

How do we go forward if we are designing backwards??

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Backwards Course Design

The Key Components Of INTEGRATED COURSE DESIGN

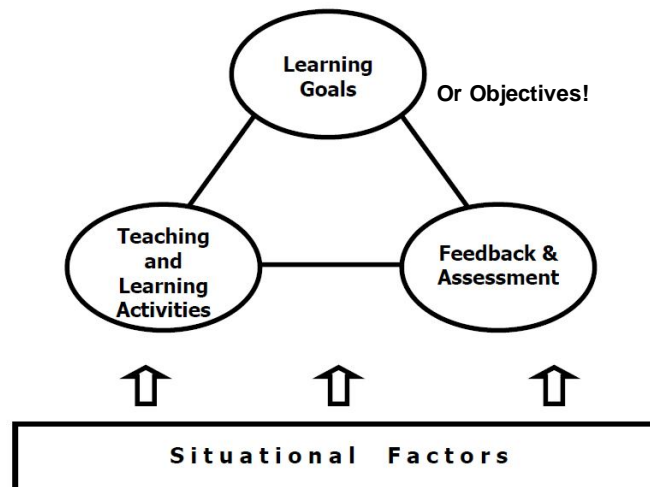


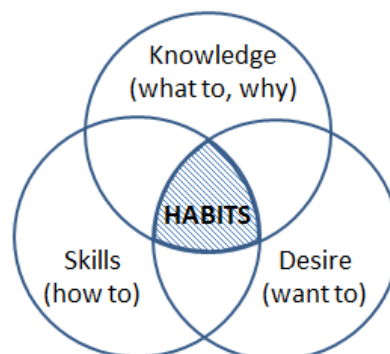
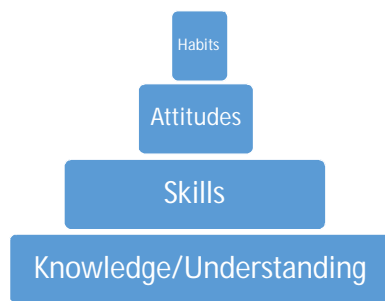
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Learning is...

- ◆ ...a relatively durable change in behavior caused by experience.
- ◆ ...a change in the neuron patterns in the brain. (Goldberg, 2009)

Learning is Forming New Habits

- ◆ Fueled by attitudes and desires (emotion)
- ◆ Supported by skills and understanding



Stephen R. Covey, *The 7 Habits of Highly Effective People*

Learning Objectives = Durable Learning

- ◆ **What do you want students to be able to do at the end of your course/curriculum?**
- ◆ **What do you still want them to be able to do 50 years later?**
- ◆ **For learning to last that long, it has to be integrated into our students' lives: it has to become a habit.**

Organizing Objectives

- ◆ **Sources of Learning Objectives**
 - **Accrediting agencies (via college)**
 - **The Core**
 - **Your department**
 - **Your colleagues/other courses**
 - **Your own sense of the class**
- ◆ **How do we deal with all those objectives?**

Prioritizing Objectives

◆ How to organize and prioritize them:

1. **Let the students do it.**
 - Gives them a sense of control, which increases motivation and engagement
 - Ensures that the class will focus on things that are important to students
2. **Rank them according to your 50-year plan. What needs to become habit?**

Prioritizing Objectives

◆ Prioritizing Objectives for Durability

- **Habits (no more than 4)—you won't have time to reinforce more than that**
- **Attitudes (no more than 4)**
- **Skills (what do students need to be able to do to build attitudes and habits?)**
- **Knowledge (what do students need to know to build skills, attitudes and habits?)**

Course Level Objectives - Tonya

1. **Develop** a problem-solving approach to solve mechanics problems using basic principals of statics and mechanics of materials. (Habit)
2. **Explain** the concepts of normal stress & strain and shear stress & strain. (Skill)
3. **Determine** internal stresses (shear or normal) at any location on a member and deformations due to these stresses. (Skill)
4. **Solve** statically indeterminate members using statics and kinematics. (Skill)
5. **Transform** stresses to an arbitrary reference axis in two dimensions, and **Calculate** the principle stresses and maximum shear stress along with indicating their orientation. (Skill)
6. **Design** prismatic beams and shafts that meet a minimum level of safety. (Skill)
7. **Solve** the critical buckling load for a column. (Skill)
8. **Justify** the use of different geometric shapes for resisting applied loads. (Skill)
9. **Embrace the need for** and **present** analysis and results in a clear, logical manner with drawings and assumptions. (Attitude & Habit)

