Applying Critical Thinking to Teaching and Learning

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J. Matt Searls, Ph.D.
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Objectives for Today

- Identify different aspects of critical thinking (CT), including what is happening with NTID's outcomes assessment plan
- Include teaching/learning strategies to increase students' fund of knowledge and CT skills
- Structure assignments to expand CT skills
- Create evaluation methods for higher order of thinking about the subject matter in a course
- Identify CT resources

What is critical thinking?

- "…Purposeful, self-regulatory judgment…" *(Delphi definition)*
- MCC General Education Initiatives
- Bloom's Taxonomy
- Addressing tasks by generating alternatives and comparing pros and cons to reach an informed conclusion (*NTID CT Rubric)*

Bloom's Taxonomy

Cognitive levels:

- Knowledge: *What do I know?*
- Comprehension: *What does this mean?*
- Application: *How can I use what I know in different situation?*
- Analysis: *Why does this work as it does?*
- Synthesis: *What can I create from the information and ideas I have?*
- Evaluation: *Is this accurate, useful, effective, economical or satisfying?*

Other key words/phases

- Logical thinking
- Reasoning
- Compare/contrast
- Sequencing
- Questioning
- Drawing inferences
- Perspective taking
- Argumentation
- Cause/effect
- Thinking outside of the box

Teaching/learning strategies

- Instruction
- Assignments
- Evaluation

Instruction:

1) Interactive learning

Teacher can demonstrate CT through:

- Asking, probing, questions (why, what about, tell me more, explain)
- Using analogies and comparisons

2) Fund of Knowledge

Teacher can:

- Recognize when students need to know more about a topic before making decisions or drawing conclusions
- Ask students about knowledge of topic and provide background information or real-time search for information
- Give students references and resources for seeking information on their own

3) Connection to prior learning

Teacher can:

- Make connections between what students are learning now and how it applies to other situations
- Facilitate transfer of knowledge in and out of the classroom

4) Mediated learning

Teacher can:

- Add *some* information
- Fill in the blank that facilitates student's understanding or ability to complete the task

5) Teach HOW to learn

Teacher can:

- Demonstrate “how to” learn the subject material (specific learning strategies) at the beginning of the course
- Shift responsibilities to students from *“showing how to”* to *“I can do it”* by the end of the course

6) Other perspectives

Teacher can:

- Encourage inquiry about others' answers, opinions and points of views
- Encourage comparison of own point of view with other students' and "experts"
- Set-up class debates or discussion

7) Feedback

Teacher can:

- Provide feedback that requires students to use critical thinking to revise work before resubmission
- Use ideas from handout – *Responding to Student Writing*

8) More strategies…

Teacher can:

- Give students high but attainable expectations
- Respect the diversity of students' learning styles; give them a variety of ways in which to learn and to demonstrate what they have learned
- Use other strategies listed on handouts (e.g. page 11 - *Magna*

Assignments that promote CT

Teacher can:

- Choose verbs to fit the kind of thinking you want students to use
- Know what kind of thinking the words on your assignment will require
- Ask questions or require thinking ONE step above where students have demonstrate ability (scaffolding)

Search for knowledge

Teacher can:

- Require printout of internet search about topics to increase fund of knowledge

  -Google: www.google.com

- Require printout of dictionary or Google *image* search for words that are unfamiliar

  -Longman Dictionary: www.ldoceonline.com

Set high standards

Teacher can:

- Expect students to submit their best work
- Require students to have an assignment edited by “second eye”
- Require students to proofread their work for grammar, spelling, for following directions

Evaluation

- Structure course activities so that units build on each other
- Learning of each “small segment” assures success later because of connections between segments
- The “test” is no surprise or difficulty

Multiple assessment

- Quizzes

  -Questions that cover a range of thinking levels in Bloom's taxonomy

- Open book/open note tests
- Projects that integrate learning

  -Presentations

  -Experiments

  -Portfolio

Barrier Free Evaluation

- Give modality choices so students can demonstrate their thinking and knowledge without language barriers:

  -Written or typed

  -Video or audio recording

  -Creative visual display (diagram, chart, graph)

  -Model, stimulation or illustration

  -Demonstrations

Resources

- Chaffee, J., (1994). Thinking Critically (4th Ed.). Boston, MA: Houghton Mifflin Company.
- Erwin, T.D., (2000). The NEPC sourcebook on assessment, volume 1: Definitions and assessment methods for critical thinking, problem solving, and writing [Electronic version]. Washington: National Center on Education Statistics.
- Facione, P.A., (1990). Critical thinking: A statement of expert consensus for purposes of education assessment and instruction, Executive Summary, “The Delphi Report.” Millbrae, CA: The California Academic Press.

Resources-continued

- Paul, R. & Elder, L., (2006). Miniature guide to critical thinking: Concepts & tools. Dillon Beach, CA: Foundation for Critical Thinking.

- Website resources:

  -www.austhink.org/critical/pages/definitions.html

  -www.criticalthinking.org

- Magna Conference Suggested Readings

Adapted from March 29, 2006 PowerPoint presentation by Marianne Gustafson and J. Matt Searls