

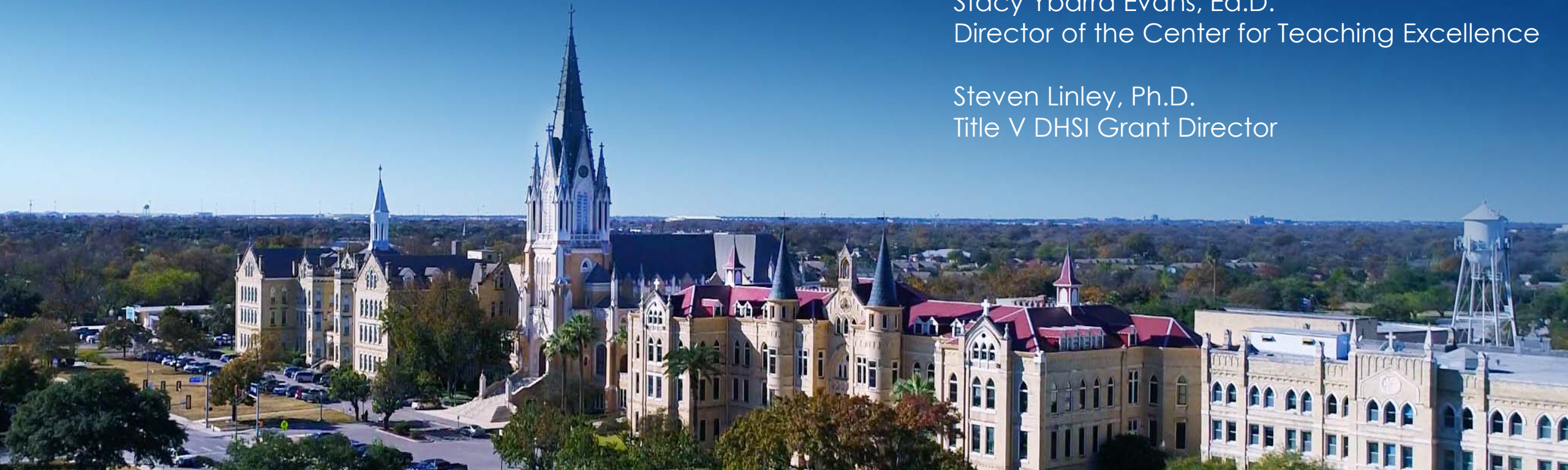
# Improving STEM Education for Hispanic Students

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## *A Case Study at Our Lady of the Lake University*

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Director of the Center for Teaching Excellence

Steven Linley, Ph.D.  
Title V DHSI Grant Director





# OLLU Student Population

- **77%** Hispanic
- **56%** Low-income
- **68%** Women
- **91%** Minority
- **43%** First-generation

