Idea-Based Learning: A Framework for Course Design

Presentation at:
DePaul University
October 7, 2016
Dr. Edmund J. Hansen

Key Insights:
1. Courses need an internal logic, i.e. a coherent set of structural components
2. A Course Design Document (CDD) succinctly communicates a course blueprint in 1-2 pages
3. Big Ideas & Enduring Understandings are the basis for aligning courses within a curriculum
4. The CDD’s of all courses give the best overview of what students learn in a curriculum
5. Authentic Performance Tasks are the best measures for student learning in a course
6. Big Ideas and Competencies are the two “bookends” of a course.

Alignment of Outcomes and Assessment

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Assignments</th>
<th>Assessment</th>
</tr>
</thead>
</table>
1. Reasons for Idea-Based Course Design
2. Big Ideas and Enduring Understandings
3. Learning Barriers and Authentic Performance Tasks
4. Course Design Document and Alignment
5. Advantages of Idea-Based Course Design

What’s the problem with the curriculum?

• Student Perspective:
  How do courses fit together?

• Faculty Perspective:
  How does my course relate to the others?

• Everybody’s Perspective:
  Aside from content, what should students learn?

In 1982, Buckminster Fuller created the “Knowledge Doubling Curve”; he noticed that until 1900 human knowledge doubled approximately every century. By the end of World War II knowledge was doubling every 25 years. Today things are not as simple as different types of knowledge have different rates of growth. For example, nanotechnology knowledge is doubling every two years and clinical knowledge every 18 months. But on average human knowledge is doubling every 13 months. According to IBM, the “internet of things” will lead to the doubling of knowledge every 12 hours.

http://www.industrytap.com/knowledge-doubling-every-12-months-soon-to-be-every-12-hours/3950
From the website “The Countdown,” which explores the mysteries of Bible prophecies about the “last days” which presage the end of this world.

Three different but related questions:

1. How can the curriculum deal with the information explosion?
2. How to help students with interdisciplinary thinking?
3. What’s the essential structure of courses that can accomplish both?

Good course design focuses on conceptual understanding.
Characteristics of Idea-Based Course Design

1. Focuses on the big picture
2. Anticipates students' learning barriers
3. Defines criteria for quality performance upfront
4. Practices required competencies
5. Centers course around authentic performance tasks
6. Consists of 9 structural course components

Which are most important?

1. Brief course description
2. Course pre-requisites
3. List of required readings
4. Course objectives
5. Assignment due dates
6. Tests and quizzes
7. Grading policies
8. Course policies

The challenge: A conceptual course design document (Exhibit 6)

1. Big Ideas
2. Enduring Understandings
3. Learning Outcomes
4. Learning Barriers/Critical Thinking
5. Essential Questions
6. Guiding Concepts
7. Performance Tasks
8. Task Performance Criteria
9. Key Competencies

For definitions of each element, see EXHIBIT 6
Today we focus on the five boldfaced elements:

1. Big Ideas
2. Enduring Understandings
3. Learning Outcomes
4. Learning Barriers/Critical Thinking
5. Essential Questions
6. Guiding Concepts
7. Performance Tasks
8. Task Performance Criteria
9. Key Competencies

Stylized flowchart of my whole course design structure

Let's begin at the top:

Why start here?
- They position Learning Outcomes within the larger curriculum.
- Thereby facilitate interdisciplinary teaching.
- Provide more context for Learning Outcomes.
- Steer course away from mere knowledge.
- Limit the scope of the course.
What are they?

