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Practicing Integrated Critical Thinking in a First-Year Core Course

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Background:

Critical thinking is often taught as a concept (e.g. spending part of a lesson explaining what it is), rather than being pervasively developed as an intellectual skill. Starting the fall 2009 semester in our Introduction to Behavioral Sciences course, we have taken a developmental approach to teaching four foundational elements of critical thinking (identify the issue and supportive evidence, clarify assumptions, seek alternative perspectives, make an interpretation) derived from the Paul and Elder (2006) model.

Several of our instructors systematically integrated opportunities to develop critical thinking practices by using structured pre-class assignments for each lesson that aligned with assessments. These pre-class assignments were designed as pre-flights (Novak & Patterson, 1998), which take advantage of technology so that students submit responses and instructors read them prior to class. Thus, class sessions can be tailored to “meet students where they are,” and class time can be used more effectively to explore misconceptions and promote deep learning. Alignment was achieved through the use of a rubric that included the four basic elements as an organizing structure (i.e. scaffold, e.g. Saye & Brush, 2002) for the students’ responses.

Assumptions:

- Critical thinking involves a large set of underlying components (e.g. Paul and Elder, 2006). It is not reasonable to assume that all can be effectively taught in one course, especially at the first-year level. But it is reasonable to assume that a small set of foundational skills can be systematically addressed.
- Critical thinking cannot be taught in a vacuum – the course content and real world application examples would provide the material about which to think critically (Rotherham & Willingham, 2009)
- Students would be able to take on the responsibility for learning some of the content on their own by reading and answering questions prior to class. (Many students find most of the content in this course to be understandable when they first read it. They most often struggle with the volume of information and the lack of a single, correct, all-encompassing approach by which to understand human behavior, i.e. ambiguity.)
- Those instructors using the pre-flight process would read responses, provide student feedback and tailor class sessions to respond to student pre-flight responses.

Hypothesis:

- Sections that incorporated the pre-flight process would see student learning and critical thinking skill development enhanced relative to sections that did not systematically incorporate critical thinking skill development opportunities.
Some Findings:

- A pre-post questionnaire (fall 2009, N=642) about understanding and application of critical thinking in different aspects of their lives (academic, military training, personal) suggests that incoming first-year students may have a naïve conceptualization of critical thinking.

- Initial analysis of critical thinking essay questions using a standardized grading rubric (blind scored) for a random subset (N=48, 8% of all students) during the spring 2010 semester reveals:
  - There was significant improvement from exam 1 to exam 2 in the identified critical thinking components for all students. The students whose instructors incorporated the pre-flight process showed larger improvement (15.5% increase in scores compared to 3.5% increase in scores).
  - Students whose instructors used the pre-flight process seemed to need time to adjust to the expectation that they would be responsible for learning some of the content on their own. Their scores on the first exam were lower than students whose instructors more thoroughly covered the content. When each critical thinking component was examined separately, the pre-flight group scored significantly lower with respect to the critical thinking skill component of inclusion of evidence; F(1,47)=182.9, p<.05.
  - There were no other significant differences for the other critical thinking component skills, although there were trends for the pre-flight group to perform better and to show much greater improvement from exam 1 to exam 2.

- Instructor use of student preflight responses (student N=316; instructor N = 5) impacted student perception for the value of the pre-flight process, r(3) = .90, p<.05. and their motivation to engage in the process, r(3) = .86, p<.07.

The process of seeding critical thinking skills in the first year student is more complex than simply teaching the skill set. Inherent in all education is the learner’s desire to embrace both the knowledge (content) and the process (thinking about or interrogating content). Adequate understanding of the learner's motivation to use and appreciation of the value of critical thinking appear to be as crucial as the faculty member's skill at delivery and integrating a critical thinking process into course content.

Comments from the students:

- “Great work with critical thinking. I can really apply it to many classes and life situations.”
- “Looking at the other side to EVERYTHING gave me the habit of doing so, which is excellent.”
- “With so many people from different backgrounds in class I am able to get different points of views and see certain situations from other angles that I had never thought of before.”
- “I was able to incorporate each element of the critical thinking model: gathering evidence, identifying assumptions, taking into account other perspectives, and forming conclusions. Sometimes this was a difficult task, but it bettered my understanding of the text and allowed me to incorporate this strategy into other areas of study”.

References: