

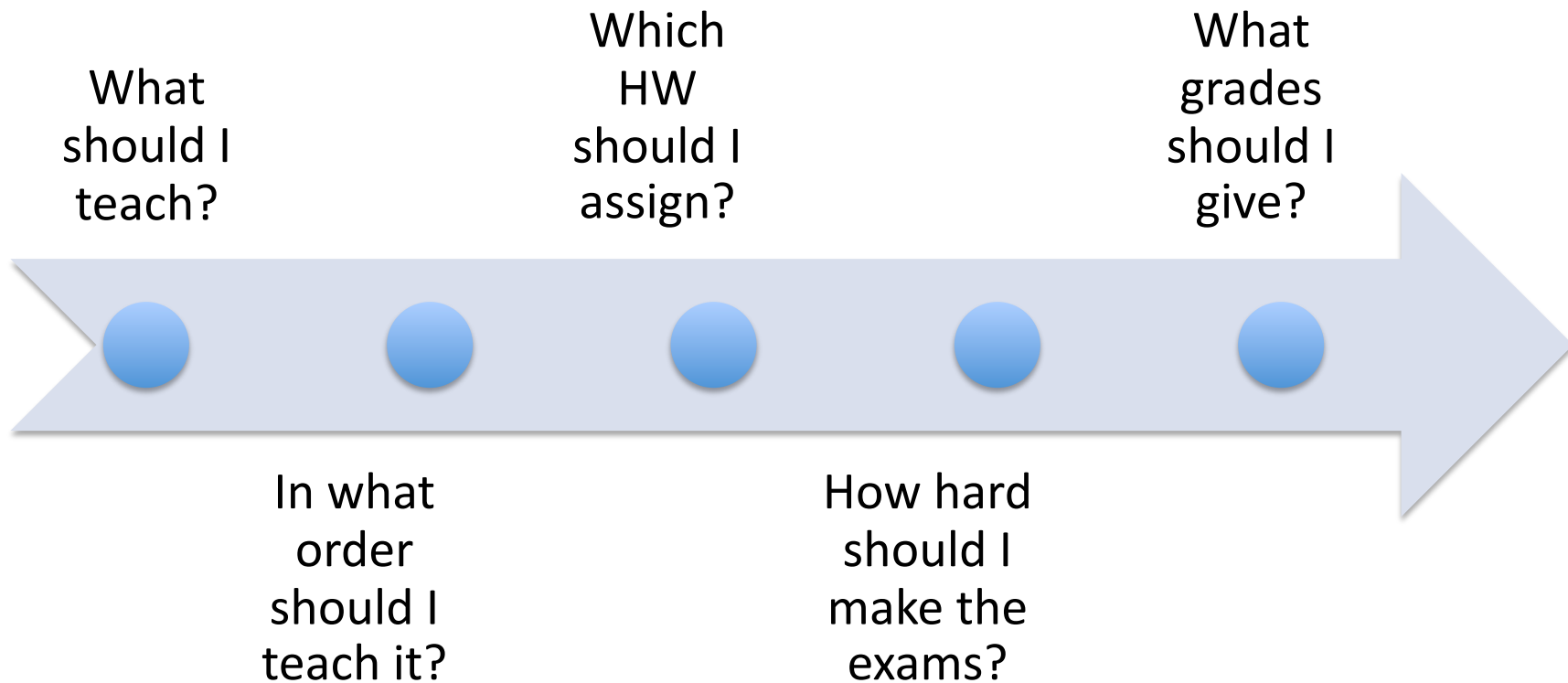
Planning 101: Understanding By Design

Monday	Tuesday	Wednesday	Thursday	Friday
Overview: stages 1, 2,3	Understanding Understanding -more on stage 1 as needed	Connections to Unit & Course Organizer	Essential Questions	UbD & Syllabi
Specific focus: stage 1, four components & big ideas	Specific focus: stage 2, GRASPS & range of assessments	Specific focus: stage 3 & WHERE TO	Specific focus: coverage vs. uncoverage	Specific focus: "Yes, but..."
Workshop	Workshop	Workshop	Workshop	Group demonstrations of UbD

