



## Office of Institutional Research

To: Scholarship Action Group  
CC: Curriculum Committee & ESIMT  
From: Darby Hiller  
Date: May 20th, 2005  
Subject: Outcome Performance Analysis (Spring 2005 Artifacts)

### Executive Summary

In May 2005, 43 faculty and staff scored 143 Critical Thinking and 239 Communications artifacts over four days to measure performance on our general education outcomes (Cultural perspectives artifacts were not scored at this time).

#### Key findings:

- Performance improved on using correct grammar and mechanics in communications (a trended weak area)
- Strongest communications skill: identifying the main idea
- Weakest communications skill: supporting main idea with relevant material and documented sources
- 38% of near-graduates performed below the sufficient level in communications
- Performance on all critical thinking skills improved over last semester
- Strongest critical thinking skill: identifying the issue or problem
- Weakest critical thinking skill: demonstrating understanding of different perspectives (a trended weak area)
- 25% or less of near-graduates below the sufficient level on the critical thinking skills
- Sophomores barely outperformed freshmen in communications and critical thinking

### Methodology

We continued using the new scoring method to increase inter-reader reliability (see inter-reader reliability report (Spring 2005)). The inter-reader reliability rate was 94% for the Communications artifacts and 95% for the Critical Thinking artifacts. Some artifacts were thrown out of this analysis because the final score difference was outside our accepted range of reliability. Therefore, this analysis includes 224 artifacts for Communications and 135 artifacts for Critical Thinking. These results are generalizable to those students taking courses that support our general education outcomes.

NMC's primary goal for performance on general education outcomes is that near-graduating students, defined as 52 or more NMC credits will perform at the sufficient level in all the capabilities of the outcome. A second goal is that students will show improvement with increasing exposure to NMC's curriculum. We demonstrate this by comparing students with fewer than 30 NMC credits (freshman) to those that have 30 or more credits (sophomore). The five capabilities on the [rubrics](#) measure the outcome. A student can score in the range of zero (deficient) to three (proficient) on each capability. (See [assessment methodology](#) for complete description.)

### Results: Communications

The artifact results show that on average our students performed sufficiently on all the communications capabilities except supporting the main idea with relevant material and documented sources (Table 1). A sufficient level of performance is defined as average of 2.0. During the previous time period the weakest area was using coherent and mechanically-sound

language. Faculty and Curriculum Committee identified various viable changes to the curriculum, mostly in the Communications Academic Area, to address our students' weakness in using correct grammar and mechanics. These changes will be implemented for the fall 2005 semester, and are further outlined in a general education progress report to the Higher Learning Commission on how we use assessment results.

When we look at the results in terms of percentages, a majority of our students are performing sufficiently in each of the communications capabilities (Table 2). Fewer students were sufficient in organizing ideas logically (C3) and supporting the main idea with relevant material (C4) than in the last time period. However, slightly more students performed sufficiently or better in identifying a main idea (C1), using coherent and mechanically-sound language (C2), and demonstrating an awareness of audience (C5) than in fall 2004.

The students with 52 or more NMC credits (N=66) performed sufficiently or better on average on four of the five capabilities (Table 3). The ability to support the main idea with relevant material and documented sources was the weakest skill for our near-graduates. About 40% scored in the deficient or developing range (Table 4).

To assess whether increasing exposure to the NMC curriculum helps students achieve the general education outcomes, we compared the mean scores of students with less than 30 credit hours to those with 30 or more credit hours. The data show that the sophomores performed slightly better on all the capabilities than the freshman (Table 5). However, only the result for C4 is statistically significant. In general, students with 30 or more credit hours are more likely to perform better at supporting the main idea with relevant material and documented sources. However, neither freshmen nor sophomores performed at the sufficient level on C4 on average.

### **Results: Critical Thinking**

The data show that our students in the aggregate performed at the sufficient level on three of the five capabilities (indicated by a mean of 2.0 or greater) (Table 6). This finding represents an improvement over the previous semester in which none of the means were greater than 2.0. The weakest skills were in demonstrating an understanding of different perspectives (CT2) and in drawing conclusions that resolve issues or problems (CT5). This is a recurring finding in five years of analyses. A second problem with CT2 is that fewer assignments require the students to demonstrate this capability (as indicated by the lower N) than other capabilities, making the results less generalizable.

Performance on all the capabilities improved greatly over the previous time period (Table 7). The spring 2005 data also represent our student population better than those from fall 2004 because of the increased number of artifacts scored.

