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Idea-Based Learning: A Framework for Course Design

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

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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.

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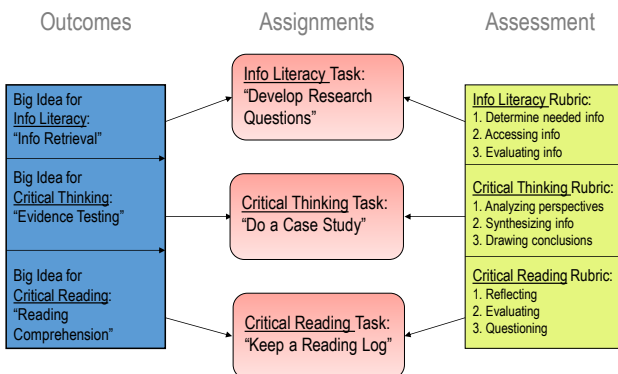
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Take-aways from this presentation

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Alignment of Outcomes and Assessment



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Illustration of course alignment

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Outline

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

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Presentation overview

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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?

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Three Perspectives

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Information Explosion

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](http://www.industrytap.com/knowledge-doubling-every-12-months-soon-to-be-every-12-hours/3950), the "internet of things" will lead to the doubling of knowledge every 12 hours.

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Too much information

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Information Explosion

- Printed knowledge doubles every 8 years
- Medical knowledge doubles every 7 years
- Scientific information doubles every 5 years
- Technical knowledge doubles every 3 years
- The sum total of human knowledge doubles every 2–3 years (and is soon expected to double every year)
- Useful genetic information doubles every 18–24 months
- Online information doubles every 6 months

<http://www.countdown.org/en/signs/increased-knowledge/>

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From the website “The Countdown,” which explores the mysteries of Bible prophecies about the “last days” which presage the end of this world

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Scientific Progress

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?

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Three different but related questions

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Content Layers in Courses

Worth being familiar with

Important to know and do

Crucial for conceptual understanding

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Good course design focuses on conceptual understanding

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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

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How Idea-Based Course Design meets the challenge

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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

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Question for the audience

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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

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For definitions of each element, see **EXHIBIT 6**

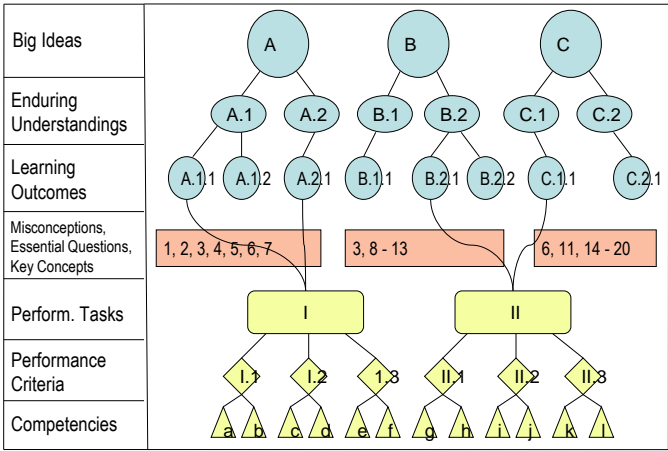
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A conceptual course design document: Limited selection

- 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**

Today we focus on the five boldfaced elements

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Stylized flowchart of my whole course design structure

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Big Ideas

Why start here?

- They position Learning Outcomes w/in larger curriculum
- Thereby facilitate interdisciplinary teaching
- Provide more context for Learning Outcomes
- Steer course away from mere knowledge
- Limit the scope of the course

Let's begin at the top

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Big Ideas

What are they?

- There are different types:
 - Disciplinary Content Ideas
 - Skills Ideas
 - Attitudes and Value Ideas
 - Abstract Concept Ideas
- See examples in **EXHIBIT 1**

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Types of Big Ideas

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Big Ideas: Some Examples

BIOLOGY	PSYCHOLOGY	STATISTICS
Theory of Evolution	Motivators of Behavior	Correlation
Cell Communication Networks	Individual Differences	Sampling
Life (vs. inanimate)	Psychological Theorizing	Prediction
Interdependent Ecosystems	Happiness	Central Tendency

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Examples for three disciplines

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Big Ideas

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

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Wiggins & McTighe’s definitions

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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)

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Enduring Understandings

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Enduring Underst.: Examples

ECONOMICS	PSYCHOLOGY	POLITICAL SCIENCE
Specialization and division of labor can increase worker productivity	Behavior is influenced by external incentives and internal needs	Different political systems vary in their tolerance and encouragement of innovation
Relative scarcity may lead to trade & economic interdependence or to conflict	Motivation involves the interaction of emotion and cognition	Democratic governments must balance the rights of individuals with the common good

