



cla+

National Results, 2013 -14

Contents

INTRODUCTION 2

METHODOLOGY 2

 THE INSTRUMENT 2

 INSTITUTIONAL AND STUDENT SAMPLE 3

 GROWTH ESTIMATES 4

2013-14 CLA+ RESULTS 5

 INSTITUTION-LEVEL CLA+ SCORES 5

 STUDENT-LEVEL CLA+ SCORES 6

 MASTERY LEVELS 8

 SUBSCORES 9

 GROWTH ESTIMATES 10

CONCLUSION 13

REFERENCES 14

APPENDIX A: LIST OF PARTICIPATING INSTITUTIONS, 2013-14 15

APPENDIX B: CLA+ MASTERY LEVELS 17

APPENDIX C: CLA+ PERFORMANCE TASK RUBRIC 19

INTRODUCTION

In 2002, CAE (the Council for Aid to Education) introduced the Collegiate Learning Assessment (CLA) as a major initiative. Since its launch, CLA has offered institutions a valuable measure of their contributions—or value added—to students' attainment of higher-order thinking skills. The assessment requires students to analyze, evaluate, and synthesize information as they demonstrate their ability to think critically and solve problems. To date, hundreds of institutions and hundreds of thousands of students have participated in the CLA testing program.

In 2013, CAE introduced CLA+, an enhanced version of the assessment that includes new subscores, criterion-referenced Mastery Levels, and reliable information about performance at the student and institutional levels.

Advancing beyond a growth-centered model, CLA+ is designed to measure critical thinking and written communication—key higher-order skills that are valued by both educational institutions and employers. CLA+ provides students with reliable evidence that they possess these skills.

Higher-order skills are a necessity for navigating and excelling in today's complex, new knowledge economy. Employers overwhelmingly report valuing employees who exhibit strong critical-thinking and written-communication skills (Hart Research Associates, 2013). Correspondingly, students who excel in the areas measured by CLA+ have been shown to experience greater success in their immediate post-college careers (Arum & Roksa, 2014).

CLA+ enables schools to identify areas of strength and weakness so they can improve their teaching and learning processes and ultimately graduate students who are prepared to succeed in the post-collegiate arena. Concurrently, CLA+ provides graduating students with the tools to stand out in a competitive job market by highlighting key skills for professional success.

This report summarizes the performance of the 169 institutions and 31,652 students who participated in the inaugural academic year of CLA+.

METHODOLOGY

THE INSTRUMENT

CLA+ includes two major components: the Performance Task (PT) and a series of Selected-Response Questions (SRQs).

The **Performance Task** presents students with a real-world scenario that requires a purposeful written response. Students are asked to address an issue, propose the solution to a problem, or recommend a course of action to resolve a conflict. They are instructed to support their responses by using information provided in the Document Library. This repository contains a variety of reference materials, such as technical reports, data tables, newspaper articles, office memoranda, and emails. A full PT includes four to nine documents in its Document Library. Students have 60 minutes to complete this constructed-response task.

Student responses to the PT are scored in three skill areas: Analysis and Problem Solving, Writing Effectiveness, and Writing Mechanics. Students receive subscores based on the CLA+ rubric, ranging from 1 to 6, for each skill category based on key characteristics of their written responses. These

characteristics are described in detail within the PT rubric, available on CAE's website at www.cae.org/claptrubric.

In the second part of the examination, students are asked to answer 25 **Selected-Response Questions**. Like the PT, the 25 SRQs require students to draw information from provided materials. Students have 30 minutes to complete this section of the assessment.

SRQs are scored based on the number of correct responses that students provide. Each of three question sets represents a skill area: Scientific and Quantitative Reasoning (10 questions), Critical Reading and Evaluation (10 questions), and Critique an Argument (5 questions). Because some question sets may be more difficult than others, the subscores for each category are adjusted to account for these differences and reported on a common scale. Score values range from approximately 200 to 800 for each SRQ section.

CLA+ NATIONAL RESULTS, 2013-14

To convert raw PT and SRQ scores to scale scores, CAE uses a linear transformation. The process creates a scale score distribution for CLA+ freshmen that has the same mean and standard deviation as their combined SAT Math and Critical Reading (or

converted ACT) scores. The result is a scale that ranges from approximately 400 to 1600. In addition to receiving scores for each of the two sections of the assessment, students receive total scores, which are simply the average of the scaled section scores.

INSTITUTIONAL AND STUDENT SAMPLE

Participating schools are individually responsible for student sampling and recruitment, with guidance available from CAE on strategies for achieving a representative sample. Schools are recommended to test at least 100 students, or 25-50% of the population size for each class level tested.

Students within the CLA+ institutional sample are generally representative of students across CLA+ institutions, with respect to entering academic ability (EAA) scores. EAA is determined based on one of three sets of scores: (1) combined SAT Math and Critical Reading, (2) ACT Composite, or (3) Scholastic Level Exam (SLE) scores reported on the SAT Math and Critical Reading scale.

Specifically, across institutions, the average EAA score of freshmen in the CLA+ sample was only seven points higher than that of the average freshmen at CLA+ institutions (1038 versus 1031, across n=123 institutions that provided this information), and the average EAA score of seniors in the CLA+ sample was only 16 points higher than that of the average seniors at CLA+ institutions (1065

versus 1049, across n=119 institutions). The correlation between the average EAA score of freshmen in the CLA+ sample and their classmates was high ($r=0.93$), as was the correlation between the average EAA score of seniors in the CLA+ sample and their classmates (0.90).

These data suggest that, as a group, students tested as part of the CLA+ institutional sample perform similarly to all students at CLA+ institutions. This correspondence increases confidence in the inferences made about students at CLA+ institutions based on testing data collected from the institutional samples.

At the institution level, the sample of participating institutions is fairly representative of four-year, not-for-profit institutions nationwide (see Table 1A). Public school representation (60% within CLA+ institutions, compared to 30% nationally) and average undergraduate student body size (7,130 FTE undergraduates within CLA+ institutions, compared to 3,869 nationally) are notable exceptions.

