

University of Nebraska – Kearney, Office of Assessment

Collegiate Assessment of Academic Proficiency Results: 2010-2011

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The University of Nebraska at Kearney (UNK) is currently using the Collegiate Assessment of Academic Proficiency (CAAP) as a measure of the achievement level of UNK students compared to a national norm group and also as an indicator of the success of the General Studies program. This report is based on the scores of UNK first-year students who took the CAAP test during the fall semester of 2010 and seniors who took the CAAP during the spring semester of 2011. First-year student participation was solicited based on enrollment in the General Studies program's Portal Classes. Seniors were recruited via email solicitation and were reimbursed for their time. Since sampling was not random, there are limitations on the conclusions that can be drawn from the data, especially with the senior cohort. (Students who volunteer to take tests in their spare time are more likely to be the type who do well on such tests, whereas those who do not perform well on tests and/or do not like taking them would not be expected to volunteer.) The national norms used for the first-year student group comparison are from the ACT website (www.act.org/caap) and are based on student data collected from freshmen at public, four-year institutions during the fall of 2010. Because nationally, fewer seniors take CAAP tests, the national norms used for the senior group comparison were derived from all the seniors who took the CAAP in the fall of 2010. The information about UNK's undergraduate population was taken from the UNK Factbook (available at unk.edu/factbook). The demographic composition of each test-taking group varies and is noted within each section.

Although the last time UNK administered the CAAP test was during the 2007-2008 school year (when the current testing group's seniors were presumably first-year students), value-added conclusions cannot be drawn from the data. The participant group does not include the same students, and therefore no within-participant score changes were calculated. Although there are some drastic differences between the 2007-2008 first-year students' performance and the 2010-2011 senior students' performance, we must be cautious to not over-extend the data.

Critical Thinking: First-Year Students

One hundred ten (110) first-year students took the CAAP Critical Thinking (CT) test. It should be noted that a modest majority (62.9%) of the population used to establish the national norms self-reported their race as white/Caucasian. UNK's white/Caucasian sample represented an overwhelming majority (92.7%). This percentage is neither a reflection of the national norm group nor UNK's undergraduate population (79.9% white/Caucasian). No comparisons based on race were made because of the extremely low number of non-white/Caucasian participants. In the future, intentional oversampling of minority populations may allow for comparisons of performance between members of varied ethnic groups as well as a more accurate comparison of the whole UNK sample to the national norm group. The UNK sample's percentages of female and male participants (59% and 41%, respectively) were very similar to the gender distribution of the national norm group (56.5% and 42.7%, respectively). However, UNK's undergraduate population is closer to being divided evenly (53.5% female and 46.5% male).

The mean scale score of UNK first-year students on the CT test was 62.5 ± 4.6 , slightly above the national mean of 61.0 ± 5.3 . Of the 110 UNK students, 72 (65.5%) scored above the national average. The breakdown of UNK freshmen performance as compared to the national percentiles is as follows:

36.4% of UNK first-year students scored above the 75th percentile nationally
29.1% of UNK first-year students scored between the 50th and 75th percentile nationally
23.7% of UNK first-year students scored between the 25th and 50th percentile nationally
10.8% of UNK first-year students scored below the 25th percentile nationally

There were no significant differences in mean CT scores between genders, ethnicities, or declared majors in the first-year student group.

Of the 86 students who indicated their level of effort on the CT test, 93% responded with either “tried my best” or “gave moderate effort”. While this is promising, 21.3% of the total participants did not indicate their level of effort, making it difficult to approximate the collective effort.

Critical Thinking: Seniors

One hundred two (102) seniors took the CAAP Critical Thinking (CT) test. It should be noted that the demographic makeup of the UNK sample is not representative of the national norm group. The majority of the national norm group self-reported their ethnicity as white/Caucasian (67.1%), and 57.6% of the participants were women and 41.6% were men (0.8% did not provide a response). The UNK sample consisted of an overwhelming majority (93.0%) of white/Caucasian participants. This is not reflective of the national norm group nor is it reflectively of UNK’s undergraduate student population (79.9% white/Caucasian). The distribution of women and men for the UNK sample (60.4% and 39.6% respectively) was much closer to that of the national norm group than was the distribution across ethnicities, but this is not representative of UNK’s student population (53.5% women, 46.5% men).

