



CAAP Analysis and Report

Spring 2006

Executive Summary

Northeast Community College (NECC) administered the CAAP (Colligate Assessment of Academic Proficiency) exams on March 29, 2006 to 133 students receiving Associate of Arts (AA) or Associate of Science (AS) degrees and 183 students receiving Associate of Applied Science (AAS) degrees. Five different exams including writing skills, mathematics, reading, critical thinking, and writing essay were randomly administered to these two groups of students.

- Overall, NECC students performed at the national norm or were negligibly above or below with few exceptions. On the written writing essay, AA/AS students were moderately above the national norm, while AAS students were moderately below the national norm on the objective reading skills exam.
- On the objective writing skills exam Northeast students showed strength in punctuation skills while demonstrated weaknesses in basic grammar and usage were evident.
- Pre-algebra Mathematical skills were strong for both the AA/AS and the AAS groups but elementary and intermediate algebra along with coordinate geometry were weak for both groups.
- The AA/AS group demonstrated strong reasoning skills in the reading exam while the AAS students showed a moderate weakness in reading primarily due to weak referring skills.
- The AAS students scored above the national norm in Critical Thinking primarily due to their strength in analysis and extension of arguments. AA/AS students scored very close to the national norm.
- AA/AS students demonstrated an overall strength in writing by scoring a moderate positive difference over the national norm on essay writing. AAS scored negligibly below the national norm.

- Northeast students performed very well on the CAAP exams. One or more students from each group (AA/AS and AAS) scored in the highest 97 and above percentiles on each exam.
- Northeast students responded positively when asked to describe their views of working with people of diverse cultures. Over 80 percent responded that theirs was one of understanding, acceptance, or embracing the differences.

Sample Selection Process

Northeast Community College (NECC) has administered the CAAP during the spring semester in 2002, 2004, and 2006. The first two times it was administered each student receiving an Associate of Arts (AA) or Associate of Science (AS) degree received a letter informing them that they had been selected to take the CAAP exam. Those that chose to attend were administered 4 separate 40 minute objective exams over a 4 hour period. In 2002, 47 students participated and in 2004, 65 students participated. Because of the method of selection this was a volunteer sample and not a random sample therefore the results cannot be applied to the overall graduating group but only to those who participated.

In 2006, a different approach was used that would guaranteed a true random sample. After reviewing the general education goals, four objective exams (writing skills, reading, mathematics, and critical thinking) along with the writing essay were selected to be administered. A minimum of 25 completions of each exam was required by ACT to run the Content Analysis Report which would provide a detailed analysis of the results from each objective exam. This meant that we had to have at least 25 students from each group (AA/AS and AAS) take each exam. A minimum of 30 students were selected to take each exam to allow for a maximum of 15 percent absenteeism. Students were selected who had completed 45 hours or were currently enrolled and would have at least 45 hours upon completion of the semester. A computer query was run to select students with at least 45 hours who were enrolled in class at 10:00 on Wednesday, March 22. The test ended up being administered one week later due to an unpredictable snow storm that closed the school for two days just prior to the original test day. These students were divided into those receiving an AA or AS degree and those receiving an AAS (Associate of Applied Science) degree. From these two groups, two samples were identified using a random table to take the written essay exam. Each student was assigned to a testing room, once seated the objective exams were passed out in a spiral method ensuring each student received an exam by random chance.

A group of instructors and staff were identified to act as ACT test examiners. The Director of Institutional Research with the help of the Assessment Coordinator conducted a series of one hour workshops to review testing procedures for the examiners. To insure confidentiality of the exams and other testing materials, the academic deans' help was enlisted to distribute the exams and testing materials to the proper classrooms prior to the exam, and retrieve the exams and all testing materials after the exams were completed. All materials were kept secure in the Director of Institutional Research's office except

during the testing phase. The answer sheets were organized, packaged and shipped overnight to ACT for processing the same day.

Writing skills

A total of 27 AA/AS and 36 AAS students took the CAAP writing skills exam. The scaled scores were 61.9 and 61.5 respectively compared to 62.3 nationally. The NECC comparison scores (-0.09 and -0.17) were below the national mean but the difference was negligible.

