

# **Introduction to Universal Design for Learning**

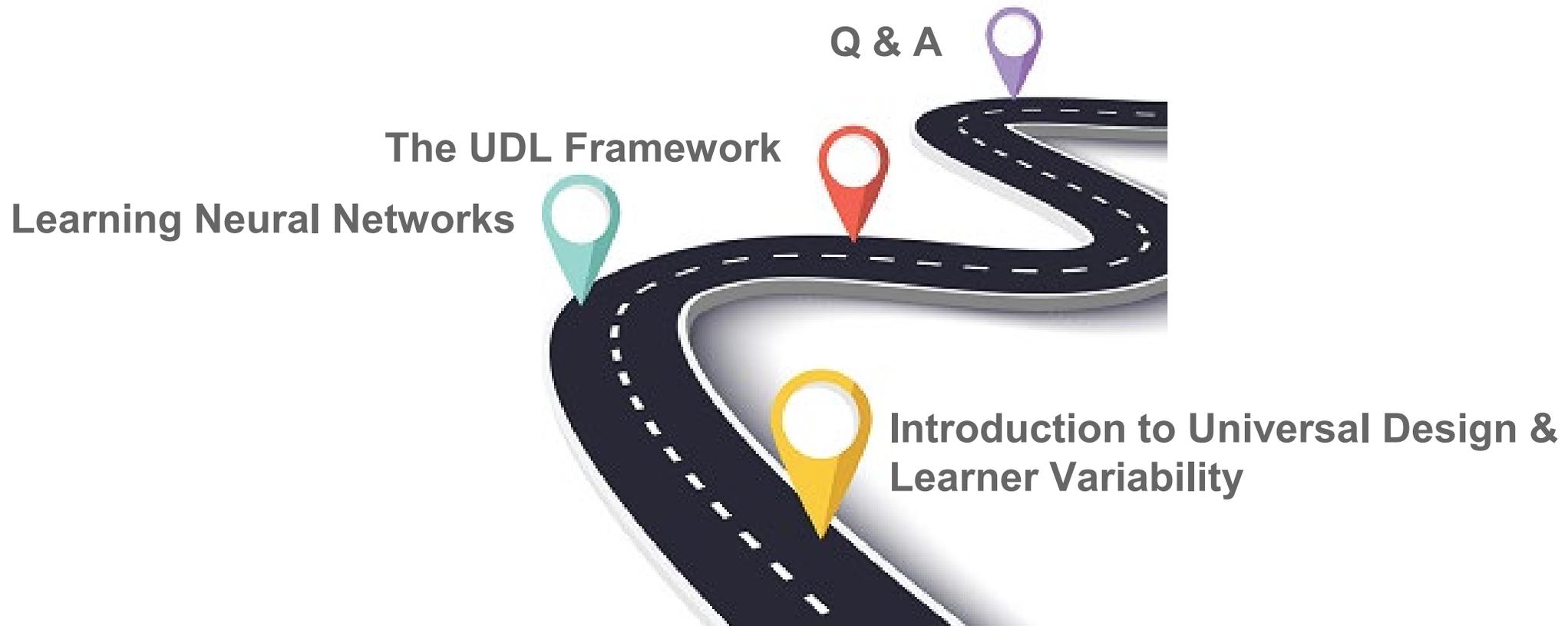
**Investing in Student Potential  
1.28.2020**

# Introducing the Presenter



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Schools Association  
diana@wacharters.org

# Agenda



# How familiar are you with UDL?

## One-to-Five

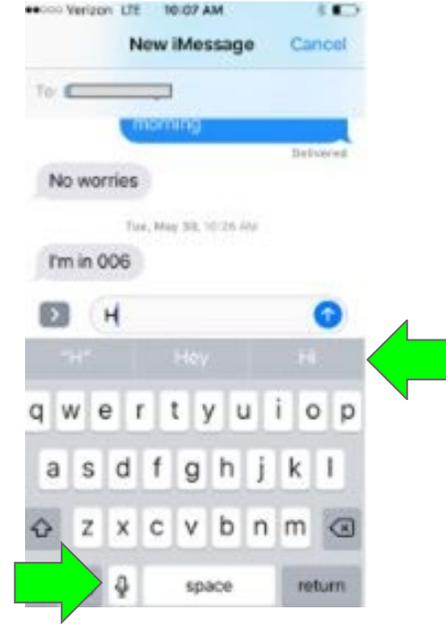
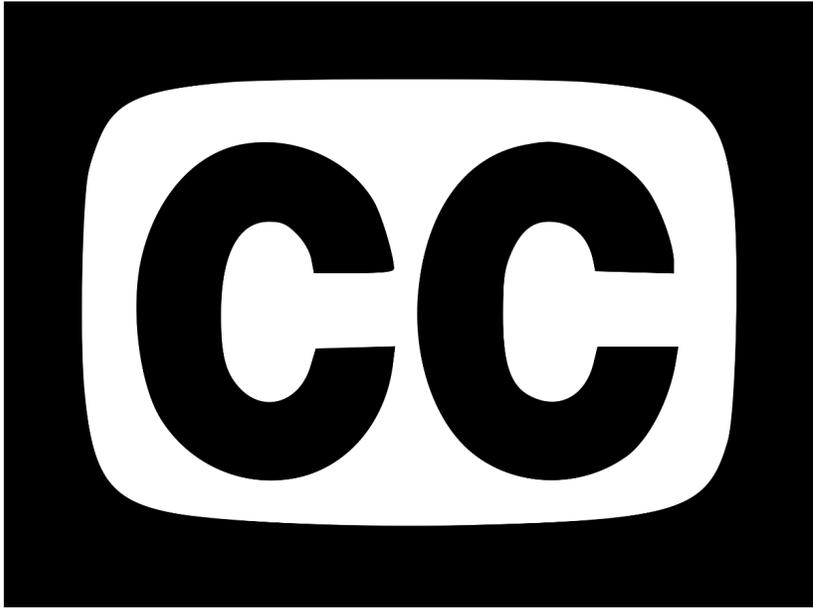


# Universal Design for Learning

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.

