



UNDERSTANDING BY DESIGN: A CURRICULUM DESIGN PROCESS

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What's the Problem?



Teaching does not = Learning

- There is often an inconsistency between the outcomes of student learning as teachers and students would ideally like them to be and the reality of what students actually learn.

Paul Ramsden, 2003, p. 19

Teaching & Learning in Higher Education

Goals of the Next Hour

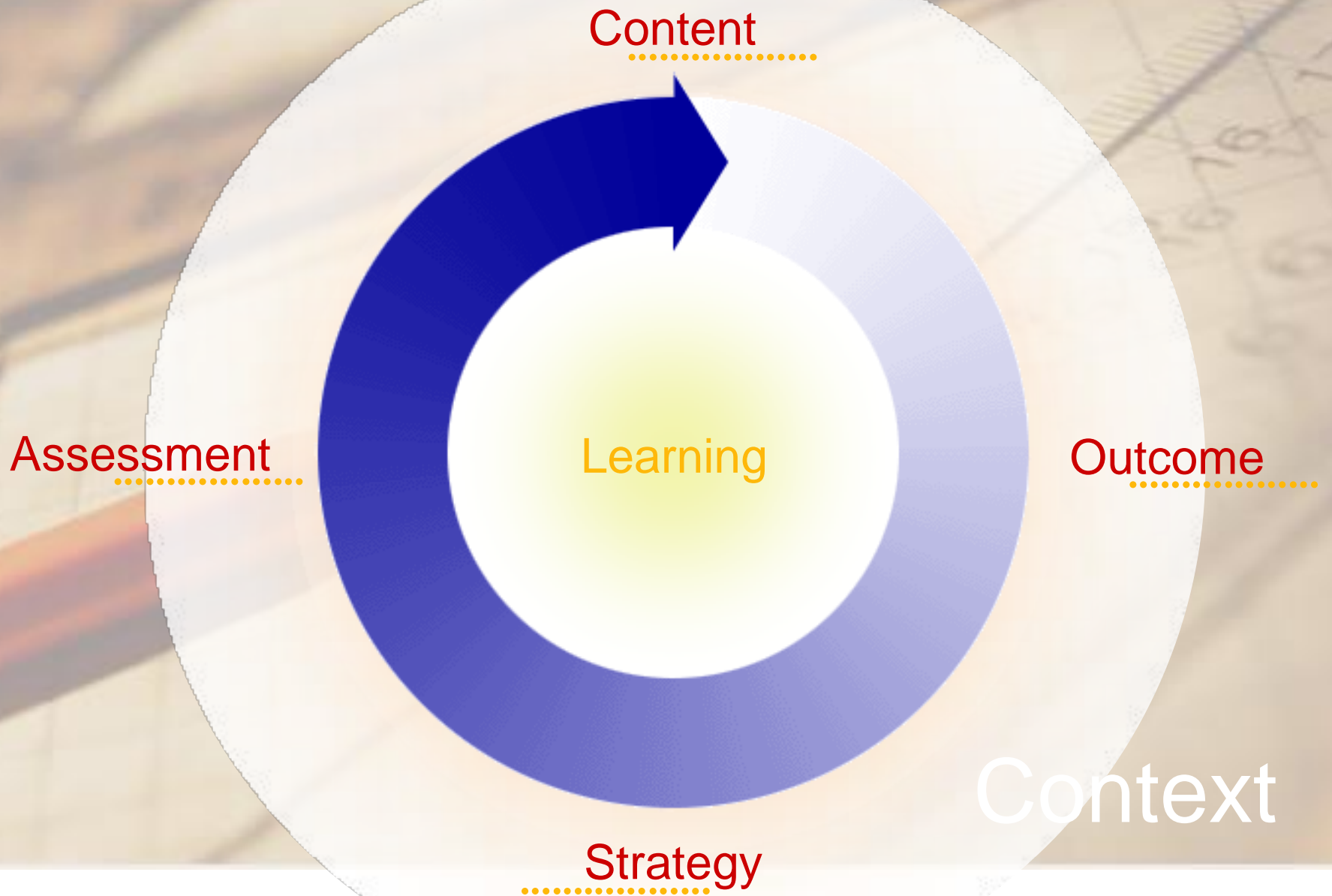
- Introduce the concept of *Understanding by Design*
- See why *Understanding by Design* is a powerful tool for educators
- Unpack the *Understanding by Design* process
- Examine its terminology
- Identify the obstacles to using this type of design approach
- Identify what teachers need to know in order to begin using a Backward Design approach

What is Understanding by Design?

- A conceptual framework
- A design process
- A set of design standard
- A resource with a template that can aid in the design of
 - Curriculum
 - Instruction
 - Assessment

What is it? – Why is it special?

