

Assessment-Driven Design

Institute for Scientist & Engineer Educators
Inquiry Institute 2019

Wiggins & McTighe

Backward Design

Wiggins & McTighe

Backward Design

Identify the desired results

Identify acceptable evidence

Plan the learning experiences

Not Backward Design

Starting with the textbook

Starting with a favorite activity

Starting with the cool gizmo/demo

Starting with the syllabus from the last one who taught this

Starting with the syllabus from when you took the course

Wiggins & McTighe

Backward Design

Identify the desired results

What should learners know and/or be able to do? “Learners will...”

Identify acceptable evidence

How will you know if the learners have achieved the results? What will count?

Plan the learning experiences

What activities will move learners to the desired results?

**Backward Design
in inquiry about ray
nature of light**

Identify the Desired Results

Light & Shadow Learning Outcome:

- Learners will explain complex phenomena involving light and shadows using the **ray model of light**.

Identify the Desired Results

Light & Shadow Learning

“Counterintuitive, nuanced, subtle, or otherwise easily

Outcome: misunderstood ideas”

- “The student can verify, induce, or justify these ideas through inquiry and construction.”

phenomena involving light and shadows using the **ray model of light.**

Identify the Desired Results

Light & Shadow content AND practice:

- Learners will explain complex phenomena involving light and shadows using the **ray model of light**.
- Learners will **test hypotheses with predictions**.

Identify the Desired Results

Light & Shadow content AND

practice.
“Counterintuitive, nuanced, subtle, or otherwise easily misunderstood ideas”

- “The student can verify, induce, or justify these ideas through inquiry and construction.”
Learners will explain complex phenomena involving light and shadows using the **ray model of light.**

- “The conceptual or strategic element of any skill”
Learners will **test hypotheses with predictions.**

Identify the Desired Results

Light & Shadow content AND practice:

- Learners will explain complex phenomena involving light and shadows using the **ray model of light**.

• Learners will **test hypotheses with predictions**.
STEM Practices – focus of the ISEE Assessment Project

Evidence of Understanding

Evidence that is more
consistent and tangible



Evidence that is
fleeting and inconsistent



Evidence of
understanding

Evidence of
not understanding

Prompt for the Evidence

L&S:

- “Use the ray nature of light to explain the phenomena you investigated. Use evidence from your investigation to support your explanation.
- Please show a drawing and include a bulleted explanation. Be sure to note the question or phenomenon your explanation addresses.”

ISEE Iterative, Assessment-Driven Design

ISEE Iterative, Assessment-Driven Design

Define learning outcomes

Define evidence of understanding

Design prompt to elicit evidence

Design activity components to align

ISEE Iterative, Assessment-Driven Design

Define learning outcomes

- STEM practices as a whole
- Identify practices that UCSC instructors identify as important for students to engage in

Define evidence of understanding

- Literature searches, instructor experience, student examples, examples from our own science research

Design prompt to elicit evidence

Design activity components to align

ISEE Iterative, Assessment-Driven Design

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Design prompt(s) to elicit evidence

- Prompt tightly aligned with content LO and authentic ways in which we want students to engage in practice

Design assessment components and learning activities to align

ISEE Iterative, Assessment- Driven Design **Misconceptions**

Define learning outcomes

Design activity components to align

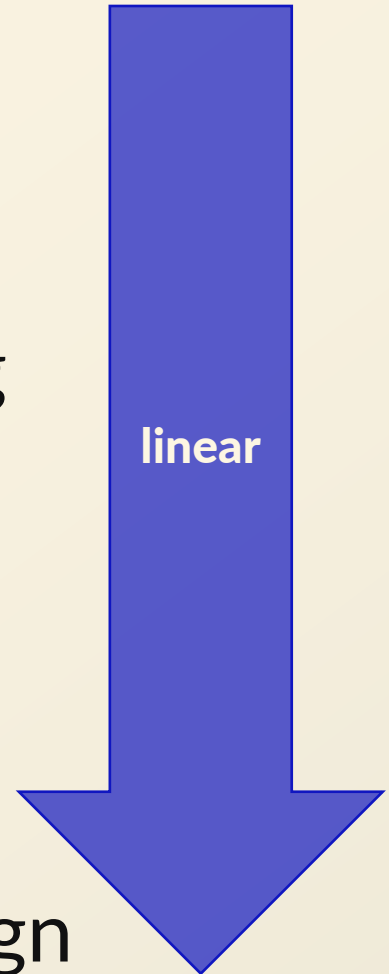
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