Magna 20 Minute Mentor

Note-taking Guide

How Can I Assess Critical Thinking with Student-Created Work?

Presented by:
Linda B. Nilson, Ph.D.

MAGNA

Presenter

Linda B. Nilson, Ph.D.

Director, Office of Teaching Effectiveness and Innovation

Clemson University

448 Brackett Hall, Clemson, SC 29634 864.656.4542 *
nilson@clemson.edu *
www.clemson.edu/OTEI
www.linkedin.com/in/lindabnilson

1

Outcomes for This 20-Minute Mentor

- Ensure learning outcomes are assessable and address discipline-relevant critical thinking (CT) skills
- Design constructed response questions & tasks that give sufficient guidance, authentically assess CT skills, and enhance students' self-awareness of their process.
- Write quality CT-focused assessment rubrics.

2

Where CT d*oes* apply

When a "claim" may or may not be valid, complete, or the best possible.

"Claim" = belief, value, assumption, interpretation, theory, problem definition, generalization, analysis, viewpoint, opinion, contention, hypothesis, solution, inference, prediction, decision, or conclusion – *not* a fact or term definition.

3

Must-have CT learning outcomes

- Outcomes = statements of what students should *be able to do* by end of the day, week, unit, or course.

- Across the disciplines, CT involves, at a minimum, *interpretation/analysis* and *evaluation*

4

Outcomes (cont.)

- "Performances" you can *observe* so you can assess and *set standards* for them
  – *not* internal states of mind like "know," "learn," "feel," "understand," "appreciate"

    (Supplementary Material)

5

Discipline-Relevant CT Skills/Outcomes
(Supplementary Material)

- Check your current learning outcomes against these examples. Are they assessable and CT-focused?
- Revise, add CT outcomes as needed.
- Think about sequencing them in the order will students achieve them.

6

Assessments should *Mirror* outcomes

Outcome

Assessment

7

What are constructed responses?

Students generate a product:

e.g., answer to question, essay, paper, report, project, portfolio, design, oral or multimedia presentation, artistic work or performance, or demonstration (e.g., of technical problem solving).

- For CT, students should also reflect & report on how they did it.

8

Constructed responses can *require* and *assess*…

- Interpretation
- Generalization
- Inference
- Problem defining
- Problem solving
- Conclusion drawing
- Organization
- Research

- Communication
- Comprehension
- Application
- Analysis
- Synthesis
- Creation
- Evaluation

9

A well-designed constructed response

- = Question or task assessing one or more of your CT outcomes
- Non-standardized answers/products
- Professional judgment needed for assessment

10

A well-designed constructed response (cont.)

- Well-defined and focused; OK to recommend types of thinking and content to use.

- Question or task is situated in a relevant, real-world problem or situation.

11

Examples of poor and improved constructed response prompts

- VAGUE: To what factors have historians attributed the decline of the Roman Empire?

- IMPROVED: Some people argue that the United States is following the same path of decline as the Roman Empire. Write a critical examination of this claim analyzing how the United States is and is not declining due to similar factors.

12

Examples (cont.)

- VAGUE, LOW-LEVEL: What should a nurse do when a patient has a bad reaction to an immunotherapy injection?

- IMPROVED; PROBLEM-FOCUSED: After the first injection of an immunotherapy program, you notice a large, red wheal on your patient's arm. Then the patient begins coughing and expiratory wheezing. What series of interventions should you implement? Justify your interventions and their sequence.

13

Examples (cont.)

- LOW-LEVEL: What is the relationship between education and income? To what extent has it changed recently?

- IMPROVED PARADOX-FOCUSED: The education of the working and middle classes has been increasing for decades while their income has been flat or decreasing for the past decade. How can you resolve this trend and the well-established positive relationship between education and income? (Consider other factors that may affect income.)

14

Examples (cont.)

- VAGUE, LOW-LEVEL: What will happen to the hydrosphere, the geosphere, and the biosphere if a large amount of sulfur dioxide is released into the atmosphere?

15

Examples (cont.)

IMPROVED; PROBLEM-FOCUSED: Some geoscientists maintain that the mega-magna chamber below Yellowstone National Park is leaking increasing amounts of sulfur dioxide into the atmosphere & will cause a mass extinction within 70,000 years.

16

Examples (cont.)

They rest this claim on the mass extinction that happened 250 million years ago. Why or why not do you accept this claim? To what extent are the hydrospheric, atmospheric, and biospheric conditions comparable to those 250 million years ago?

17

Possible reflective meta-assignments

- *How did you arrive at your response/ solution?*
- *How did you define the task/problem, decide which principles & concepts to apply, develop alternative approaches & solutions, & assess their feasibility, trade-offs, & relative worth?*

18

Possible reflective meta-assignments

- *How did you conduct your design/ problem-solving/research process (steps taken, strategies used, problems encountered, how overcome)?*
- *What skills did you use or improve, & when will they be useful in the future?*

19

Possible reflective meta-assignments (cont.)

- *Evaluate your strategies, performance, and success in achieving your goals.*
- *What goals and strategies will guide your revision (if applicable)?*
- *What learning value did this task have? What would you do differently?*

20

Possible reflective meta-assignments (cont.)

- *What part of the learning experience challenged what you thought about the subject? Did you find yourself resisting it? If so, how did you overcome your resistance?*
- *What advice would you give next semester's students before they do this assignment (preparation, strategies, pitfalls, value)?*

21

Think of a relevant, real-world problem or situation for your students to solve or resolve.

Choose an appropriate reflective meta-assignment (assignment "wrapper") to raise your students' awareness of their thinking while solving or resolving it.

22

To assess CT questions or tasks

- *Analytical Rubric =* an assessment/ grading tool that lays out specific expectations for a piece of work & describes each level of performance quality on the selected assessment criteria/skills.

23

Draft a rubric for Your CT task or question

- *Analytical Rubric =* an assessment/ grading tool that lays out specific expectations for a piece of work & describes each level of performance quality on the selected assessment criteria/skills.

24

For rubrics, accept that…

- You can't assess/grade student work on every criterion/skill you can think of.
- Students can't work on improving their performance on every criterion/skill. *They don't even know what those criteria/skills are.*
- You must chose <u>just a few</u> criteria/skills.

25

Step 1: choose CT criteria based on your outcomes

- What CT skills/outcomes are most important for students to demonstrate in a given assignment or essay?
- What CT skills/outcomes is it supposed to assess?

26

Step 2: Define levels and their values

- Number or range of points for each level
- Grades (A, B, C, or 4.0. 3.7, 3.3, etc.)
- Descriptive levels (e.g., high, average, low mastery; exemplary, competent, developing, unacceptable)
- Combination

27

Step 3: Describe the performance for each level on each criterion

- Usually in a table in sentences, phrases, or lists; "all or most…" alternative.

- Write out descriptions of each level of performance on each assessment criterion. (Supplementary Material)

28

Step 4: Use rubric to teach

- Distribute & explain your rubric to students as part of assignment or essay test instructions.

- Teach analysis & evaluation: Best to have students in groups use rubric to grade models of varying quality.

29

Step 5: Use rubric to assess

- Have students submit rubric with their work.

- Mark relevant descriptors on rubric & write comments on work, *as time permits*.

- Demand any grade challenges in *writing* with *justifications* within a tight time limit.

30

Thank you!

Tell us what you think:

https://www.surveymonkey.com/s/studentworkct

_____

_____

_____

_____

_____

_____

_____