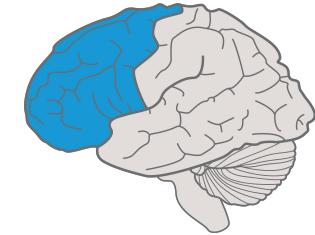
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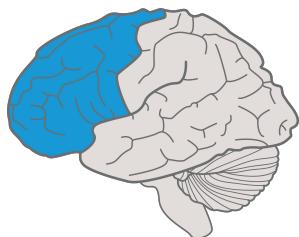
Strategies for Success

- Embed the [Read&Write](#) toolbar
- Use the [Frayer model](#)
- Use [Padlet](#) to help supply background knowledge

Strategic neural networks



- Strategic networks allow us to plan, execute and monitor all kinds of purposeful acts in our environment – ranging from simple motor acts to complex skills.
- They also are the networks for executive functions such as setting broad, long term goals, making plans for effective strategies, monitoring progress, making corrections if needed.
- When two individuals confronted with the same problem, they solve it a different way – using different patterns within their brain



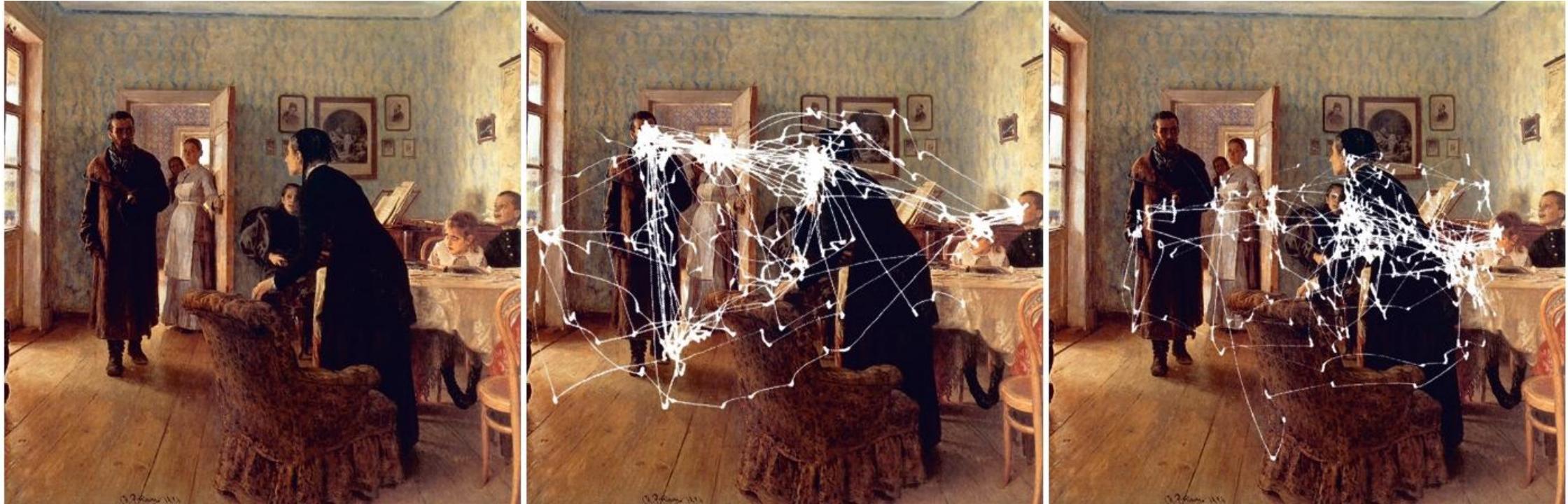
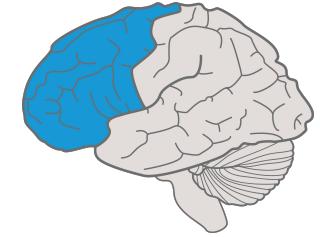
An Unexpected Visitor