Underfunded K-12 Schools  
Cultural Barriers



# 20% ↓

Hispanic STEM Student Enrollment  
over the last twelve years

# 21% ↑

Hispanic STEM Student Retention  
year three of grant-funded intervention





We must provide the right support





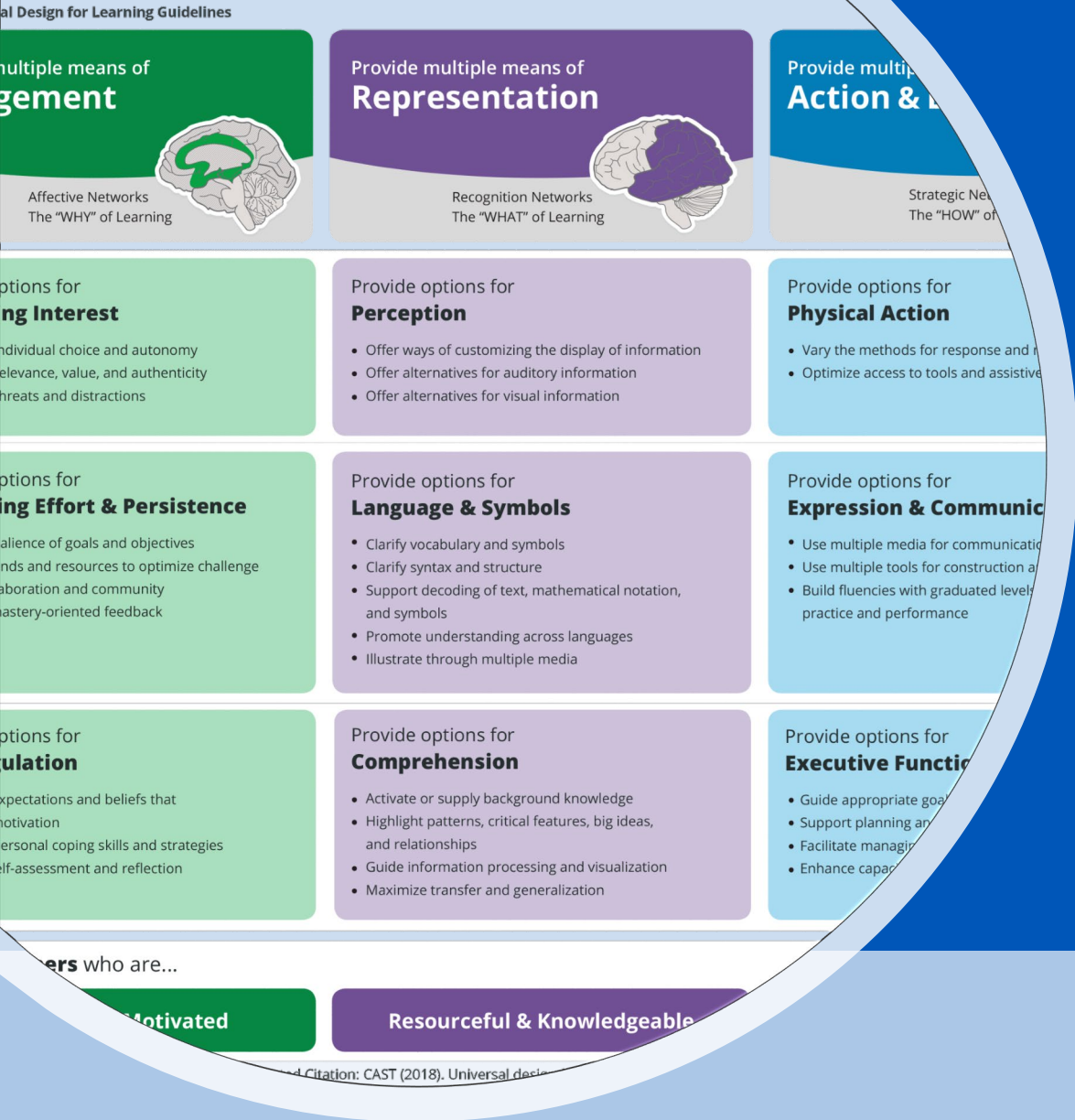
Training Faculty in UDL