(CAST, 2018)





“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.





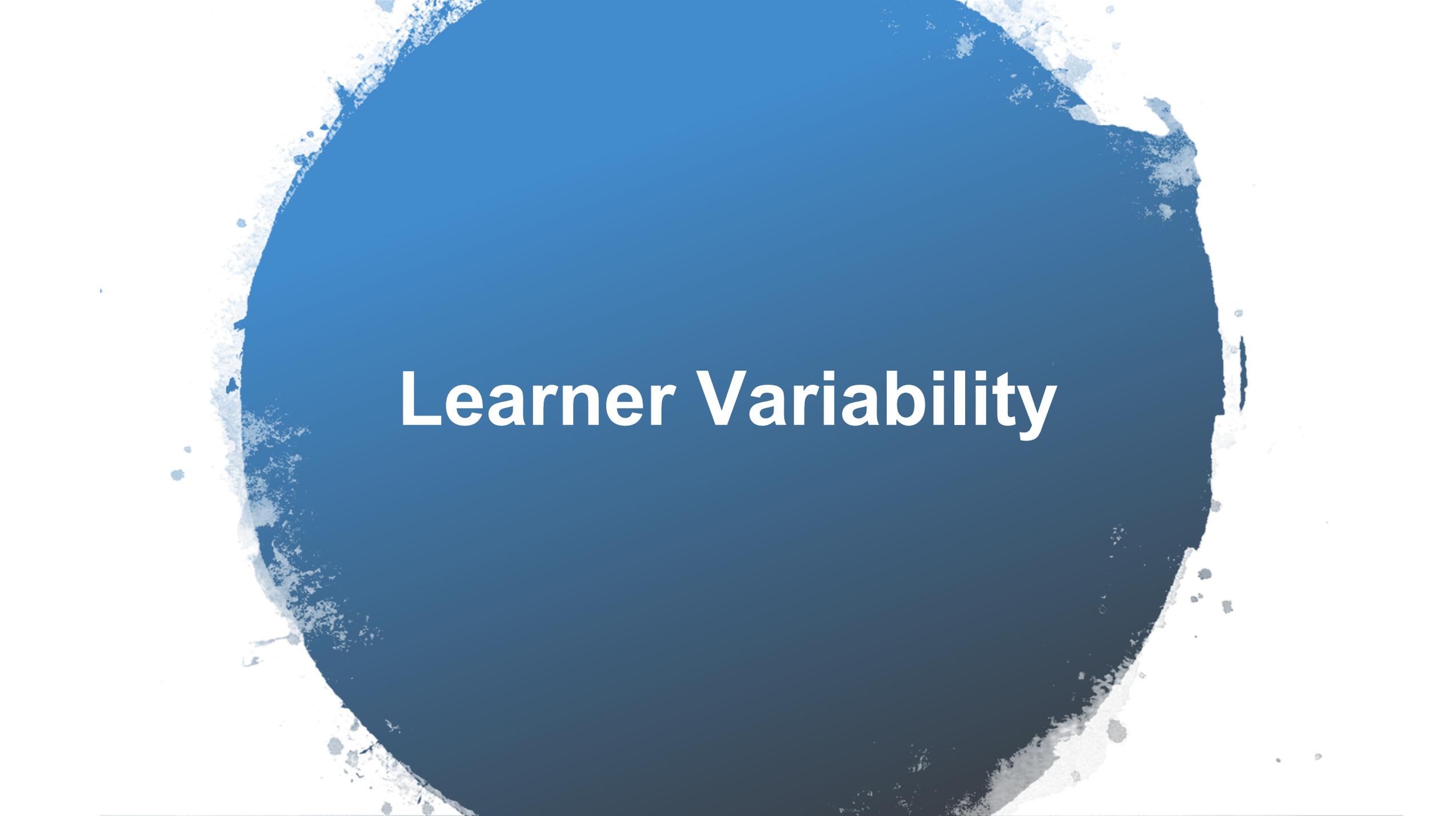
**“Consider the needs of the broadest possible range of users from the beginning.”**

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)