Group	AA/AS	AAS	National
Mean	61.9	61.5	62.3
Std. Dev.	5.2	4.4	4.7
¹ Comparison	-0.09	-0.17	

Of the 27 AA/AS students, 11 (41 percent) were male and 16 (59 percent) were female. Both groups scored a 62 on the writing skills exam. Of the 36 AAS students, 19 (53 percent) were male and 17 (47 percent) were female. The male students' scaled score was 62 and the female score was 61. The score for the twenty-three (23) AAS students who were between 19 and 20 was 61 while the score for the 8 students who were between 21 and 25 was substantially higher at 64.

Students were asked to rate their performance effort by indicating that they: *tried their best*; *gave moderate effort*; *gave little effort*; *gave no effort*; or *no response*. Sixteen (59 percent) of the AA/AS students rated their performance as, *tried my best* and they averaged 62. Ten (37 percent) rated their performance as, *gave moderate effort* and scored a 63. Twenty (56 percent) AAS students rated their performance as, *tried my best* and they scored a 63 compared to 10 (28 percent) who rated their performance as, *gave moderate effort* and scored a 61.

The Content Analysis Report for writing skills was run independently for each group. The results rated how the Bottom 25 percent scored compared to the Bottom 25 percent nationally, similarly how the Middle 50 percent scored compared to the Middle 50 percent nationally, and how the Top 25 percent scored against the Top 25 percent

¹ Comparison Scale: if the score is between .25 and negative .25 the result is plus or minus of a ¼ standard deviation from the national norm and the result is negligible. If the result is a plus or minus .25 to .50 than the score represents a ¼ to a ½ of a standard deviation which is a moderate variation. If the result is greater than plus or minus .50 than the variation is greater than a ½ of a standard deviation and that would be considered substantial.

nationally. The writing skills exam subcategories were: punctuation, basic grammar and usage, sentence structure, strategy, organization, and style.

Strengths: Both the AA/AS and AAS results indicate that their strengths include punctuation and organization. In these areas they scored at the national norm or above the norm. The amount that the AAS students scored above the national norm was moderate to substantial while the AA/AS group scored negligibly to moderately above. In organization, both groups scored at the national mean or moderately above in the lower 25 percentile group.

Table 2 Results of AA/AS Students in Writing Skills			
Category	Bottom 25%	Middle 50%	Top 25%
Punctuation	4%	13%	3%
Basic Grammar & Usage	-8%	-8%	-16%
Sentence Structure	0%	-5%	-5%
Strategy	-4%	-5%	-9%
Organization	9%	1%	-1%
Style	5%	-1%	4%

Table 3 Results of AAS Students in Writing Skills			
Category	Bottom 25%	Middle 50%	Top 25%
Punctuation	21%	13%	10%
Basic Grammar & Usage	-14%	-10%	-8%
Sentence Structure	5%	-11%	-3%
Strategy	1%	-12%	-13%
Organization	18%	5%	-2%
Style	1%	-2%	-2%

Weaknesses: The results indicated a weakness in basic grammar and usage. This weakness extended across all three groups (Bottom 25, Middle 50, and Top 25) for both the AA/AS and AAS groups with scores of -8, -8, -16 and -14, -10, and -8 respectively. These negative differences indicated a substantial difference at all levels.

Sentence structure and strategy categories showed a general overall negligible to moderate weakness. Style was overall negligibly different from the national mean.

Mathematics

A total of 30 AA/AS and 37 AAS students took the CAAP mathematics exam. The scaled scores were 55.7 and 55.8 respectively compared to 56.1 nationally. The NECC comparison scores (-0.11 and -0.08) were both below the national mean but the differences were negligible.