Twin Sins of Traditional Design

- Activity-focused teaching
- Coverage-focused teaching

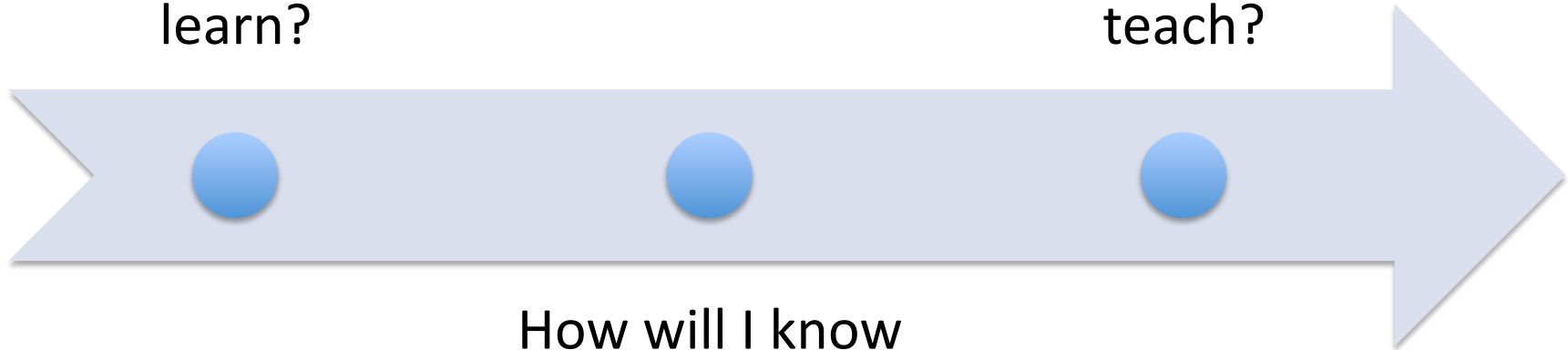
Typical Course Development Decision Process



Backward Design Course Development Decision Process

What do I want
students to
learn?

What should I
teach?



How will I know
that they have
mastered the
material?

3 Stages of UbD

1. Identify desired results

2. Determine acceptable evidence

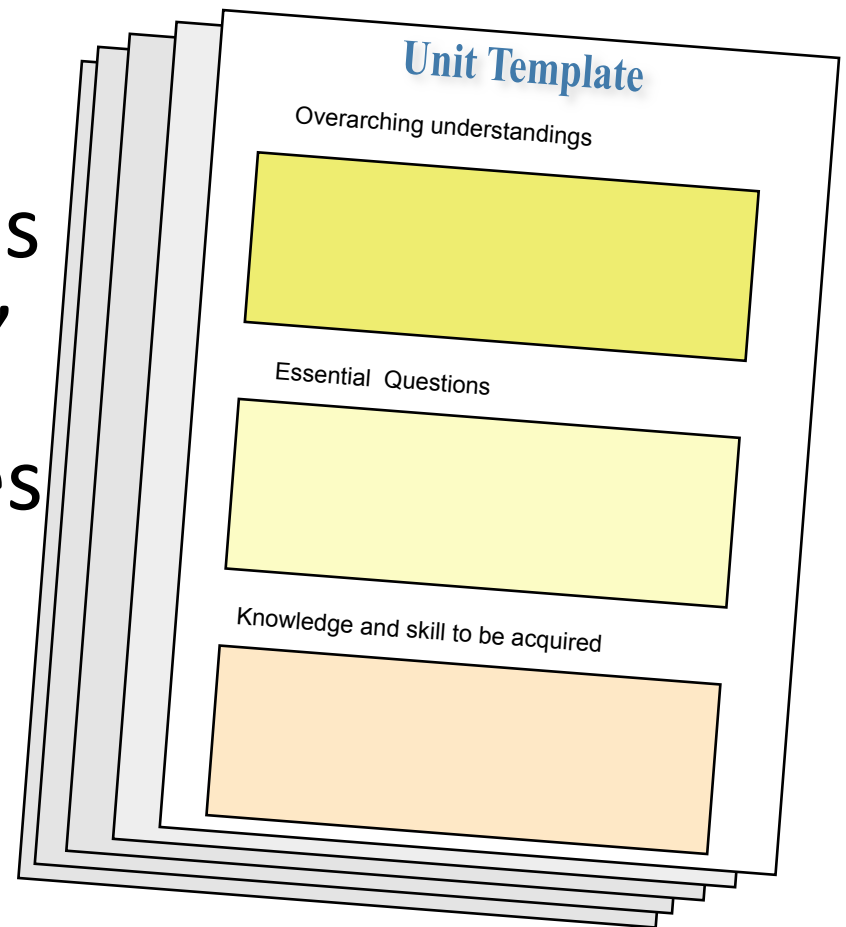
**3. Plan learning experiences
& instruction**

Why “backward”?

- The stages are logical but they go against habits
 - We’re used to jumping to lesson and activity ideas before clarifying our performance goals for students
 - By thinking through the assessments upfront, we ensure greater alignment of our goals and means, and that teaching is focused on desired results

Understanding by Design Template: the foundation of our planning

- The UbD template embodies the 3 stages of “Backward Design”
- The template provides an easy mechanism for exchange & capturing of ideas