- Way of thinking about curriculum, instruction and assessment that can result in:
 - Richer learning experiences
 - Deeper understandings of facts, concepts, principles
- Requires a change in the sequence of steps normally used in course design
- Focuses on the *Meaning of Understanding*

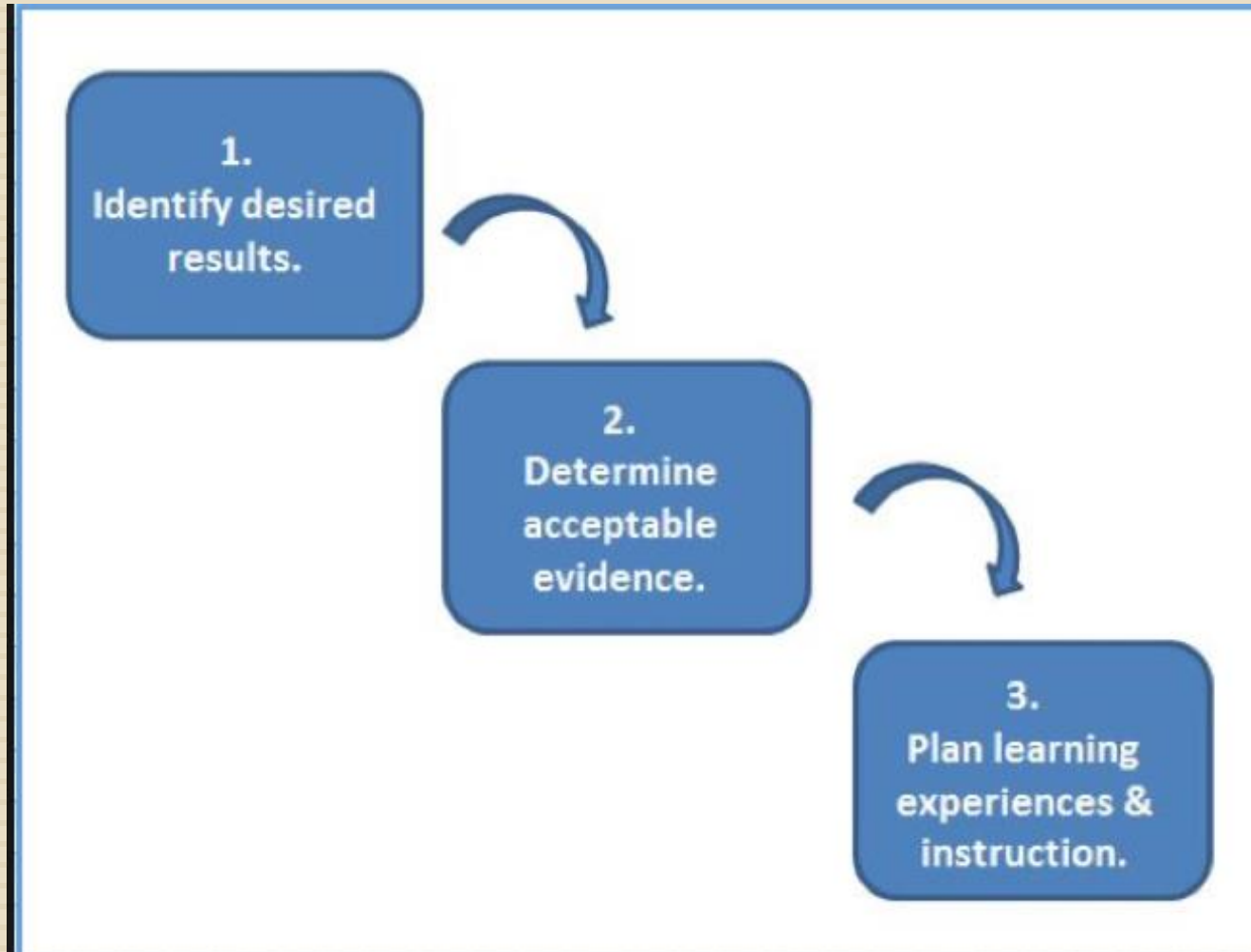


Typical Design Error

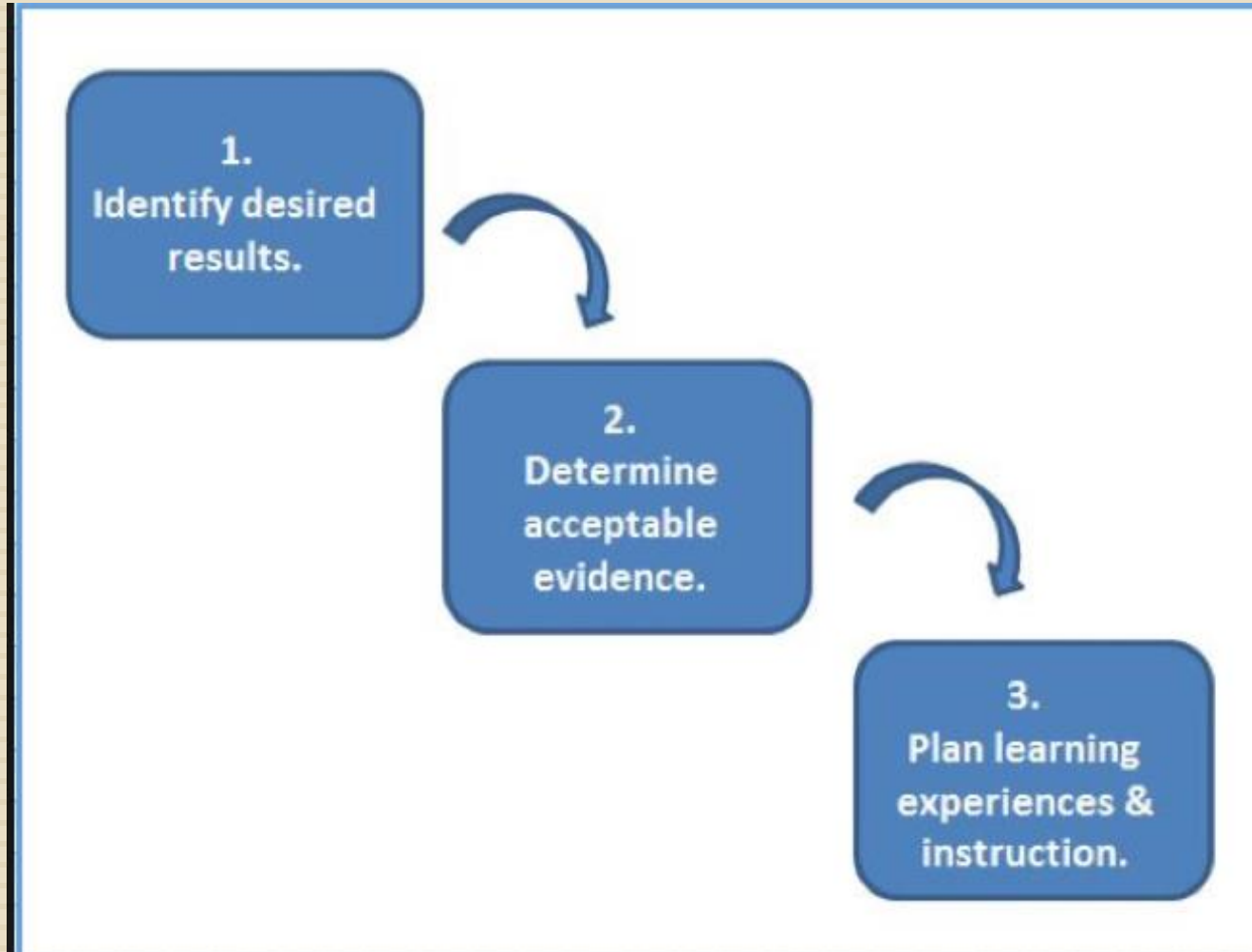
1. Identify Content
2. Plan Activities
3. Design an assessment w/o alignment