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Course-Level Objectives - Engl

- 1) **Think** rhetorically about *any and all types of business communications* and **develop** appropriate communications strategies based on your analyses [Habit];
- 2) **Communicate** effectively with *all relevant business audiences* in a variety of contexts, deliberately varying style, tone, arguments and means of communication as appropriate [Attitude];
- 3) **Write** logically structured, comprehensible documents [Skill];
- 4) **Write** clear, concise prose
 - a) using appropriate formats [Knowledge/Skill], and
 - b) following contemporary, context-appropriate rules of grammar and usage [Knowledge];
- 5) **Speak** appropriately and effectively to *individuals and small groups* in a variety of contexts with differing degrees of formality [Skill];
- 6) **Collaborate** effectively in *group problem-solving and document production* (even when not able to meet face-to-face) [Attitude];
- 7) **Exhibit** good judgment by making well-considered and helpful decisions even when guidance and available resources are inadequate or unhelpful [Habit];
- 8) **Control** *all facets of your ethos* strategically and effectively in all public and business interactions [Attitude].

Course-Level Objectives - Engl

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Setting Priorities

- ◆ **Prioritize your Learning Objectives**
 - **Habits (no more than 4)—you won't have time to reinforce more than that**
 - **Attitudes (no more than 4)**
 - **Skills (what do students need to be able to do to build attitudes and habits?)**
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Then What?

- ◆ **Pick, create or modify learning activities to support your learning objectives.**
- ◆ **Don't include anything that doesn't support one or more learning objectives.**
- ◆ **Consider how you will assess the learning.**

Backwards Course Design

The Key Components Of INTEGRATED COURSE DESIGN

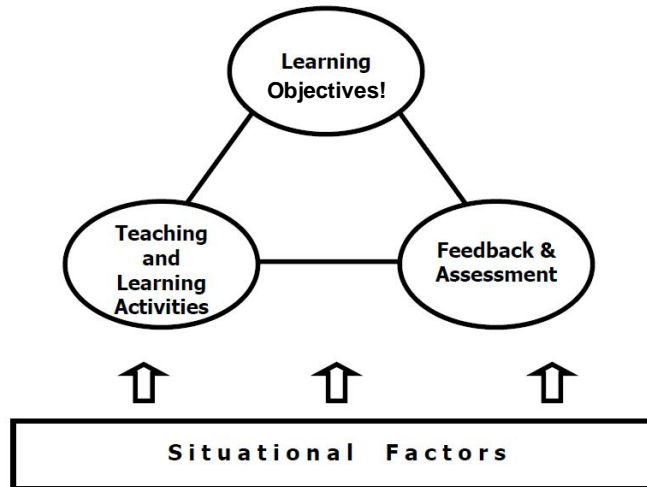


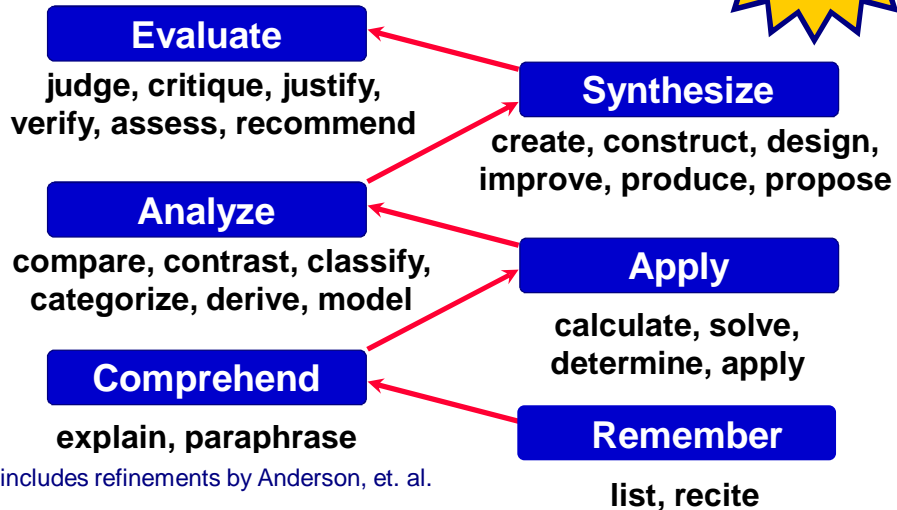
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**A Technique That Helps Us
Go Beyond
Knowing About What We Teach
To
Knowing What Our Students Learn**

**Backwards Design with
Learning Objectives**

Bloom's Taxonomy of Educational Objectives*

For the Cognitive Domain



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So What?