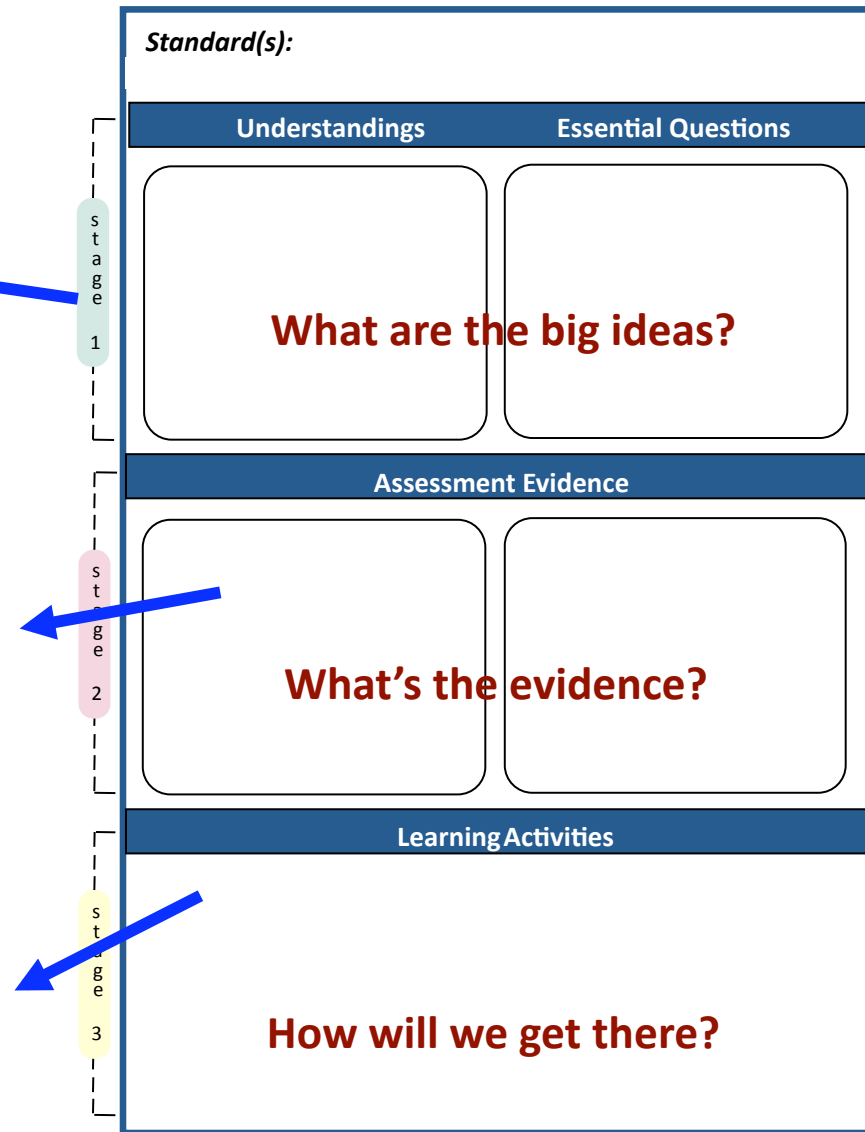


The “big ideas” of each stage:

Unpack the content standards and ‘content’, focus on big ideas

Analyze multiple sources of evidence, aligned with Stage 1

Derive the implied learning from Stages 1 & 2



Not necessary to fill in the template “in order”

- There are many ‘doorways’ into successful design – you can start with...
 - Content standards
 - Performance goals
 - A key resource or activity
 - A required assessment
 - A big idea, often misunderstood
 - An important skill or process
 - An existing unit or lesson to edit