Redesigning STEM Courses

Creating a STEM Studio

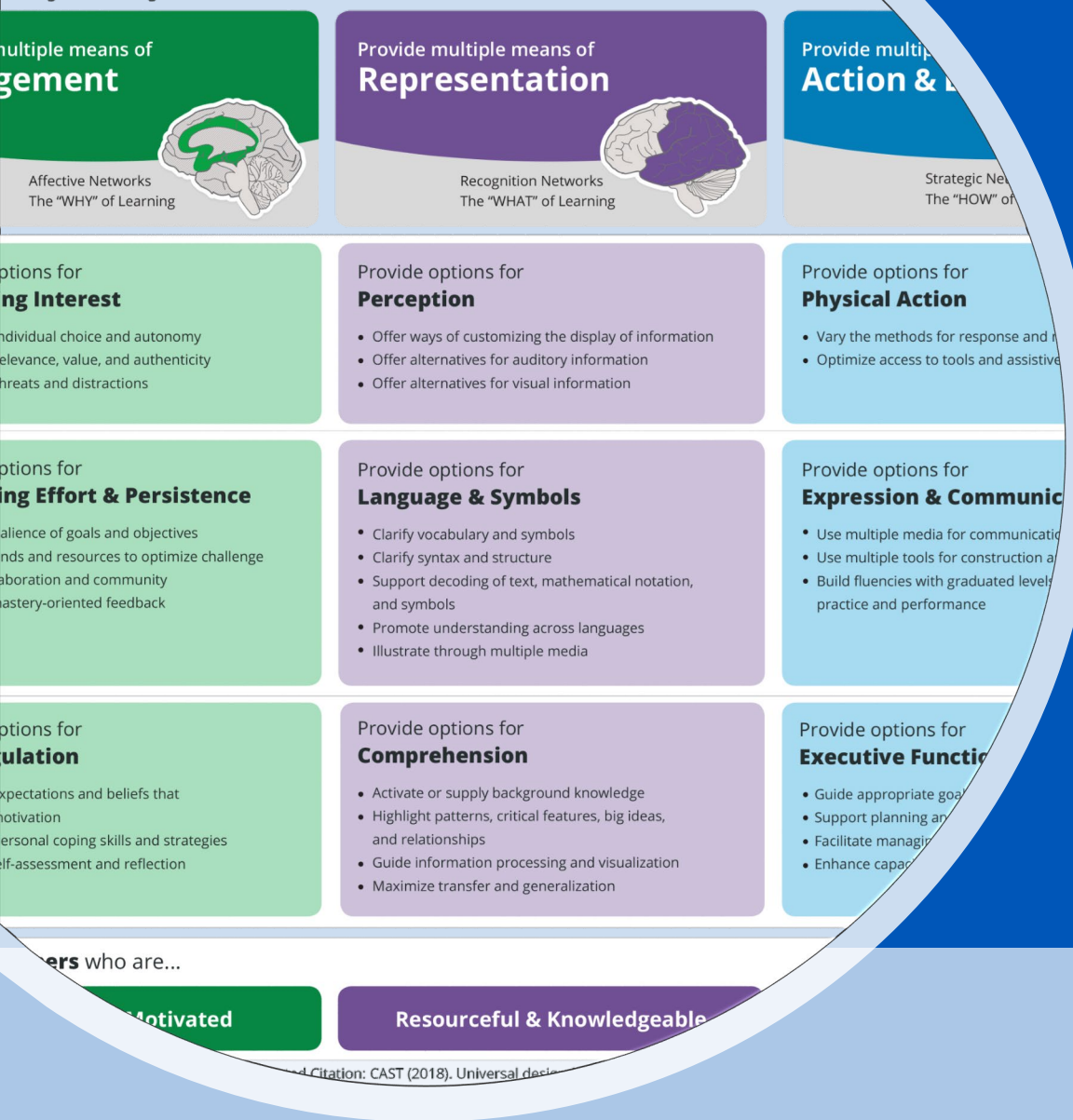
Five-Year Title V DHSI Grant

Funded Intervention



an educational framework that helps instructors create more inclusive learning environments by eliminating obstacles that hinder student learning

Universal Design for Learning (UDL)