Three Stages of Backwards Process



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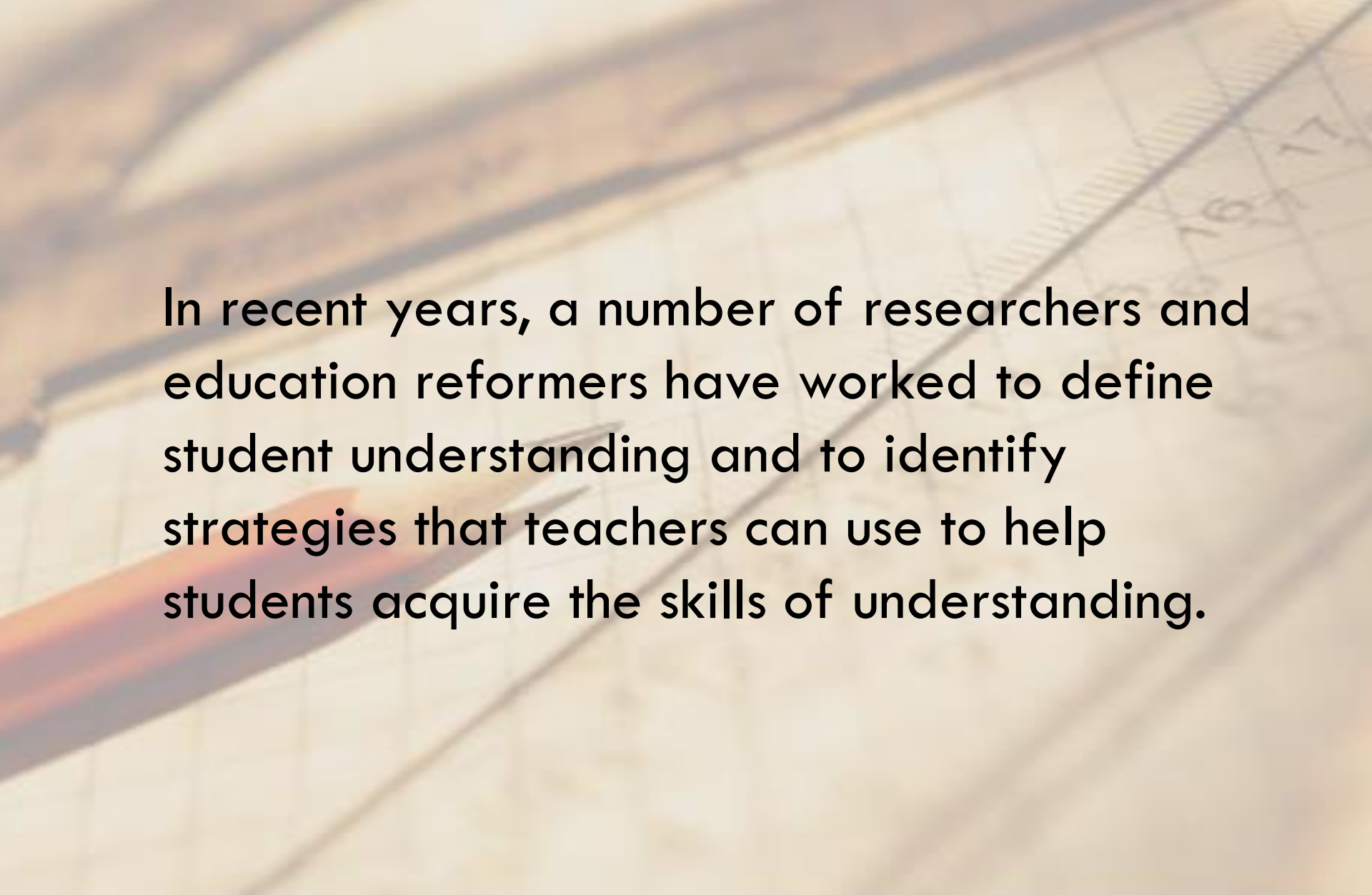
REFLECTION

“STARVATION”

- How would you define this word?
- Think of a sentence in which this word appears.
- You “know” the definition.....

***...they understand what the word
“starvation” means***



The background of the slide features a close-up, slightly blurred image of a pencil and a ruler resting on a grid-patterned surface, likely graph paper. The pencil is positioned diagonally from the bottom left towards the center, and the ruler is positioned diagonally from the top left towards the center. The overall color palette is warm and muted, with shades of beige, light brown, and soft yellow.

In recent years, a number of researchers and education reformers have worked to define student understanding and to identify strategies that teachers can use to help students acquire the skills of understanding.



Understanding is being able to carry out a variety of actions or ‘performances’ that show one’s grasp of a topic and at the same time advance it...

Perkins, D. N. (1998). What is understanding? In M. S. Wiske (Ed.), *Teaching for understanding: linking research with practice* (pp. 13). San Francisco, CA: Jossey-Bass.

Understanding

Our ‘performance perspective’ ...says that understanding is a matter of being able to do a variety of thought-demanding things with a topic - like explaining, finding evidence and examples, generalizing, analogizing, and representing the topic in a new way:... being able to take knowledge and use it in new ways.

Perkins, D. N. (1998). What is understanding? In M. S. Wiske (Ed.), *Teaching for understanding: linking research with practice* (pp. 13). San Francisco, CA: Jossey-Bass.

Six Facets of Understanding



- Can Explain
- Can Interpret
- Can Apply
- Has Perspective
- Can Empathize
- Has Self-Knowledge

This Focus on Understanding

- Explains common practices that interfere with understanding
- Offers a backward design process to avoid common problems
- Proposes an approach to curriculum designed to engage students in inquiry & “uncovering” ideas
- Proposes a set of design standards for achieving quality control in curriculum & assessment

Steps in the Process



Begin with the end in mind

- Means to start with a clear understanding of your destination. It means to know where you are going so that you better understand where you are now so that the steps you take are always in the right direction.
 - Stephen R. Covey, *The 7 Habits of Effective People*



Stage One: Identifying Desired Results

- Goals
- Knowledge & Skills → Competency
- Essential Questions
- Enduring Understandings