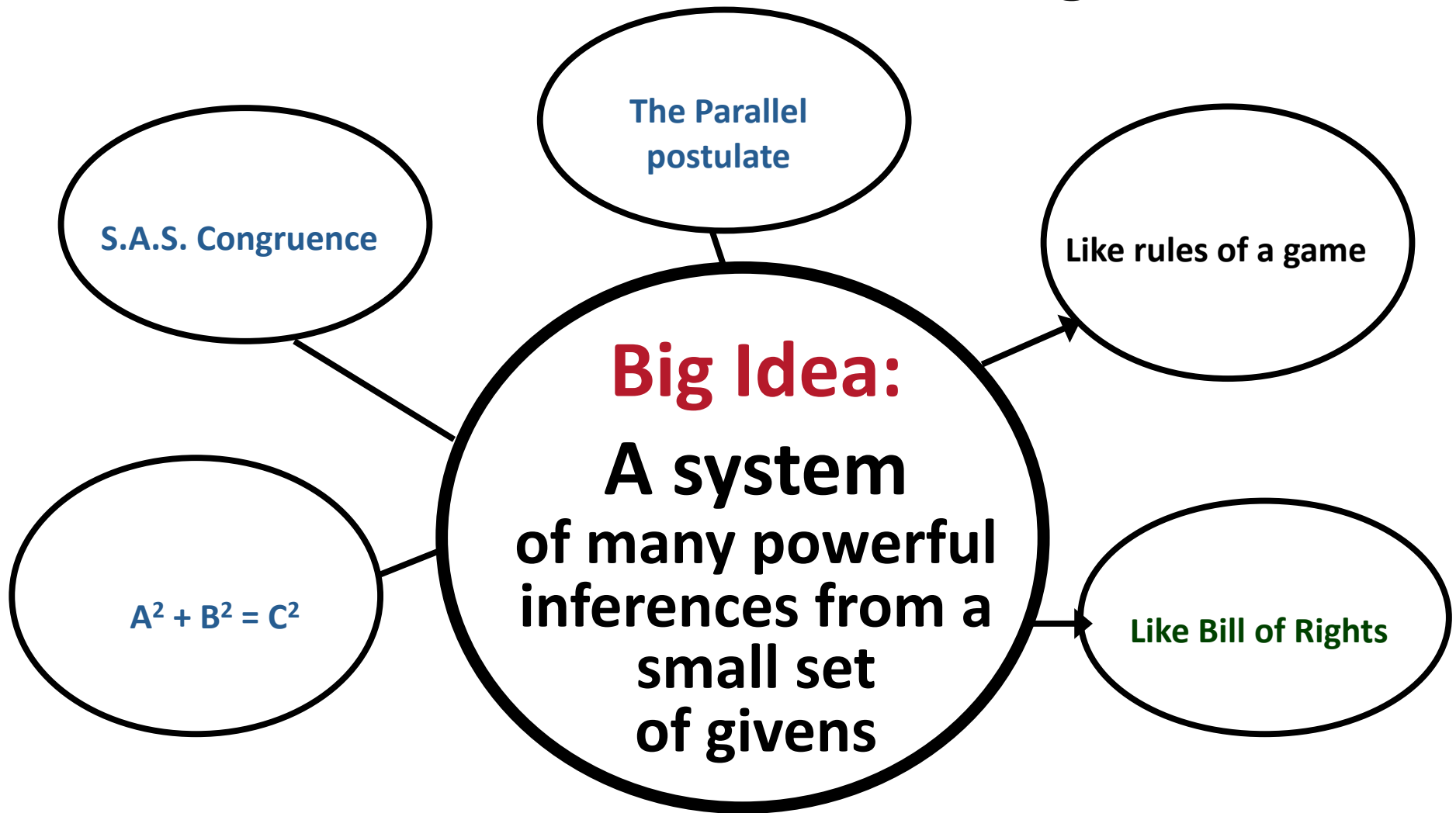




Misconception Alert: the work is non-linear

- It doesn't matter where you start as long as the final design is coherent (all elements aligned)
 - Clarifying one element or Stage often forces changes to another element or Stage
 - The template “blueprint” is logical but the process is non-linear (think: home improvement!)

The big ideas provide a way to connect and recall knowledge



Big Ideas: defined

- A big idea is a concept, theme, or issue that gives meaning and connection to discrete facts and skills.

Change	Energy	Exploration	Freedom	Interaction
Migration	Symbols	Systems	Power	Patterns

“Big Ideas” are typically revealed via –

- Core concepts
- Focusing themes
- On-going debates/issues
- Insightful perspectives
- Illuminating paradox/problem
- Organizing theory
- Overarching principle
- Underlying assumption
- Key questions
- Insightful inferences from facts

Some questions for identifying truly “big ideas”

1. Does it have many layers and nuances, not obvious to the naïve or inexperienced person?
2. Can it yield great depth and breadth of insight into the subject? Can it be used throughout K-12?
3. Do you have to dig deep to really understand its subtle meanings and implications even if anyone can have a surface grasp of it?
4. Is it (therefore) prone to misunderstanding as well as disagreement?
5. Are you likely to change your mind about its meaning and importance over a lifetime?
6. Does it reflect the core ideas as judged by experts?

3 Stages of UbD: Let's dig in...

1. Identify desired results

2. Determine acceptable evidence

3. Plan learning experiences
& instruction

Stage 1: Identify Desired Results

- Key: Focus on Big ideas
 - Enduring understanding
 - Important to know and do
 - Worth being familiar with

Stage 1: peeling back the layers...

- What is worthy and requiring of understanding?
- Four filters will help guide us.

Stage 1: Four Filters

1. To what extent does the idea, topic or process represent a “big idea” having enduring value beyond the classroom?

Idea: essential for understanding the topic subject; a focus on ideas that are long lasting.

Stage 1: Four Filters

2. To what extent does the idea, topic or process reside at the heart of the discipline?

Idea: how does a professional in this field do their work? Authentic learning – the student has an active role as a constructor of meaning.

Stage 1: Four Filters

3. To what extent does the idea, topic or process require uncoverage?

Idea: What ideas/concepts do the students often have difficulty grasping? About which big ideas are they likely to harbor a misconception?

Connecting Stage 1 to your course:

- First, on your own, make a list of no more than three enduring understandings for your chosen course.
- Then, in your groups, share what you came up with.
- Using the “Design Questions” (page 14), discuss.
- Compare to examples on pages 6 - 11

Knowledge	Understanding
The facts	The meaning of facts
A body of coherent facts	The theory that provides coherence and meaning to those facts
Verifiable claims	Fallible, in-process theories
Right or wrong	A matter of degree or sophistication
I know something to be true	I understand why it is, what makes it knowledge
I respond on cue with what I know	I judge when to and when not to use what I know

I want my children to understand the world, but not just because the world is fascinating and the human mind is curious. I want them to understand it so that they will be positioned to make it a better place... Ultimately, we must synthesize our understandings for ourselves. The performance of understanding that truly matters are the ones we carry out as human beings in an imperfect world which we can affect for good or for ill. (Howard Gardner 1999: 180-181)

3 Stages of UbD

1. Identify desired results

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Stage 1: Four Components

- Establish goals
- Understandings
- Essential questions
- Knowledge & skills

Sheer numbers...

