



Basic Proficiencies in Critical Thinking

February, 2006

As approved by Faculty Senate

This recommendation is submitted in response to the guidelines of the Undergraduate Education Initiative, a campus-wide review of FSU's undergraduate curriculum, as approved by the Faculty Senate in February, 2005.

Membership

The following FSU faculty members served on the planning group for the establishment of criteria for basic proficiencies in critical thinking:

Dr. Al Bensley, Psychology;

Dr. Robert Doyle, Physics;

Dr. Linda Lyon, Biology;

Ms. Sharon Robinson, Accounting.

Dr. Jim Limbaugh, Assistant to the Provost, served as convener and facilitator.

The Case for—and Confusion About—Critical Thinking

Our General Education Goals specifically cite a focus on students' attainment of skills of inquiry, critical thinking, and synthesis. Through an introduction to critical thinking, students will be able to "demonstrate foundational abilities to apply different methods of inquiry from various perspectives and disciplines to gather information." Additionally, students will acquire the skills necessary to "comprehend and use various fundamental research methods to evaluate information critically." Finally, FSU will expect that its students "use problem-defining and problem-solving skills by synthesizing core concepts within and across disciplines."

Establishing an "operational" definition of critical thinking is difficult, however, because critical thinking is a term widely used in education but one "whose meaning lacks clear consensus" (Suskie, 2004, p. 85). According to Suskie (p. 85),

Critical thinking skills can include many of the thinking skills . . . including analysis, synthesis, evaluation, problem solving, and some of the productive habits of mind.

Critical thinking can also include the abilities to seek truth, clarity, and accuracy;

distinguish facts from opinions; and have a healthy skepticism about arguments and claims.

In addition to a definitional muddiness, significant controversy exists regarding the actual ability of first-year students to engage in critical thinking. On one hand, substantial research exists indicating that first-year students are capable of learning skills in critical thinking (e.g. Bensley & Haynes, 1995; Halpern, 1993; McMillian, 1987; Pascarella, 1989; Pascarella & Terenzini, 1991). Conversely, the inquiries of other educators and researchers (Baxter-Magolda, 1992; Belenky et. al, 1986; Hofer & Pintrich, 1997; Meacham, 2003; Perry, 1970/1981) reveal that students' intellectual and ethical development as young adults, when they enter college, most often is categorized as a form of dualist thinking; i.e., students tend to view concepts as either "right or wrong" or "acceptable or unacceptable," a type of thinking attributed to their level of physiological development.

As a result, critical thinking is a universal goal of higher education, but its definition is unclear and its applicability may well depend on students' physiological development. However, the University still has the responsibility to develop, within its own contexts and goals, an interpretation of critical thinking as a basic skill. Therefore, the University's definition of critical thinking, as outlined below, will guide institutional initiatives to help students develop basic skills in critical thinking and to guide assessments of student learning outcomes.

External Mandates

The development and assessment of core skills in general education also responds to the requirements of two external entities: The Maryland Higher Education Commission and the Middle States Association of Higher Education.

The Maryland Higher Education Commission (MHEC) has mandated that all Maryland institutions of higher education establish specific definitions and benchmarks regarding college-level skills in seven basic skills areas. In addition to critical thinking, these skills include written communication, quantitative reasoning, scientific reasoning, oral communication, technological literacy, and information literacy. Said benchmarks are to be assessed on a regular basis and reported to MHEC every three years, beginning in 2007.

The University's accrediting agency, the Middle States Association of Higher Education, also specifically mentions in its revised standards the need to assess students' skills in critical thinking. The accreditation standards of the Middle States Commission on Higher Education state that an institution's program of general education must be designed "so that students

acquire and demonstrate college-level proficiency in general education and essential skills” including those cited above (*Characteristics of Excellence*, 2002, -p. 37).

Definition

At Frostburg State University, critical thinking is defined as reflective, self-directed thinking that requires skills in reasoning and the dispositions to use those skills so that a person can think effectively about questions, problems, and decisions both inside and outside of the classroom.

A student who has developed basic skills in critical thinking will be able to

1. analyze questions and problems from multiple perspectives and points of view;
2. evaluate relevant evidence to draw sound conclusions from information provided to them in their major field of study, general education courses, and everyday lives;
3. properly construct arguments from information provided to them.

A student who has developed critical thinking dispositions will show the inclination to

1. approach questions with an open-minded and curious attitude, be informed by multiple relevant perspectives, and be willing to examine questions in a fair-minded way;
2. apply critical thinking skills to thinking about issues in a major field of study, general education courses, and everyday lives;
3. reflect on how best to answer questions, solve problems, and make decisions in academic and everyday settings.

Please note that this definition and the attendant objectives are subject to continual review and refinement as assessment results are analyzed in light of institutional learning goals.