**plickers**  
clickers, simplified



## 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.

# Systematic Learning Variability

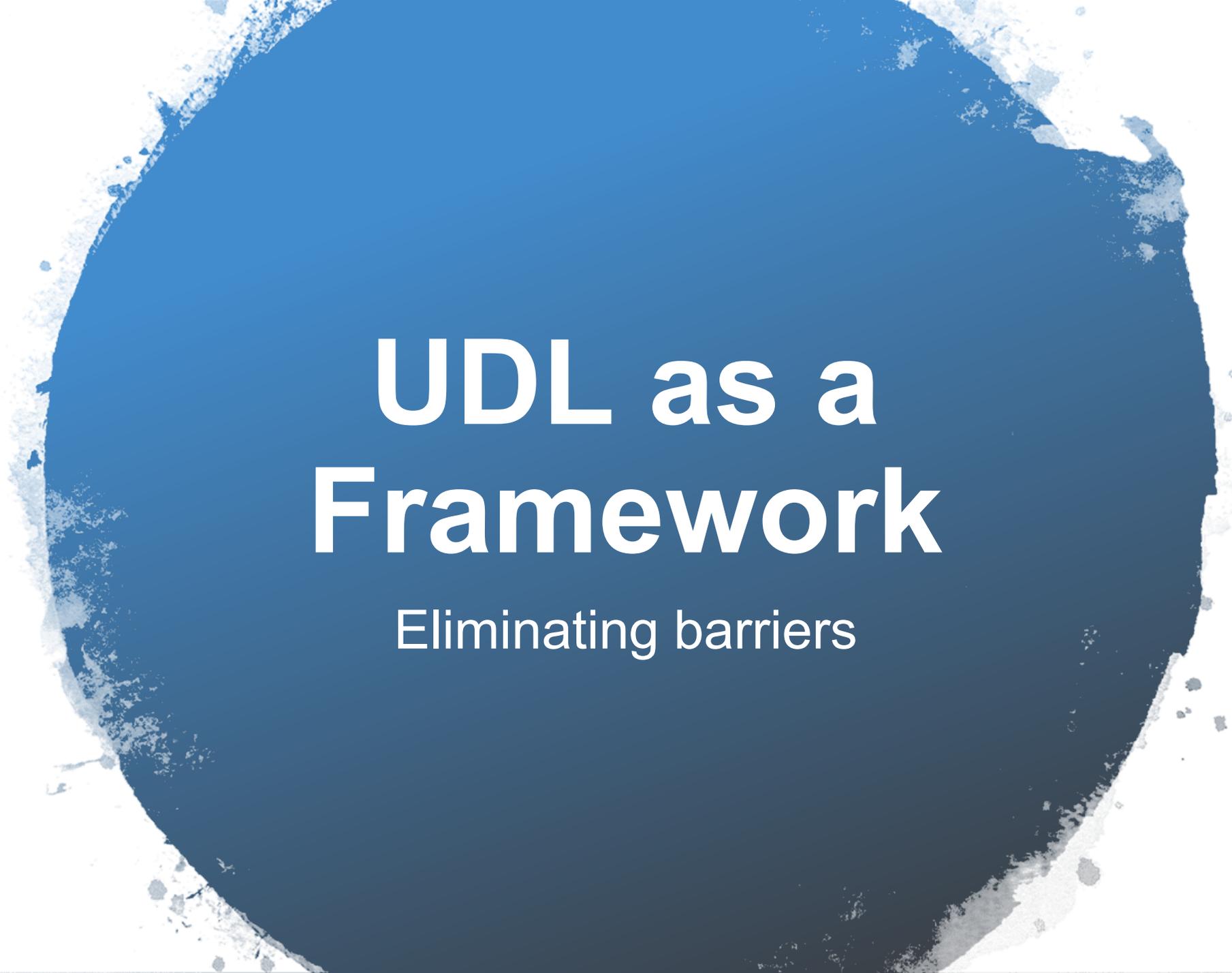
“We’ve identified three dimensions of systematic variability that will exist in every learning environment at every age. Differences in terms of the way that people **receive information**, differences in the way that they **engage with the material**, and differences in the way that they can **act upon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