- 160 national and state-level standards (more than 2000 pages)
- A synthesis yielded 255 standards and 3968 benchmarks
 - Marzano & Kendall, 1999

Sheer numbers...

- Would require an additional 15,465 hours for students to learn them all
- 9 more years = K-21

What's the big idea?



Facts & Skills

Key concepts & core
processes

Generalizations
& principles

Factual Knowledge

Includes:

- vocabulary, terminology
- definitions
- critical details
- important people & events
- sequence/timeline

Skills

Includes:

- Decoding, drawing
- Communication skills
- Thinking skills (like comparing)
- Study skills (like note taking)
- Interpersonal, group skills

Big Ideas: defined

- A big idea is a concept, theme, or issue that gives meaning and connection to discrete facts and skills.

Change	Energy	Exploration	Freedom	Interaction
Migration	Symbols	Systems	Power	Patterns

Research Connection

“We turn now to the questions of how experts’ knowledge is organized...Their knowledge is not simply a list of facts and formulas that are relevant to the domain; instead, their knowledge is organized around core concepts or big ideas that guide their thinking about the domain.”

-Brandford, et. al, *How People Learn*, page 34

US History: WW II to present

- Everything we do in this course addresses one or more of the following questions:
 - What is the story of American history?
 - How do historians construct and evaluate the stories they tell?
 - Why study history?

Adaptation

Big Idea/Understanding

Living organisms have developed adaptive mechanisms to enable them to survive harsh environments.

Essential Question:

In what ways do living organisms adapt to survive in harsh environments?

World Literature

Big Idea/Understanding

Great literature from various cultures explores enduring themes and reveals recurrent aspects of the human condition.

Essential Question:

How can stories from other places and times be about me?

Artistic Expression

Big Idea/Understanding

Available tools and technologies influence the ways in which artists express their ideas.

Essential Questions:

Where do artists get their ideas?

What factors influence artistic expression?

Goldilocks Problem

“Students will analyze the regional development of Asia, Africa, the Middle East, Latin America, and the Caribbean, in terms of physical, economic and cultural characteristics and historical evolution from 1000 AD to the present.”

Goldilocks Problem

“Compare the early civilizations of the Indus River Valley in Pakistan with the Huang-He of China.”

“Students will recognize how technical, organizational and aesthetics elements contribute to the ideas, emotions and overall impact communicated by works of art.”

Revisit: too big

“Students will analyze the regional development of Asia, Africa, the Middle East, Latin America, and the Caribbean, in terms of physical, economic and cultural characteristics and historical evolution from 1000 AD to the present.”

The geography, climate and natural resources of a region influence the lifestyle, culture and economy of its inhabitants.

-How does where you live influence how you live and work?

Revisit: too specific

“Compare the early civilizations of the Indus River Valley in Pakistan with the Huang-He of China.”

The geography, climate and natural resources of a region influence the lifestyle, culture and economy of its inhabitants.

-How does where you live influence how you live and work?

How People Learn

“A key finding in the learning and transfer of literature is that organizing information into a conceptual framework allows for greater transfer (17).”

When and how should we differentiate with the framework?

1. Identify desired results

2. Determine acceptable evidence

**3. Plan learning experiences
& instruction**

When and how should we differentiate with the framework?

1. Should rarely be differentiated

2. Determine acceptable evidence

**3. Plan learning experiences
& instruction**

When and how should we differentiate with the framework?

1. Should rarely be differentiated

2. May need some differentiation

**3. Plan learning experiences
& instruction**

When and how should we differentiate with the framework?

1. Should rarely be differentiated

2. May need some differentiation

3. Should be differentiated

When and how should we differentiate with the framework?

1. Identify desired results

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Stage 2: Determine Acceptable Evidence

How will we know if we have succeeded as instructors?