TABLE 1A. School Characteristics of the CLA+ Institutional Sample

SCHOOL CHARACTERISTIC	NATION	CLA+
PERCENTAGE PUBLIC	30	60
PERCENTAGE HISTORICALLY BLACK COLLEGE OR UNIVERSITY (HBCU)	4	3
MEAN PERCENTAGE OF UNDERGRADUATES RECEIVING PELL GRANTS	31	32
MEAN SIX-YEAR GRADUATION RATE	51	49
MEAN BARRON'S SELECTIVITY RATING	3.6	3.1
MEAN ESTIMATED MEDIAN SAT SCORE	1058	1030
MEAN NUMBER OF FTE UNDERGRADUATE STUDENTS (ROUNDED)	3,869	7,130
MEAN STUDENT-RELATED EXPENDITURES PER FTE STUDENT (ROUNDED)	\$12,330	\$10,469

Sources: *The Education Trust (2010)* and *Carnegie Foundation for the Advancement of Teaching (2012)*

TABLE 1B. Carnegie Classification of the CLA+ Institutional Sample

CARNEGIE CLASSIFICATION	NATION (N=1,683)		CLA+ (N=157)	
	N	%	N	%
DOCTORATE-GRANTING UNIVERSITIES	283	17	23	15
MASTER'S COLLEGES AND UNIVERSITIES	651	39	87	55
BACCALAUREATE COLLEGES	749	45	47	30

Source: Carnegie Foundation for the Advancement of Teaching (2012)

The spread of Carnegie Classifications among CLA+ schools also corresponds fairly well with that of four-year, not-for-profit institutions across the nation, though with a somewhat higher proportion of Master's Colleges and Universities. (See table 1B.)

CLA+ students are similarly representative of their peers nationally in terms of race/ethnicity and

gender (see Table 1C) and in terms of EAA. The mean estimated median SAT score across four-year colleges nationally is 1058, while the median SAT score across CLA+ students overall is 1040 (1030 is the median score for freshmen and 1060 is the median for seniors).

TABLE 1C. Student Sample Representativeness by Gender and Race/Ethnicity

DEMOGRAPHIC CHARACTERISTIC	CLA+ STUDENTS		ALL STUDENTS NATIONALLY	
	Freshmen	Seniors		
GENDER	Male	39%	37%	44%
	Female	59%	60%	56%
	Decline to State	2%	3%	N/A
RACE/ ETHNICITY	American Indian / Alaska Native / Indigenous	1%	1%	1%
	Asian (including Indian subcontinent and Philippines)	9%	9%	6%
	Native Hawaiian or other Pacific Islander	0%	1%	0%
	African-American / Black (including African and Caribbean), non-Hispanic	14%	9%	14%
	Hispanic or Latino	17%	13%	11%
	White (including Middle Eastern), non-Hispanic	53%	58%	60%
	Other / Decline to State	7%	9%	8%

Source: Snyder and Dillow (2013)

GROWTH ESTIMATES

CAE calculates two types of growth estimates for participating schools: effect sizes and value-added scores.

Effect sizes characterize the amount of growth in CLA+ scores that is evident across classes. They do so by relating the performance of the freshman class to that of the sophomore, junior, and senior classes.

Effect sizes are calculated by subtracting the mean scores of the freshmen from the mean scores of the seniors, and dividing this amount by the standard deviation of the freshmen scores. Effect sizes are reported in standard deviation units.

While effect sizes characterize growth from freshman to senior year within an institution, **value-**

added scores relate that growth meaningfully to the growth of students across other colleges and universities. A simple comparison of the average achievement at all schools would tend to present selective institutions in a favorable light and overlook the educational efficacy of schools admitting students with weaker academic backgrounds. Value-added modeling addresses this situation by providing scores comparable to those of institutions with entering students of similar academic ability. Compared to effect size, value-added scoring is generally viewed as a more equitable way of estimating an institution's contribution to learning

and thus of demonstrating its relative educational efficacy.

To calculate value-added estimates, CAE employs a statistical technique known as hierarchical linear modeling (HLM). This method yields value-added scores that indicate the degree to which observed senior CLA+ mean scores at an institution meet, exceed, or fall below expectations as established by two factors: the seniors' EAA scores and the mean CLA+ performance of freshmen at the school, which serves as a control for any selection effects not addressed by EAA.

2013-14 CLA+ RESULTS

INSTITUTION-LEVEL CLA+ SCORES

The average institutional CLA+ score for schools that tested their freshmen in fall 2013 was 1039, indicating basic mastery of the skills measured by CLA+. Schools testing seniors scored, on average, almost 90 points higher (1128), with exiting students largely proficient in critical thinking and written communication.

Performance on these skills, however, differs considerably across institutions.

Some of these differences may reflect distinct recruitment and admissions procedures across institutions. For instance, the most selective institutions—with Barron's selectivity ratings ranging from Very Competitive to Most Competitive—have incoming students who score 140 points higher on CLA+ than the least competitive institutions (with freshman mean scores of 1110 and 970, respectively). Students at the most competitive institutions continue to perform better than their peers at the least competitive institutions through graduation, as well, though there is a slightly smaller difference in mean scores across levels of selectivity for seniors (97 points) than for freshmen.

Differences also persist between minority-serving institutions (MSIs) and non-MSIs.¹ Freshmen at the average MSI score 85 points lower than their peers at non-MSIs, with the disparity increasing to 102 points for institutions testing seniors.

Similar disparities are seen when looking at institutions where half or more of the student

¹ Minority-Serving Institutions include those that are legally defined as Historically Black Colleges and Universities or Tribal Colleges and Universities, as well as institutions with 25% or higher enrollment of Black, Hispanic, Asian/Pacific Islander, or American Indian students.

population consists of Pell Grant recipients. The average institution with a high proportion of Pell Grant recipients has a freshman score of 973 and a senior score of 1064 (a 91-point difference), while the average institution with fewer than half of its population receiving Pell Grants has a freshman score of 1069 and a senior score of 1150 (an 81-point difference).

