



Office of Institutional Research

To: Scholarship Action Group
 CC: Stephen Siciliano
 From: Darby Hiller
 Date: December 11, 2003
 Subject: CAAP After Action Report - Fall 2003

In October and November 2003, the College Wide Assessment Team administered the CAAP Critical Thinking Test in ten courses to 152 students. The CAAP Critical Thinking test is intended to measure students' skill in clarifying, analyzing, evaluating, and extending arguments. An argument is defined as a sequence of statements that includes a claim that one of the statements, the conclusion, follows from the other statements. Each passage in the test presents a series of sub-arguments, overlapping positions, statistical arguments, experimental results, or editorials. Twenty questions out of 32 (63%) measured whether a student could identify the parts of an argument. Six questions measured whether a student was able to evaluate an argument (19%). Six questions measure whether a student was able to extend an argument (19%). These three different skills roughly correspond to Levels 1, 2, and 3 of our critical thinking rubric.

Level	Language in Critical Thinking Rubric	Language in CAAP Technical Handbook
Level 1	Identifies arguments	Identifies elements of an argument
Level 2	Evaluates claims and develops conclusions	Evaluates an argument
Level 3	Demonstrates problem resolution	Extends an argument

As was mentioned in a previous report (CAAP Addendum: Item Analysis dated February 24, 2003). There are three ways in which the CAAP test can help measure the general education outcome of critical thinking. First, extra item analysis can help link certain questions to the three levels of the critical thinking rubric. In this way, students' skill level (a.k.a answering a question correctly in certain skill sets) can be compared to the levels of the rubric. Second, students with greater exposure to the NMC curriculum can be compared with students with less exposure demonstrating the effectiveness of the curriculum. Third, students can be compared to other students from two-year colleges nation-wide with a standardized score. Here I provide the findings for the three different types of comparisons.

Sixty two percent (62%) of the test takers were able to identify the parts of an argument correctly as shown in Table 1. This is down from the previous year where 67% answered the identification questions correctly. Nearly 60% of our

students were able to correctly evaluate an argument (Table 2). This is a dramatic improvement over the 54% from last year. Finally, 59% of our students were able to extend an argument correctly (Table 3). This number is the same as that from the previous test. (Note: these statistics assume these skills are exclusive of each other.)

Identify Parts of an Argument				
Table 1	Wrong		Correct	
	Count	Layer %	Count	Layer %
q1	26	17.1%	126	82.9%
q2	30	19.7%	122	80.3%
q5	29	19.1%	123	80.9%
q7	70	46.1%	82	53.9%
q8	62	40.8%	90	59.2%
q10	38	25.0%	114	75.0%
q11	41	27.0%	111	73.0%
q12	38	25.0%	114	75.0%
q13	52	34.2%	100	65.8%
q15	72	47.4%	80	52.6%
q17	32	21.1%	120	78.9%
q18	43	28.3%	109	71.7%
q20	75	49.3%	77	50.7%
q21	70	46.1%	82	53.9%
q23	99	65.1%	53	34.9%
q25	53	34.9%	99	65.1%
q28	56	36.8%	96	63.2%
q29	52	34.2%	100	65.8%
q31	55	36.2%	97	63.8%
Sum			1895	62.3%

Evaluate an Argument				
Table 2	Wrong		Correct	
	Count	Layer %	Count	Layer %
q3	42	27.6%	110	72.4%
q14	41	27.0%	111	73.0%
q19	38	25.0%	114	75.0%
q24	104	68.4%	48	31.6%
q27	54	35.5%	98	64.5%
q32	89	58.6%	63	41.4%
Sum			544	59.6%

Extend an Argument				
Table 3	Wrong		Correct	
	Count	Layer %	Count	Layer %

q4	46	30.3%	106	69.7%
q6	54	35.5%	98	64.5%
q9	45	29.6%	107	70.4%
q16	82	53.9%	70	46.1%
q22	82	53.9%	70	46.1%
q30	68	44.7%	84	55.3%
Sum			535	58.7%

The next set of statistics assumes that the skills are not exclusive but build on one another. If a student was able to answer over half of the questions in a certain skill set it was assumed that she mastered the skill. This is a generous assumption. Only three people answered all the Level 1 questions right, nine people answered all the Level 2 questions correctly, and nine people answered all the Level 3 questions correctly. No one had a perfect score, although two people came close by only missing one or two questions out of 32.

