UNDERSTANDING BY DESIGN: A CURRICULUM DESIGN PROCESS

Dianne Bateman, PhD
What’s the Problem?

I taught Stripe how to whistle.

I don’t hear him whistling.

I said I taught him. I didn’t say he learned it.
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

1. Identify desired results.
2. Determine acceptable evidence.
3. Plan learning experiences & instruction.
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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
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…

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.

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
- Essential Questions
- Enduring Understandings
WARNING
CHALLENGES AHEAD
### Competencies

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Skills</th>
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</thead>
<tbody>
<tr>
<td>Vocabulary</td>
<td>Communication</td>
</tr>
<tr>
<td>Terminology</td>
<td>Analytical Thinking</td>
</tr>
<tr>
<td>Definitions</td>
<td>Critical Thinking</td>
</tr>
<tr>
<td>Factual Information</td>
<td>Research</td>
</tr>
<tr>
<td>Formula</td>
<td>Study Skills</td>
</tr>
<tr>
<td>Critical Details</td>
<td>Interpersonal Skills</td>
</tr>
<tr>
<td>Important events</td>
<td></td>
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<tr>
<td>Sequences &amp; Timeline</td>
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</tbody>
</table>
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
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
- Initiators of creative and critical thinking
- Require use of prior knowledge, new information, research, and experiences
- Encourage Analysis, Synthesis, Evaluation, and Reflection
Three Stages of Backwards Process

1. Identify desired results.
2. Determine acceptable evidence.
3. Plan learning experiences & instruction.
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?
The primary aim of assessment is to improve student performance, not merely audit it via grades on simplistic tests.

Grant Wiggins, 2004
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

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Quality</th>
<th>No/Limited Proficiency (1 point)</th>
<th>Some Proficiency (2 points)</th>
<th>Proficiency (3 points)</th>
<th>High Proficiency (4 points)</th>
<th>Rating (1,2,3,4pts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Identifies &amp; explains ISSUES</td>
<td>Fails to identify, summarize, or explain the main problem or question.</td>
<td>Identifies main issues but does not summarize or explain them clearly or sufficiently.</td>
<td>Successfully identifies and summarizes the main issues, but does not explain why/how they are problems or create questions.</td>
<td>Clearly identifies and summarizes the main issues and successfully explains why/how they are problems or questions; and identifies embedded or implicit issues, addressing their relationships to each other.</td>
<td>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.</td>
<td>(1,2,3,4pts)</td>
</tr>
<tr>
<td>2. Recognizes stakeholders and CONTEXTS (i.e., cultural/social, educational, technological, political, scientific, economic, ethical, personal experience)</td>
<td>Fails accurately to identify and explain any empirical or theoretical contexts for the issues.</td>
<td>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.</td>
<td>Correctly identifies all the empirical and most of the theoretical contexts relevant to all the main stakeholders in the situation.</td>
<td>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.</td>
<td>Not only formulates a clear and precise personal point of view, but also acknowledges objections and rival positions and provides convincing replies to these.</td>
<td>(1,2,3,4pts)</td>
</tr>
<tr>
<td>3. Frames personal responses and acknowledges other PERSPECTIVES</td>
<td>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.</td>
<td>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.</td>
<td>Formulates a clear and precise personal point of view concerning the issue, and seriously discusses its weaknesses as well as its strengths.</td>
<td>Not only formulates a clear and precise personal point of view, but also acknowledges objections and rival positions and provides convincing replies to these.</td>
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<td>(1,2,3,4pts)</td>
</tr>
<tr>
<td>4. Evaluates ASSUMPTIONS</td>
<td>Fails to identify and evaluate any of the important assumptions behind the claims and recommendations made.</td>
<td>Identifies some of the most important assumptions, but does not evaluate them for plausibility or clarity.</td>
<td>Identifies and evaluates all the important assumptions, but also some of the more hidden, more abstract ones.</td>
<td>Not only identifies and evaluates all the important assumptions, but also some of the more hidden, more abstract ones.</td>
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<td>(1,2,3,4pts)</td>
</tr>
<tr>
<td>5. Evaluates EVIDENCE</td>
<td>Fails to identify data and information that counts as evidence for claims and fails to evaluate its credibility.</td>
<td>Successfully identifies data and information that counts as evidence but fails to thoroughly evaluate its credibility.</td>
<td>Identifies all important evidence and rigorously evaluates it.</td>
<td>Not only identifies and rigorously evaluates all important evidence offered, but also provides new data or information for consideration.</td>
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<td>(1,2,3,4pts)</td>
</tr>
<tr>
<td>6. Evaluates IMPLICATIONS, conclusions, and consequences</td>
<td>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.</td>
<td>Suggests some implications, conclusions, and consequences, but without clear reference to context, assumptions, data, and evidence.</td>
<td>Identifies and briefly discusses implications, conclusions, and consequences considering most but not all the relevant assumptions, contexts, data, and evidence.</td>
<td>Identifies and thoroughly discusses implications, conclusions, and consequences, considering all relevant assumptions, contexts, data, and evidence.</td>
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<td>(1,2,3,4pts)</td>
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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**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Standards of Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Explanation</td>
<td>Accurate</td>
</tr>
<tr>
<td>Interpretation</td>
<td>Meaningful</td>
</tr>
<tr>
<td>Application</td>
<td>Effective</td>
</tr>
<tr>
<td>Perspective</td>
<td>Credible</td>
</tr>
<tr>
<td>Empathy</td>
<td>Sensitive</td>
</tr>
<tr>
<td>Self-Knowledge</td>
<td>Self-Aware</td>
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</tbody>
</table>
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
Elements of Teaching for Understanding

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

happy
Spring
References