Group	AA/AS	AAS	National
Mean	55.7	55.8	56.1
Std. Dev.	4.2	3.9	3.6
Comparison	-0.11	-0.08	

Of the 30 AA/AS students, 10 (33 percent) were male and 20 (67 percent) were female. Both groups scored a 56. Of the 35 AAS students, 17 (46 percent) were male and 20 (54 percent) were female. The males scaled score was 56 while the female score was 55. The score for the 20 AAS students who were between 19 and 20 was 57 while the score for the 8 students who were between 21 and 25 was substantially lower at 55.

Students were asked to rate their performance effort by indicating that they: *tried their best*; *gave moderate effort*; *gave little effort*; *gave no effort*; or *no response*. Fifteen (50 percent) of the AA/AS students rated their performance as, *tried my best* and they averaged 55. Ten (33 percent) rated their performance as, *gave moderate effort* and scored a 56. Twenty-one (57 percent) AAS students rated their performance as, *tried my best* and they scored a 56 compared to 8 (22 percent) who rated their performance as, *gave moderate effort* and scored a 55.

The Content Analysis Report for mathematics was run independently for both groups. The results rated how the Bottom 25 percent score compared to the Bottom 25 percent nationally, similarly how the Middle 50 percent scored compared to the Middle 50 percent nationally, and how the Top 25 percent scored against the Top 25 percent nationally. The mathematics content report has the following subcategories: prealgebra, elementary algebra, intermediate algebra, coordinate geometry, college algebra, and trigonometry.

Strengths: Both the AA/AS and AAS results indicated that their strengths were in prealgebra which are presented in Tables 5 and 6 on the following page. In the prealgebra area both groups scored above the norm. The AAS students scored moderately and substantially above the national norm in all three groups (Bottom 25%, Middle 50%, and Top 25%) with scores of 20%, 13%, and 10%. The AA/AS students scored moderately above in all three areas (Bottom 25%, Middle 50%, and Top 25%) with scores of 7%,

6%, and 7%. The Top AAS students also performed well in intermediate algebra with a score of 20% above the national norm which was a substantial increase.

Weaknesses: The results presented in Tables 5 and 6 below indicate a number of weaknesses in mathematics. When we review the results of the AA/AS group, we discover an overall weakness in elementary algebra, intermediate algebra, and coordinate geometry. This weakness extends across all three groups (Bottom 25, Middle 50, and Top 25). The following table presents those results. It is very evident of the weaknesses in these areas of algebra and geometry as most of the numbers demonstrate a negative difference that is substantial.

Table 5 Results of AA/AS Students in Mathematics			
Category	Bottom 25%	Middle 50%	Top 25%
Prealgebra	7%	6%	7%
Elementary algebra	-13%	-14%	-4%
Intermediate algebra	-18%	-13%	-4%
Coordinate geometry	0%	-15%	0%
College Algebra	-3%	3%	-6%
Trigonometry	3%	-8%	-6%

If we compare the above results of the AA/AS group to the AAS group below, we find some of the same weaknesses. At the same time, there are a number of strengths in the Top 25% group. The data indicates that there are substantial negative differences in the Bottom 25% (-12%, -6%, and -10%). The Middle 50% group is below the national mean but those differences are negligible. The Top 25% group are all positive (4%, 20%, and 3%) with the one being a substantial positive difference.

Table 6 Results of AAS Students in Mathematics			
Category	Bottom 25%	Middle 50%	Top 25%
Prealgebra	20%	13%	10%
Elementary algebra	-12%	0%	4%
Intermediate algebra	-6%	-3%	20%
Coordinate geometry	-10%	-4%	3%
College Algebra	-3%	0%	-9%
Trigonometry	-5%	-8%	-15%

Both the AA/AS and the AAS students scored below the mean in trigonometry. Most of the negative differences were moderate. These are not particularly surprising as most AAS students receive little or no instruction in trigonometry in their applied math programs.

Reading

A total of 26 AA/AS and 39 AAS students took the CAAP reading exam. The scaled scores were 60.8 and 58.6 respectively compared to 60.4 nationally. The NECC comparison scores were (0.07 and -0.33). The AA/AS comparison score was negligible above the national norm while the AAS score of -0.33 was moderately below the national mean.