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Examples for three disciplines

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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

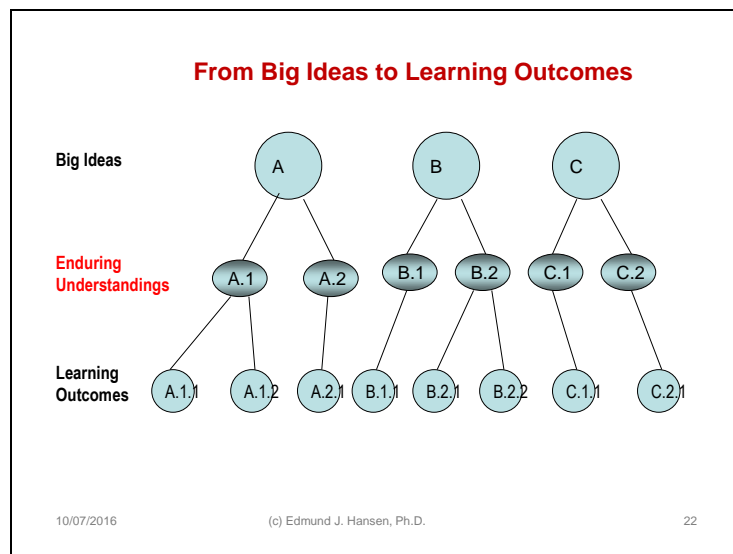
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More definitions for Enduring Understandings

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How these three elements fit together

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**LEARNING OUTCOMES
Skipped!**

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Item skipped (for lack of time)

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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

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[10-min. Audience Activity]

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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

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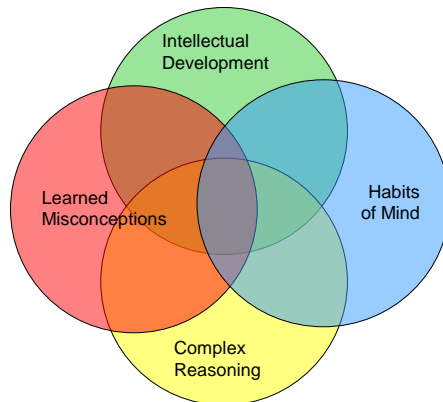
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Four types of barriers to Critical Thinking

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Four Dimensions of Critical Thinking



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Four domains of Critical Thinking

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Barriers to Critical Thinking: 1. Intellectual Development

- Dualism (received knowledge)
 - Knowledge is objective (facts)
- Multiplicity (subjective knowledge)
 - Knowledge is a matter of opinion
- Contextual Relativism (procedural know.)
 - Good opinions are supported w/ reasons
- Commitment in Relativism (constructed)
 - Knowledge is integrated w/ experience

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William Perry: *Intellectual and Ethical Development in the College Years*
Belenky a.o.: *Women's Ways of Knowing*

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Barriers to Critical Thinking: 2. Habits of Mind

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)

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Richard Paul & Linda Elder:
Critical Thinking

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Barriers to Critical Thinking: 3. Complex Reasoning

The ability to:

- Identify pertinent issues
- Recognize stakeholders & contexts
- Acknowledge different perspectives
- Evaluate assumptions
- Evaluate evidence
- Evaluate implications

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Stephen Brookfield:
Teaching for Critical Thinking

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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

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The examples on this slide come from **Howard Gardner's** 1991 book "The Unschooled Mind: How Children Think & How Schools Should Teach,"

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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.

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[10-min. Audience Activity]

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**ESSENTIAL QUESTIONS
&
GUIDING CONCEPTS
Skipped!**

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Items skipped (for lack of time)

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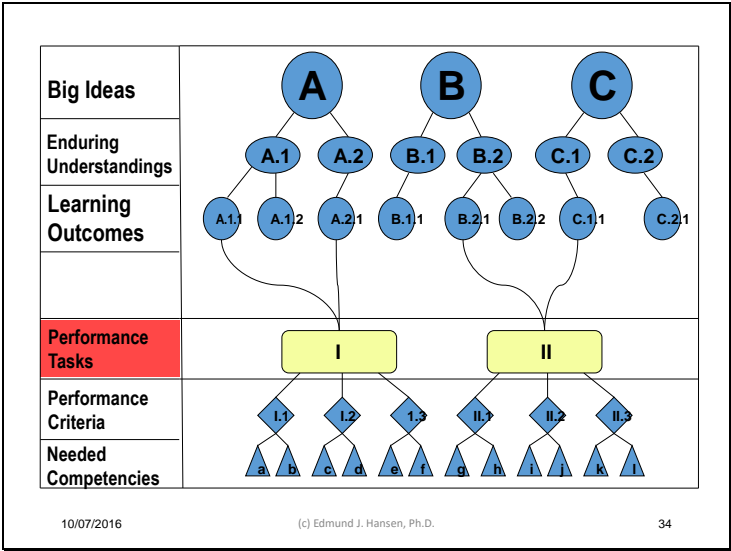
**Authentic Performance
Tasks**

