

COURSE DESIGN WORKSHOP
 EARTH EDUCATORS RENDEZVOUS - 2020
 JULY 16-17, 2020

NC STATE UNIVERSITY

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Learning Objectives

1. Describe strategies to promote an inclusive college-level classroom
2. Explain the principal components of the backward design process
3. Analyze sample learning objectives and assessments.
4. Write learning objectives and design assessments for new lessons

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Schedule

8:00-8:15 Introductions – Reginald & Jason
 8:15-8:30 Icebreaker
 You will be randomly assigned to a breakout room.
 Get to know your “room mates” and find at least two things **all five of you** have in common!

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Schedule

8:30-8:35 Icebreaker report out!

8:30-9:30 Strategies for promoting classroom inclusivity

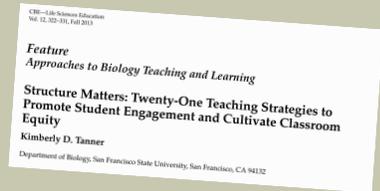


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CLASSROOM INCLUSIVITY

Arguably one of the most important features of an effective course is students' ability to feel welcome and valued in the environment

The question is...**how can we as instructors create an inclusive environment?**



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Inclusivity Strategies Jigsaw

Split into breakout rooms, read (one strategy per person) and discuss each strategy as a small group

- | | |
|--|---|
| Group 1: Strategies 1-5 | Group 5: Strategies 1-5 |
| • Kotokowski, Garnier, Whittington, Goldsmith, Farrell | • Abolins, Peebles, Blome, Fung, Philips |
| Group 2: Strategies 6-10 | Group 6: Strategies 6-10 |
| • Horsman, Bigio, Klosko, Haile, Marton | • Wysesion, Abshire, Snyder, Pricope, Wang |
| Group 3: Strategies 11-15 | Group 7: Strategies 11-15 |
| • Low, Goldhagen, Benner, Knox, Cantner | • Cohen, Davies, Yun, Sheffield, Mostarshed |
| Group 4: Strategies 16-21 | Group 8: Strategies 16-21 |
| • Ross, Fredrick, Courtland, Falkena, Gonzalez | • Watson, Traub-Metlay, Lepore, Isava, Sun |



Back here to report out at 9:00!



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Inclusivity Strategies Discussion

What did you learn?!

Category 1: Giving students opportunities to think and talk about the topic

- Strategies 1 - 4

Category 2: Encouraging ... and actively managing the participation of all students

- Strategies 5 - 10

Category 3: Building an inclusive and fair classroom community for all students

- Strategies 11 - 15

Category 4: Monitoring behavior to cultivate divergent thinking

- Strategies 16 - 19

Category 5: Teaching all of the students in your biology classroom

- Strategies 20 - 21

9:15-9:30 Reginald discusses his experiences

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Schedule

9:30- 9:45 BREAK

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WHAT DBER TELLS US ABOUT TEACHING FOR LEARNING

1. Students learn key concepts better when they actively monitor their understanding in a variety of activities inside and outside of class (designed, structured activities).
2. Students become better learners when we challenge them to answer questions that require the use of higher order thinking skills.
3. Knowledge is socially constructed and people learn best in supportive social settings (e.g., in small collaborative groups).

Classes with these practices may be described as **reformed or student-centered or active learning environments or using research-based instruction**

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IDENTIFYING LEARNING OUTCOMES

Recognizing that we haven't formally discussed it yet, try writing five learning outcomes for your target course

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9:45 - 9:55
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IDENTIFYING LEARNING OUTCOMES

Learning Goals vs. Learning Objectives

"What's the difference?"

Learning goals (4-8 per semester) **broad**, larger goals that include several concepts. Designed to guide **course** development
 (e.g., Students will be able to use data to guide scientific argument)

Learning objectives (~100 per semester) for **activities/lessons** in your courses that would support the learning of a **single important concept** in your target course
 (e.g., I can explain how clastic sedimentary rocks are formed.)

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IDENTIFYING LEARNING OUTCOMES

From your practice list, can you identify one **learning goal** for your target course?

...did you write any **learning objectives**?

Which did you write more of?

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IDENTIFYING LEARNING OUTCOMES

If you didn't in your first trial, write one **learning goal** for your target course

Additionally, write one or two potential **learning objectives** for activities in your courses that would support the learning of an important concept in your target course

We will break out to our groups to discuss your objectives

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EFFECTIVE LEARNING OBJECTIVES

- Objectives should focus on the students, not the instructor.**
 - Teacher-focused goal: List of topics to be discussed in class
 - Student-focused goal: List of learning objectives
- What students will be able to do? (SWBAT)**
 - What will students have learned or be able to do by the end of the lesson that they don't know/can't do now?

- Students will be able to **list** names and proportions (%) of primary gases in the atmosphere
- Students will be able to **differentiate between** weather and climate information
- Students will be able to **plot and interpret** data in Matlab using the plot, max, and min functions

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- What students will be able to do? (SWBAT)**
 - What will students have learned or be able to do by the end of the lesson that they don't know/can't do now?
- Objectives should clearly demonstrate student learning.**
 - Learning should be visible, measurable. Include an action term (e.g., *Identify, explain, analyze, sketch, summarize*) that requires students do something.
 - Lesson learning objectives should be limited and specific.