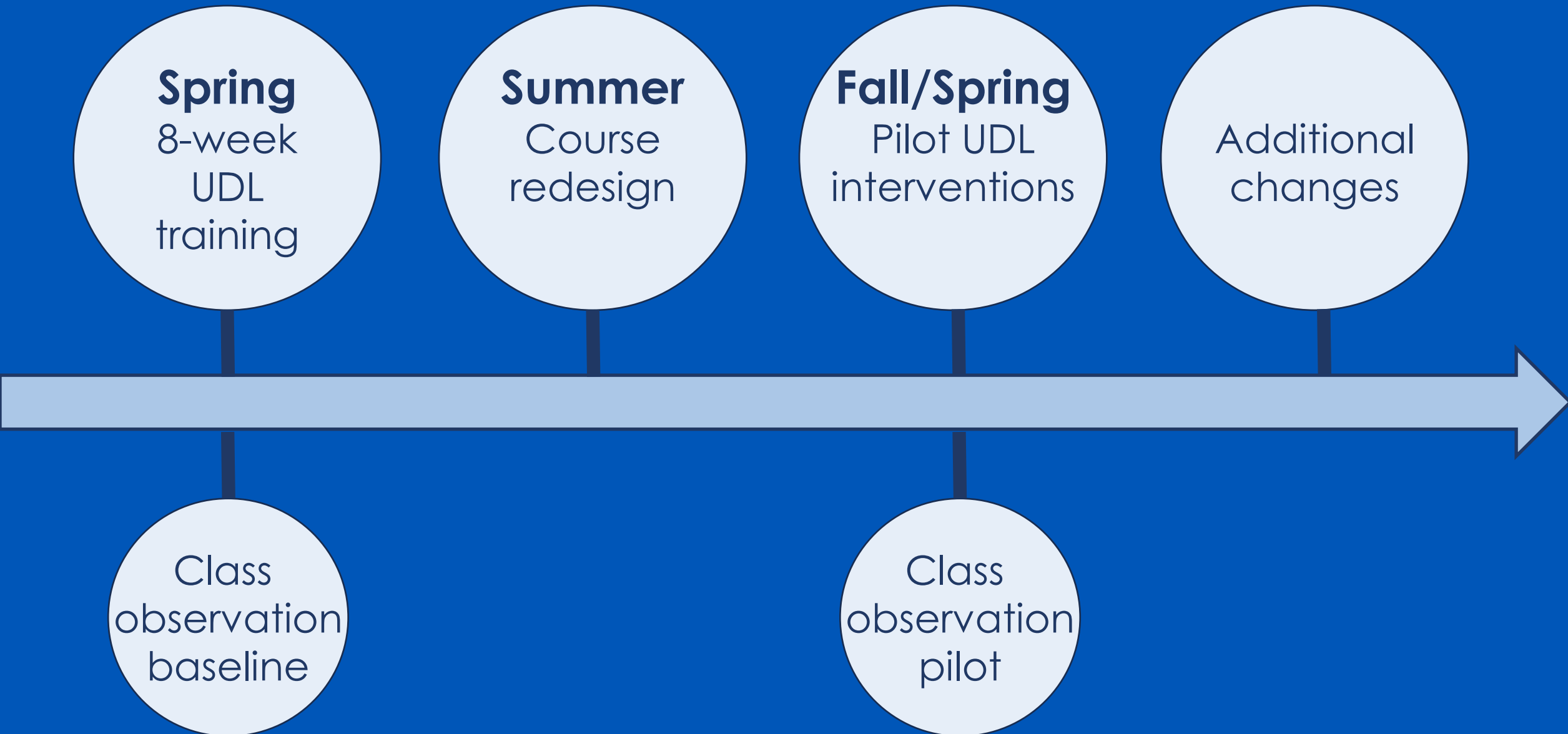


# Multiple Means of:

- Representation
- Engagement
- Action and Expression

## Universal Design for Learning (UDL)

# Grant Funded Course Redesign Process





# Example: Anatomy



## Challenge

A student with a TBI struggled with terms

Students with test anxiety struggled with terms

Supporting Memory with  
Word Banks

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

### 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 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
- Facilitate personal coping skills and strategies
- Develop self-assessment and reflection