- Dr. Todd Rose

**Core Concept:**

**Variability is Predictable**





# UDL as a Framework

Eliminating barriers

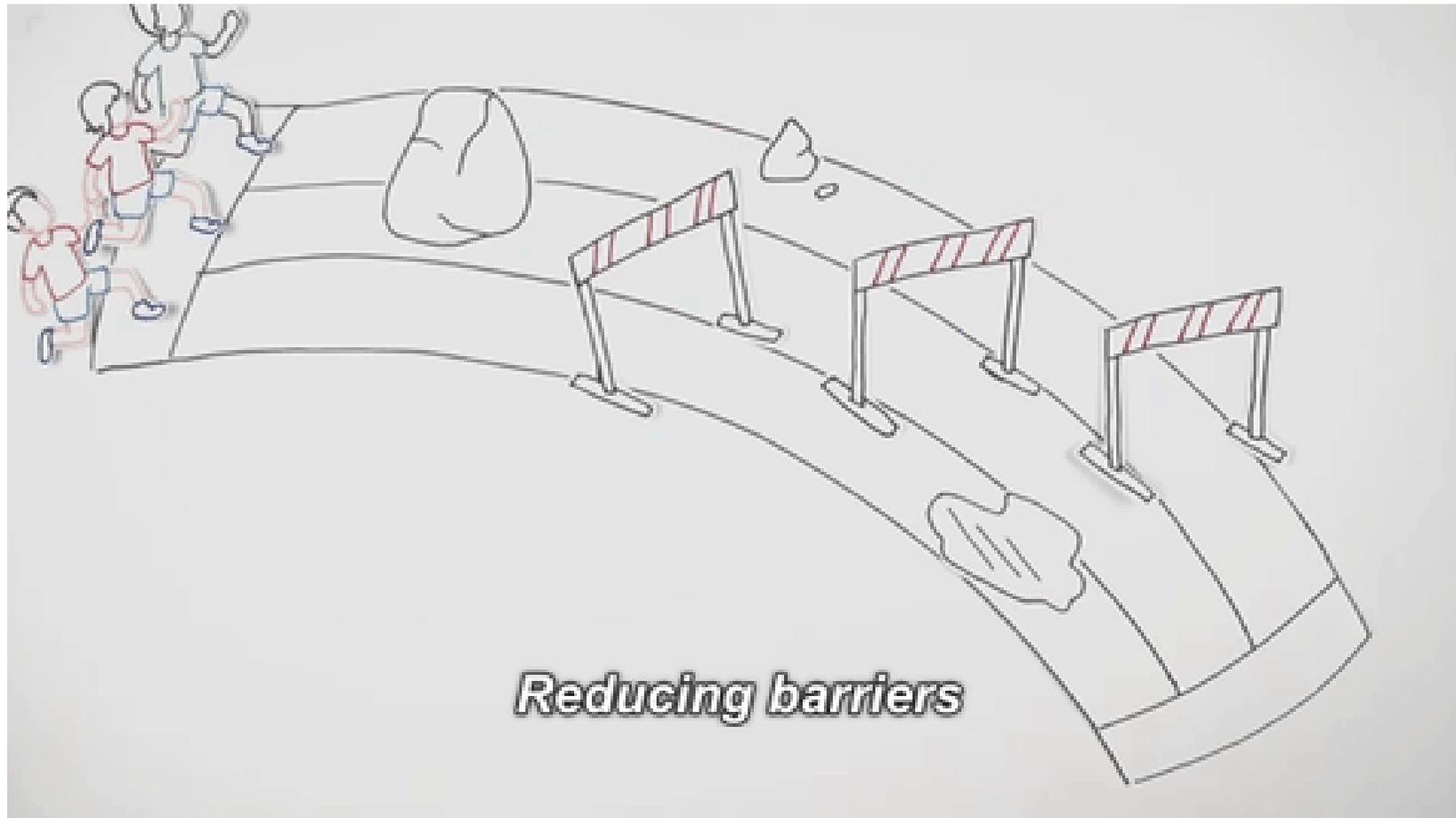
# Eliminate Barriers

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

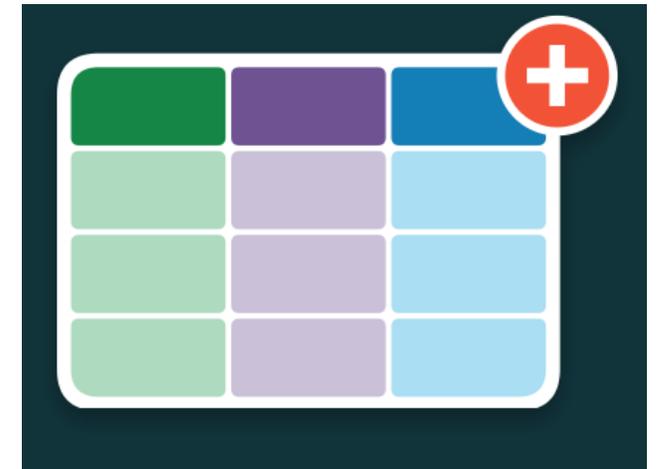
Set Clear, Rigorous,  
Relevant Goals



Anticipate Barriers  
(Think about Learner  
Variability)



Design Options to  
Reduce Barriers for All



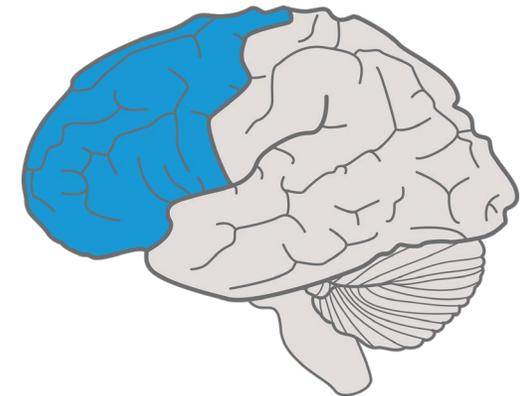
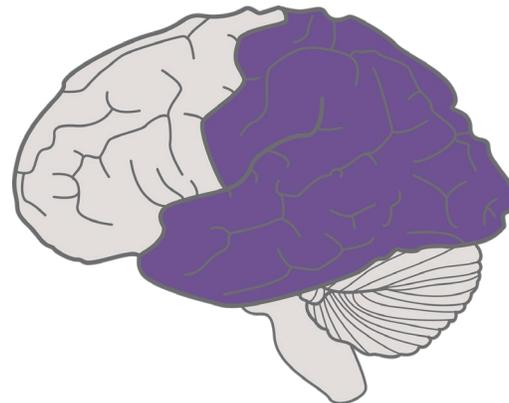
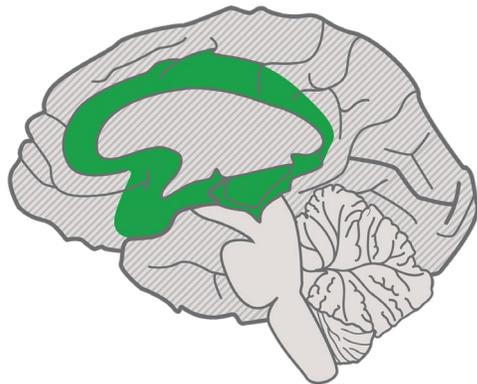
## **Core Concept:**