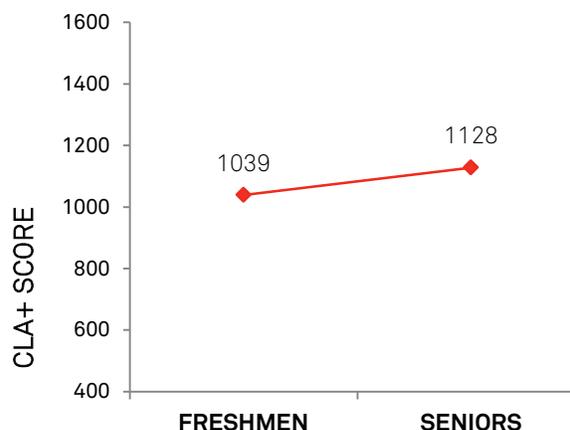


FIGURE 1. Change in Average Institutional CLA+ Score from Freshman to Senior Year

There are some institutional categorizations, however, where differences are statistically non-significant or are diminished by senior year. Carnegie Classification and institution size are two examples where there are moderately sized, statistically significant differences among institutions testing freshmen but not among institutions testing seniors.

TABLE 2. Institutional CLA+ Performance by School Characteristic and Class Tested, 2013-14

INSTITUTIONAL CHARACTERISTIC	FRESHMEN			SENIORS		
	N ^a	Mean Score	SD	N ^a	Mean Score	SD
All Institutions	154	1039	84	155	1128	70
Carnegie Classification						
Baccalaureate Colleges	42	1030**	83	40	1125	84
Master's Colleges and Universities (Doctorate-Granting Universities) ^b	78	1030**	71	82	1124	57
(Doctorate-Granting Universities) ^b	22	1094	80	23	1143	86
Barron's Selectivity Rating						
Non- to Less Competitive	27	970**	66	25	1076**	67
Competitive to Competitive Plus (Very to Most Competitive)	77	1038**	63	79	1125**	60
(Very to Most Competitive)	29	1110	71	32	1173	65
Minority-Serving Institution						
Yes	19	967**	81	16	1036**	79
(No)	124	1052	72	132	1138	60
Share of Students Receiving Pell Grants						
(Less than Half)	100	1069	65	108	1150	56
Half or More	44	973**	66	40	1064**	66
Geographic Region						
Northeast	29	1045	65	29	1109**	69
(Midwest)	33	1069	70	36	1155	52
South	51	1023*	89	52	1112**	79
West	33	1041	76	32	1139	59
Institution Size						
Small [\leq 3,000 Students]	46	1028*	81	45	1120	75
Medium [3,001 – 10,000 Students]	42	1021**	69	48	1124	72
(Large [\geq 10,001 Students])	55	1066	79	55	1135	63
Sector						
Public	86	1044	77	92	1126	67
(Private)	57	1035	81	56	1129	74

^aNote: because data are not available for all institutions, the sample sizes for a given institutional characteristic may not sum to the same N as the overall CLA+ sample.

^bReference categories in parentheses.

* $p < 0.05$.

** $p < 0.01$.

Geographically, CLA+ schools in the Midwest have slightly higher-performing freshmen and seniors than in other regions; though statistically significant, the differences in school mean scores between the Midwest and other regions are not large (no more than 46 points, on average).

STUDENT-LEVEL CLA+ SCORES

The average freshman who tested in fall 2013 had a CLA+ score of 1042, while the average senior scored almost 90 points higher (1128). As with the distribution of institutional scores, there is substantial variation in performance across students by certain demographic characteristics (see Table 3).

While there is little overall difference in performance between males and females—either at the start or

Similarly, there is little to distinguish the freshman and senior performance of public versus private institutions.

Table 2 summarizes differences in average institutional score by each of the previously discussed institutional characteristics.

end of college—there are disparities in performance across other demographic groups. Speakers whose primary language is English, for instance, score considerably higher as freshman (on average, 60 points higher than those for whom English is not their primary language), and that gap persists (57 points) within the sample of seniors taking CLA+.

Student performance also differs considerably by field of study. Consistent with previous findings

CLA+ NATIONAL RESULTS, 2013-14

(Steedle & Bradley, 2012) students whose majors include business and helping/services fields score significantly lower than students in math and science fields. This is true of both freshmen and seniors taking CLA+.

CLA+ results show an even larger performance gap across racial and ethnic groups. African American freshmen scored on average nearly a full standard deviation below their White peers (939 and 1083,

respectively). Among seniors, the gap is slightly narrower, though the difference is still quite large (120 points).

Parental education levels are similarly associated with CLA+ performance. Each additional level of education attained by a student's parents is reflected by an associated increase of about 30 points in the average scores of both freshmen and seniors.

TABLE 3. Student CLA+ Performance by Class Standing and Demographic Characteristic, 2013-14

DEMOGRAPHIC CHARACTERISTIC*	FRESHMEN			SENIORS		
	N	Mean Score	SD	N	Mean Score	SD
All Students	18,178	1042	158	13,474	1128	148
Transfer Status						
Transfer Student	--	--	--	2,392	1092**	152
(Non-Transfer Student) ^a	18,178	1042	158	11,082	1135	146
Gender						
(Male)	7,092	1039	165	4,948	1133	152
Female	10,783	1044*	153	8,119	1126**	144
Decline to State	303	1044	161	407	1094**	166
Primary Language						
(English)	14,832	1053	156	11,317	1137	145
Other	3,346	993**	158	2,157	1080**	155
Field of Study						
(Sciences and Engineering)	4,723	1074	160	2,928	1170	140
Social Sciences	2,061	1047**	162	2,221	1139**	153
Humanities and Languages	1,939	1064*	156	2,334	1131**	148
Business	2,452	1020**	159	2,126	1103**	149
Helping / Services	4,596	1017**	151	3,155	1103**	142
Undecided / Other / N/A	2,407	1025**	149	710	1089**	149
Race/Ethnicity						
American Indian / Alaska Native / Indigenous	173	981**	167	74	1091**	137
Asian [Including Indian Subcontinent and Philippines]	1,604	1058**	156	1,272	1110**	153
Native Hawaiian or Other Pacific Islander	71	1001**	161	64	1056**	138
African-American / Black [Including African and Caribbean], Non- Hispanic	2,452	939**	149	1,223	1038**	144
Hispanic or Latino	3,051	1004**	142	1,774	1098**	142
(White [Including Middle Eastern], Non- Hispanic)	9,553	1083	145	7,854	1158	139
Other	620	980**	179	408	1088**	155
Decline to State	654	1046**	177	805	1091**	161
Parent Education						
Less Than High School	1,245	960**	147	659	1074**	139
High School	4,244	995**	152	2,174	1100**	149
Some College	4,135	1035**	151	3,695	1110**	143
Bachelor's Degree	5,017	1072**	153	3,955	1141**	145
(Graduate or Post-Graduate Degree)	3,537	1093	155	2,991	1164	149

^a Reference categories in parentheses.