### 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

### Provide options for Executive Functions

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

Goal

**Expert learners** who are...

**Purposeful & Motivated**

**Resourceful & Knowledgeable**

**Strategic & Goal-Directed**



# Example: Anatomy

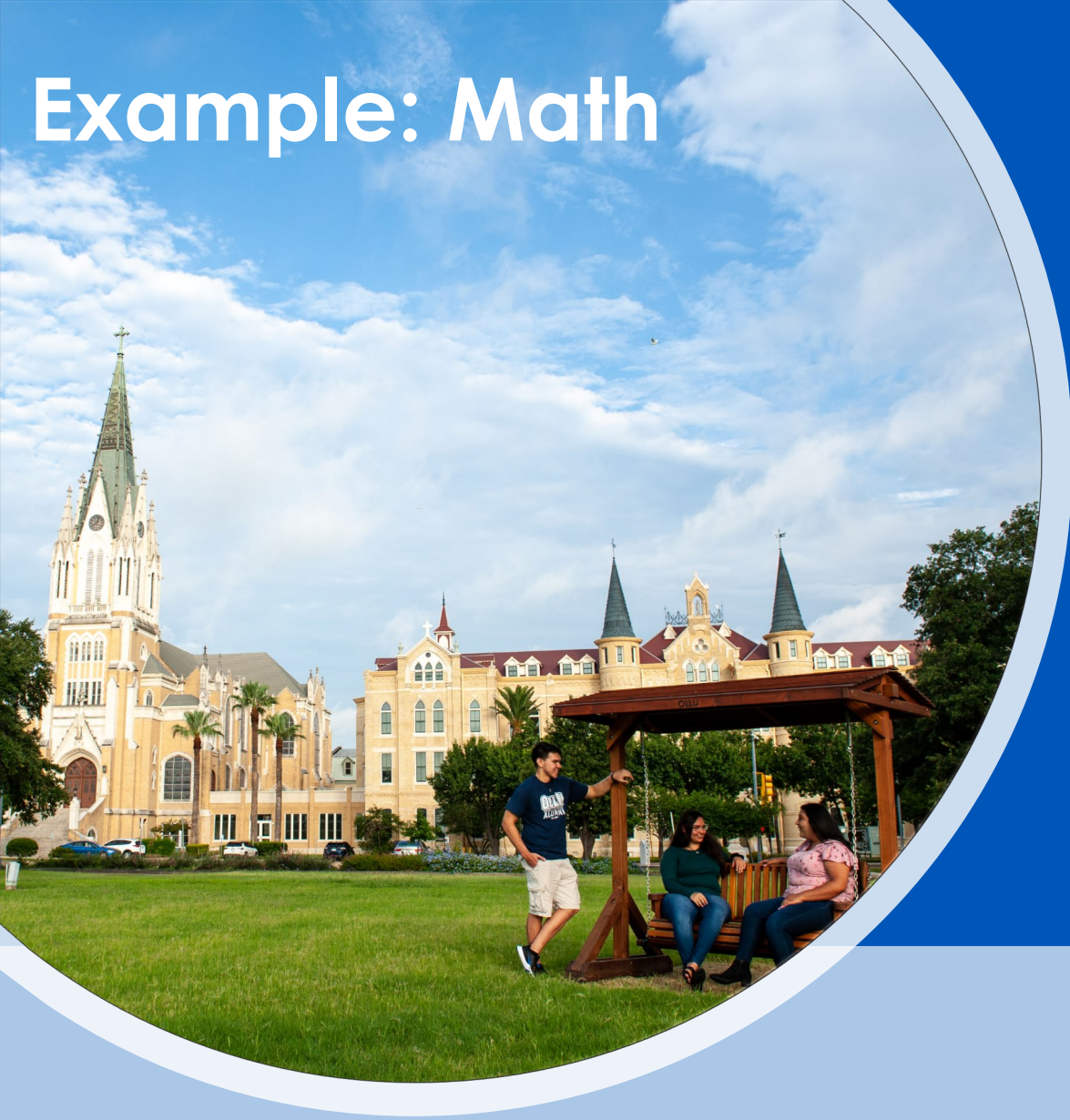


## Intervention

Integrate word banks into

- class sessions
- small-group activities
- quizzes
- practice exams
- exams

Supporting Memory with  
Word Banks



# Example: Math

## Challenge

Concepts feel abstract or disconnected from everyday life

