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WORKSHOP: ASSESSING LEARNING OBJECTIVES

Elizabeth Lewis
University of Nebraska-Lincoln, elewis3@unl.edu

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Dr. Beth Lewis
University of Nebraska-Lincoln
College of Education and Human Sciences
Dept. of Teaching, Learning, & Teacher Education

AGENDA

- Introductions
- Learning goals
- Assessment
  - Standards & rubrics
- Learning theory
- Inquiry & learner-centered instruction
- Using evidence of student learning

I. INTRODUCTIONS

- Dr. Beth Lewis
  - Assistant professor, science education (TLTE)
  - Former geologist & high school science teacher
- Small group activity
- *First, individual writing* (5 minutes)
  1. Describe an assessment that you use effectively in your classes (i.e., provides you with an accurate picture of student understanding)
  2. A specific assessment concern/problem you want to resolve in the near future
  3. Share with your group (5 minutes)
  4. Summarize your group's ideas in two lists (5 minutes)

TALKING POINT: EDUCATIVE ASSESSMENT

- Educative assessment systems are (Wiggins, 1998, p.12):
  - "designed to teach -- to improve performance (of student and teacher) and evoke exemplary pedagogy…"
  - built upon "meaningful performance tasks that are credible and realistic (authentic), hence engaging to students ."
- An educative assessment makes for a productive learning opportunity…two for one
  - Example: Tiffany Heng-Moss has entomology students in course/labs construct their own insect collection
- Discuss in your group (5 minutes):
  - When have you used an educative assessment in your classes?

II. LEARNING GOALS & ASSESSMENT

- A learning goal should be specific and measurable
- Instruction should be aligned with learning goal
  - “Opportunity to learn"
- Assessment standards (see NRC handout)
  - Students should understand your expectations
    - Deliberate attempts to make task more difficult to figure out violate assessment standards
- Use clear product descriptors & rubrics

RUBRICS

- Are not just a list of criteria and distribution of points
- Each criteria should have a unique description of the quality of each level…provides feedback to students on what they did well and what needs improvement
- Translation of rubric to grade

Criteria	Exemplary (4)	Proficient (3)	Partially Meets Standard (2)	Not Yet (1)	Missing (0)
Spelling & Grammar	*Correct* grammar, spelling, & punctuation	*Some* grammar, spelling, and/or punctuation errors	*Multiple* grammar, spelling, and/or punctuation errors	*Consistent poor* grammar, spelling, and/or punctuation	Nothing to assess.

ACTIVITY: LEARNING GOAL

- Handout:
  - Wiggins & McTighe (2006) template
  - Learning goal example
- Write a clear learning goal for one of your classes (5 minutes):
  - "Students will be able to...." (process)
  - "Students will understand..." (content)
- Share your objective with your group and provide feedback on the clarity of each other's objectives (5 minutes)

ACTIVITY: LEARNING GOAL (CON'T)

Individual write (8 minutes)….describe:

- one way you could determine if students were making progress toward this goal
- at the end of your instruction how you could determine if students had a deep understanding of your learning goal….share with your group

Q: Would you grade either of these assessments?

- Why or why not?

Q: How would you ensure that students had the opportunity to learn these concepts?

Discuss with your group (5 minutes)

III. LEARNING THEORY & LEARNER-CENTERED INSTRUCTION

Handout: 5E & assessment / Degrees of learner-centered activities

- Social constructivist learning theory
  - In practice: students need opportunities to co-construct meaning from learning activities
  - 5E instructional model (Bybee)
    - based upon the learning cycle (Lawson)

INQUIRY-BASED INSTRUCTIONAL MODEL

Inquiry-based instruction: e.g., the 5E model

- ***Engage:*** hook (also a good opportunity to access prior knowledge)
- ***Explore***: students doing science
- ***Explain I:*** students making meaning through oral and written discourse
- ***Explain II***: teacher provides any necessary clarification of concepts and terms
- ***Elaborate:*** students apply understanding to new situation/context
- ***Evaluate:*** throughout, formative & summative

DEGREES OF LEARNER-CENTERED ACTIVITIES

Level: Common Name	Problem	Equipment	Procedure	Answer
0: Verification	Given	Given	Given	Given
1: Guided inquiry	Given	Given	Given	Open
2a: Open guided inquiry	Given	Given	Open	Open
2b: Open guided inquiry	Given	Open	Open	Open
3: Open inquiry	Open	Open	Open	Open

From: Hackling, 2005

IV. USING EVIDENCE OF STUDENT LEARNING

- Types of evidence:
  - **Whole group measures** on assignments (i.e., grades)
  - Strategically select a **sub-sample of student work** to analyse, by a particular lens or *rationale…*
    - gender (e.g., male/female students), *because we are trying to recruit more women into science…*
    - performance level (e.g., top, middle, and bottom third)
    - degree (i.e., majors/non-majors)
  - Informally **interview and/or survey** students for what helped them learn

…TO MAKE CLAIMS & REFLECT UPON INSTRUCTION

- Analyse for effective instruction…
  - which concepts students learned
  - which concepts student struggled with, and potentially retained misconceptions
- Reflect upon your instruction….
  - What positive claims can you make about student learning in your classes? *(…and what instruction you would keep the same)*
  - How could you adjust your instruction to better support student learning?

Set a goal for your instruction & assessment with the learning goal you wrote today

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