

STATE COUNCIL OF HIGHER EDUCATION FOR VIRGINIA
CRITICAL THINKING COMPETENCY ASSESSMENT REPORT¹
UNIVERSITY OF VIRGINIA
JUNE 1, 2006

Definition:

Critical thinking is the process of analyzing, evaluating, and constructing arguments based on their merits. Critical thinking has its basis in intellectual values that transcend subject matter divisions.

Goal:

One of the University of Virginia's most important goals is "fostering in students the habits of mind and character required to develop a generous receptivity to new ideas, from whatever source [and] a disposition for applying the most rigorous criticism to all ideas and institutions, whether old or new." Critical thinking is central to the University's mission, and our graduates should demonstrate excellent critical thinking skills in their communications.

Student Learning Outcomes:

Undergraduate students graduating from the University of Virginia should be able to:

- Carefully interpret, analyze, and evaluate evidence, statements, graphics, questions, etc.
- Construct well-supported, clearly articulated, and sustained arguments.
- Justify conclusions based on well-supported arguments.

Standards:

The University of Virginia expects 95% of its graduates to be minimally competent in critical thinking.

Description of Methodology Used to Gather Evidence:

The University of Virginia used one standard and rubric for all the undergraduate schools. It was hoped that sufficient sample sizes would ensure that the results could be reported for each of the undergraduate schools.² Because each undergraduate school is responsible for designing its own curriculum, this method allows schools to make the best use of the assessment results. Unfortunately, some of the school sample sizes were not large enough to make the results useful at the school level. School results have been aggregated to form an overall result for the University. The sampling error for the aggregated overall result was a very acceptable .06 at a 95% confidence level.

In the fall and spring semesters of the academic year 2005-06, for each undergraduate school, and for each major within a school, deans and department chairs were asked to identify upper-level courses in the major, such as seminars and capstone courses, which required papers *and* expected critical thinking to be demonstrated for those assignments. Within each school's list of courses, a sample of courses was selected, from which either electronic or printed versions of papers were collected for the assessment. The courses in the assessment sample were chosen, and if necessary weighted by discipline, to ensure that at least a majority of graduating fourth-years were represented within each school.

For the Critical Thinking competency assessment, 378 papers were collected from upper-level courses in 26 majors, representing 64% of the graduating fourth-years at the University. Within the College, papers from 10 different majors were collected, representing 53% of the graduating fourth-years in the College. In a number of these classes from which papers were collected, students outside of the major were enrolled, adding a small sample of respondents from 3 additional majors. Outside of the College, papers

¹ The development of the University of Virginia's critical thinking competency assessment plan was coordinated by the Office of Institutional Assessment and Studies. A faculty committee composed of representatives of the undergraduate schools wrote the definition, goal, learning outcomes, and standards, created the scoring rubric and conducted the evaluations of student work. Institutional Assessment and Studies staff coordinated the collection of papers and the evaluation workshops, conducted the data analysis, and wrote this report.

²Results for undergraduates in the Curry School of Education were not compiled separately because students in the five-year joint BA/MT degree in the Curry School were included in the sampling of students from the College of Arts and Sciences.

from 16 majors were collected, representing 100% of the graduating fourth-years from the schools of Architecture, Commerce, Engineering, Nursing, and Continuing and Professional Studies (BIS).

Using a skills-based, four-point descriptive scoring rubric (see Appendix), ten faculty and four experienced graduate TA evaluators scored the papers during a series of workshops in the winter and spring. Norming sessions were held at the beginning of each workshop. The four individual skills were assigned a score from 4 (highly competent) to 1 (not competent); an overall score for each student was calculated by summing and averaging the scores for each individual skill. Each paper was scored twice, and a third time if the score on two or more skills differed by more than one point. The University's final scores are the average of the overall individual scores.

Reliability analysis was used to evaluate the reliability of the rubric and evaluators. The results indicate that the four items on the Critical Thinking rubric form a reliable scale (Cronbach's alpha was .92). In terms of inter-rater reliability, the percentage of exact agreement among item ratings (first two reviewers) was 48.2%. The percentage of disagreement by more than one point among item ratings was 3.2%. The need for third raters thus was very low.

Summary:

For assessment of the critical thinking core competency, the Office of Institutional Assessment and Studies coordinated the collection of 378 student papers in third- and fourth-year classes in the major. The University was required to assess 5% of the graduating fourth-year class (approximately 170 students); more than twice this number were assessed in the hope that the results could be broken down by each undergraduate school. Papers were evaluated by a faculty committee which developed a descriptive scoring rubric for that purpose. Application of the rubric resulted in the following results for the University as a whole:

Overall Scores - Weighted by School and Discipline			
Score*	Count	%	
4	64	16.9	(17% Highly Competent)
3	215	62.1	(74% Competent)
2	95	25.3	(99% Minimally Competent)
1	3	0.8	(1% Not Competent)

*4 = Highly Competent (3.5-4.0), 3 = Competent (2.5-3.499), 2 = Minimally Competent (1.5-2.499), 1 = Not Competent (<1.5)
The data in this table are weighted. The total n of 377 is caused by the need for rounding weighted results.

These overall scores are weighted by school, and scores from the College of Arts and Sciences are weighted by discipline, to ensure that the results are representative of the University's graduating fourth-year class.³ Sampling error for the University score is 0.06 at a 95% confidence level.

As stated in the standards section above, the University expected 95% of its undergraduates to be minimally competent in critical thinking. Overall the University exceeded this goal for minimal competence with 99% of the papers rated minimally competent. Moreover, the mean and median scores of 2.8 and 2.9, respectively, indicate that the majority of UVa students substantially exceeded minimal competence on the critical thinking assessment. Nevertheless, the University's Critical Thinking Core Competency Assessment Committee will review the overall results, as well as the results of specific outcomes within the rubric, to determine if there are areas for improvement. The committee will also examine the appropriateness of the rubric and the efficacy of the process. Next steps and recommendations will be made to the Provost over summer 2006. In addition, meetings will be held with school representatives to examine the results for each school.

³ In calculating the weights by discipline within the College of Arts and Sciences, the Office of Institutional Assessment and Studies relied on the proportions of 2005 fourth-year graduates in the disciplines (arts and humanities, sciences, social sciences). The original sampling plan did not break the college down by discipline but relied instead on the total number of third- and fourth-year students in academic year 2004-2005. To weight the data, it was assumed that the proportion of third- and fourth-year students in the various majors within the College would be close to the proportion of 4th-year graduates.

Appendix:

**UNIVERSITY OF VIRGINIA
CORE COMPETENCY ASSESSMENT
CRITICAL THINKING SCORING RUBRIC**

Paper ID	_____
Rater ID	_____

SCORING GUIDE:

1 = Not Competent 2 = Minimally Competent 3 = Competent 4 = Highly Competent

Assign one whole number to each objective:

OBJECTIVE	<i>Not Competent</i>	<i>Minimally Competent</i>	<i>Competent</i>	<i>Highly Competent</i>
Carefully interprets, analyzes, and evaluates evidence, statements, graphics, questions, etc.	1	2	3	4
Constructs well-supported arguments	1	2	3	4
Develops and sustains clearly articulated arguments throughout the narrative	1	2	3	4
Justifies conclusions on the basis of well-supported arguments	1	2	3	4