• There are different types:
  • Disciplinary Content Ideas
  • Skills Ideas
  • Attitudes and Value Ideas
  • Abstract Concept Ideas

• See examples in EXHIBIT 1

---

### Big Ideas: Some Examples

<table>
<thead>
<tr>
<th>BIOLOGY</th>
<th>PSYCHOLOGY</th>
<th>STATISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory of Evolution</td>
<td>Motivators of Behavior</td>
<td>Correlation</td>
</tr>
<tr>
<td>Cell Communication Networks</td>
<td>Individual Differences</td>
<td>Sampling</td>
</tr>
<tr>
<td>Life (vs. inanimate)</td>
<td>Psychological Theorizing</td>
<td>Prediction</td>
</tr>
<tr>
<td>Interdependent Ecosystems</td>
<td>Happiness</td>
<td>Central Tendency</td>
</tr>
</tbody>
</table>

---

Wiggins & McTighe’s definitions

What are they?

• The glue (“conceptual velcro”) that holds the field together
• Important meta-concepts and theories
• Provide “conceptual lenses” for whole knowledge domains
• May cut across several disciplines
Enduring Understandings

Why yet another step?
• Selected with your students’ experiential and intellectual horizon in mind
• Need to be uncovered
• Make transfer possible across domains (function as major themes)

Examples for three disciplines

<table>
<thead>
<tr>
<th>ECONOMICS</th>
<th>PSYCHOLOGY</th>
<th>POLITICAL SCIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialization and division of labor can increase worker productivity</td>
<td>Behavior is influenced by external incentives and internal needs</td>
<td>Different political systems vary in their tolerance and encouragement of innovation</td>
</tr>
<tr>
<td>Relative scarcity may lead to trade &amp; economic inter-dependence or to conflict</td>
<td>Motivation involves the interaction of emotion and cognition</td>
<td>Democratic governments must balance the rights of individuals with the common good</td>
</tr>
</tbody>
</table>

More definitions for Enduring Understandings

What are they?
• See examples in EXHIBIT 2
• Derivations from Big Ideas
• Key elements of Big Ideas’ definitions, applications, or implications
• Generalizations central to the discipline
• What students should understand past the end of the course
How these three elements fit together

From Big Ideas to Learning Outcomes

Big Ideas

Enduring Understandings

Learning Outcomes

A.1  A.1.1  A.1.2

A.2  A.2.1

B.1  B.1.1

B.2  B.2.1  B.2.2

C.1  C.1.1

C.2  C.2.1

Item skipped (for lack of time)

LEARNING OUTCOMES

Skipped!

YOUR TURN!

Use Exhibits 1 & 2

1. In your table groups, select an intro course for your discipline
2. Identify 3-5 Big Ideas relevant for this course
3. Then find 1-2 Enduring Understandings for each Big Idea
4. Be ready to describe your results... and what you thought about the process

[10-min. Audience Activity]
Barriers to Critical Thinking

What gets in the way of Critical Thinking?

Four dimensions (see EXHIBIT 3):

1. Intellectual Immaturity
2. Bad Attitudes
3. Faulty Logic
4. Simplistic Explanations

Four Dimensions of Critical Thinking

- Intellectual Development
- Complex Reasoning
- Habits of Mind
- Learned Misconceptions

William Perry: Intellectual and Ethical Development in the College Years
Belenky a.o.: Women’s Ways of Knowing
Critical thinkers are **fair-minded**, which includes intellectual:

- Humility (awareness of own biases)
- Courage (facing ideas one dislikes)
- Empathy (putting oneself in other’s shoes)
- Integrity (admitting problems in own thoughts)
- Perseverance (working through frustrations)
- Autonomy (thinking for oneself)
- Confidence in Reason (encouraging people to come to their own rational conclusions)

---

Barriers to Critical Thinking:

2. Habits of Mind

---

Barriers to Critical Thinking:

3. Complex Reasoning

---

Barriers to Critical Thinking:

4. Learned Misconceptions

1. Inappropriate analogies
2. Simplistic explanations (“either/or”)
3. Naïve folk theories
4. Assumption of teleological tendencies
5. Overall “halo effect”
6. Coherence bias

---

Richard Paul & Linda Elder: *Critical Thinking*

Stephen Brookfield: *Teaching for Critical Thinking*

The examples on this slide come from Howard Gardner’s 1991 book “The Unschooled Mind: How Children Think & How Schools Should Teach,”
YOUR TURN!
Use Exhibit 3

1. In your table groups, build on the previously chosen Big Ideas & Enduring Understandings:
2. Imagine a couple of Learning Barriers to Critical Thinking that might get in the way of students doing well in your course.
3. Be ready to describe your results... and what you thought about the process.

