




# UNIVERSALLY DESIGNED, INQUIRY-BASED SCIENCE PROFESSIONAL DEVELOPMENT FOR SPECIAL EDUCATORS

Lindsay Ruhter  
Meagan Karvonen



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# WARMING UP

**Share your thoughts in this Google doc:**

1. What do you want to know about UDL-infused PD?
2. What do you hope to learn about UDL and inquiry?

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# SCIENCE INSTRUCTION FOR STUDENTS WITH EXTENSIVE SUPPORT NEEDS

- Focus on **discrete skills** (e.g., identifying vocabulary words) or **functional skills** (e.g., cooking)
- Instructional strategies include constant time delay, task analysis

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# INQUIRY SCIENCE TEACHING



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# THE 5E-SESE PROJECT

- Design relevant, engaging PD to support teachers in teaching universally designed, inquiry-based science to students with **extensive support needs (ESN)**
  - Project centers on high academic expectations for students with ESN.
  - UDL gives teachers tools to address **ALL** learners.
  - Teacher PD parallels student instruction: high expectations, embracing varying teacher backgrounds and experiences, and including the three constructs in PD design and delivery.
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# THE 5E-SESE MODEL

Three constructs:

**Multidimensional  
science standards**

**Universal Design  
for Learning  
(UDL) framework**

**5E model of  
science  
instruction  
(inquiry)**

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# MULTIDIMENSIONAL SCIENCE

Students with ESN are taught science incorporating same dimensions as the **K-12 Framework for Science Education** and the **NGSS**

Science and Engineering Practices

Disciplinary Core Ideas

Cross-Cutting Concepts

5E-SESE partners with states using **Dynamic Learning Maps alternate assessments.**

- **DLM<sup>®</sup> Essential Elements** (EEs) are grade-level expectations indicating what students with ESN know and can do.
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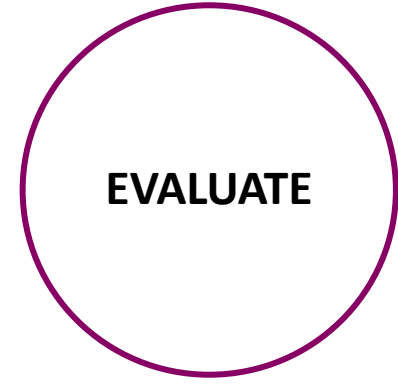
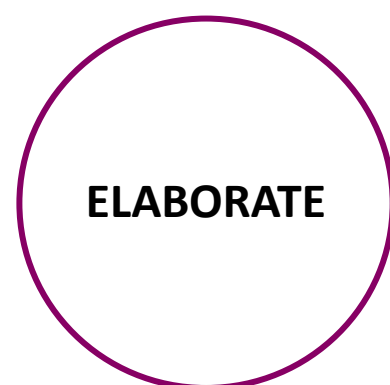
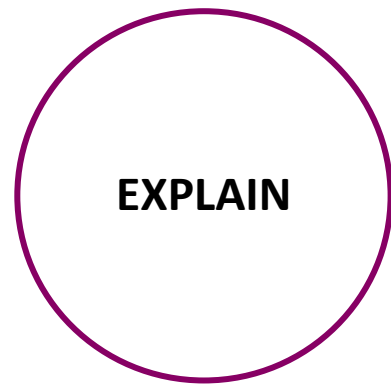
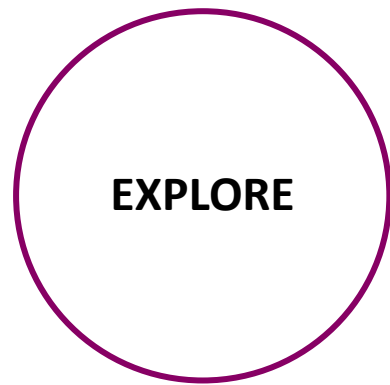
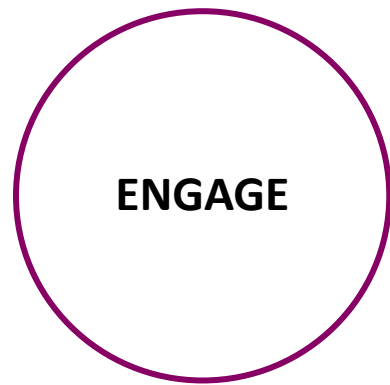
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# 5E INQUIRY CYCLE

5E Model for Science Instruction (Bybee et al., 2006)

- **Five Es** = five steps in inquiry-based science teaching





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# 5E INQUIRY CYCLE

- **Engage:** Access prior knowledge and make predictions.
  - **Explore:** Investigate predictions.
  - **Explain:** Synthesize information and/or observations in the previous phases and apply new knowledge.
  - **Elaborate:** Apply the concept to another context.
  - **Evaluate:** Demonstrate what they learned.
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# UDL + 5E INQUIRY CYCLE

UDL is intentionally considered at each 5E phase

Flexible depending on specific science lesson

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# TWO COMPONENTS OF PROFESSIONAL DEVELOPMENT

**Self-directed  
modules**

**Coaching**

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# BREAKOUT ROOMS

## UDL in module **design**

- Explore dissemination module
- Share what you notice with the group

## UDL in **coaching**

- Explore coaching conversation worksheets
  - Share what you notice with the group
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# UDL IN MODULE DESIGN

- Organization of modules
    - Foundational modules + EE-centered modules
  - How it fits into inquiry cycle
    - Represent first three phases (Engage, Explore, Explain)
    - Teachers **engage** with science topic, **explore** multidimensional standards and ways to incorporate UDL, and then **explain** new learning in developing a lesson plan.
  - Exemplar module: Contains sample lessons from foundational and EE-centered modules
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# UDL IN COACHING

- Overview of coaching model
  - **Transition conversation**
    - Teachers choose content standard/science learning target to focus
  - **Lesson cycle conversation #1**
    - Choose a goal/area of focus for teacher growth
    - Collaborate on lesson plan before implementation
  - **Lesson cycle conversation #2**
    - Discuss recorded lesson
    - Identify strengths of lesson implementation, reflect on goal, target areas of improvement, and discuss lessons learned

# BREAKOUT ROOM ACTIVITIES



# WRAP UP





# THANK YOU

**Lindsay Ruhter**

[lindsay.ruhter@ku.edu](mailto:lindsay.ruhter@ku.edu)

**5E-SESE project site**

[5eproject.atlas4learning.org](http://5eproject.atlas4learning.org)

**ATLAS at KU**

[atlas.ku.edu](http://atlas.ku.edu)