WARNING



**CHALLENGES
AHEAD**

Competencies

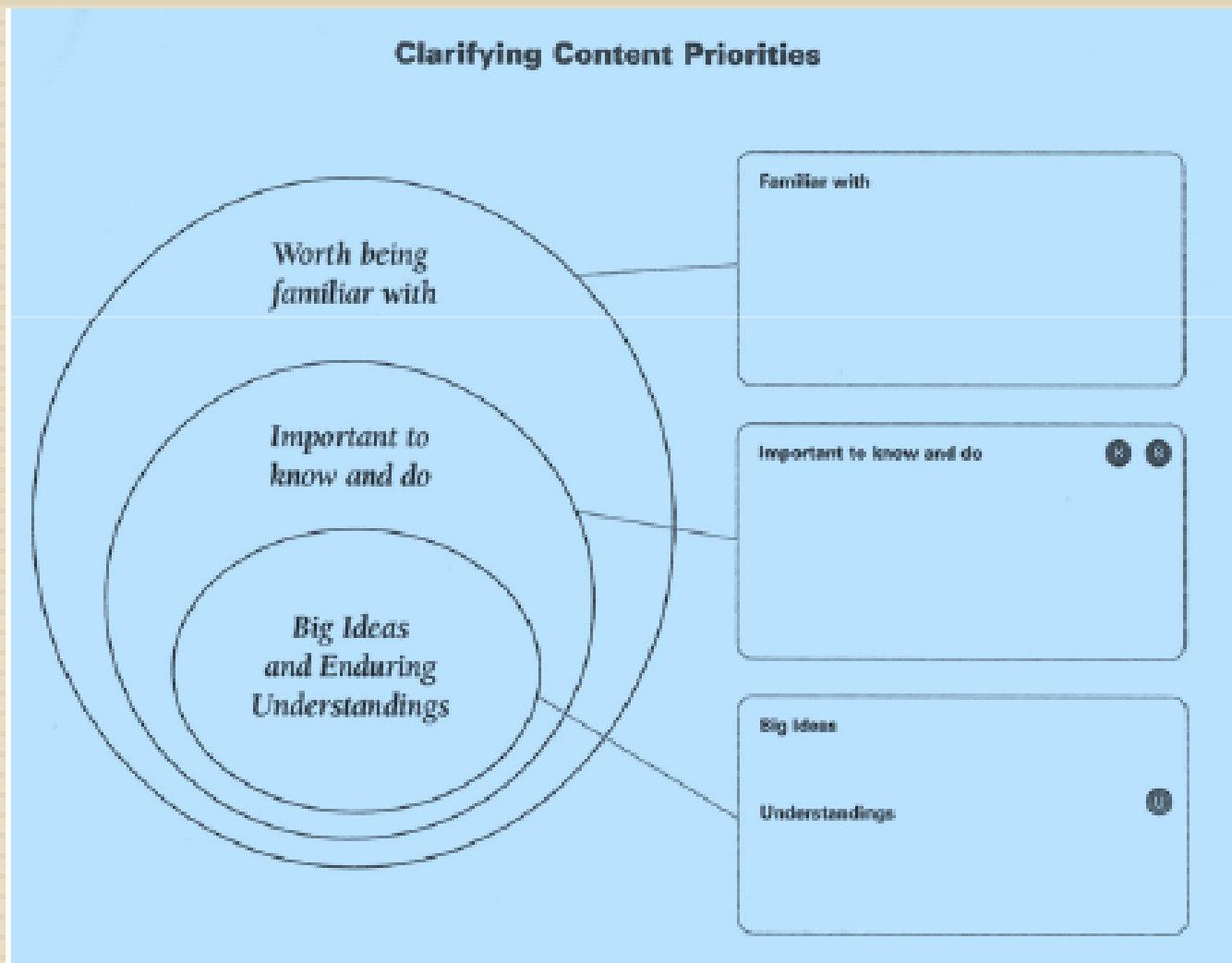
Knowledge

- Vocabulary
- Terminology
- Definitions
- Factual Information
- Formula
- Critical Details
- Important events
- Sequences & Timeline

Skills

- Communication
- Analytical Thinking
- Critical Thinking
- Research
- Study Skills
- Interpersonal Skills

Identifying the “Big Ideas”



Understandings & Big Ideas

- Concepts
- Themes
- Issues or Debates
- Problems or Challenges
- Processes
- Theories
- Paradoxes
- Assumptions or Perspectives

Formulating an Essential Question



Essential Questions



An **essential question** is a question or idea which is rich in its potential for multiple connections to students' interests and experiences. It also opens the door to exploration from a variety of disciplinary perspectives. It is central to the discipline, engaging to both students and teachers, and builds on students' previous knowledge.

Sample Essential Question

Is effective teaching (i.e., teaching which promotes deep student learning and understanding of subject matter) a natural “gift” or is it a matter of design?