Group	AA/AS	AAS	National
Mean	60.8	58.6	60.4
Std. Dev.	4.7	5.5	5.5
Comparison	0.07	-0.33	

Of the 26 AA/AS students, 6 (23 percent) were male and 20 (77 percent) were female. The male group scored 59 and the female group scored 61. Of the 39 AAS students, 23 (59 percent) were male and 16 (41 percent) were female. The male scaled score was 58 and the female score was 59. The score for the 13 (33 percent) AA/AS students who were between 19 and 20 was 61 while the score for the 5 (13 percent) students who were between 21 and 25 was also 61. The score for the 15 (38 percent) AAS students who were between 19 and 20 was 57 while the score for the 18 (46 percent) students who were between 21 and 25 was substantially higher at 60.

Students were asked to rate their performance effort by indicating that they: *tried their best*; *gave moderate effort*; *gave little effort*; *gave no effort*; or *no response*. Fourteen (54 percent) of the AA/AS students rated their performance as, *tried my best* and they averaged 62. Eleven (42 percent) rated their performance as, *gave moderate effort* and scored a 61. Sixteen (41 percent) AAS students rated their performance as, *tried my best* and they scored a 59 compared to 12 (33 percent) who rated their performance as, *gave moderate effort* and also scored a 59.

The Content Analysis Report for reading was run independently for both groups. The results rate how the Bottom 25 percent score compared to the Bottom 25 percent nationally, similarly how the Middle 50 percent score compared to the Middle 50 percent nationally, and how the Top 25 percent scored against the Top 25 percent nationally. The reading content report has the following subcategories: reasoning skills and referring skills. Reasoning skills refers to reasoning to determine implicit meaning and relationships. Referring skills refers to what is explicitly stated in the text.

Strengths: Both the AA/AS and AAS results indicate that their strengths were in the reasoning skills area. In this area the AA/AS students scored above the norm but the positive results were only negligible to moderate. The AAS students scored below the norm but the results were only negligible.

Table 8 Results of AA/AS Students in Reading			
Category	Bottom 25%	Middle 50%	Top 25%
Reasoning skills	6%	6%	5%
Referring skills	1%	-7%	-6%

Table 9 Results of AAS Students in Reading			
Category	Bottom 25%	Middle 50%	Top 25%
Reasoning skills	-1%	-3%	-2%
Referring skills	-13%	-11%	-9%

Weaknesses: The results indicate that both groups were weak in the referring skills area. When we review the results of the AA/AS group, we discover an overall weakness that is particularly evident in the Middle 50% and Top 25% where the results were -7 percent and -6 percent respectively. The Bottom 25% actually scored negligibly 1 percent above the norm for the Bottom 25%. The results of the AAS group indicated there were substantial negative differences in the referring skills area as indicated by: Bottom 25%, -13%; Middle 50%, -11%; and Top 25%, -9%.

Critical Thinking

A total of 27 AA/AS and 39 AAS students took the CAAP mathematics exam. The scaled scores were 60.6 and 60.9 respectively compared to 60.7 nationally. The NECC comparison scores (-0.02 and 0.04) were very similar to the national mean and any difference was negligible.

Table 10 Critical Thinking			
Group	AA/AS	AAS	National
Mean	60.6	60.9	60.7
Std. Dev.	5.5	4.0	5.3
Comparison	-0.02	0.04	

Of the 27 AA/AS students, 7 (26 percent) were male and 20 (74 percent) were female. The male group scored 66 which was substantially higher than the female group that scored 59. Of the 39 AAS students, 23 (59 percent) were male and 16 (41 percent) were

female. The male scaled score was 61 and the female score was 60. The score for the 12 (44 percent) AA/AS students who were between 19 and 20 was 60 while the score for the 10 (37 percent) students who were between 21 and 25 was 61. The score for the 15 (38 percent) AAS students who were between 19 and 20 was 61 while the score for the 13 (33 percent) students who were between 21 and 25 was substantially higher at 62.