On average, our near-graduates (N=48) performed sufficiently on all the Critical Thinking capabilities (Table 8). But about 25% are still below sufficient on drawing conclusions (Table 9).

Is NMC value added when it comes to the critical thinking skills of our students? The data show that those students with 30 or more earned NMC credits performed slightly better on all the capabilities than those that have less than 30 earned credits (Table 10). However, only the result for CT5 is statistically significant. In general, students with 30 or more credit hours are more likely to perform better at drawing conclusions that resolve issues or problems than those with less than 30 credit hours. The "freshmen" performed sufficiently on identifying the problem (CT1) and using information to solve a problem (CT3) on average. The "sophomores" were sufficient on four of the five capabilities. The "freshmen" had the most trouble with CT5, "draw conclusions that resolve the issue or problem," while the "sophomores" were weakest in CT2, "demonstrates an understanding of different perspectives."

### **What this tells us**

With a larger sample of artifacts we have greater confidence that the results found here reflect more accurately the skills of our students. Using correct grammar and mechanics was the weakest communications skill for the past five years. Faculty and curriculum committee have emphasized changes to the curriculum that address this weak area. The Communications Academic Area started implementing those changes roughly at the beginning of spring 2005. With these artifact results we see improvement in using correct grammar and mechanics. The weakest area in communications this semester is using relevant material and correctly documented sources, if necessary, to support the main idea. The curricular changes started this semester are intended to help students on all the communications capabilities.

The results for the critical thinking outcome were much improved over the previous semester. The weakest area is still demonstrating an understanding of different perspectives. In as much as writing/communications is linked to being able to think critically, the curricular changes begun this semester by the Communications Academic Area are designed to improve our students' critical thinking skills as well. These changes include:

- 1) develop an English as a Second Language Program (tutoring and coursework)
- 2) establish a fundamentals of writing course, ENG97
- 3) enforce mandatory sequencing of ENG111 and ENG112
- 4) implement English Composition Capstone project assessment
- 5) establish a "Writing Across the Curriculum" program by developing guidelines and identifying writing intensive courses, and by adopting and using a multidisciplinary common writing guide and web resources

For more information on these initiatives, contact the Communications Academic Area.

NMC's primary goal for its general education outcomes is that all graduates will leave here with a sufficient level of achievement on all the outcomes (sufficiency is defined on the outcome rubrics). We demonstrate this by reviewing the work of those students with 52 or more credits (near-graduates). This number of credits was chosen because it was thought to represent those that have only about 12 credit hours to go until a degree is earned (or one semester, full-time). The results presented above for our near-graduates are descriptive only. This sample is not representative of all of our students with 52 or more credits. In the future we will assure our results are more generalizable with a different sampling method. In communications, about 62% of our near-graduates performed at the sufficient level or above, indicating we still have work to do to reach 100%. In critical thinking, 76% of our near-graduates performed at the sufficient level or above. The weakest areas in critical thinking for our near-graduates on average is demonstrating an understanding of different perspectives and drawing conclusions.

A secondary goal is to demonstrate that with increasing exposure to the NMC curriculum, our students will improve their achievement on the general education outcomes. Measuring this goal has been difficult because our sample of artifacts has been too small to provide generalizable results. However of those artifacts scored this semester, those students with 30 or more NMC credit hours performed slightly better than those with less than 30 credit hours. In the future, we may want to develop an alternate way of measuring this secondary goal because acquiring the requisite number of artifacts and scoring them may be too cumbersome and resource intensive.

Address questions or comments about this analysis to the Office of Institutional Research.

Appendix A: Communications Tables

Table 1. Communications Capability Average	N	Min	Max	Mean	Std. Dev.	Fall 2004 (N=49)
c1: Identifies main idea for intended purpose	224	.00	3.00	2.22	.67	2.06
c2: Uses coherent and mechanically-sound language	224	.50	3.00	2.09	.62	1.84
c3: Organizes ideas logically for intended purpose	224	.50	3.00	2.05	.65	2.05
c4: Supports main idea with relevant material and documented sources, if suitable	224	.00	3.00	1.83	.74	2.04*
c5: Demonstrates an awareness of audience	224	.00	3.00	2.18	.59	2.15
Final score	224	2.50	15.00	10.36	2.61	

Table 2. Percentage of students scoring Sufficient or better: Communications		Spring 2005 (N=224)	Fall 2004
C1	Identifies main idea for intended purpose	77.2	71.4 (N=49)
C2	Uses coherent and mechanically-sound language	76.7	61.2 (N=49)
C3	Organizes ideas logically for intended purpose	68.8	71.4 (N=49)
C4	Supports main idea with relevant material and documented sources, if suitable	57.6	69.2 (N=39)
C5	Demonstrates an awareness of audience	79.9	79.6 (N=49)