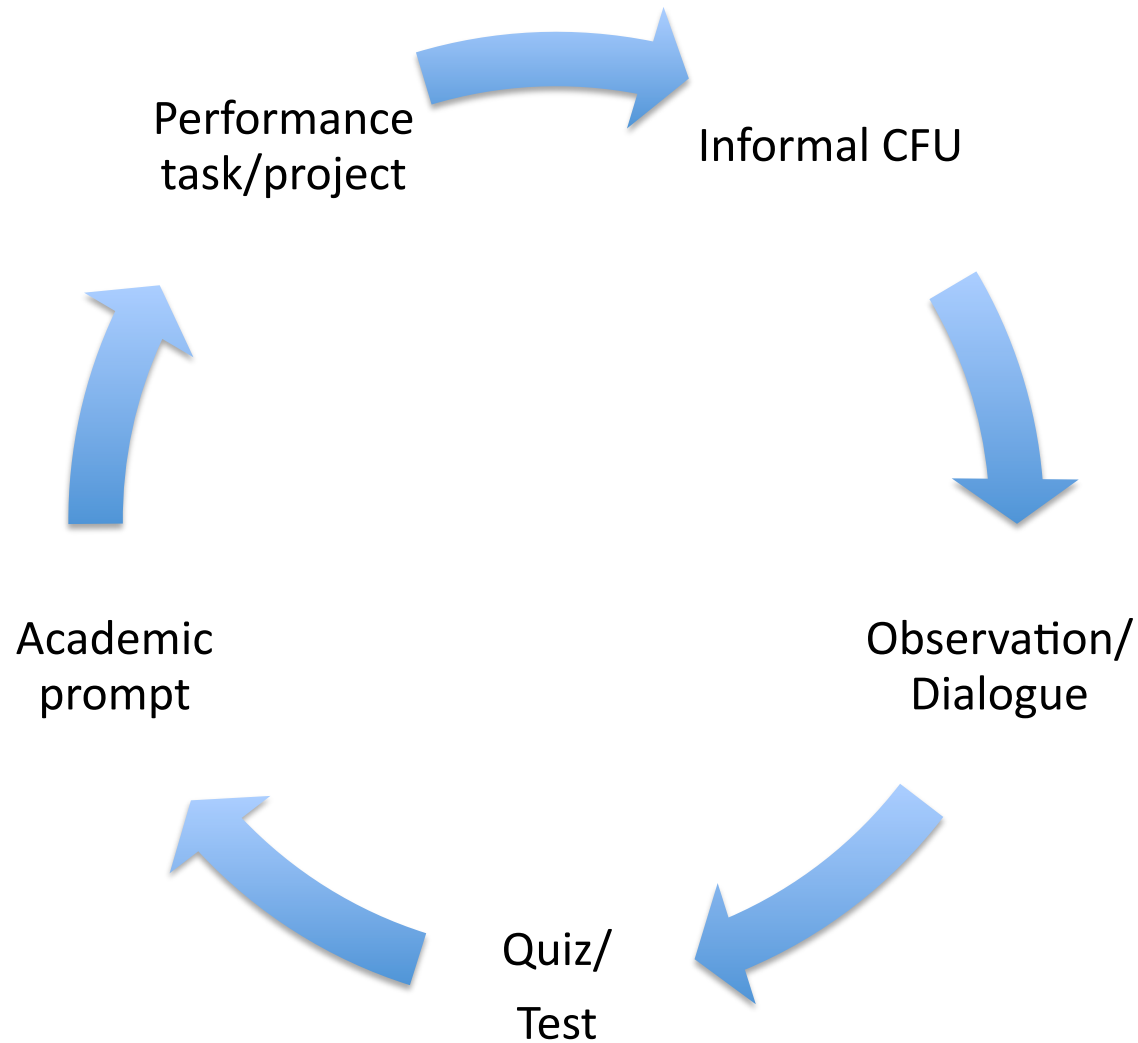
How will we know if the students have achieved the desired results?

What does it mean to understand?

- Explanation
- Interpretation
- Application
- Perspective
- Empathy
- Self-Knowledge

Workbook, page 155

Assessment Methods



Criteria for Assessment Instruments

- Valid
- Reliable
- Sufficient
- Authentic work
- Feasible
- Student friendly

Performance Task Scenario: GRASP

- **Goal**
- **Role**
- **Audience**
- **Situation**
- **Product, Performance & Purpose**
- **Standards and Criteria for Success**

Workbook, page 171

GRASPS: assessing understanding of multi-variable experimental design

Goal & Role: As a scientist with a consumer research group, your task is to design an experiment to determine which of four brands of detergent will most effectively remove three different types of stains on cotton fabric.

Audience: Your target audience is the testing department for *Consumer Research* magazine.

GRASPS: assessing understanding of multi-variable experimental design (2)

Situation: You have a 2-part challenge

- to develop an experimental design for isolating key variables

- to clearly communicate the procedure so that the staff of the testing department can conduct the experiment to determine which cleaner is most effective for each type of stain.

GRASPS: assessing understanding of multi-variable experimental design (3)

Product: You need to develop a written experimental procedure (following given format) outlining the steps in sequence. You may include an outline or graphic format to accompany written description

GRASPS: assessing understanding of multi-variable experimental design (4)

Standards: Your experimental design needs to follow the criteria for good design accurately and completely; appropriately isolate the key variables; include a clear and accurate written description of the procedure (an outline or graphic to assist the testers is optional); and enable the testing department staff to determine which cleaner is most effective for each type of stain.

Understandings: examples...

- Great artists often break with conventions to better express what they see and feel.
- Price is a function of supply and demand.
- Friendships can be deepened or undone by hard times.
- History is the story told by the “winners”.
- $F = ma$ (weight is not mass)
- Math models simplify physical relations – and even sometimes *distort* relations – to deepen our understanding of them.
- The storyteller rarely tells the meaning of the story.

Knowledge vs. Understanding

- An understanding is an *unobvious and important inference*, needing “uncoverage” in the unit; knowledge is a set of established “facts”.
- Understandings make sense of facts, skills, and ideas: they tell us what our knowledge *means*; they ‘*connect the dots*’
- Any understandings are inherently fallible “theories”; knowledge consists of the accepted “facts” upon which a “theory” is based and the “facts” which a “theory” yields.