ESSENTIAL QUESTIONS

Extend beyond the
curriculum or
course

Suggest Inquiry

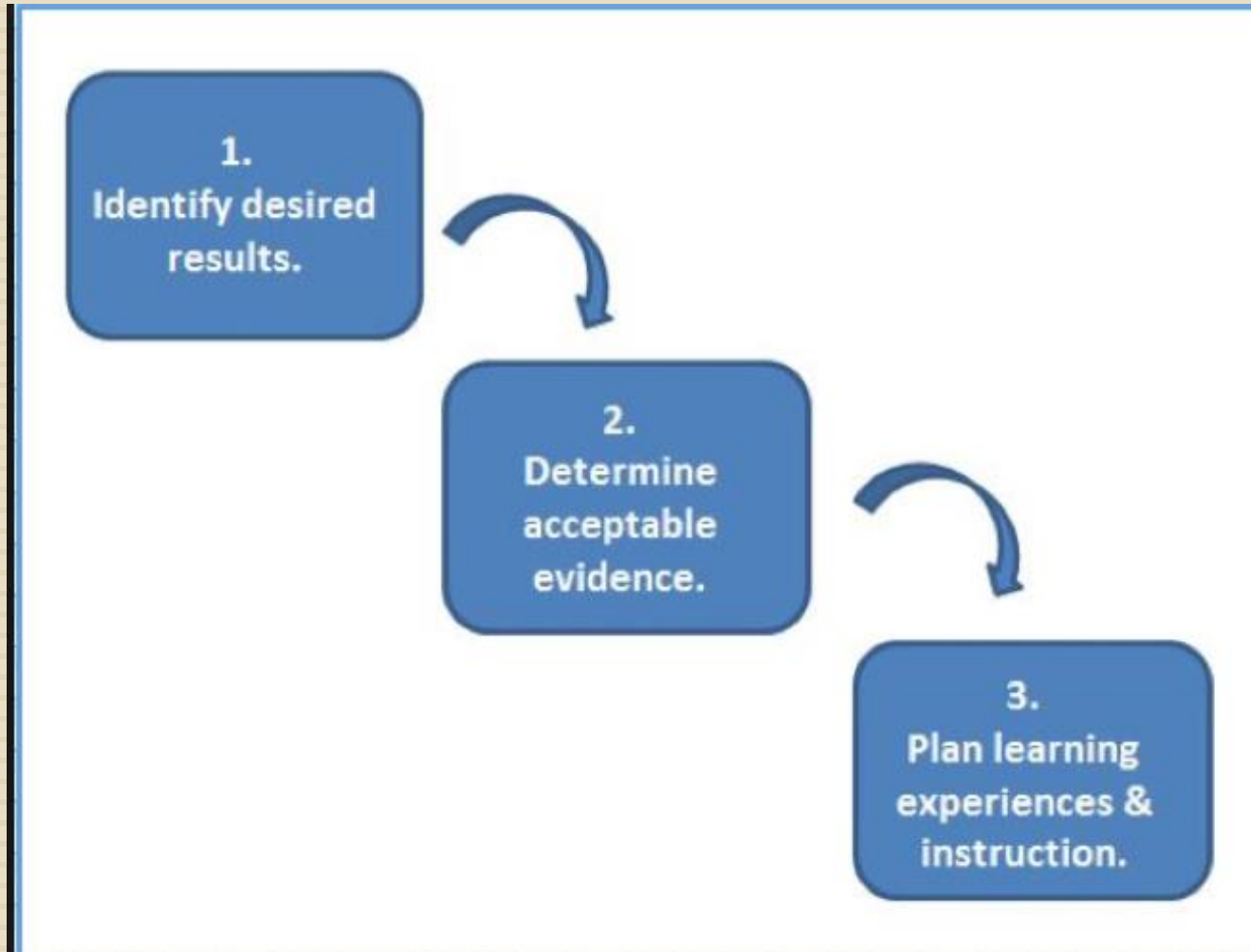
Focus on key
concepts implicit in
the curriculum

Require use of prior
knowledge, new
information &
research/
experiences

Initiators of
creative and critical
thinking

Encourage
Analysis, Synthesis,
Evaluation, and
Reflection

Three Stages of Backwards Process



Stage Two - Evidence

- What is sufficient and telling evidence of understanding?
- Keeping the goals in mind, what performance tasks should anchor & focus the unit?
- What criteria will be used to focus the work?
- Will the assessment reveal & distinguish those who really understand versus those who only seem to understand?

Core Premise




The primary aim of assessment is to improve student performance, not merely audit it via grades on simplistic tests.