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



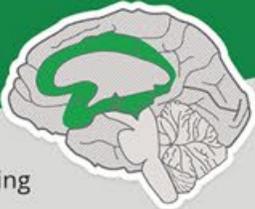
# Introduction to the UDL Guidelines

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# 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

**Goal**

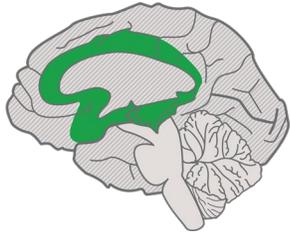
**Expert learners** who are...

Purposeful & Motivated

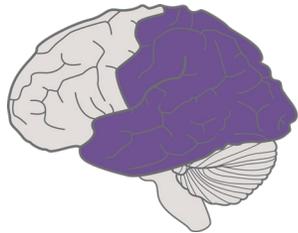
Resourceful & Knowledgeable

Strategic & Goal-Directed

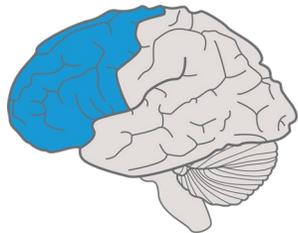
# Three primary classes of learning neural networks



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

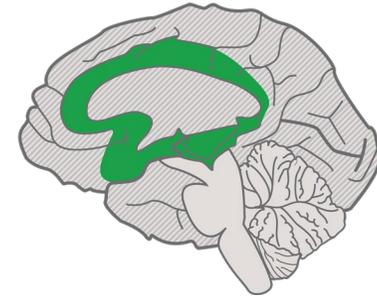


**Recognition networks** that sense and perceive information in the environment and transform it into usable knowledge.



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

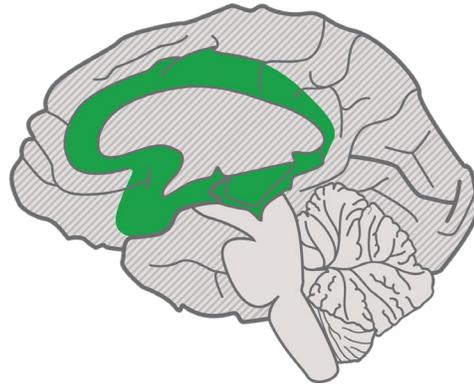
# Affective neural networks

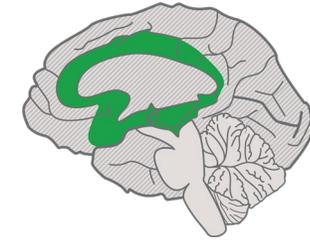


- Affective networks are specialized – they are composed of many parts that all serve a specific purpose
- Certain stimuli can initiate powerful feelings of fear. .
- Emotion and cognition are completely intertwined. Separating them is not practical or useful!

# 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.





**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

## 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
- Vary demands and resources to optimize challenge
- Foster collaboration and community
- Increase mastery-oriented feedback

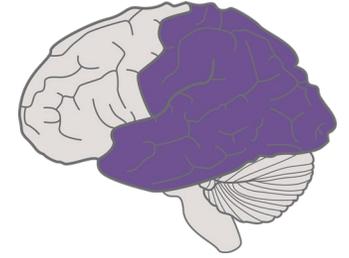
### Provide options for **Self Regulation**