The mean scale scores of UNK seniors on the CT test was 65.1 ± 4.5 , above the national mean score of 63.0 ± 5.4 . Two-thirds of UNK’s participating seniors scored above the national average. The breakdown of UNK senior performance as compared to the national percentiles are as follows:

50.9% of UNK seniors scored above the 75th percentile nationally
15.7% of UNK seniors scored between the 50th and 75th percentile nationally
23.5% of UNK seniors scored between the 25th and 50th percentile nationally
9.9% of UNK seniors scored below the 25th percentile nationally

There were no significant differences in mean CT scores between genders, ethnicities, or declared majors in the senior group.

Of the 60 students who indicated their level of effort on the CT test, all responded with either “tried my best” or “gave moderate effort”. This is very encouraging, but 41.2% of participants did not respond to the question about their effort, so it is difficult to estimate the effort level of the group as a whole. Moreover, most of the participants who indicated their level of effort had above average scores. It is possible that some of those who received lower scores put forth less than moderate effort and could have possibly scored higher.

Essay Writing: First-Year Students

One hundred nine (109) first-year students took the CAAP writing essay test. The proportion of white/Caucasian participants was disproportionate for the writing test also, but to a lesser extent (84.4% as opposed to 92.7% in the CT sample). This sample is a better representation of UNK’s undergraduate students regarding the proportion of white/Caucasian students to non-white/Caucasian students. The proportion of female and male participants was very skewed (74.3% and 24.8%, respectively) and is not representative of either UNK’s student population or the national norm group.

The mean composite scale score for UNK first-year students was 3.0 ± 0.5 ; the national composite scale score was 3.0 ± 0.7 . Of the 109 UNK students, 58.8% scored at or above the national average. The breakdown of UNK student performance as compared to the national percentiles is as follows:

21.2% of UNK first-year students scored above the 75th percentile nationally
37.6% of UNK first-year students scored between the 50th and 75th percentile nationally
32.1% of UNK first-year students scored between the 25th and 50th percentile nationally
9.2% of UNK first-year students scored below the 25th percentile nationally

There were no significant differences in mean composite scale scores between genders, ethnicities, or declared majors in the first-year student group.

Essay Writing: Seniors

One hundred one (101) seniors took the CAAP writing essay test. The proportion of white/Caucasian participants was disproportionate for the writing test also (93.0%). The proportion of female and male participants was skewed to the same degree as was the CT sample (60.4% and 39.6%, respectively) and is not representative of either UNK's student population or the national norm group.

The mean composite scale score for UNK seniors was 3.5 ± 0.5 , above the national average of 3.3 ± 0.6 . Of the 101 UNK seniors, 79.2% scored above the national average. The breakdown of UNK senior performance as compared to the national percentiles are as follows:
42.6% of UNK freshmen scored above the 75th percentile nationally
36.6% of UNK freshmen scored between the 50th and 75th percentile nationally
12.9% of UNK freshmen scored between the 25th and 50th percentile nationally
7.9% of UNK freshmen scored below the 25th percentile nationally

There were no significant differences between the mean composite scale scores between ethnicities or declared majors within the senior group. Women did score significantly higher than men¹ (means: 3.68 ± 0.43 and 3.34 ± 0.52 , respectively).

Summary Observations

In each of the four testing groups, more than 50% of UNK's students scored above the national average. In fact, the number of seniors scoring below average on both tests was very low. Sampling bias aside, this is a very positive sign. While a random sample would most likely make the UNK students' score distribution more similar to that of the national average, it is improbable that the shift would be great enough to bring UNK's average to that of the national average. Especially with the senior's writing scores, going from almost 80% above average to 49% above average (that is, equivalent to the national norm group) is highly unlikely. Although sampling bias greatly inhibits the ability to quantify UNK's first-year and senior students' performance in comparison to the rest of the nation, it does appear that we are doing quite well.