Grant Wiggins, 2004

Assessment Methods

Assessment Methods

Traditional 
quizzes and tests

- Paper-and-pencil
- Selected-response
- Constructed response

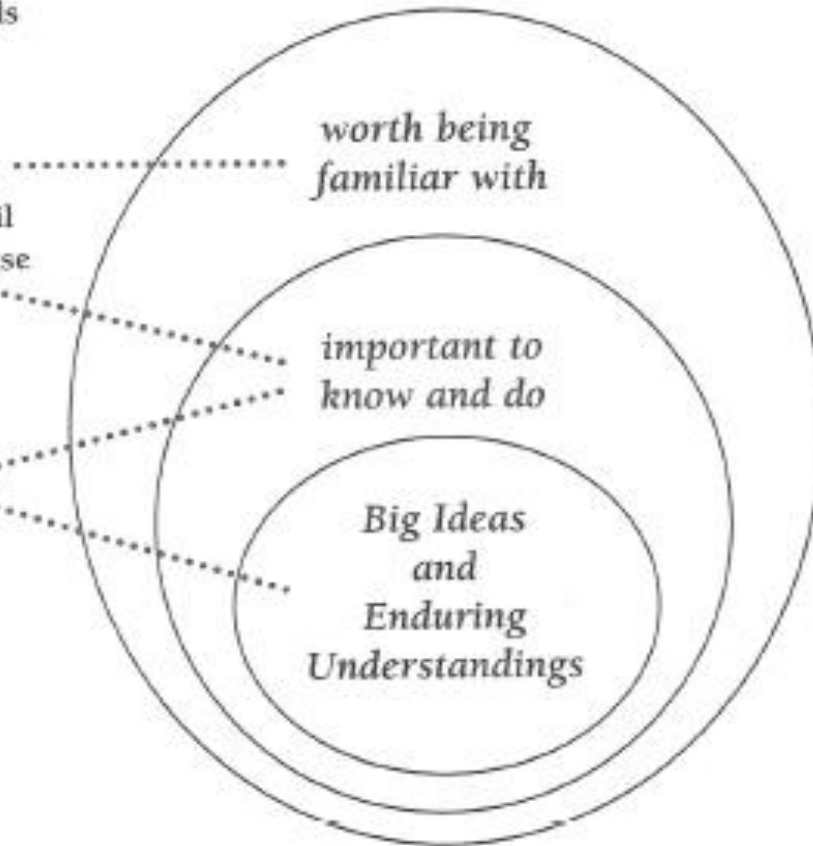
Performance 
tasks and projects

- Complex
- Open-ended
- Authentic

worth being familiar with

important to know and do

Big Ideas and Enduring Understandings



Complex Assessments

- **Performance Assessment**
 - Assessments requiring observation and judgment of a student process or product
- **Alternative Assessment**
 - Assessments that are not paper & pencil
- **Authentic Assessment**
 - Assessment that “realistic” to some context



DESIGNING RUBRICS

Students as Self Assessors

Teachers as Focused Coaches

Rubrics



- Rubrics (or other scoring schemes) structure observation of the process or product

Rubric for Critical Thinking Assignment

Critical Thinking Rubric

Quality \ Criteria	No/Limited Proficiency (1 point)	Some Proficiency (2 points)	Proficiency (3 points)	High Proficiency (4 points)	Rating (1,2,3,4pts)
1. Identifies & explains ISSUES	Fails to identify, summarize, or explain the main problem or question. (OR) Represents the issues inaccurately or inappropriately.	Identifies main issues but does not summarize or explain them clearly or sufficiently	Successfully identifies and summarizes the main issues, but does not explain why/how they are problems or create questions	Clearly identifies and summarizes main issues and successfully explains why/how they are problems or questions; and identifies embedded or implicit issues, addressing their relationships to each other.	
2. Recognizes stakeholders and CONTEXTS (i.e., cultural/social, educational, technological, political, scientific, economic, ethical, personal experience)	Fails accurately to identify and explain any empirical or theoretical contexts for the issues. (OR) Presents problems as having no connections to other conditions or contexts.	Shows some general understanding of the influences of empirical and theoretical contexts on stakeholders, but does not identify any specific ones relevant to situation at hand.	Correctly identifies all the empirical and most of the theoretical contexts relevant to all the main stakeholders in the situation.	Not only correctly identifies all the empirical and theoretical contexts relevant to all the main stakeholders, but also finds minor stakeholders and contexts and shows the tension or conflicts of interests among them.	
3. Frames personal responses and acknowledges other PERSPECTIVES	Fails to formulate and clearly express own point of view, (OR) fails to anticipate objections to his/her point of view, (OR) fails to consider other perspectives and position.	Formulates a vague and indecisive point of view, (OR) anticipates minor but not major objections to his/her point of view, (OR) considers weak but not strong alternative positions.	Formulates a clear and precise personal point of view concerning the issue, and seriously discusses its weaknesses as well as its strengths.	Not only formulates a clear and precise personal point of view, but also acknowledges objections and rival positions and provides convincing replies to these.	
4. Evaluates ASSUMPTIONS	Fails to identify and evaluate any of the important assumptions behind the claims and recommendations made.	Identifies some of the most important assumptions, but does not evaluate them for plausibility or clarity.	Identifies and evaluates all the important assumptions, but not the ones deeper in the background – the more abstract ones.	Not only identifies and evaluates all the important assumptions, but also some of the more hidden, more abstract ones.	
5. Evaluates EVIDENCE	Fails to identify data and information that counts as evidence for truth-claims and fails to evaluate its credibility.	Successfully identifies data and information that counts as evidence but fails to thoroughly evaluate its credibility.	Identifies all important evidence and rigorously evaluates it.	Not only identifies and rigorously evaluates all important evidence offered, but also provides new data or information for consideration.	
6. Evaluates IMPLICATIONS, conclusions, and consequences	Fails to identify implications, conclusions, and consequences of the issue, (OR) the key relationships between the other elements of the problem, such as context, assumptions, or data and evidence.	Suggests some implications, conclusions, and consequences, but without clear reference to context, assumptions, data, and evidence.	Identifies and briefly discusses implications, conclusions, and consequences considering most but not all the relevant assumptions, contexts, data, and evidence.	Identifies and thoroughly discusses implications, conclusions, and consequences, considering all relevant assumptions, contexts, data, and evidence.	