* $p < 0.05$.

** $p < 0.01$.

MASTERY LEVELS

CLA+ Mastery Levels contextualize CLA+ scores by interpreting test results in relation to the qualities exhibited by examinees. Each Mastery Level corresponds to specific evidence of critical-thinking and written-communication skills (see Appendix B for detailed information about each Mastery Level). There are four Mastery Levels for the 2013-14 academic year: Below Basic, Basic, Proficient, and Advanced. A new Mastery Level will be introduced in 2014-15 to further distinguish the levels of proficiency; students who are highly proficient but not quite Advanced will be designated as Accomplished in terms of the skills measured by CLA+. The full standard-setting report can be found at http://cae.org/cla_ss.

Almost two-thirds (63%) of the college freshmen tested in fall 2013 were non-proficient in CLA+ skills—scoring at or below the Basic Mastery Level. Another 36% scored at the Proficient Mastery Level, with only 2% of entering freshmen exhibiting Advanced Mastery of critical-thinking and written-communication skills, as measured by CLA+.

The average entering freshman (with a mean score of 1042) exhibits Basic Level Mastery of CLA+ skills.

In order to score at the Basic Mastery Level, a student must make a reasonable attempt to analyze the details of the Performance Task and demonstrate that they are able to communicate in a manner that is understandable to the reader. Students with Basic Mastery also show some judgment about the quality of evidence provided in the Document Library.

In addition, students scoring at the Basic Mastery Level know the difference between correlation and

causality, and they can read and interpret a bar graph—but not necessarily a scatterplot or regression analysis. Tables may be out of reach for Basic Mastery Level students, as well.

Across college seniors testing in 2013-14, more than half (61%) were proficient in CLA+ skills—scoring either at the Proficient or Advanced Mastery Level. A total of 26% scored at the Basic Mastery Level, while 14% were unable to demonstrate even basic mastery of CLA+ skills.

The average exiting senior (with a mean score of 1128), exhibits proficient Mastery of critical-thinking and written-communication skills, as measured by CLA+.

Students scoring at the Proficient Mastery Level have shown that they are able to extract the major relevant pieces of evidence provided in the Document Library and develop a cohesive argument and analysis of the Performance Task. Proficient Mastery Level students are able to distinguish the quality of evidence in these documents and express the appropriate level of conviction in their conclusion given the provided evidence. Additionally, Proficient Mastery Level students are able to suggest additional research or consider counterarguments.

Students at this level can correctly identify logical fallacies, accurately interpret quantitative evidence, and distinguish the validity of evidence and its purpose. Likewise, they have the ability to determine the truth and validity of an argument. Students at this level also recognize when a graph or table is applicable to an argument.

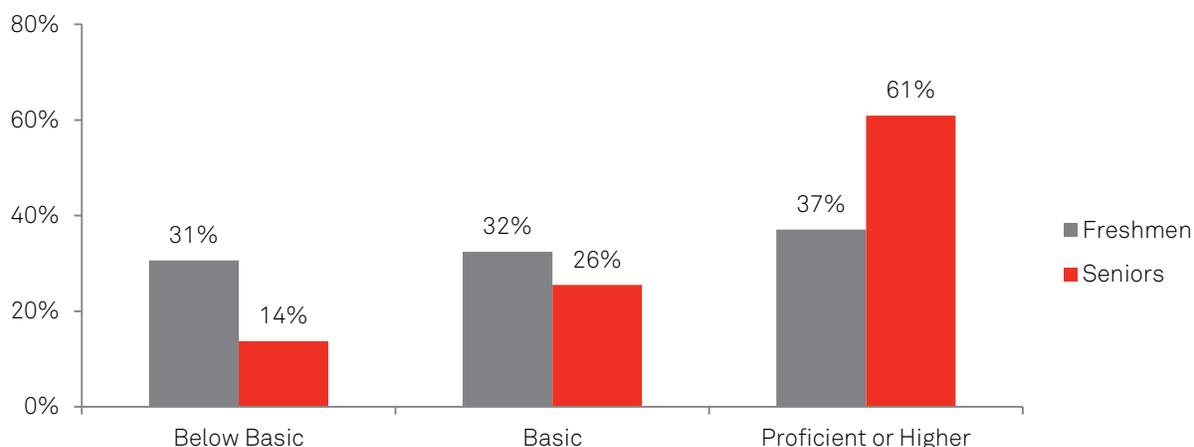


FIGURE 2. Student Distribution of CLA+ Mastery Levels

SUBSCORES

Student responses to the **Performance Task** (PT) are scored in three skill areas: Analysis and Problem Solving, Writing Effectiveness, and Writing Mechanics. These subscores are assigned values ranging from 1 to 6, with those values determined according to specific response characteristics outlined in the CLA+ Scoring Rubric (see Appendix C).

Subscores for the **Selected-Response Questions** (SRQs) represent three additional skill areas: Scientific and Quantitative Reasoning (10 questions), Critical Reading and Evaluation (10 questions), and Critique an Argument (5 questions). Because some question sets may be more difficult than others, the subscores for each category are adjusted to account for these differences and reported on a common scale. Score values range from approximately 200 to 800 for each SRQ section.

For the PT, the average institution testing freshmen received a score of 3 for Analysis and Problem Solving, 3.1 for Writing Effectiveness, and 3.4 for Writing Mechanics. Some improvement is observed when considering the average subscores across institutions testing seniors, though these average scores fail to exceed more than three-tenths of a point above that of the average institutional freshman subscores.

On the SRQs, institutions testing freshmen averaged scores of 501 across each of the three subscore categories, with scores improving to 545, 539, and 536, respectively, for Scientific and Quantitative Reasoning, Critical Reading and Evaluation, and Critique an Argument.