Stage 1: Essential Questions

- are arguable - and *important* to argue about?
- are at the heart of the subject?
- recur - and *should* recur - in professional work, adult life, as well as in classroom inquiry?
- raise more questions – provoking and sustaining engaged inquiry?
- often raise important conceptual or philosophical issues?
- can provide organizing purpose for meaningful & connected learning?

Essential versus Leading Questions (used in teaching: Stage 3)

Essential: Stage 1

Asked to be argued,
designed to “uncover”
new ideas, views, lines
of argument.
Set-up inquiry, heading
to new understandings.

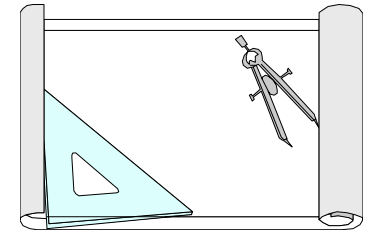
Leading: Stage 3

Asked as a reminder, to
prompt recall.
Designed to “cover”
knowledge.
Point to a single,
straightforward fact.

Sample Essential Questions:

- Who are my true friends - and how do I know for sure?
- How “rational” is the market?
- Does a good read differ from a ‘great book’? Why are some books fads, and others classics?
- To what extent is geography destiny?
- Should an axiom be obvious?
- How different is a scientific theory from a plausible belief?
- What is the government’s proper role?

3 Stages of Design: Stage 2



1. Identify desired results

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Stage 2 – Assessment Evidence

- Template fields ask:
 - What are key complex performance tasks indicative of understanding?
 - What *other evidence* will be collected to build the case for understanding, knowledge, and skill?
 - What rubrics will be used to assess complex performance?

The big idea for Stage 2

- The evidence should be credible & helpful.
- Implications: the assessments should –
 - Be grounded in real-world applications, *supplemented as needed* by more traditional school evidence
 - Provide useful feedback to the learner, be transparent, and minimize secrecy
 - Be valid, reliable - aligned with the desired results of Stage 1 (and fair)

Just because the student “knows it” ...

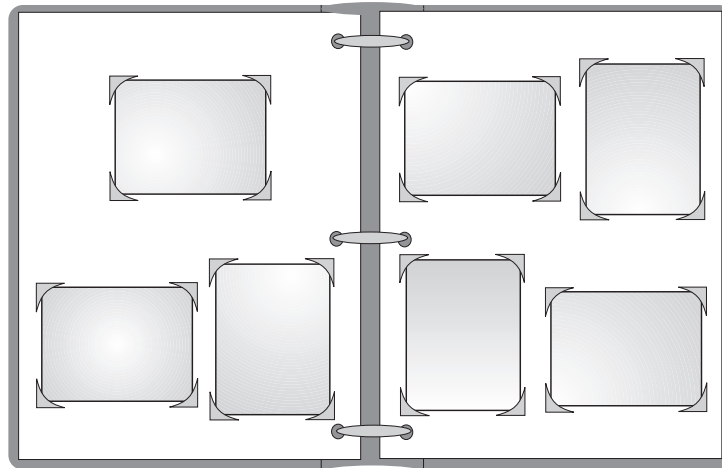
- Evidence of understanding is a greater challenge than evidence that the student knows a correct or valid answer
 - Understanding is inferred, not seen
 - It can only be inferred if we see evidence that the student knows *why* (it works) *so what?* (why it matters), *how* (to apply it) – not just knowing *that* specific inference

Assessment of Understanding via the 6 facets

- i.e. You really understand when you can:
 - explain, connect, systematize, predict it
 - show its meaning, importance
 - apply or adapt it to novel situations
 - see it as one plausible perspective among others, question its assumptions
 - see it as its author/speaker saw it
 - avoid and point out common misconceptions, biases, or simplistic views

Reliability: Snapshot vs. Photo Album

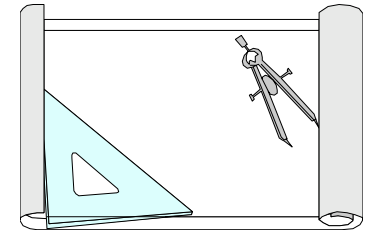
- We need patterns that overcome inherent measurement error
 - Sound assessment (particularly of State Standards) requires multiple evidence over time
 - a photo album vs. a single snapshot



For Reliability & Sufficiency: Use a Variety of Assessments

- Varied types, over time:
 - authentic tasks and projects
 - academic exam questions, prompts, and problems
 - quizzes and test items
 - informal checks for understanding
 - student self-assessments