Students observed to be noticeably quiet

Real-world Application  
Boosts Engagement



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The "WHY" of Learning



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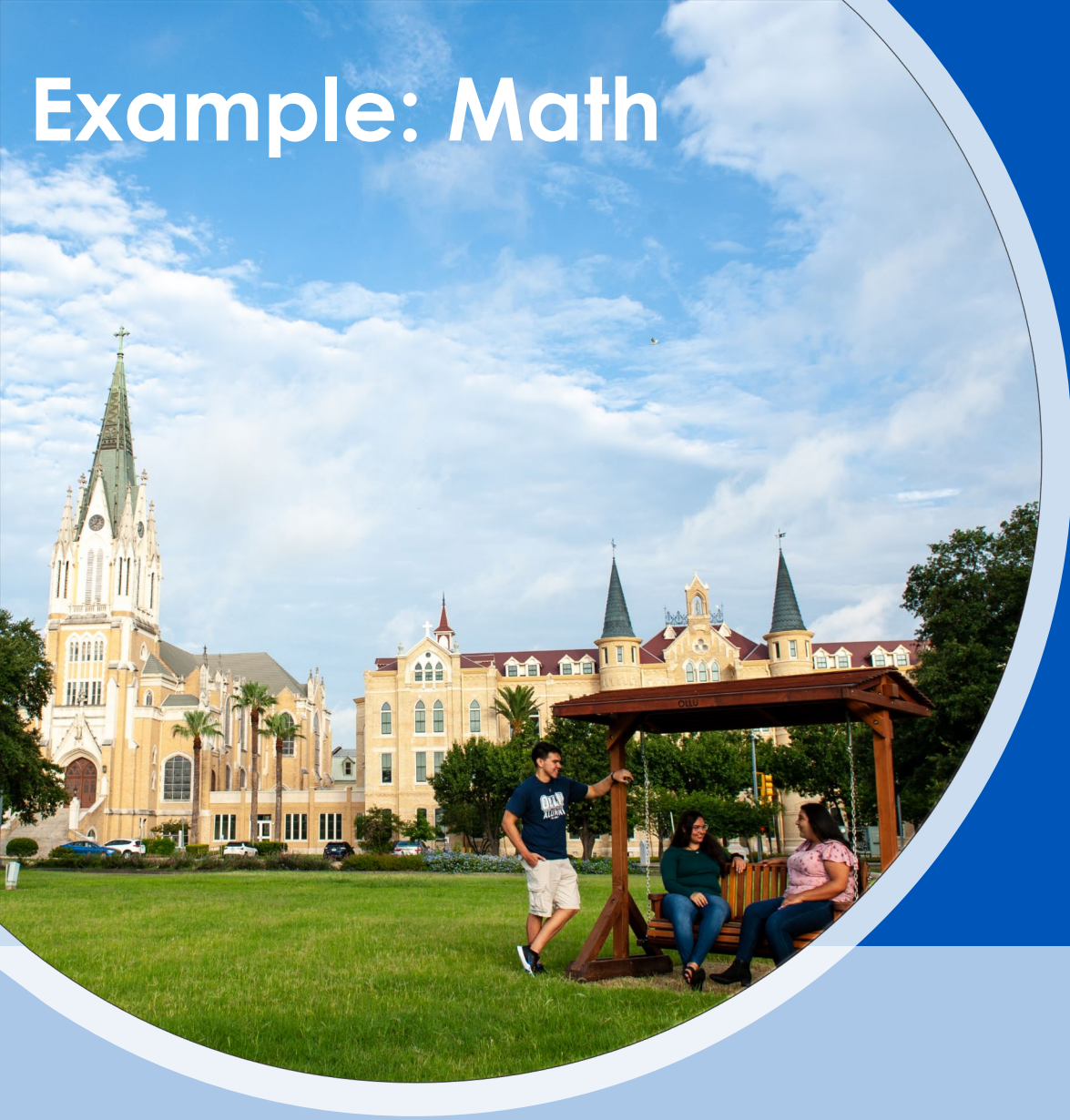
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**Strategic & Goal-Directed**

# Example: Math



## Intervention

Connect formulas to real-world applications

- connect to previous concepts
- Explore new ideas using video
- Hands-on, real-world scenario