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

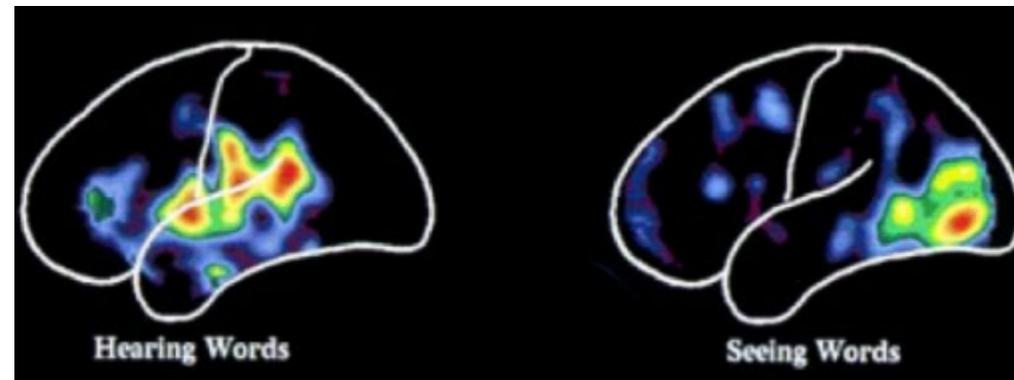
## Strategies for Success

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

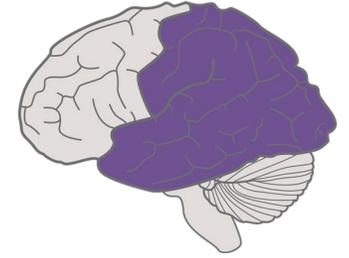
# Recognition neural networks



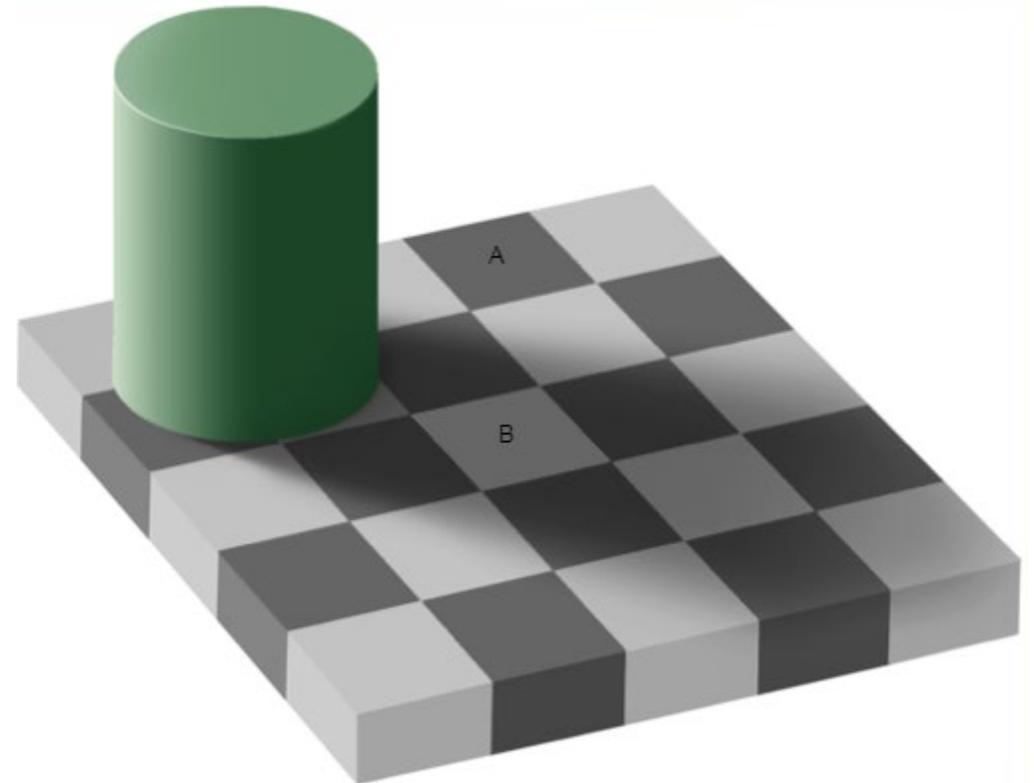
- Our expectations about what we are seeing can warp what we do see.
- Contextual factors have been shown to have a strong influence on perception and recognition
- Different representations are recognized in different parts of the brain



# Recognition networks



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



(Meyers et.al, 2014)