3 Stages of Design: Stage 3

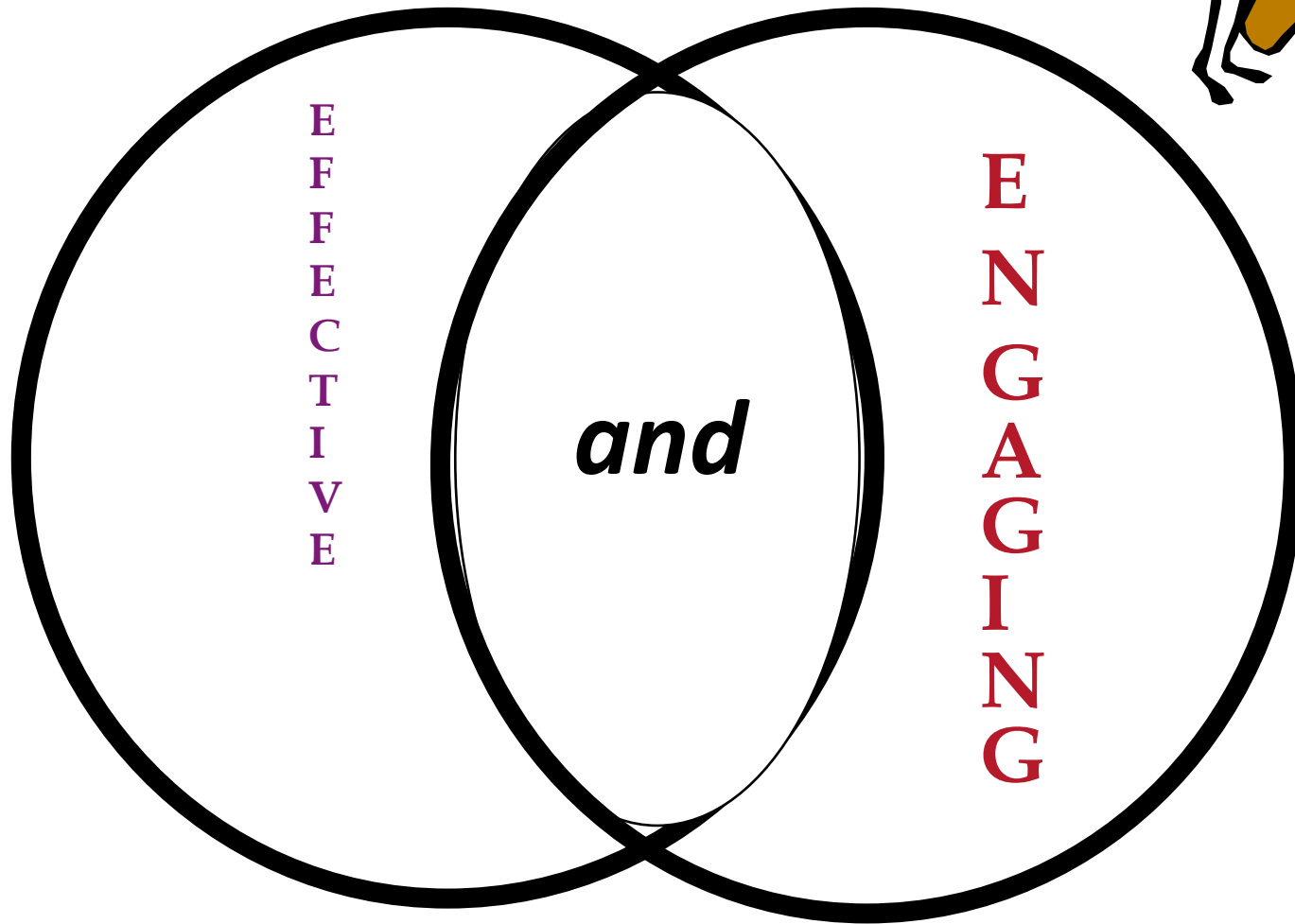
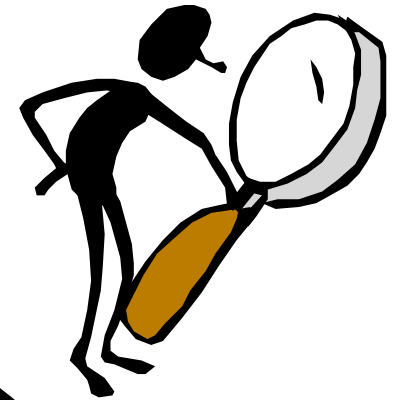


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Stage 3 big idea:



Stage 3 – Plan Learning Experiences & Instruction

- A focus on engaging and effective learning, “designed in”
 - What learning experiences and instruction will promote the desired understanding, knowledge and skill of Stage 1?
 - How will the design ensure that all students are maximally engaged and effective at meeting the goals?

Think of your obligations via W. H. E. R. E. T. O.



- W** • “Where are we headed?” (the student’s Q!)
- H** • How will the student be ‘hooked’?
- E** • What opportunities will there be to be equipped, and to experience and explore key ideas?
- R** • What will provide opportunities to rethink, rehearse, refine and revise?
- E** • How will students evaluate their work?
- T** • How will the work be tailored to individual needs, interests, styles?
- O** • How will the work be organized for maximal engagement and effectiveness?

Essential Questions

“To question means to lay open, to place in the open. Only a person who has questions can have real understanding.”

Gadamer, 1994

Understanding is the ability to transfer learning to new, different and unique experiences.”

Wiggins