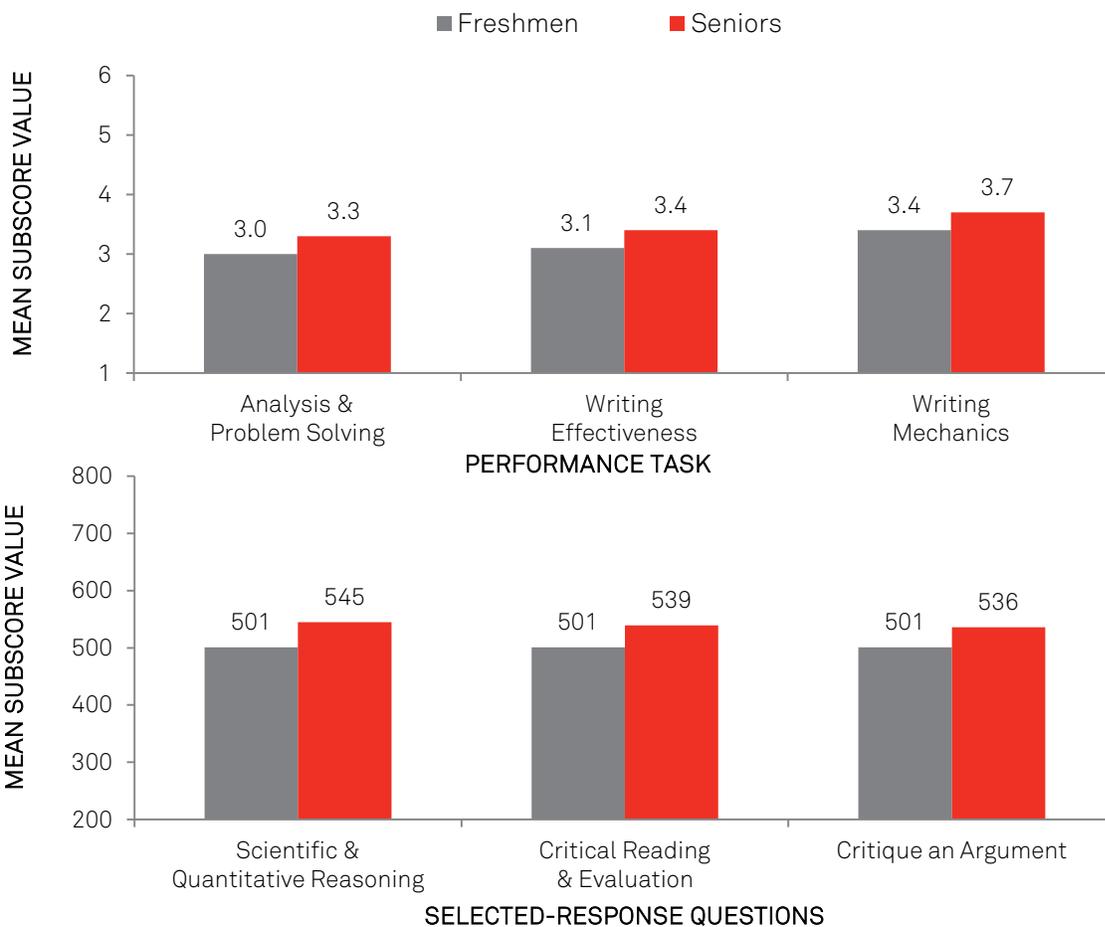


FIGURE 3. Average CLA+ Subscores Across Institutions

GROWTH ESTIMATES

Effect sizes characterize the amount of growth in CLA+ scores that is evident across classes, in standard deviation units. The effect size for the average CLA+ institution in 2013-14 was 0.62, representing approximately 0.62 standard deviations of improvement from freshman to senior year. These scores are normally distributed, though there are a handful of institutions with exceptionally high effect sizes. The typical institution exhibited an effect size between 0.14 and 1.10, indicating fairly wide variation in the amount of growth seen across these schools in 2013-14 (see Figure 4).

As noted in the methodology section of this report, **value-added scores** meaningfully relate the growth within an institution to the growth of students across similar colleges and universities.

Figure 4 illustrates the performance of all four-year colleges and universities relative to their expected performance as predicted by the value-added model. The diagonal line in the figure represents the points at which expected and observed senior scores are equivalent. The vertical distance from the diagonal line indicates the value added by an institution. Institutions above the diagonal line add more value than expected based on the model; institutions below the line add less value than expected.

Because the parameters for the CLA+ value-added model are based on the 2013-14 institutional sample, the mean value-added score for that academic year is 0.00, with a standard deviation of 1.00. As with effect sizes, the 2013-14 value-added scores are normally distributed (see Figure 5).

A value-added score of 0.00 indicates that a school's seniors are performing exactly as expected given their EAA and the mean CLA+ performance of freshmen at that school. Value-added scores can be categorized into levels of performance relative to expectations. These levels are as follows:

- above 2.00: well above expected
- 2.00 to 1.00: above expected
- 1.00 to -1.00: near expected
- -1.00 to -2.00: below expected
- below -2.00: well below expected

As with the unadjusted scores, both of these growth estimates—effect sizes and value-added scores—differ, in some cases to a large degree, across various types of institutions. Table 4 provides average value-added scores and effect sizes across the CLA+ institutional sample, as well as for specific categories of institutions.