Students were asked to rate their performance effort by indicating that they: *tried their best; gave moderate effort; gave little effort; gave no effort; or no response*. Fifteen (50 percent) of the AA/AS students rated their performance as *tried my best* and they averaged 55. Ten (33 percent) rated their performance as, *gave moderate effort* and scored a 56. Twenty-one (57 percent) AAS students rated their performance as, *tried my best* and they scored a 56 compared to 8 (22 percent) who rated their performance as, *gave moderate effort* and scored a 55.

The Content Analysis Report for critical thinking was run independently for both groups. The results rate how the Bottom 25 percent score compared to the Bottom 25 percent nationally, similarly how the Middle 50 percent score compared to the Middle 50 percent nationally, and how the Top 25 percent scored against the Top 25 percent nationally. The critical thinking report has the following subcategories: 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.

Strengths: Both the AA/AS and AAS results indicate that their strength is in the analysis of arguments area. In addition, the AAS group demonstrated a positive substantial difference in the extension of arguments area. This is evident when all three (Bottom 25%, Middle 50%, and Top 25%) groups exhibit strong scores respectively (14%, 11%, and 9%). All of these scores indicate substantial difference from the national scores.

Table 11 Results of AA/AS Students in Critical Thinking			
Category	Bottom 25%	Middle 50%	Top 25%
Analysis of Arguments	5%	6%	-5%
Evaluation of Arguments	-1%	-13%	2%
Extension of Arguments	4%	-11%	2%

Table 12 Results of AAS Students in Critical Thinking			
Category	Bottom 25%	Middle 50%	Top 25%
Analysis of Arguments	13%	7%	-4%
Evaluation of Arguments	4%	-5%	0%
Extension of Arguments	14%	11%	9%

Weaknesses: The results from Tables 11 and 12 indicate that within both groups that their weakest area was in the evaluation of arguments. When we review the results of the AA/AS group, we discover an overall weakness that is particularly evident in the Middle 50%. It is particularly noteworthy that the Middle 50% group scored substantially below the national Middle 50% in evaluating and extension of arguments (respectively -13% and -11%). The results of the AAS group indicated that there were negligible differences in the evaluation of arguments area as indicated by Bottom 25%, Middle 50%, and Top 25% where the scores were 4%, -5%, and 0% respectively, but the group performed much better in the other two areas.

Writing Essay

A total of 23 AA/AS and 31 AAS students took the CAAP writing essay. The scaled scores were 3.2 and 2.9 respectively compared to 3.0 nationally. The NECC comparison scores of 0.33 for the AA/AS group was substantially above the national mean while the -0.09 for the AAS group was negligibly below the national mean.

<i>Table 13</i>			
<i>Writing Essay</i>			
Group	AA/AS	AAS	National
Mean	3.2	2.9	3.0
Std. Dev.	0.6	0.6	0.6
Comparison	0.33	-0.09	

Students' Response to Diversity

The FACS Social Skills team measures students' learning outcomes for the following objectives:

- The student will be able to demonstrate interactive behaviors
- The student will be able to demonstrate knowledge of individual, national and international diversity.

In an effort to measure students' perception of their skills in these areas, the team submitted four questions that were added to the objective CAAP exams. The results are presented for each group (AA/AS and AAS) plus a combined score.

The first question stated, *I feel prepared to work more effectively with people from diverse backgrounds due to my education at Northeast Community College.* Table 14 below indicates that less than 8 percent of the students disagree or strongly disagree with that statement.

Table 14
I feel prepared to work more effectively with people from diverse backgrounds due to my education at Northeast Community College

Response	AAS		AA/AS		Combined	
	N	%	N	%	N	%
Strongly agree	21	13.0%	16	16.2%	35	14.4%
Agree	42	45.7%	38	39.0%	104	42.8%
Neutral	51	32.6%	41	38.1%	85	35.0%
Disagree	19	5.8%	9	4.8%	13	5.3%
Strongly Disagree	5	2.9%	1	1.9%	6	2.5%
Total	138		105		243	

The multiple choice answers for the following three questions were in random order on the CAAP exam. The results are presented in an order that the FACS team feels are from the most acceptable to the least acceptable order. The Teams’ goal was that at least 80 percent of the students responding would choose one of the first three answers for each of the questions.