The demographic similarities of the first-year participants and senior participants allow for some moderate cross-sectional comparisons. The ethnic and gender distributions of both CT test groups and both essay writing test groups are close enough that we can reasonably infer the individuals in the respective samples are characteristically similar. Please note that a number of first-year students will not progress through the entirety of their university education, whereas

¹ $F(1, 99)=12.40, p<.001$

the senior student group has most likely already lost such students. Presuming that those students would have a negative pull on the group mean, the first-year mean scores will be deflated somewhat while the senior mean scores will not.

When we consider the scores of UNK's first-year students compared to the senior students, the seniors scored higher than the first-year students on both the writing and CT tests and also more seniors scored above the national average on both tests. See figures 1 and 2 for comparisons between first-year and senior students for CT scores and composite essay scores. The great difference in the writing score distributions shows that, generally speaking, the seniors have more developed writing skills than the first-year students. Although we cannot determine to what degree the senior group's writing has improved during their time at UNK, we undoubtedly want seniors to be writing at a higher level than first-year students. The CT score distributions are more closely aligned, but the seniors had many more high scoring students as compared to the first-year students. Once again, it is desirable and expected that the seniors would outperform the first-year students, but due to the highly biased sampling of the senior cohort, no valid conclusions regarding causation can be drawn. Individual matching in future years of testing would allow for within-subjects analysis in addition to the between-groups analysis presently conducted.

Comparison to 2007-2008 CAAP Results

Figures 3 and 4 show the comparisons between first-year and senior students for CT scores and composite essay scores for the 2007-2008 CAAP testing results. Since these are score comparisons, not percentile comparisons, it is clear that there was little difference in the performances of the first-year students and the seniors at that time. In the 2010-2011 testing results, senior students scored significantly higher on both the CT² and the writing test³ as compared to first-year students. Although the nature of this analysis prevents us from establishing the cause of the seniors' higher scores, the difference between the two lends credibility to the notion that students' critical thinking and writing abilities are increasing during their time at UNK.

There are differences between the scores from the 2007-2008 testing session and the 2010-2011 session for both of the student groups and both tests (see table 1). Whereas in 2007-2008 the UNK student performances were either below average or on par with the national comparison group, the 2010-2011 performances were either even with or above the national comparison group averages. If we consider only the senior scores in the table, it is apparent that the 2010-2011 seniors outperformed the 2007-2008 seniors. In 2007, the UNK senior CT scores were comparable to the national average. In 2010, the UNK seniors averaged a full two points above the national average. More impressively, in 2007 the average score of a UNK senior's essay was 0.3 below the national average. Three years later, the UNK senior's score jumped a half a point while the national average remained the same.

In gauging outcomes of higher education at UNK, it is logical to focus on the performance of students who have (nearly) completed their degree requirements. While testing first-year students is valuable for obtaining a baseline of entry-level performance, testing seniors gives us a sense of what they are gaining from their time at UNK. With this in mind, it is very encouraging to see the 2010-2011 senior scores for both tests be (1) higher than first-year student scores, (2) higher than the scores of seniors three years ago, and (3) higher than the average score

² $F(2, 208)=8.56, p < .001$

³ $F(2, 207)=32.87, p<.001$

of seniors around the country. I must once again state, though, that the sample of seniors was by no means random and most likely consisted of many of UNK's higher ability students. If nothing else, it suggests that UNK's above average seniors are scoring above the national average. If this were not the case (i.e., UNK's higher ability students were scoring below the national average), it would be cause for concern.

Overall, student performance from the 2010-2011 CAAP tests was much better than from the 2007-2008 CAAP tests. Each of the four tests had drastically fewer students scoring in the lowest quartile nationally in the most recent testing session (ranging from 23% to 37% of UNK students in 2007-2008 to 7.9% to 10.8% in 2010-2011). While the available data provides positive indications of UNK students' abilities, more randomized sampling in the future would allow for a more complete understanding of what students are gaining from their time at UNK.