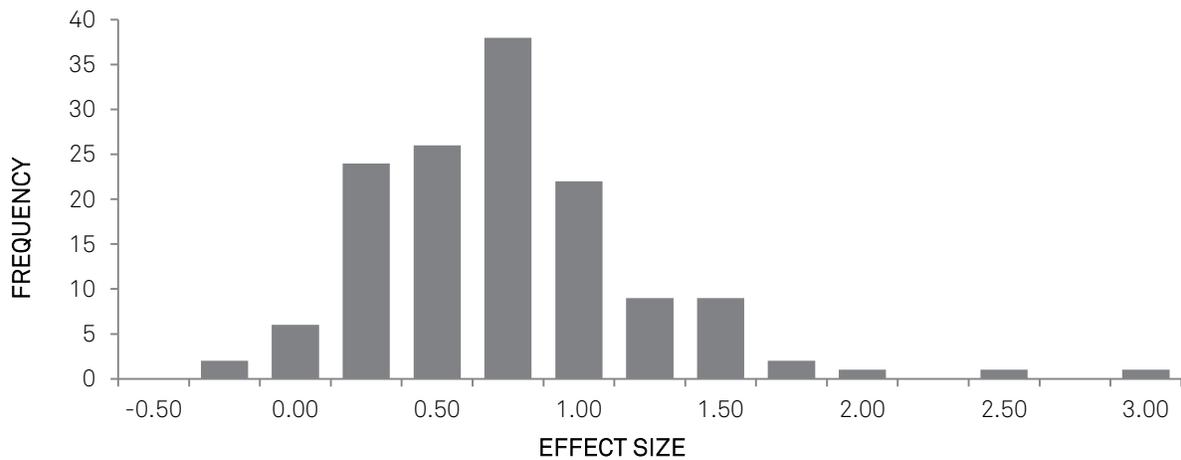


FIGURE 4. Distribution of Institutional Effect Sizes

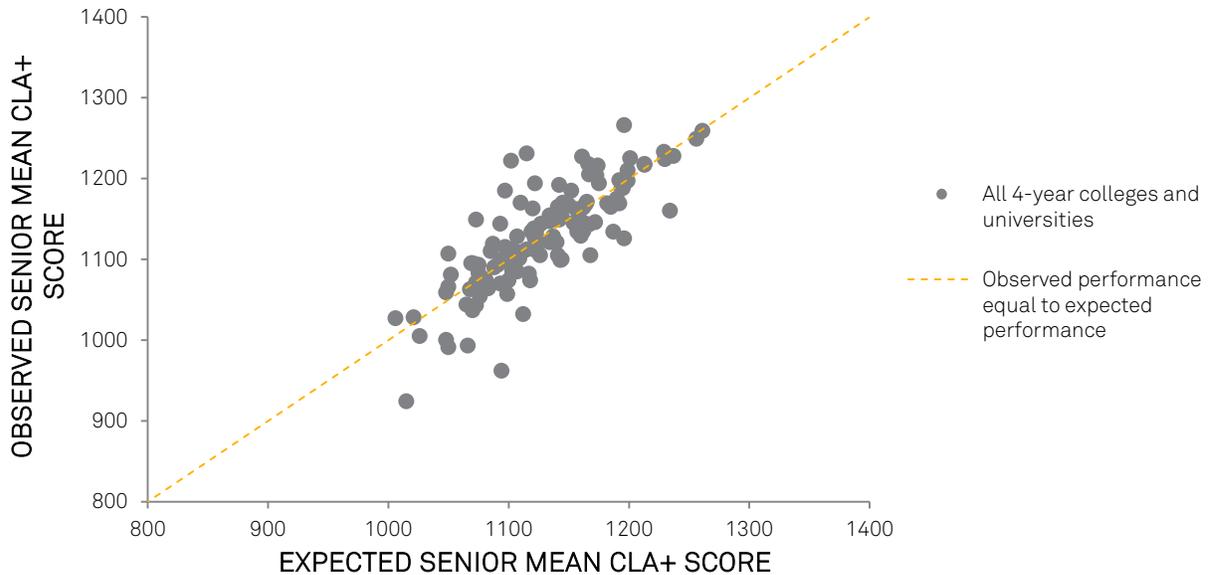


FIGURE 5. Expected vs. Observed CLA+ Scores

Across the three primary Carnegie Classifications, for example, Baccalaureate Colleges and Master’s Colleges and Universities have, on average, more than double the effect size of Doctorate-Granting Universities. However, when taking students’ EAA into account, Baccalaureate Colleges and Doctorate-Granting Universities have identical average value added—each group’s seniors performed very near expected (with value-added scores of 0.08). Master’s Colleges and Universities have a slightly higher average value-added score of 0.11. This represents a difference of approximately 10 percentile points across the three primary Carnegie Classification groups.

counter to expectations. Schools with Barron’s ratings of Non-Competitive to Less Competitive showed the most growth (an average effect size of 0.74), while institutions classified as Very and Most Competitive had a lower average effect size (0.48) than the institutional sample overall (0.62). This difference may be attributable to the different ability levels of students attending these institutions; lower-ability students may simply have more room to grow. When controlling for students’ entering academic ability, the less-competitive institutions performed as expected (an average value-added score of 0.00), while the Very Competitive and Most Competitive institutions had an average value-added score of -0.24, though the difference in these values is not statistically significant.

Differences in growth estimates by the selectivity rating of the institutional sample run somewhat

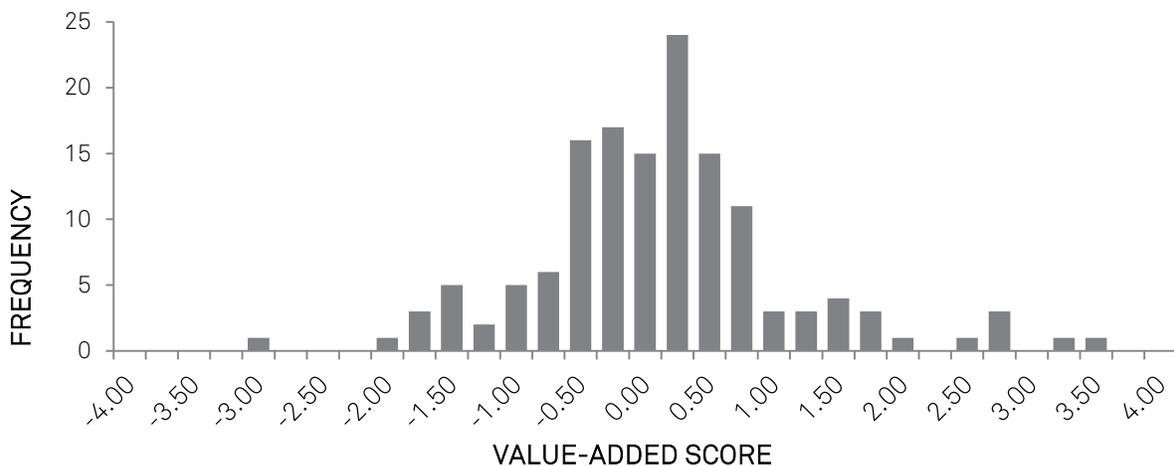


FIGURE 6. Distribution of Institutional Value-Added Scores

CLA+ NATIONAL RESULTS, 2013-14

In terms of the demographics served by CLA+ institutions, minority-serving institutions (MSIs) showed less growth than non-MSIs. The 16 MSIs that tested in 2013-14 had an average effect size of 0.47, about a third of a standard deviation below the overall institutional sample. Even when taking into account the entering academic ability of students at these schools, they demonstrated on average less growth than what would be expected. These MSIs have an average value-added score of -0.43, equivalent to the performance of a school scoring at the 29th percentile. While this value is almost half a standard deviation below the average value-added score of non-MSIs, the difference is statistically non-significant.