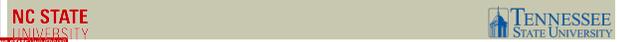
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EFFECTIVE LEARNING OBJECTIVES

4. Match each learning objective with separate defined assessment task

We will do this tomorrow!!!



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Schedule

10:15 - 10:30 What is measurable?



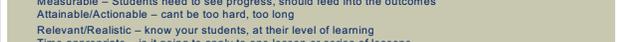
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SMART OBJECTIVE/GOAL SETTING CREATES A VERIFIABLE TRAJECTORY TO ATTAIN THE GOALS

Effective lesson objectives should be:



Specific – not too broad, focused, targeted
 Measurable – Students need to see progress, should feed into the outcomes
 Attainable/Actionable – can't be too hard, too long
 Relevant/Realistic – know your students, at their level of learning
 Time appropriate – is it going to apply to one lesson or series of lessons



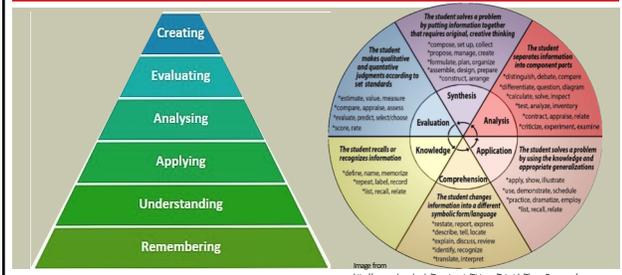
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MEASURABLE GOALS

- Include precise amounts, dates, and so on in your goals so you can measure your degree of success.
 - I.e. By the end of this lesson, students will be able to:
 - Identify 4 types of earthquakes
 - Describe the characteristics...
 - Distinguish between...
- Example goal: Given live examples of five types of plants, the student will compare and contrast physical characteristics of plant structures (roots, stems, leaves, flowers, fruits, and seeds).
 - Action: Compare and contrast
 - Condition: Given live examples of five types of plants
 - Mastery (success): they can compare and contrast physical characteristics of five of the six structures of different types of plants

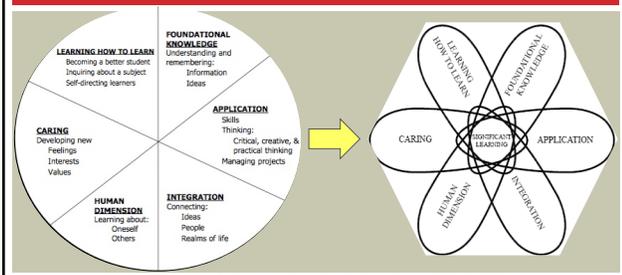
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USE BLOOM'S TAXONOMY TO CONSIDER ACTION WORDS DESCRIBING WHAT STUDENTS WILL DO AND LEARN



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FINK'S TAXONOMY CONSISTS OF SIX TYPES OF SIGNIFICANT LEARNING CATEGORIES & SUB-CATEGORIES.



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Action verbs	Remember	Understand	Apply	Analyze	Evaluate	Create
	Choose Describe Define Label List Locate Match Memorize Name Omit Recite Select State Count Draw Outline Point Quote Recall Recognize Repeat Reproduce	Classify Defend Demonstrate Distinguish Explain Express Extend Give Examples Illustrate Indicate Interrelate Interpret Infer Match Paraphrase Represent Restate Rewrite Select Show Summarize Tall Translate Associate Compute Convert Discuss Estimate Extrapolate Predict	Choose Dramatize Explain Generalize Judge Organize Point Prepare Produce Select Show Sketch Solve Use Add Calculate Change Classify Complete Compare Discover Divide Examine Graph Interpolate Manipulate Modify Operate Subtract	Categorize Classify Compare Differentiate Distinguish Identify Infer Point out Select Subdivide Survey Arrange Breakdown Combine Detect Diagram Discriminate Illustrate Outline Point out Separate	Appraise Judge Critique Defend Compare Assess Conclude Contrast Determine Grade Justify Measure Rank Rate Support Test	Combine Compose Construct Design Develop Formulate Hypothesize Invent Make Originate Organize Plan Produce Role Play Drive Devise Generate Integrate Prescribe Propose Reconstruct Revise Rewrite Transform

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Schedule

10:30 - 10:50 Revise/Practice writing objectives

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TOOLS FOR BUILDING GOALS & OBJECTIVES

- <https://cdi.ucf.edu/teach/resources/objective-builder-tool/>
 - Given GIS data model descriptions, students will list 2 ways spatial data is represented, including 100% of the feature types.
- <https://teachonline.asu.edu/objectives-builder/>
 - describe 2 ways spatial data is represented in GIS data models.
- <https://content.easvgenerator.com/create-learning-objectives>

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Schedule

10:50 Road Check and homework

Homework: If you haven't already, write 10 **measurable** learning objectives using Blooms action verbs for your topic course for tomorrow.



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END OF DAY 1



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