ESSENTIAL QUESTIONS & GUIDING CONCEPTS
Skipped!

Authentic Performance Tasks

Consider the strategic place that Authentic Performance Tasks occupy in course design.

[10-min. Audience Activity]

Items skipped (for lack of time)

Course Design Element #7
Performance Tasks: the place where the top levels meet the bottom levels

The "Oreo Model of Course Design"
You might think this (the “Oreo Model”) is a little hoky… but I’m quite serious. Authentic Performance Tasks are what bind your good intentions (BI’s, EU’s, LO’s) together with what you actually teach. How so…? <read slide>

Conceptual definition of Performance Tasks

What are they?
• Contextualized in a realistic scenario
• Ask students to “do” the subject
• Replicate challenging (work) situations
• Assess ability to use a repertoire of knowl.
• Create opportunities to practice & get feedback
• May provide an audience for the task result

Examples in EXHIBIT 4

Item skipped (for lack of time)
Deriving Competencies

Performance Task

Performance Criteria

Needed Competencies

The last three elements

Needed Competencies

What are they?

- See examples in Exhibit 5. (They need to be made course or discipline-specific)
- Competencies translate a perf. criterion into hands-on action
- Faculty need to explore what their students’ barriers are for performing a task
- Then break those barriers down into specific steps (at which student learn the competencies)

Schema of Course Design Document
YOUR TURN! Use Exhibits 4 & 5

1. In your table groups, build on the previously chosen Big Ideas & Enduring Understandings:

2. Consider one major Authentic Performance Task that would address these.

3. Think of a few Competencies students would need to overcome these barriers.

4. Be ready to describe your results… and what you thought about the process.

[10-min. Audience Activity]

Remember the course alignment graphic from slide 3!
Some Conclusions

About:
1. Content vs. Idea-Based Course Design
2. General Advantages of IB-Course Design

Comparison of Content vs. Idea-Based Course Design

Characteristics | Content-based | Idea-based
--- | --- | ---
Organized around: | Topics & facts | Big ideas, End. Understandings, Ess. Quest’s
Evidence of learning: | Tests & decontextualized assignments | (Authentic) performance tasks
Purpose of assessment: | Assigning grades | Providing practice & feedback
Assessment criteria: | Instructor-owned, not shared | Rubrics as shared teaching tools
Curricular alignment: | Hard to demonstrate | Elements are derived from each other
Critical thinking: | Hoped-for | Directly addresses misconceptions
Faculty role: | Imparting knowledge | Coaching for learning
Student role: | Passively receiving knowledge | Actively making sense & conceptual underst.

Advantages of Idea-Based Course Design

1. Provides **focus** for what to teach & what to leave out
2. Emphasizes **C.T.** by anticipating expected barriers
3. Thereby considers **unlearning** misconceptions as part of learning new ideas
4. Includes 9 key **course components** required for comprehensive course planning
5. Thereby creates a course document that allows systematic **curriculum development**
6. Centers the course around relevant performance tasks to increase **student understanding & motivation**
7. Identifies key **competencies** that need to be taught if students are to succeed in the course
8. See **EXHIBIT 6**

Other advantages for IB-Course Design

My conclusions on…
Final Debriefing:
1. What questions do you have?
2. Agreements or disagreements regarding Idea-Based Course Design?

REFERENCES:
• Erickson, H.L. (2007). Concept-Based Curriculum and Instruction for the Thinking Classroom.
• Stiehl, R. & Lewchuk, L. (2002). The Outcomes Primer

For further questions or comments, please contact me at: hansen.edmund@yahoo.com