Similar differences are seen across institutions in relation to their proportion of Pell Grant recipients. Schools with fewer than half their student populations receiving Pell Grants have a similar average effect size (0.62) to those with half or more of their students receiving Pell Grants (0.66). However, when taking the student population's entering academic ability into account, the average value-added scores of these two groups diverge. Schools with half or more of their students receiving Pell Grants have an average value-added score of -0.22, while schools with fewer than half of their students receiving Pell Grants have an average value-added score nearly two-thirds of a standard deviation higher (0.42). Though the difference appears substantial, it is statistically non-significant.

TABLE 4. Institutional CLA+ Growth by School Characteristic, 2013-14

INSTITUTIONAL CHARACTERISTIC	N ^a	VALUE-ADDED SCORE		EFFECT SIZE	
		Mean	SD	Mean	SD
All Institutions	141	0.00	1.00	0.62	0.48
Carnegie Classification					
Baccalaureate Colleges	37	-0.08	1.10	0.68**	0.48
Master's Colleges and Universities	74	0.11*	0.88	0.71**	0.49
(Doctorate-Granting Universities) ^b	22	-0.08	0.93	0.32	0.31
Barron's Selectivity Rating					
Non- to Less Competitive	24	0.00	0.86	0.74*	0.52
Competitive to Competitive Plus	74	-0.01	0.97	0.65	0.52
(Very to Most Competitive)	27	-0.24	0.91	0.48	0.31
Minority-Serving Institution					
Yes	16	-0.43	0.88	0.47	0.47
(No)	118	0.03	0.96	0.65	0.48
Percentage of Students Receiving Pell Grants					
(Less Than Half)	96	0.42	0.93	0.62	0.47
Half or More	39	-0.22	1.01	0.66	0.51
Geographic Region					
Northeast	26	-0.29**	0.89	0.47*	0.39
Midwest	32	-0.14**	0.59	0.61	0.34
South	48	-0.25**	1.02	0.60	0.49
(West)	30	0.62	0.97	0.81	0.62
Institution Size					
Small [\leq 3,000 Students]	42	-0.29*	0.90	0.65	0.39
(Medium [3,001 – 10,000 Students])	38	0.27	1.05	0.76	0.48
Large [\geq 10,001 Students]	54	-0.04	0.90	0.53*	0.53
Sector					
Public	84	0.04	1.01	0.62	0.53
(Private)	50	-0.14	0.87	0.65	0.38

^a Note: because data are not available for all institutions, the sample sizes for a given institutional characteristic may not sum to the same N as the overall CLA+ sample.

^b Reference categories in parentheses.

* $p < 0.05$.

** $p < 0.01$.

CLA+ NATIONAL RESULTS, 2013-14

Differences in value-added scores are also seen across geographic regions. The 30 CLA+ schools in the West of the U.S., for example, have considerably higher effect sizes—albeit with a correspondingly larger variation in effect size—than their peers in other regions of the country. The difference becomes even more pronounced, and is highly statistically significant, when controlling for students' entering academic ability.

Differently sized institutions also exhibit different levels of contributions to their students' attainment

of critical-thinking and written-communication skills. Medium-sized institutions (those with 3,001 to 10,000 students), have a higher average effect size (0.76) and value-added score (0.27) than larger or smaller institutions.

Institutional sector, on the other hand, is one of the few areas where different types of schools are largely comparable. Students at both public and private institutions demonstrated similar levels of growth in the 2013-14 academic year.

CONCLUSION

With ballooning student debt and—following the most recent recession—a higher unemployment rate among recent college graduates than in the labor force overall (Shierholz, Davis et al., 2014), it is easy to dismiss college as an unnecessary cost. What CLA+ data show, however, is that colleges and universities are contributing considerably to the development of key skills that can make graduates stand out in a competitive labor market.

College certainly matters; it can narrow achievement gaps across students from different racial/ethnic and socio-economic backgrounds, and it can help students develop and enhance the complex, broadly transferrable skills that are valued by employers across fields and sectors.

What CLA+ data likewise show is that where a student goes to college can matter, as well—and that the schools contributing most heavily to their students' growth in CLA+ skills are not necessarily the schools one would expect. There are clear differences in students' raw performance and their growth on CLA+-measured skills, not just across different types of schools, but within those groups, as well.

While there is marked variation in performance across schools, the average student enters college with basic critical-thinking and written-communication skills and leaves college proficient in these skills. Graduating from college—especially from a college that fosters critical thinking and written communication—can be crucial for long-term success.

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APPENDIX A: LIST OF PARTICIPATING INSTITUTIONS, 2013-14

The colleges and universities listed below in alphabetical order agreed to be identified as participating schools in 2013-14, and they constitute the institutional sample for CLA+. To view a list of currently participating schools, please visit www.cae.org/claparticipants.