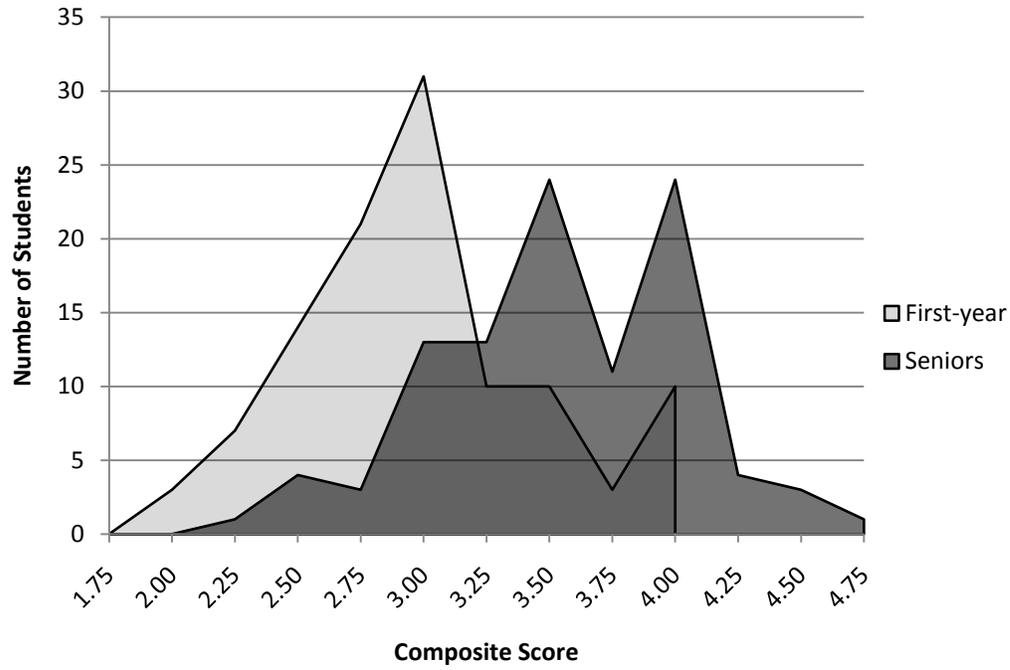


Figure 1. Comparison of composite essay scores of first-year students and seniors from the 2010-2011 CAAP test. The lines indicate the number of students receiving each score. Although there is some overlap, seniors tended to score higher than first-year students.