At what level do we want our students to be working at?

What level of thinking are the first years of higher education typically focused on?

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So What?

- ◆ Undergraduate education tends to focus on the lower level thinking skills. (*remembering, comprehension, application*)
- ◆ Ideally, **all** levels should be addressed in **every** course
- ◆ Ideally, **all** levels should be assessed in **every** course

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So What?

Students will operate at the level we expect them to, if:

- **Communicate these expectations**
- **Use activities & teaching strategies that support expectations**
- **Assess and evaluate performance**

Learning Objectives

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When to Use?

- **Learning objectives provide clear direction to students on what they are expected to be able to do.**
- **Use for overall course objectives.**
- **Great for each lesson. Typically 2-4 per lesson. Lesson objectives:**
 - **Help you identify what are the key skills and help organize your lesson.**
 - **Help students know what to study.**
 - **Make exam writing easy! Just use the objectives!**

Example for a Daily Lesson:

LESSON 13

SUBJECT: Shear Stress in Beams due to transverse loading.

ASSIGNMENT:

Read 7.4 & 7.5 for Lesson 14

Homework 6 – See HW 6 Handout. – Due Wednesday, 10/14

COMMENTS:

Remember, no class on Monday – October 19th **BUT YOU HAVE SOME READING YOU ARE RESPONSIBLE FOR!**

OBJECTIVES:

1. Describe how horizontal shear develops in a beam in bending.
2. Determine the shear stress at any point along the length of a beam and at any depth in the cross-section.
3. Evaluate the best place to drill a hole in a beam's cross-section whose design is controlled by shear stress, τ_{xy} .
4. Identify the limitations of the shear stress formula.

Lesson Objectives - Engl

Modules: Résumé 1—Foundation Level, Style 3

Materials:

Handouts: Traits All Hiring Managers Look For, Sample résumés from Angel (MS Word templates), Style 3 handouts, Copyright Release

To collect:

Comparison of résumé advice—on Angel
Style 3.2, 3.3 (samples in class)

Next: Read:

- Review “On the Job: Résumés” on ANGEL (20).
- *Writing that Works*, Chapter 8: Designing Effective Documents and Visuals (53).

Style: Read *Style*, Lesson Three: Actions, pp. 41-52 (10) and do Exercise 3.5 (1-5), 3.6 (odd numbers) and 3.7 (all).

Writing: Bring in your job ad, your analysis of the audience for your résumé (based on that ad), and a draft of a résumé that you would use to apply for that job. We will peer edit these in class.

1/26 **Writing:** Turn in a polished résumé incorporating the feedback you have received and the strategic thinking you have done. (Don't forget your ad, ad analysis and audience analysis.)

Objectives: Evaluate basic résumés—foundation level (1, 2, 3, 4, 6, 7)

Make sentences more dynamic and precise (1, 2, 3, 4b, 6, 7)

Analyze and strengthen executive summaries (1, 2, 3, 4, 7)

Learning Objectives Summary

Learning objectives shift us away from what we as teachers are covering towards what our students are learning.

Use learning objectives to set up a class where higher levels of thinking are taught, learned, practiced, evaluated, and assessed.

Well-written learning objectives are measurable and can easily be aligned with department Student Outcomes.

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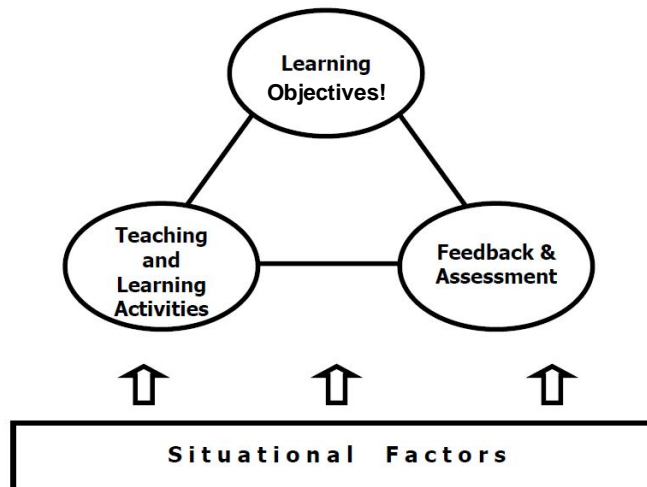


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