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

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Course Design Element #7

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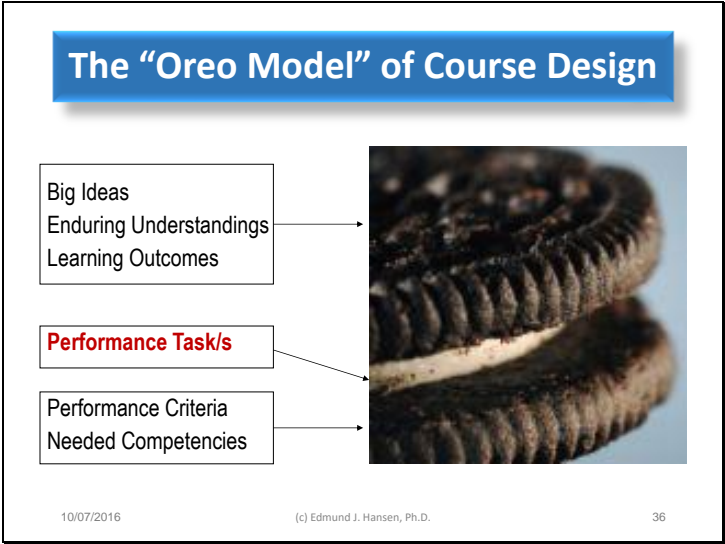


Performance Tasks: the place where the top levels meet the bottom levels

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The “Oreo Model of Course Design”

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Authentic Performance Tasks

Why “authentic performance tasks”?

- Shift focus to hands-on learning: generate student motivation
- Provide evidence whether students truly “understand” (achieve the L.O’s)
- Help instructor to build course around practice & feedback opportunities (“assignment-based teaching”)

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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>

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Authentic 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**

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Conceptual definition of Performance Tasks

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TASK PERFORMANCE CRITERIA Skipped!

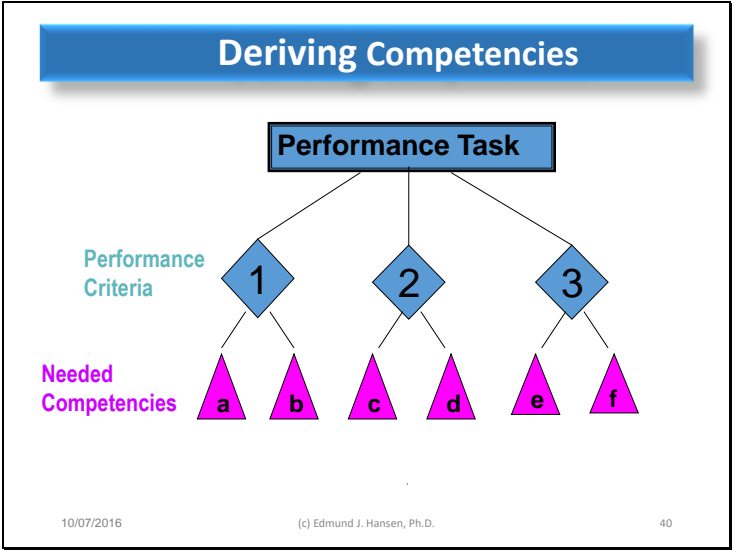
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The last three elements

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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 studentd learn the competencies)

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Competencies

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Course Design Doc								
Big Ideas	Enduring Understandings	Learning Outcomes	Common Misconceptions & Barriers	Essential Questions	Guiding Concepts	Authentic Performance Task	Performance Criteria	Needed Competencies
A.	A.1.	A.1.a.						
	A.2.	A.2.a.						
B.	B.1.	B.1.a.						
	B.2.	B.2.a.						
C.	C.1.	C.1.a.						
	C.2.	C.2.a.						
		C.2.b.						