Connection to Undergraduate Institutional Learning Goals

Frostburg State University’s definition of quantitative reasoning supports the following Undergraduate Institutional Learning Goals:

- Liberal Knowledge and Skills of Inquiry, Critical Thinking, and Synthesis...specifically,
 - “apply different methods of inquiry from various perspectives and disciplines to gather information”;
 - “comprehend and apply various research methods to evaluate information critically”;

- “use problem-defining and problem-solving skills by synthesizing ideas within and across disciplines.”
- Core Skills...specifically, “comprehend and critically interpret information in written and oral forms.”

Assessment Strategies

To assess the disposition to think critically, a 20-item version of the Need for Cognition Scale of Cacioppo, Petty, and Kao (1984) will be used (see Attachment A) as a pre- and post-test each semester. The Need for Cognition Scale has been found to be a reliable and valid instrument for measuring the disposition to engage in effortful cognitive activity. It has been positively correlated with the tendency to seek out information, the need to evaluate, and openness to experience; it has been negatively correlated with authoritarianism and dogmatism (Cacioppo et al., 1996). In existing research on the critical thinking of FSU students, significant, positive correlations have been found between students’ responses to the “Need for Cognition Scale” and both a critical thinking skills test and a critical thinking dispositions inventory (Bensley & Clulee, 2004).

The Need for Cognition Scale, because it measures students’ self-reported responses, is an indirect method of assessing students’ dispositions toward critical thinking. In order to obtain direct assessment of students’ basic skills in critical thinking, a set of questions is being developed to measure the ability to apply multiple perspectives to analyze a complex, interdisciplinary problem. To our knowledge, no such instrument now exists; as a result, an FSU-specific instrument currently is under development (see Draft, Attachment B). We will use this instrument for critical thinking assessment beginning in fall 2006, testing students at the beginning and end of their enrollments in IDIS 150.

The First-Year FSU Colloquium (IDIS 150) will serve as the initial site for institutional assessment of critical thinking skills and dispositions. This course, an addition to the general education program and one that will be required of all entering first-time students as of fall 2007, serves as an appropriate site for two reasons. First, the course is designed to introduce students to the concept of critical thinking through faculty modeling of interdisciplinarity: “In the early stages of students’ college careers, modeling the ambiguities and the search for resolutions in interdisciplinary thought is particularly valuable as a precursor to the types of connections they will be expected to make in their studies” (Limbaugh, 2004, p. 72). Second, IDIS 150 will become, as of fall 2007, one of only three courses that are universally required of all first-year students (in addition to “Introduction to Higher Education” [ORIE 101] and “The

Advanced FSU Colloquium” [IDIS 350]), therefore providing a higher level of reliability in sampling.

The assessment process will be ongoing, with results from each assessment becoming part of the discussion of continued improvement of student learning. Changes will be made as necessary in response to the results of assessment, including, for example, the expansion of data collection beyond first-year students enrolled in IDIS 150 and implementation of other types of inventories, such as the California Critical Thinking Dispositions Inventory (CCTDI).

Reports on student performance in the aggregate (not by individual class) will be shared with appropriate University constituencies.

Internal Benchmarks

Frostburg State University will report that its students are demonstrating critical thinking dispositions if 70% of students in the tested sample demonstrate an increase from pre-test to post-test corresponding to an effect size* of .5. This standard is extrapolated from research on college students’ increases in critical thinking skills from their first year to their second year, data identified as most comparable to our chosen sample.

Timeline for Implementation

Please note, in reviewing the following timeline, that assessment of critical thinking, as outlined in previous paragraphs, was initiated in fall 2005 in three sections of IDIS 150. This timeline plots the continuation of this assessment initiative.

1. February/March 2006: Faculty Senate reviews criteria for critical thinking. If accepted, assessments continue in IDIS 150.
2. Spring 2006 and beyond: Assessment of critical thinking continues, with the locus of effort centered in IDIS 150. As the assessments are refined, and with the review of the Student Learning Assessment Advisory Group, application of the assessment instrument may be expanded to other first-year courses.

* Effect size is defined as a measurement of the magnitude of a treatment effect. For FSU’s assessment of basic skills in critical thinking, effect size is calculated as follows:

$$\text{post-test mean} - \text{pre-test mean} / \text{standard deviation of pre-test.}$$

*Submitted by Jim Limbaugh, Assistant to the Provost
on behalf of the Faculty Planning Group for Quantitative Reasoning
February, 2006*