# Recognition networks

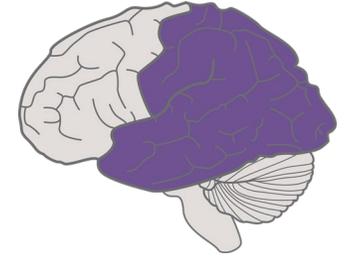
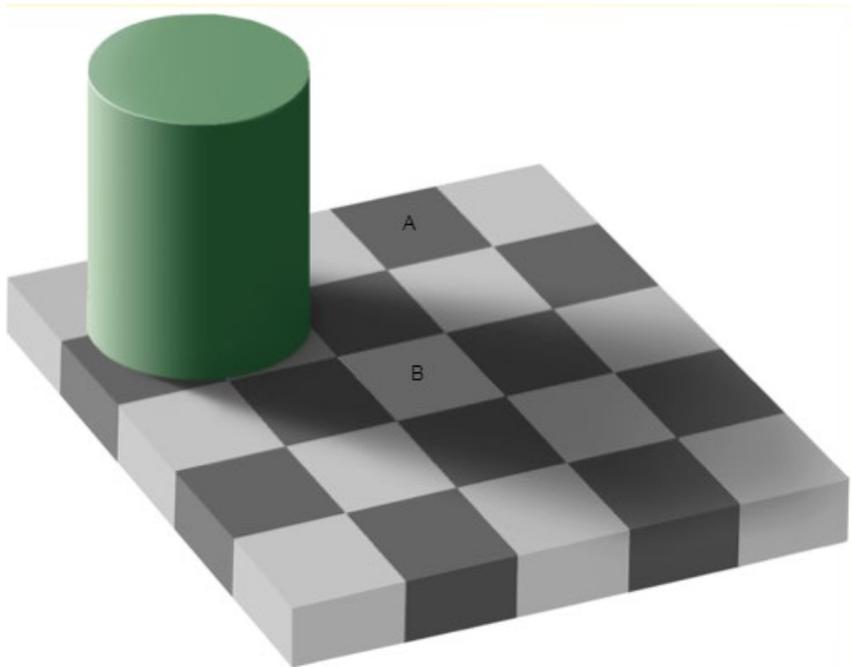
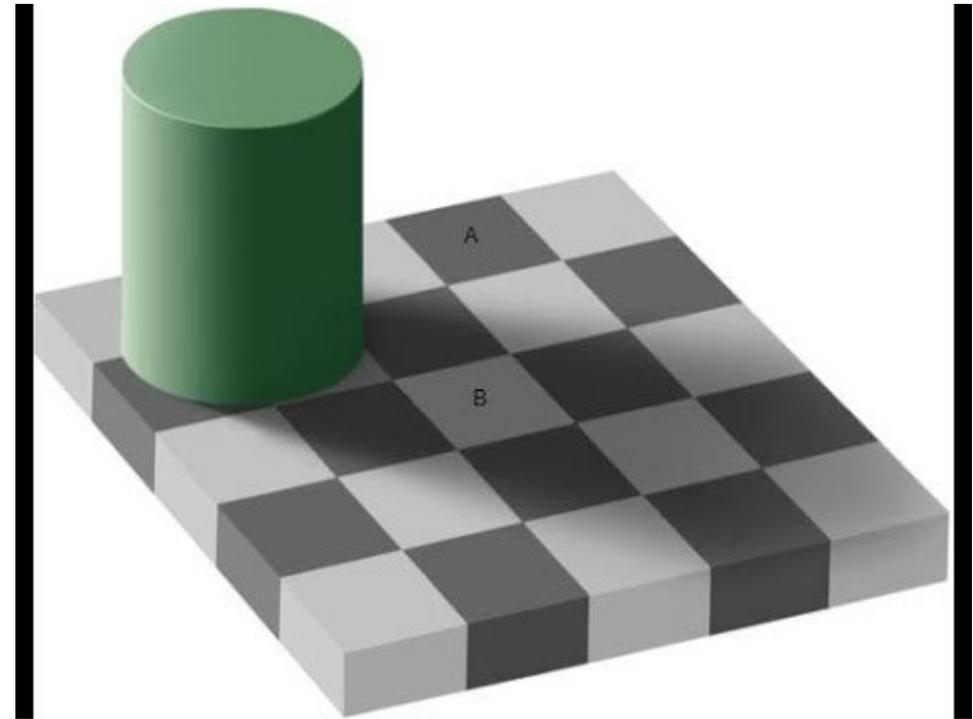
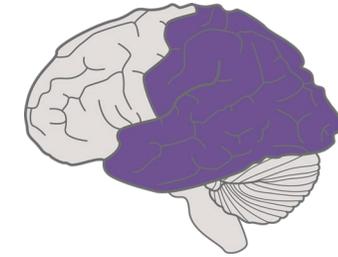


Image of the checkerboard



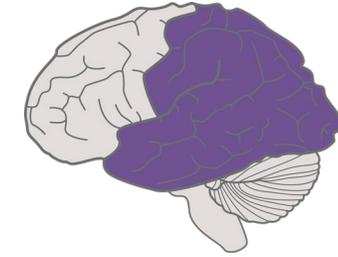
Cover drawn





**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

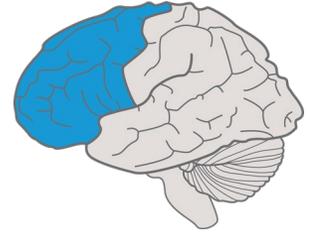
### Provide options for **Comprehension**

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

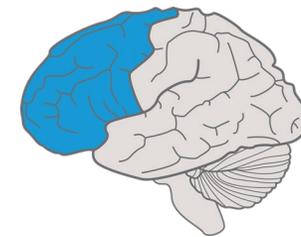
## Strategies for Success

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

# Strategic neural networks



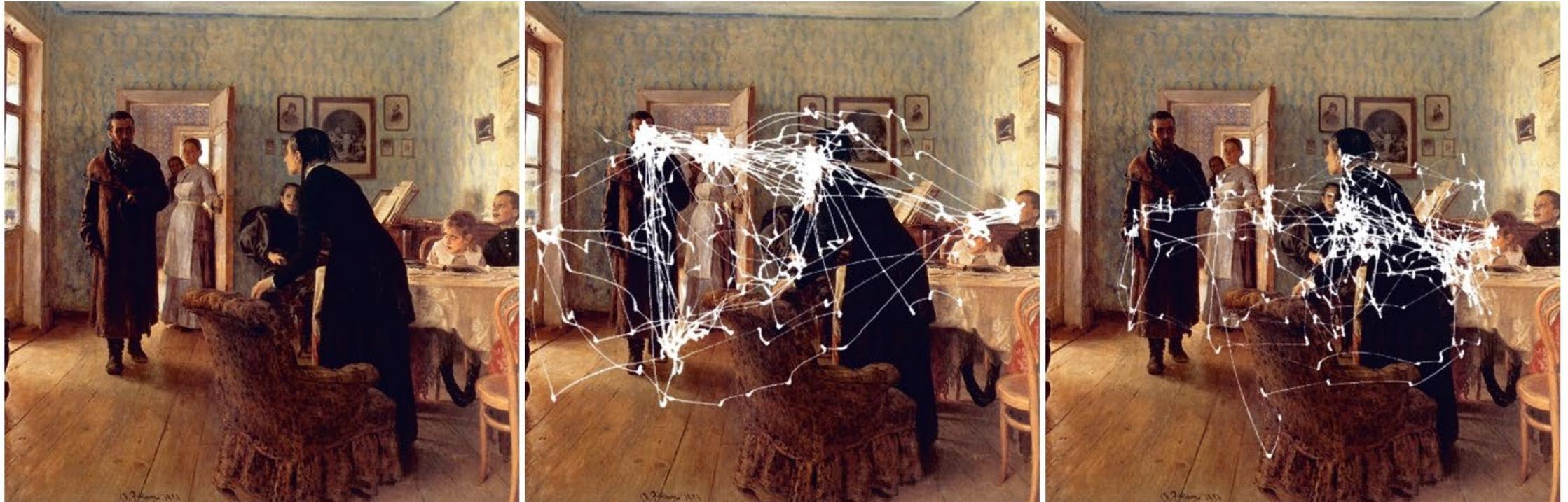
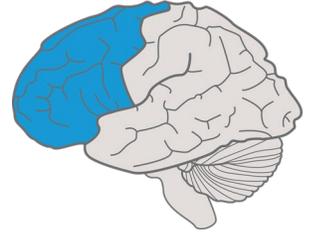
- Strategic networks allow us to plan, execute and monitor all kinds of purposeful acts in our environment – ranging from simple motor acts to complex skills.
- They also are the networks for executive functions such as setting broad, long term goals, making plans for effective strategies, monitoring 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**  
**Alfred Yarbus**  
**1967**