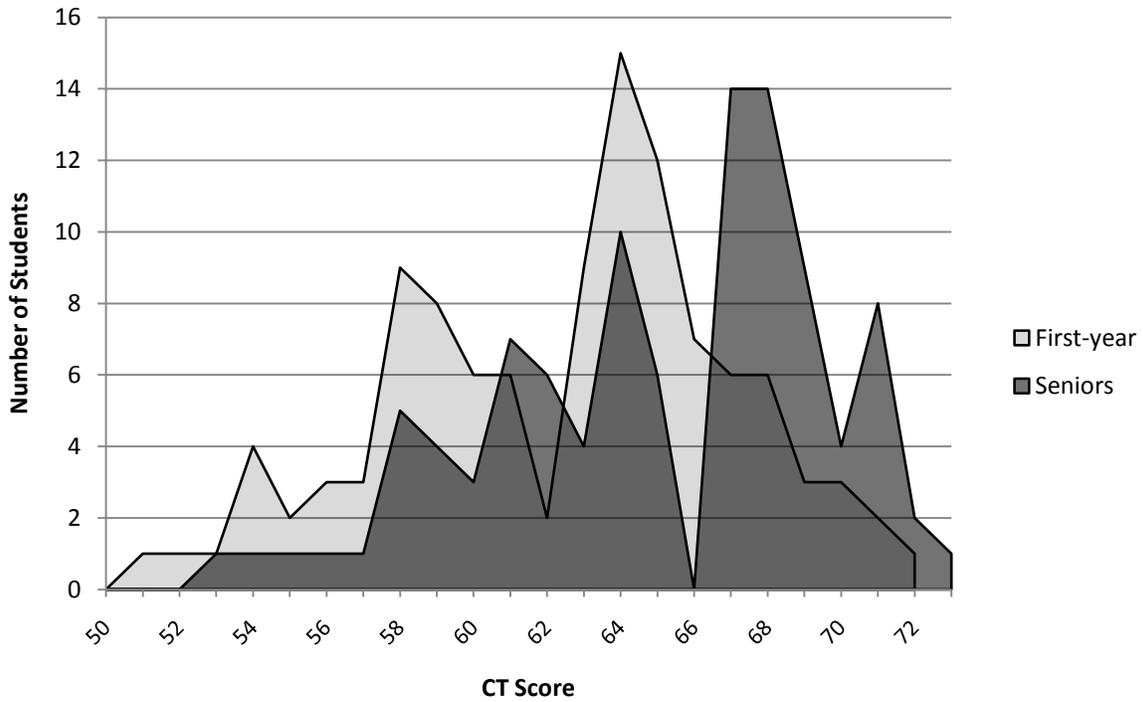


Figure 2. Comparison of critical thinking scores of first-year students and seniors from the 2010-2011 CAAP test. The lines indicate the number of students receiving each score. The senior students had many more students in the top third of scores represented (scores above 65) than did the first-year students. All scores are integers.

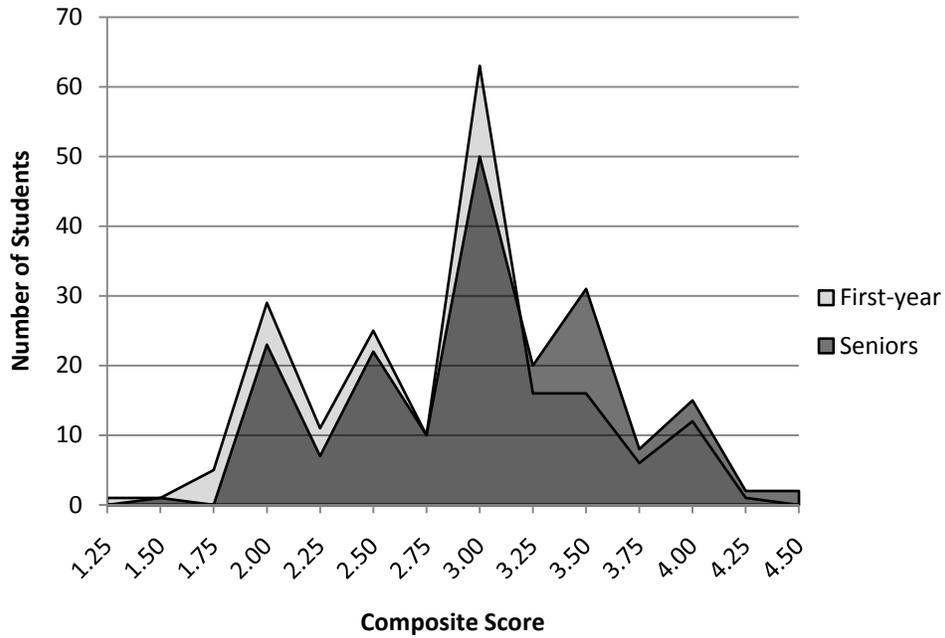


Figure 3. Comparison of composite essay scores of first-year students and seniors from the 2007-2008 CAAP test. The lines indicate the number of students receiving each score. There was little difference between the scoring pattern of first-year students and seniors.

