Designing a Course and Constructing a Syllabus

Best Practices for Teaching and Learning

Massachusetts Institute of Technology · OEIT · TLL Teaching & Learning Laboratory

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Traditional Courses and Course Design

Traditional courses

- List of topics rather than concepts

- Lack a framework

- Encourage rote memorization

Traditional Courses and Course Design

The result is that:

- Knowledge is acquired without a connecting framework and does not lead to understanding

- Learning has little reward

- No transfer of knowledge

Knowledge ≠ Understanding

"What differentiates revolutionary thinkers from non-revolutionary ones is almost never a greater knowledge of the facts, Darwin knew far less about the various species he collected on the Beagle voyage than did experts back in England who classified these organisms for him. Yet expert after expert missed the revolutionary significance of what **Darwin** collected, who **knew less, somehow understood more**."

Sulloway, F.J., *Born to Rebel*, p.20

Goal

To illustrate how **backward course design** can lead to a more effective course.

Learning Objectives

By the end of this session, you will have considered ways to:

1. **State** the components of a syllabus

2. **Identify** the components of Backward Course Design:

3. **Evaluate** content for a course you would like to teach based on content priorities

4. **Define** and develop learning objectives for a course you would like to teach

What exactly is a syllabus?

A "roadmap" for the course

- **Where** you are going during the semester
- **Why** you are going there
- **How** you are getting there

A contract between the instructors and the students

- Explicit
- Implicit

What exactly is a syllabus?

"A good syllabus is … evidence that you have devoted the essential effort needed to create a good course; a bad syllabus is students' first warning that you haven't and that your course is likely to disappoint."

"What's in a syllabus?" by Prof. Michael Shafer, Political Science, Rutgers University

What's in a syllabus?

The core of the explicit contract:

- Basic course information
- Description
- Goals and learning objectives
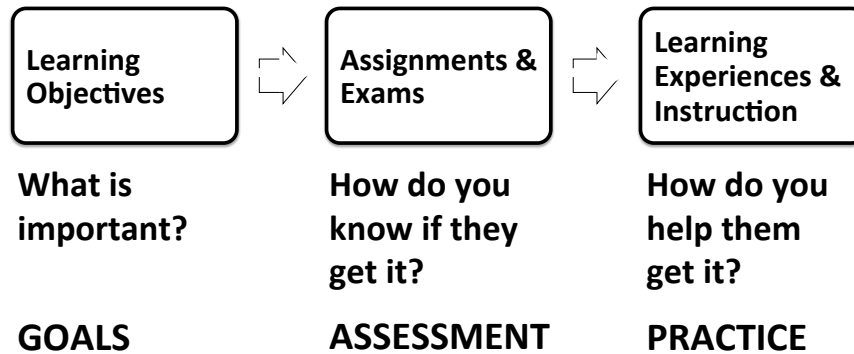- Assessments
- Schedule
- Policies

What's in a syllabus?

The core of the implicit contract:

Norms may evolve during the first few weeks of the semester.

- Who talks in the classroom, when, and for how long?
- How are strict are the assignment deadlines?
- What is the nature of the relationship between the students and instructor? Between students?

The Backward Design Process

Learning Objectives	⇒	Assignments & Exams	⇒	Learning Experiences & Instruction
What is important?		**How do you know if they get it?**		**How do you help them get it?**
GOALS		**ASSESSMENT**		**PRACTICE**

Modified from Wiggins & McTighe, Understanding by Design, p. 18

The Elements of Backward Design

GOALS:

– Consider students' skills, knowledge, & attitudes to develop learning objectives.

ASSESSMENT:

– Assess students' abilities to meet the learning objectives, both at the beginning and throughout the course.

PRACTICE:

– Design in-class activities and instructional methods to help students meet the learning objectives.

Wiggins & McTighe, Understanding by Design, p. 18

Content Priorities

Worth Being Familiar With

Important to Know & Do

Big Ideas & Core Tasks
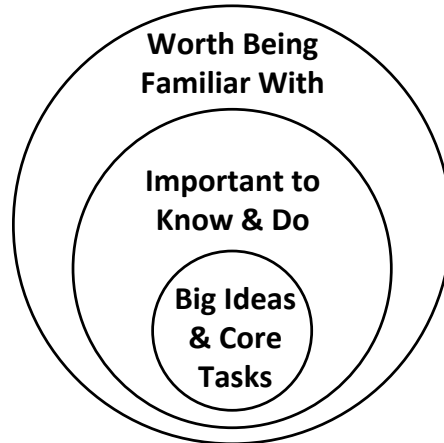
Wiggins & McTighe, Understanding by Design, p. 71

Pair-Share Activity

What are the **big ideas** within your discipline?

Big Ideas

Physics: Energy conservation

Biology: Evolutionary mechanisms

Chemistry: Structure and function

Mathematics: Divide and conquer

Signals & Systems: Feedback loops

Think-Pair-Share Activity

- **Identify** the underlying concepts of the topics

- **Prioritize** the content into the 3 categories of content prioritization:
    1. Big Ideas & Core Tasks
    2. Important to Know and Do
    3. Worth Being Familiar With

Discussion

- What were your reactions to the readings?

- Do you have any questions about the readings?

Learning Objectives: S-K-A

By the end of the course,

Skills

   – What should students be able to do?

Knowledge

   – What should students know and understand?

Attitudes/Attributes

   – What attitudes or attributes should students have?
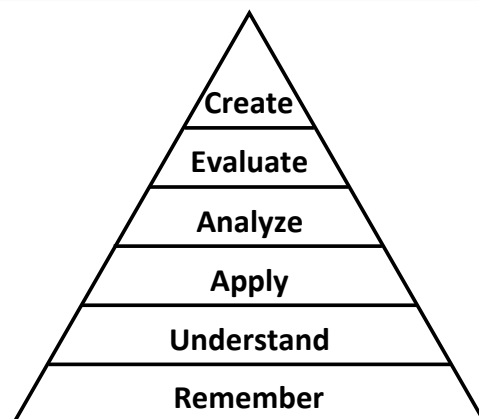
Learning Objectives: S-K-A

Learning objectives are:

- Statements describing a **specific**, **observable**, and **measurable** student behavior.

Learning objectives are NOT:

- A list of topics to be covered,
- Actions to be performed by the instructor, or
- What you hope students get from the course.

Bloom's Taxonomy

Create
Evaluate
Analyze
Apply
Understand
Remember

Bloom (1956), Anderson et al (2001)

Think-Pair-Share Activity

Based on the topics you identified in your pre-session assignment,

- **identify** the underlying concepts and skills, and

- **write** intended learning objectives

for the course that you teach or would like to teach.

Summary

- Components of a syllabus
- Course Design
  - Backward Design
  - Content Prioritization
  - Learning Objectives