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(Meyers et.al, 2014)

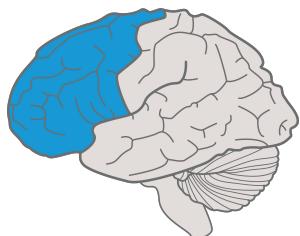
Strategic networks



(Meyers et.al, 2014)

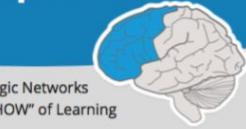


- Patterns of eye movement vary depending on the task
- This is an image of the same viewer examining the photo on separate occasions.
- The viewer had a separate goal with each view.
- Even processes that seem simple involve complex, layered processes in the break.



(Meyers et.al, 2014)

Provide multiple means of
Action & Expression



Provide options for
Physical Action

- Vary the methods for response and navigation
- Optimize access to tools and assistive technologies

Provide options for
Expression & Communication

- Use multiple media for communication
- Use multiple tools for construction and composition
- Build fluencies with graduated levels of support for practice and performance

Provide options for
Executive Functions

- Guide appropriate goal-setting
- Support planning and strategy development
- Facilitate managing information and resources
- Enhance capacity for monitoring progress

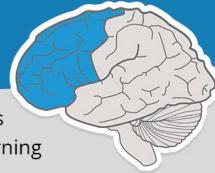
Strategic & Goal-Directed

What options could be added to ensure that all learners can **physically interact with the materials and respond during the activity?**

What options could be added to ensure that all learners can **express learning and communicate during the activity?**

What options could be added to ensure that all learners are able to **plan and organize their own learning?**

Provide multiple means of
Action & Expression



Strategic Networks
The "HOW" of Learning

Provide options for
Physical Action

- Vary the methods for response and navigation
- Optimize access to tools and assistive technologies