References

- Baxter-Magolda, M. (1992). *Knowing and reasoning in college: Gender-related patterns in students' intellectual development*. San Francisco: Jossey-Bass.
- Belenky, M., Clinchy, B., Goldberger, N., and Tarule, J. (1986). *Women's ways of knowing: The development of self, voice, and mind*. New York: Basic Books.
- Bensley, A., and Clulee, N. (2004). *Assessment of critical thinking skills and dispositions at Frostburg State University: Cumulative report 1998-2003*. Frostburg State University: internal document.
- Halpern, D. F. (1993). Assessing the effectiveness of critical thinking instruction. *The Journal of General Education*, 42, 238-254.
- Hofer, B., and Pintrich, P. (1997). Epistemology: The development of epistemological theories: Beliefs about knowledge and knowing and their relation to learning. In *Review of Educational Research* (67), pp. 88-94.
- Limbaugh, J. (2004). *Revised final report: The undergraduate education initiative*. Frostburg State University: internal document.
- McMillan, J. H. (1987). Enhancing college students' critical thinking: A review of studies. *Research in Higher Education*, 26, 3-29.
- Meacham, J. (2003). Student intellectual development: An introduction. *Liberal education* (89) 3, pp. 6-9.
- Middle States Commission on Higher Education (2002). *Characteristics of excellence in higher education: Eligibility requirements and standards for accreditation*. Philadelphia: Middle States Commission on Higher Education.
- Pascarella, E. (1989). The development of critical thinking: Does college make a difference? *Journal of College Student Development*, 30, 19-26.
- Pascarella, E. (1989). The development of critical thinking: Does college make a difference? *Journal of College Student Development*, 30, 19-26.
- Perry, W. (1970). *Forms of intellectual and ethical development in the college years: A scheme*. New York: Holt, Rinehart, and Winston.
- Perry, W. (1981). Cognitive and ethical growth: The making of meaning. In A. Chickering (Ed.), *The modern American college: Responding to the new realities of diverse students and a changing society*, pp. 76-116. San Francisco: Jossey-Bass.
- Suskie, L. (2004). *Assessing student learning: A common sense guide*. Bolton, MA: Anker Publishing.

ATTACHMENT A

Course _____ *Section* _____ *Date* _____

Need for Cognition

Directions: For each of the statements below, please indicate to what extent the statement is characteristic of you. If the statement is extremely uncharacteristic of you (not at all like you) please write a "1" to the left of the question; if the statement is extremely characteristic of you (very much like you) please write a "5" next to the question. Of course, a statement may be neither extremely uncharacteristic nor extremely characteristic of you; if so, please use the number in the middle of the scale that describes the best fit.

- | | Extremely
uncharacteristic | Somewhat
uncharacteristic | Uncertain | Somewhat
characteristic | Extremely
characteristic | |
|-----|-------------------------------|------------------------------|-----------|----------------------------|-----------------------------|--|
| | 1 | 2 | 3 | 4 | 5 | |
| 1. | _____ | | | | | I try to avoid situations that require thinking in depth about something. |
| 2. | _____ | | | | | I'm not that good at figuring out complicated problems. |
| 3. | _____ | | | | | I enjoy intellectual challenges. |
| 4. | _____ | | | | | I am not very good at solving problems that require careful logical analysis. |
| 5. | _____ | | | | | I don't like to have to do a lot of thinking. |
| 6. | _____ | | | | | I enjoy solving problems that require hard thinking. |
| 7. | _____ | | | | | Thinking is not my idea of an enjoyable activity. |
| 8. | _____ | | | | | I am not a very analytical thinker. |
| 9. | _____ | | | | | Reasoning things out carefully is not one of my strong points. |
| 10. | _____ | | | | | I prefer complex problems to simple problems. |
| 11. | _____ | | | | | Thinking hard and for a long time about something gives me little satisfaction. |
| 12. | _____ | | | | | I don't reason well under pressure. |
| 13. | _____ | | | | | I am much better at figuring things out logically than most people. |
| 14. | _____ | | | | | I have a logical mind. |
| 15. | _____ | | | | | I enjoy thinking in abstract terms. |
| 16. | _____ | | | | | I have no problem thinking things through carefully. |
| 17. | _____ | | | | | Using logic usually works well for me in figuring out problems in my life. |
| 18. | _____ | | | | | Knowing the answer without having to understand the reasoning behind it is good enough for me. |
| 19. | _____ | | | | | I usually have clear, explainable reasons for my decisions. |
| 20. | _____ | | | | | Learning new ways to think would be very appealing to me. |

D R A F T

You've been assigned a term paper on [insert subject here] in which you've been asked to examine this topic from a variety of viewpoints. What viewpoints would you include, and why?

As practice, identify, on the attached sheet, as many different points of view that might be possible. Then, describe each point of view and how it would be relevant to the discussion. For example, if you were writing a psychology paper about the problem of depression in society, you might list...

- Point of View #1: Biological
 - Why it's relevant: brain function and biochemical imbalances of chemicals in the brain,
- Point of View #2: Social or political
 - Why it's relevant: issues of public health and the provision of support services.

Don't worry if you don't provide five different viewpoints. Just list as many as you can think of.

Course _____	Section _____	Date _____	Your initials _____
--------------	---------------	------------	---------------------

You've been asked to write a paper about *[insert subject here]*. List as many different, relevant points of view that possibly could be brought to your discussion. Then explain how that point of view is relevant to discussion of the problem in question.

POINT OF VIEW #1:
▪ <i>HOW IT'S RELEVANT:</i>

POINT OF VIEW #2:
▪ <i>HOW IT'S RELEVANT:</i>

POINT OF VIEW #3:
▪ <i>HOW IT'S RELEVANT:</i>

POINT OF VIEW #4:
▪ <i>HOW IT'S RELEVANT:</i>

POINT OF VIEW #5:
▪ <i>HOW IT'S RELEVANT:</i>