Of those students answering more than half of the Level 1 (identifying an argument) questions correctly (74.3%), 68.1% mastered Level 2 questions as well and 61.9% answered Level 3 questions correctly. For those mastering Level 1 and Level 2 (50.7%), 71.4% answered more than half the Level 3 questions correctly. For those mastering Level 1 and Level 3 (46.1%), 78.6% were able to answer more than half the Level 2 questions correctly. Overall, 36.2% of our students were able to master all three skills, meaning they correctly answered over half of the questions within each skill. This is slightly less than the previous test administration in which 44.2% were able to master all three skills. Regardless, the data show that gains have been made in our students' ability to evaluate an argument, that skill in which our students needed improvement in at the last administration. No skill level clearly stands out this year as needing more improvement than others. From both the last administration and this one, it seems that the critical thinking skills are definitely a related skill set or package. Students that can identify the parts of an argument are more likely to be able to accomplish the other skills as well and vice versa.

Exposure to NMC Curriculum.

In addition to comparing our students' scores to the NMC critical thinking rubric, we can also compare the scores of students with varying levels of exposure to NMC curriculum. The students were divided into two groups: 1) those with 0-30 credits hours, and 2) those with 31 credits and above. Table 4 shows the distribution of those two groups. Students with greater exposure to the NMC curriculum were more likely to master the three skills than those with less exposure. Table 5 shows the percentage of students that answered more than half of the questions correctly in each skill set (skills are considered exclusive). Students with greater exposure to the NMC curriculum have indeed gained in their critical thinking skills over their colleagues with fewer than 30 credits. This finding indicates that the curriculum at NMC is facilitating the learning of critical thinking and reasoning skills.

Table 4	Frequency	Percent	Valid Percent
0-30 credits	105	69.1	73.4
31 credits and above	38	25.0	26.6
Total	143	94.1	100.0
Missing	9	5.9	
Total	152	100.0	

Table 5	Identify	Evaluate	Extend
0-30 credits	73.3%	53.3%	48.6%
31 credits and above	73.7%	65.8%	52.6%

Finally, 60% of NMC’s test-takers scored higher than the national average for two-year colleges, with 70% scoring at or above the national average. This result is something our students can be proud of.

What We Have Learned.

In comparison with results from the last test administration, NMC students have made gains in their critical thinking skills. The data show much improvement in the area of evaluating an argument (Level 2). This specific skill was identified as an area for improvement after the last test administration. Moreover, some of these gains can be attributable to the learning that is taking place throughout the NMC curriculum. This finding is evidenced by the fact that our “Upperclassman” performed better than our “Freshman” on the test in all three skill areas. The most interesting information that can be garnered from the administration of this test is that the critical thinking skills are NOT mutually exclusive. They do build on one another and should be assessed as a packaged skill set. This information can be helpful as we review the critical thinking rubric. In light of this finding, I highly recommend eliminating the “Levels” in our critical thinking rubric.

The test administration itself was not without problems. Students were more likely to take the test seriously if their instructors were present in the classroom. Having the faculty on hand to assist with the administration lent credence to the process. In the future, should we continue using a standardized test of this fashion as a direct measure of a general education outcome, I suggest that the instructor of the course be the primary administrator of the test with assistance from the Scholarship Action Group or the Office of Institutional Research.

If you have questions or comments about this report and the analyses please contact the Office of Institutional Research, 995-1084 or dhiller@nmc.edu.