Provide options for
Expression & Communication

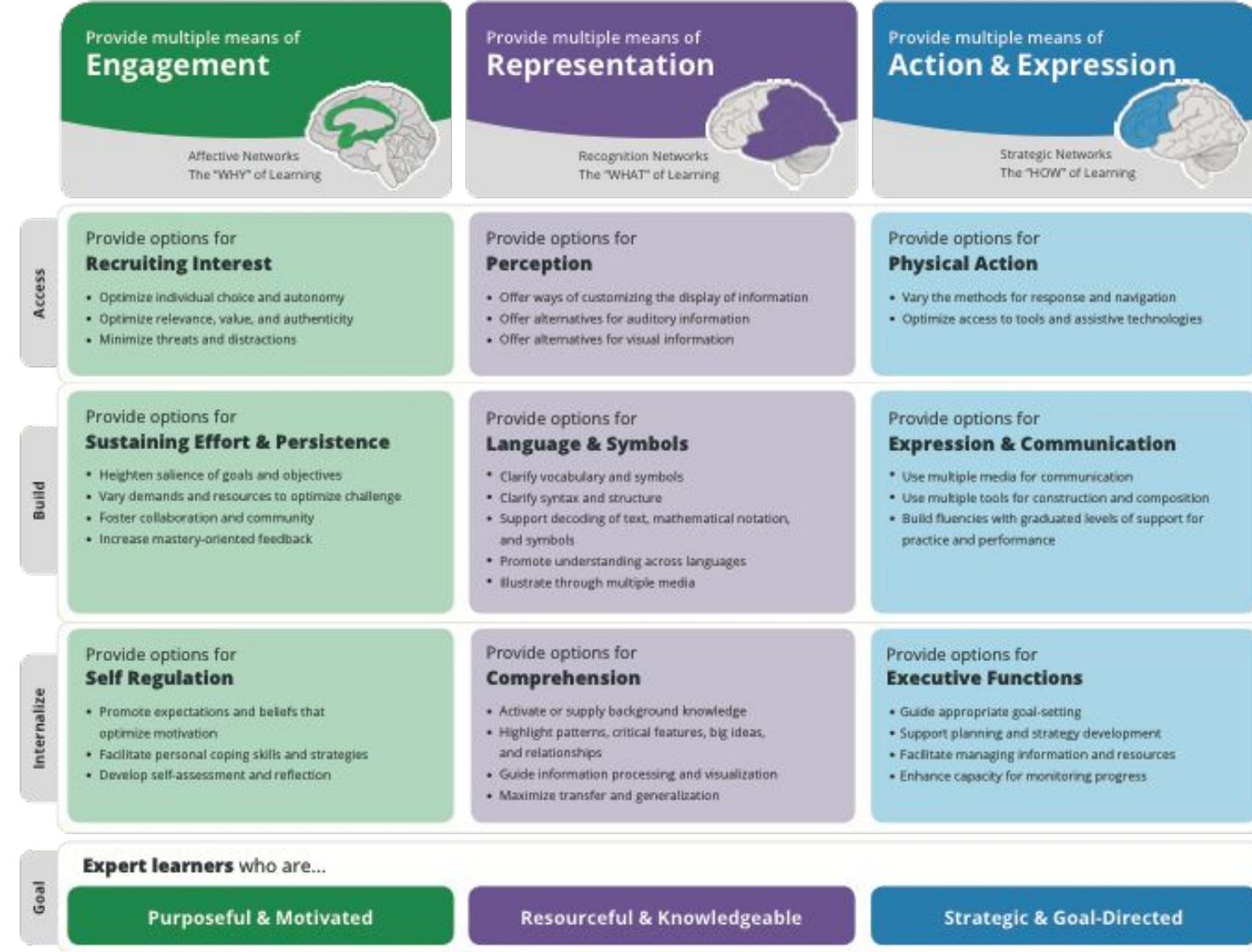
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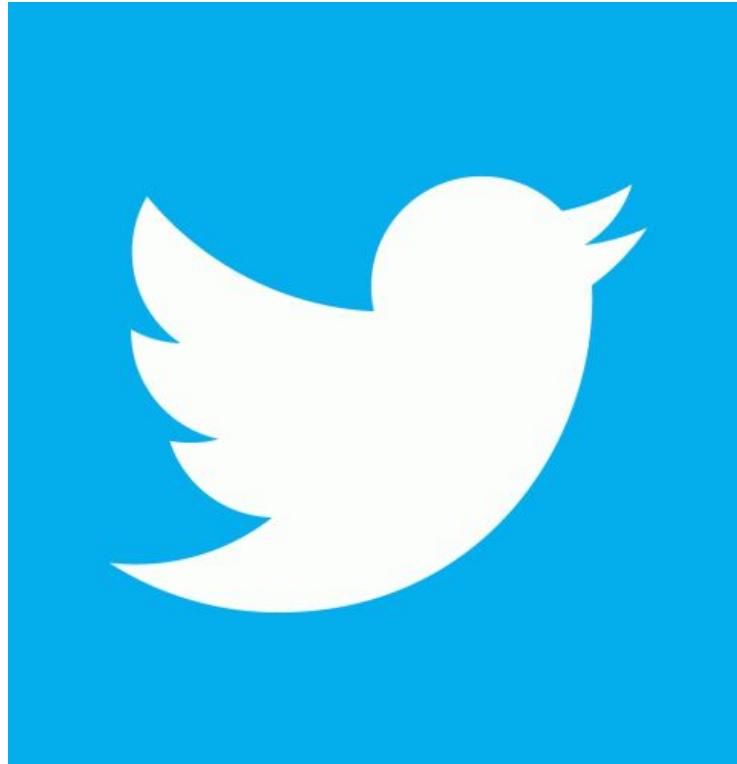
Provide options for
Executive Functions

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Strategies for Success

- Use the show me your cards strategy
- Use Twitter-style exit slips
- Help students to track the passage of time