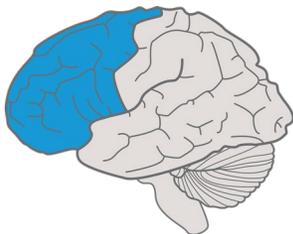
(Meyers et.al, 2014)

# Strategic networks



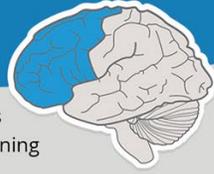


- Patterns of eye movement vary depending on the task
- This is an image of the same viewer examining the photo on separate occasions.
- The viewer had a separate goal with each view.
- Even processes that seem simple involve complex, layered processes in the brain.



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**

- 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

## Strategies for Success

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

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**

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

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  
**Physical Action**

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

Build

Provide options for  
**Sustaining Effort & Persistence**

- Heighten salience of goals and objectives
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- Foster collaboration and community
- Increase mastery-oriented feedback

Provide options for  
**Language & Symbols**

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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

Internalize

Provide options for  
**Self Regulation**

- Promote expectations and beliefs that optimize motivation
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- Develop self-assessment and reflection

Provide options for  
**Comprehension**

- Activate or supply background knowledge
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Provide options for  
**Executive Functions**

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- Enhance capacity for monitoring progress

Goal

**Expert learners who are...**

Purposeful & Motivated

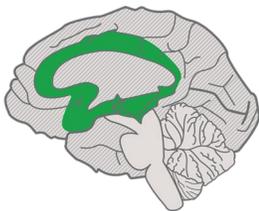
Resourceful & Knowledgeable

Strategic & Goal-Directed

# Strategies you may have noticed in this presentation...

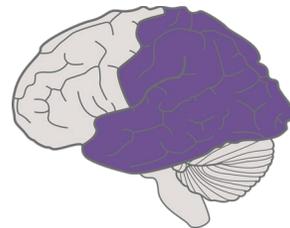
## Engagement

- Activate prior knowledge
- Self Assessment



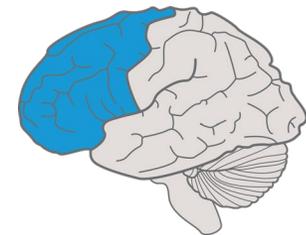
## Representation

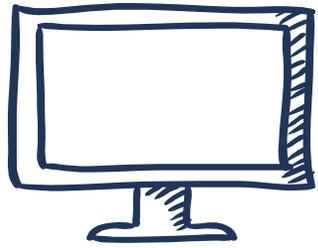
- Closed Captioning
- Color Coding



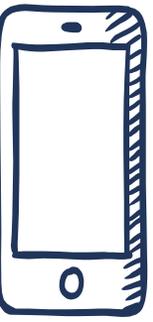
## Action & Expression

- Visual Timer
- Progress monitor





# Digital Resources



Padlet:

<http://bit.ly/UDLpadlet19>



The Padlet board is organized into several columns and rows of content:

- Videos:**
  - "The Myth of Average: Todd Rose at TEDx..." by TEDx Talks (youtube)
  - "The End of Average" by Five Moore Minutes (youtube)
  - "Making Sense of Universal Design for Learning" by Alberta Education (youtube)
- Guidelines:**
  - "Interactive Guidelines" (The UDL Guidelines)
  - "Printable & Guided Notes" (UDL Guidelines - 2 Sided (1) PDF document)
- Research:**
  - "UDL & the Learning Brain" (cast-udlandthebrain-20180321 PDF document)
  - "UDL Theory & Practice" (UDL :: Login Theory and Practice. By Anne Meyer, David Rose, and Mitchell J. Orland)
  - "Stereotype Threat"
- Strategies & Tips:**
  - "UDL Learning Environments" (CAST Professional Learning: Top 5 UDL Tips for Learning Environments PDF document)
  - "10 Engagement Tips" (CAST Professional Learning: Top 10 UDL Tips for Designing an Engaging Learning Environment PDF document)
  - "Tins for Reducing Stereotype Threat"