The column for the combined results for the question presented in Table 15 “*due to my education at Northeast, my view of working with diverse people would be described as:*” indicated that 86.0 percent of the students chose one of the following answers: acceptance, understanding, or tolerance. The results exceeded the FACS Teams goal of 80 percent. When you compare the results of the AAS students and the AA/AS students they are very similar with only small noticeable differences.

Table 15
Due to my education at Northeast, my view of working with diverse people would be described as:

Response	AAS		AA/AS		Combined	
	N	%	N	%	N	%
One of embracing differences	21	15.2%	16	15.2%	37	15.2%
One of acceptance	42	30.4%	38	36.2%	80	32.9%
One of understanding	51	37.0%	41	39.0%	92	37.9%
One of tolerance	19	13.8%	9	8.6%	28	11.5%
One of avoidance or non-acceptance	5	3.6%	1	1.0%	6	2.5%
Total	138		105		243	

The results for the second question presented in Table 16 “*When I am around people of other cultures I usually:*” indicated that 92.6 percent of the students chose one of the following answers: *learn as much as I can*; *look for commonalities*; and *interact*. The results were very similar across both the AAS and AA/AS groups.

Table 16						
<i>When I am around people from other cultures I usually:</i>						
Response	AAS		AA/AS		Combined	
	N	%	N	%	N	%
Learn as much as I can	33	23.9%	26	24.8%	59	24.3%
Look for commonalities	41	29.7%	24	22.9%	65	26.7%
Interact	50	32.6%	51	38.1%	101	41.6%
Ignore them and leave as soon as I can	13	5.8%	4	4.8%	17	7.0%
Wish they didn't exist	1	2.9%		0.0%	1	0.4%
Total	138		105		243	

The last question which dealt directly with the workplace and taking or refusing a job working and interacting with diverse individuals fell short of the 80 percent results. The results of Table 17 indicated 77.0 percent of the respondents chose one of the first three answers. When we consider each group individually, the AA/AS students responded 80.9 percent while the AAS students responded 75.0 percent. When we compare the results of the two groups we find that a larger percent of the AAS students would decline the job for whatever reason. The results do not provide any evidence why they chose to decline the job whether it was a lack of information or preparedness.

Table 17						
<i>If all aspects of my life would allow me to accept a job offer that required me to interact with many diverse individuals and groups within the United States and around the world, I would:</i>						
Response	AAS		AA/AS		Combined	
	N	%	N	%	N	%
Accept the offer with eagerness and look forward to working among different cultures.	27	19.9%	23	21.9%	50	20.6%
Accept the job and look forward to learning more about our diverse world.	41	30.1%	44	41.9%	85	35.0%
Likely accept the job.	34	25.0%	18	17.1%	52	21.4%
Consider the offer but not feel prepared to work with diverse people groups.	25	18.4%	18	17.1%	43	17.7%
Decline the offer.	9	6.6%	2	1.9%	11	4.5%
Total	136		105		241	

Conclusion

Although NECC students performed very well on the CAAP, a number of weaknesses have been identified in the subcategories of each objective exam. Each FACS team should evaluate their respective Content Analysis Report and make recommendations to the faculty on various strategies that can be implemented in their classrooms or programs to strengthen the identified weaknesses.

Overall reviews of the Content Analysis Reports indicate that strategies should be developed, recommended, and implemented to strengthen the following areas:

- Writing skills: basic grammar and usage
- Mathematics: elementary and intermediate algebra; coordinate geometry
- Reading: referring skills
- Critical thinking: evaluation and extension of arguments

Although NECC has a low enrollment of diverse students, the institution should continue to explore strategies and provide opportunities for students to interact and find commonalities so that we can embrace our difference and find acceptance and understanding.

A follow-up to this assessment strategy would be to conduct another assessment day in three years which would be spring 2009. This strategy would provide ample time for the FACS teams to develop and implement strategies to strengthen the weakness discussed. In addition, it would be a strong evaluation of the mandatory placement program that has been recently implemented.