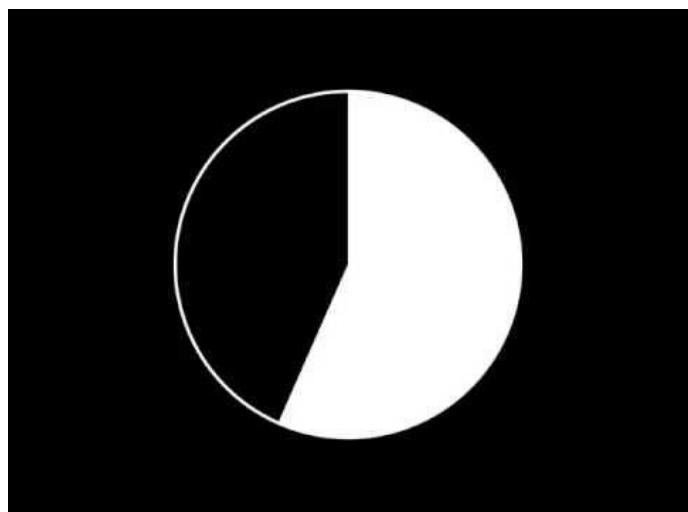


Reflection Activity

Create a tweet explaining your catchy understanding of UDL.

Must be 280 characters or less!

Options for this reflection:

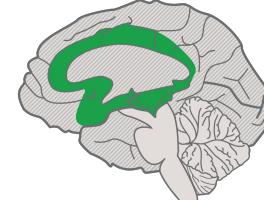


- Create a real tweet @edVoters #LEVinarUDL
- Record your response as a video
- Write your reflection on paper

Strategies you may have noticed in this presentation...

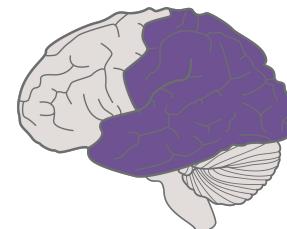
Engagement

- Activate prior knowledge
- Self Assessment



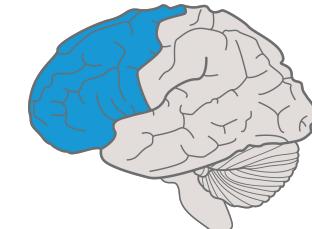
Representation

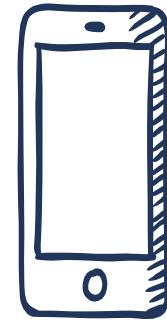
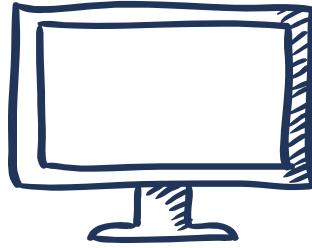
- Closed Captioning
- Color Coding



Action & Expression

- Visual Timer
- Progress monitor





Digital Resources

Padlet:

<http://bit.ly/UDLpadlet19>



The page is organized into four main sections:

- Videos:** Contains links to three YouTube videos:
 - [The Myth of Average: Todd Rose at TEDx Talks](#)
 - [The End of Average? Disrupting the great divide](#)
 - [Making Sense of Universal Design for Learning](#)
- Guidelines:** Contains links to:
 - [Interactive Guidelines](#)
 - [The UDL Guidelines](#)
 - [Printable & Guided Notes](#)
 - [UDL Guidelines - 2 Sided \(1\)](#)
- Research:** Contains links to:
 - [UDL & the Learning Brain](#)
 - [UDL Theory & Practice](#)
 - [Stereotype Threat](#)
 - [Tips for Reducing Stereotype Threat](#)
- Strategies & Tips:** Contains links to:
 - [UDL Learning Environments](#)
 - [Top 5 UDL Tips for Learning Environments](#)
 - [10 Engagement Tips](#)
 - [cast 10 engagement](#)

Q & A