Criteria



- The specific areas for assessment
- Focus areas for instruction
- Clear and relevant
- Age appropriate
- Form and function represented

Indicators

- Descriptors of level of performance for the criteria
- Clear, observable language
- Clear to the learner
- Examples for learners

Rubric for the Six Facets of Understanding

Criteria

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

Standards of Performance

- Accurate
- Meaningful
- Effective
- Credible
- Sensitive
- Self-Aware

How do rubrics alter instruction?

- The teacher commits to teaching quality.
- The teacher commits to assisting the student self-assess.
- The focus is on each product and/or performance.
- The labels are removed from students.
- Specificity appears in all communications.
- Everyone gives and receives feedback.

Stage 3 – Learning Plan

- What **instructional strategies** and **learning activities** are needed to achieve the **results** identified in Stage 1 and reflected in the assessment **evidence** specified in Stage 2?

BDesign = A Different Sequence

Thinking like an assessor

- Evidence of understanding?
- What performance tasks anchor the unit?
- How will I distinguish between those who really understand & those who seem to but don't?
- What criteria will I use?
- What misunderstandings are likely? How will I check for those?

Thinking like an Activity Designer

- What would be interesting activities on this topic?
- Resources & Materials?
- What will students be doing in & out of class? What assignments will be given?
- How will I give students a grade?
- Did the activities work? Why or why not?

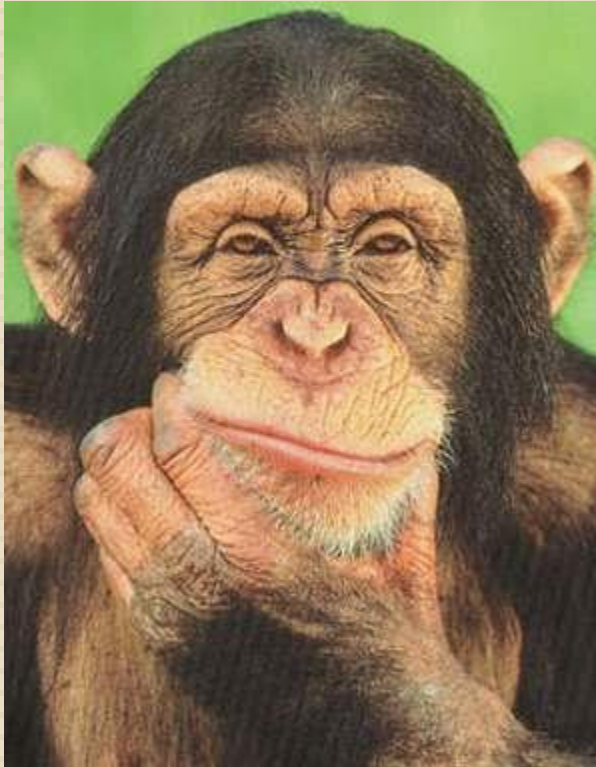
Elements of Teaching for Understanding

- General Learning Objectives
- Specific Learning Objectives
- Essential Question
- Obstacles
- Performances of Understanding
- Ongoing Assessment

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Faculty Obstacles



- What obstacles do you foresee to adopting this approach?

What will teachers have to give up?

□ Beliefs

- Focus on content knowledge
- Belief that if they “say” it students have learned it
- That it is their job to “cover” the content
- That what the student does is more important than what they are doing or saying
- That memorizing equals meaningful learning
- That they are not allowed to rewrite course objectives so that they and the students understand them

What will teachers have to learn?

- How to express clear, articulate learning outcomes
- How to create essential questions
- How to select what is important to learn
 - enduring understandings
 - important to know & do
 - worth being familiar with
- What a competency really is
- How to express standards & criteria
- To catch themselves when they enter the design process using the traditional sequence of thinking

Benefits?

- Meaningful learning
- Deep understanding
- An aligned curriculum
- An understanding of the importance of assessment
- A valid system of assessment
- Increased learning

Questions?



Good Luck!



References



- Wiggins, G. & McTighe, J. (2006). Understanding by design. Pearson, Upper Saddle River, NJ.