Real-world Application  
Boosts Engagement



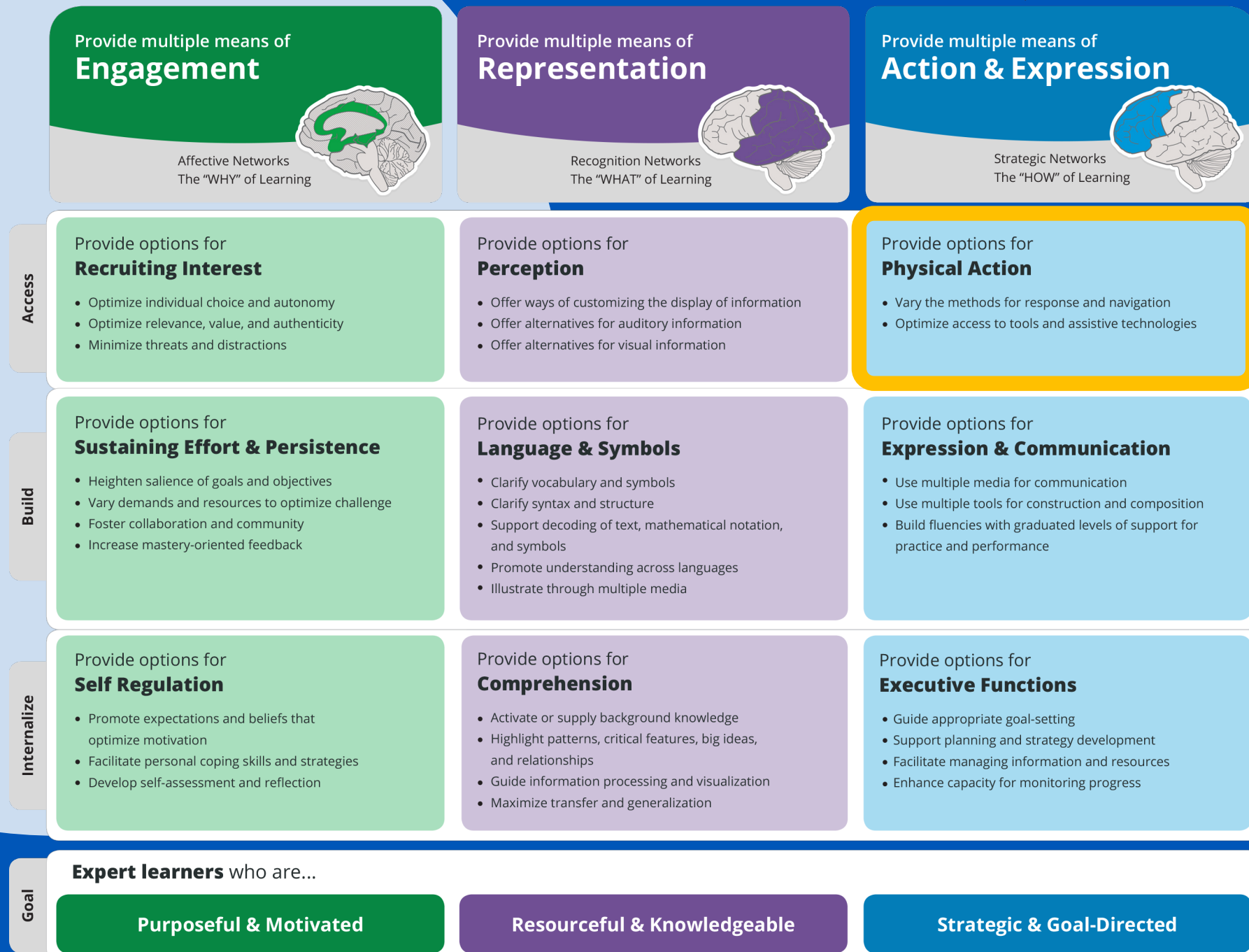
# Example: Kinesiology



## Challenge

Some students rarely spoke in class

Engagement Through  
Writing to Learn





## Example: Kinesiology



## Intervention

Structured writing activities would help these students organize their thoughts before discussions

Introduced think-pair-share

Engagement Through  
Writing to Learn



# What's Next?

Finish our new experiential  
learning Makerspace







What barriers do your students face?

What intervention addresses that barrier?

How can your institution support faculty through the process?

**Reflective Challenge**

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