Table 3. Near-Graduate Means: Communications	N	Min	Max	Mean	Std. Dev.
C1 average	66	.50	3.00	2.28	.68
C2 average	66	.50	3.00	2.13	.69
C3 average	66	.50	3.00	2.10	.69
C4 average	66	.00	3.00	1.95	.76
C5 average	66	.00	3.00	2.23	.65
Final score	66	2.50	15.00	10.69	2.93

Table 4. Near-Graduate (N=66) Percentages: Communications	c1ave	c2ave	c3ave	c4ave*	c5ave	Final score
Deficient (0-.5)	3.0	3.0	3.0	9.1	1.5	4.5
Developing (1.0-1.5)	16.7	21.2	25.7	25.8	16.7	33.3
Sufficient (2.0-2.5)	51.5	54.6	54.5	50.0	59.1	60.7
Proficient (3.0)	28.8	21.2	16.7	15.2	22.7	1.5

Table 5. Freshman/Sophomore Comparison: Communications		c1ave	c2ave	c3ave	c4ave*	c5ave	Final score
less than 30 credits	Mean	2.20	2.07	2.02	1.73	2.16	10.18
	N	109	109	109	109	109	109
	Std. Deviation	0.65	0.59	0.63	0.74	0.56	2.45
30 or more credits	Mean	2.23	2.11	2.06	1.93	2.20	10.54
	N	111	111	111	111	111	111
	Std. Deviation	0.67	0.64	0.66	0.72	0.62	2.72

(Note: \* statistically significant difference between means)

### Appendix B: Critical Thinking Tables

Table 6. Critical Thinking Capability Average	N	Min	Max	Mean	Std. Deviation	Fall 2004 (N=47)
ct1: Identifies issue or problem	121	.50	3.00	2.43	.62	1.71
ct2: Demonstrates an understanding of different perspectives	65	.50	3.00	1.78	.66	1.12 (N=37)
ct3: Uses information to results issue or problem	135	.00	3.00	2.23	.75	1.71
ct4: Applies reasoning to resolve issue or problem	135	.00	3.00	2.08	.82	1.44
ct5: Draws conclusions that resolves issue or problem	135	.00	3.00	1.89	.85	1.44
Final score average	135	1.00	15.00	9.24	2.79	

Table 7. Percentage of students scoring Sufficient or better: Critical Thinking		Spring 2005	Fall 2004
CT1	Identifies issue or problem	86.7 (N=121)	55.3 (N=47)
CT2	Demonstrates an understanding of different perspectives	47.7 (N=65)	19.0 (N=37)
CT3	Uses information to results issue or problem	77.0 (N=135)	51.1 (N=47)
CT4	Applies reasoning to resolve issue or problem	64.4 (N=135)	34.0 (N=47)
CT5	Draws conclusions that resolves issue or problem	57.8 (N=135)	34.0 (N=47)

Table 8. Near-Graduate Means: Critical Thinking	N	Min	Max	Mean	Std. Deviation
ct1 average	47	1.00	3.00	2.63	.56
ct2 average	9	1.00	2.50	2.00	.664
ct3 average	48	.50	3.00	2.41	.70
ct4 average	48	.00	3.00	2.31	.76
ct5 average	48	.00	3.00	2.19	.84
Final score	48	2.00	14.50	9.85	2.66

Table 9. Near-Graduate (N=48) Percentages: Critical Thinking	ct1ave	ct2ave (N=9)	ct3ave	ct4ave*	ct5ave
Deficient (0-.5)			2.1	4.2	6.3
Developing (1.0-1.5)	2.1	N too small for validity	16.7	18.8	18.8
Sufficient (2.0-2.5)	36.2		33.4	31.3	41.6
Proficient (3.0)	59.6		47.9	45.8	33.3

Table 10. Freshman/Sophomore Comparison: Critical Thinking		ct1ave	ct2ave	ct3ave	ct4ave	ct5ave*	Final score
less than 30 credits	Mean	2.38	1.76	2.1	1.99	1.71	9.14
	N	54	45	62	62	62	62
	Std. Deviation	.57	.64	.72	.78	.76	2.48
30 or more credits	Mean	2.48	1.84	2.35	2.17	2.05	9.33
	N	66	19	72	72	72	72
	Std. Deviation	.66	.73	.76	.85	.90	3.07

(Note: \* statistically significant difference between means)