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Schema of Course Design Document

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EXHIBIT 7: Design Document for Psychology 109, The Pursuit of Happiness									
Big Ideas	Enduring Understandings	Learning Outcomes	Learning Barriers & Misconceptions	Essential Questions	Guiding Concepts	Authentic Performance Task	Performance Criteria	Required Competencies	
Learning Skills	Effective learning requires cognitive, attitudinal, & organizational skills	Assess own strengths & weaknesses in those skills	-Unrealistic self-concept -Instructor should tell me what to do	-How can you improve on the skills at which you are weak? -What are the responsibilities of student v. instructor?	-Multiple intelligences -Active learning -Learning styles -Metacognition -Self-esteem -Habits of mind	Reflective journaling about their own learning skills and behaviors	-Describes own current practices in target skill -Describes insights gained about new strategies -Explains what may not work for self	-Close reading that extracts main ideas from text -Visualize how learn. strategies will work -Willingness to question own strategies -Ability to set realistic targets for change	
	Learning skills are acquired through a cycle of practice, feedback, & reflection	Develop routines for acad. reading, note-taking, test preparation, etc.	-Lack of time management -Doing homework is optional -Reflection seen as mere opinion	-How to increase time-on-task? -What's the purpose of reflection?	-Time management -Learning strategies -Commitment to change -Reflection -Learned Helplessness				
Teamwork	We need to learn to collaborate if we want to solve our problems	Recognize benefits and pitfalls of group decision making Acquire basic skills for effective communication in teams	-One learns nothing in groups bc students lack expertise -Critiquing others is rude	-When do groups perform better than individuals? -How to give and receive constructive feedback?	-Intrinsic v. extrinsic motivation -Social loafing -Assertiveness -Conflict resolution -Cultural difference	Experience the effectiveness of collaborative test-taking, & give performance feedback to group members	-Distinguishes dimensions of attitude, listening skills, cooperativeness, and preparedness	-Active listening -Aware of non-verbal behavior -Courage to critique others	
	Greater creativity breeds greater happiness	Cultivate a curiosity for new experiences and skills	-People are born creative or not -If it requires hard work, it can't be creative	-Does happiness exist without creativity? -Can you learn to be (more) creative?	-"Flow" -Intrinsic reward -Optimal challenge -Energy -Curiosity -Openness to experience -Maslow's hierarchy of needs	Doing a creative audio-visual presentation on their personal "happy place" in Chicago	-Detects concepts in real situation -Looks at things with new eyes -Understands connected concepts -Seeks out new experiences		
Happiness	Happiness is a journey, not a destination	Recognize the joy of the process of their personal development, not just the end results Become aware of the importance of place as it relates to being happy	-Society rewards results, not process -Happiness is sth. that happens to you	-What's the purpose of psychology? -Are human characteristics ever permanent?	-Positive psychol. -Attachment -Personality traits -Happiness archetypes	Planning what lifestyle choices they might make to lead a happy life in the future	-Assesses own strengths, skills, interests, needs, desires -Summarizes previous course reflections -Integrates these to design plan for own future	-Make sense of psych. inventories -Accept (for now) personal limitations -Synthesize info from diff. sources -Translate conclusions into a view of own future	
			Happiness is a state of mind unrelated to physical environments	-What are the preconditions for people to be happy? -Contributors of other disciplines?	-Sense of purpose -Intrinsic meaning -Pleasure -Peak performance -Social relationships				
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Course Design Document for my FYE course on positive psychology (see Exhibit 7)

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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.

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[10-min. Audience Activity]

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Alignment of Outcomes and Assessment

Outcomes

Assignments

Assessment

Big Idea for Info Literacy: "Info Retrieval"

Big Idea for Critical Thinking: "Evidence Testing"

Big Idea for Critical Reading: "Reading Comprehension"

Info Literacy Task: "Develop Research Questions"

Critical Thinking Task: "Do a Case Study"

Critical Reading Task: "Keep a Reading Log"

Info Literacy Rubric: 1. Determine needed info 2. Accessing info 3. Evaluating info

Critical Thinking Rubric: 1. Analyzing perspectives 2. Synthesizing info 3. Drawing conclusions

Critical Reading Rubric: 1. Reflecting 2. Evaluating 3. Questioning

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Remember the course alignment graphic from slide 3!

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Some Conclusions

About:

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

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My conclusions on...

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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 assessmt:	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.

Comparison of Content vs. Idea-Based Course Design

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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**

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Other advantages for IB-Course Design

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YOUR TURN!

Final Debriefing:

1. What questions do you have?
2. Agreements or disagreements regarding Idea-Based Course Design?

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[10-min. Audience Q&A]

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