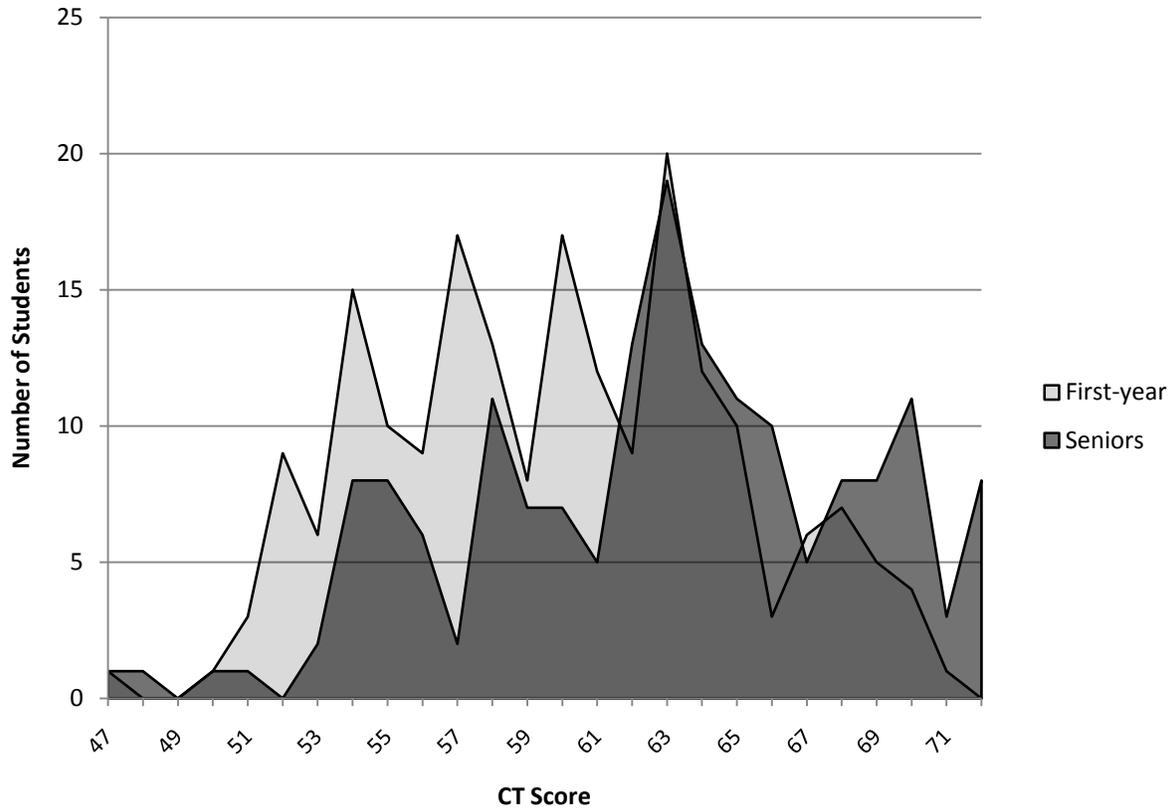


Figure 4. Comparison of critical thinking scores of first-year students and seniors from the 2007-2008 CAAP test. The lines indicate the number of students receiving each score. Fewer seniors were tested than first-year students, but the pattern of scores is similar until scores reach approximately 66. The senior students had more students score at or above the 90th percentile nationally than did the first-year group (30 seniors compared to 10 first-year students). All scores are integers.

Table 1

Comparison of scores on the critical thinking and essay writing tests.

	UNK 2007-2008	National 2007- 2008	UNK 2010-2011	National 2010-2011
First-Year Critical Thinking	59.9 ± 5.0	61.4 ± 5.5	62.5 ± 4.6	61.0 ± 5.3
Senior Critical Thinking	62.7 ± 5.5	62.9 ± 5.5	65.1 ± 4.5	63.0 ± 5.4
First-Year Essay	2.8 ± 0.6	3.2 ± 0.6	3.0 ± 0.5	3.0 ± 0.6
Senior Essay	3.0 ± 0.6	3.3 ± 0.6	3.5 ± 0.5	3.3 ± 0.6

Note. Scores given are the group's mean ± standard deviation for each group and testing year. The national norm group scores are also given. As indicated, UNK student scores improved from the 2007-2008 testing session to the 2010-2011 testing session, both relative to the national comparison group and in absolute terms.