CLA+ SCHOOLS

Alaska Pacific University
Appalachian State University
Augsburg College
Augustana College (SD)
Aurora University
Barton College
Bellarmino University
Bob Jones University
Bowling Green State University
Bridgewater College
Brigham Young University - Idaho
Brigham Young University-Idaho
California Maritime Academy
California Polytechnic State University, San Luis Obispo
California State Polytechnic University, Pomona
California State University, Bakersfield
California State University, Channel Islands
California State University, Chico
California State University, Dominguez Hills
California State University, East Bay
California State University, Fresno
California State University, Fullerton
California State University, Long Beach
California State University, Los Angeles
California State University, Monterey Bay
California State University, Monterey Bay, Computer Science and Information Technology
California State University, Northridge
California State University, Sacramento
California State University, San Bernardino
California State University, San Marcos
California State University, Stanislaus
Centenary College of Louisiana
Christopher Newport University
Clarke University
College of Saint Benedict/Saint John's University
College of Saint Benedict/St. John's University
Colorado Christian University
Concord University
Concordia College
Culver-Stockton College
CUNY - Baruch College
CUNY - Brooklyn College
CUNY - College of Staten Island
CUNY - Hunter College
CUNY - John Jay College of Criminal Justice
CUNY - Lehman College

CUNY - New York City College of Technology
CUNY - Queens College
CUNY - The City College of New York
CUNY - York College
Dillard University
Drexel University, Department of Architecture and Interiors
Earlham College
East Carolina University
Eastern Connecticut State University
Emory & Henry College
Fayetteville State University
Flagler College
Florida International University Honors College
Frostburg State University
Georgia College & State University
Hamline University
Hardin-Simmons University
Hastings College
Hong Kong Polytechnic University
Humboldt State University
Illinois College
Indiana University of Pennsylvania
Jacksonville State University
Keene State College
Kent State University
Kepler Kigali
Keuka College
LaGrange College
Lake Forest College
Lee University
Lewis University
Lynchburg College
Marshall University
Miami University - Oxford
Miles College
Minneapolis College of Art and Design
Mississippi University for Women
Monmouth University
Montclair State University
Morgan State University
Morningside College
National Louis University
Nevada State College
New York University - Abu Dhabi
Newberry College
Nicholls State University
North Dakota State University
Nyack College
Ohio Wesleyan University
Our Lady of the Lake University
Pittsburg State University
Plymouth State University
Presbyterian College
Purchase College - SUNY
Queen's University

CLA+ NATIONAL RESULTS, 2013-14

Quest University	University of Hawaii at Hilo, College of Business and Economics
Ramapo College of New Jersey	University of Houston
Rasmussen College, Twin Cities	University of Jamestown
Robert Morris University	University of Louisiana at Lafayette
Roger Williams University	University of Missouri - St. Louis
Saginaw Valley State University	University of New Mexico
San Diego State University	University of North Carolina Pembroke
San Francisco State University	University of North Dakota
San Jose State University	University of Saint Mary
Schreiner University	University of Texas - Pan American
Shepherd University	University of Texas at Arlington
Shippensburg University	University of Texas at Austin
Sonoma State University	University of Texas at El Paso
Southern Connecticut State University	University of Texas at San Antonio
Southern New Hampshire University	University of Texas of the Permian Basin
Southern Virginia University	University of Texas, Dallas
Southwestern University	University of Texas, San Antonio
St. John Fisher College	University of Texas, Tyler
Stetson University	Ursuline College
Stonehill College	Walsh College of Accountancy and Business Administration
SUNY Cortland	Warner University
Texas A&M International University	Weber State University
Texas A&M University-Texarkana	West Chester University
Texas State University-San Marcos	West Chester University of Pennsylvania
Texas Tech University	Western Carolina University
The Citadel	Western Governors University
The College of Idaho	Western Michigan University
The Ohio State University	Westminster College (MO)
The Richard Stockton College of New Jersey	Westminster College (UT)
The Sage Colleges	Wichita State University
Truman State University	Wichita State University, School of Engineering
University of Bridgeport	Wiley College
University of Colorado, Boulder	William Peace University
University of Evansville	William Woods University
University of Great Falls	Wisconsin Lutheran College
University of Guam	

APPENDIX B: CLA+ MASTERY LEVELS

SETTING STANDARDS FOR CLA+

Following the creation of CLA+, a standard-setting study was conducted to establish fair and defensible levels of mastery for the new and improved assessment. This formal study was held at CAE headquarters in New York City on December 12, 2013. Twelve distinguished panelists, representing a variety of educational and commercial sectors, were invited to participate. The table below lists each panelist.

During the standard-setting study, panelists defined descriptions of three Mastery Levels: Basic, Proficient, and Advanced. Their discussions were based on the CLA+ scoring rubric as well as the knowledge, skills, and abilities required to perform

well on CLA+. The purpose of this activity was to develop consensus among the judges regarding each Mastery Level and to create a narrative profile of the knowledge, skills, and abilities necessary for CLA+ students.

During subsequent rating activities, panelists relied on these consensus profiles to make item performance estimates. Judges broke into three groups of four, and each group evaluated characteristics related to one Mastery Level. The groups then reconvened and reported their findings to the group at large so they could form final consensus on student performance at each of the three Mastery Levels.

CLA+ Standard-Setting Study Participant List and Institutional Affiliation

PARTICIPANT	INSTITUTION
Aviva Altman	Johnson & Johnson
Jon Basden	Federal Reserve
Mark Battersby	Capilano University (Canada)
Paul Carney	Minnesota State Technical and Community College
Anne Dueweke	Kalamazoo College
Terry Grimes	Council of Independent Colleges
Sonia Gugga	Columbia University
Marsha Hirano-Nakanishi	California State University System
Rachel L. Kay	McKinsey & Company
Michael Poliakoff	American Council of Trustees and Alumni
Elizabeth Quinn	Fayetteville State University
Paul Thayer	Colorado State University

CLA+ MASTERY LEVELS

CAE uses outcomes from the 2013 standard-setting study to distinguish between CLA+ students with varying knowledge, skills, and abilities, as measured by the assessment. On individual reports, Mastery Levels are determined by students' Total CLA+ scores. On institutional reports, they are determined by each class level's mean Total CLA+ score.

Institutions should not use Mastery Levels for purposes other than the interpretation of test results. If an institution wishes to use the attainment

of CLA+ Mastery Levels as part of a graduation requirement or the basis for an employment decision, the institution should conduct a separate standard-setting study with this specific purpose in mind.

The following table summarizes each level of mastery and provides a description of students below the basic level of mastery.

Student Levels of Mastery Profiles

LEVEL OF MASTERY	PROFILE
BELOW BASIC	Students who are below basic do not meet the minimum requirements to merit a basic level of mastery.
BASIC	<p>Students at the basic level should be able to demonstrate that they at least read the documents, made a reasonable attempt at an analysis of the details, and are able to communicate in a manner that is understandable to the reader. Students should also show some judgment about the quality of the evidence.</p> <p>Students at the basic level should also know the difference between correlation and causality. They should be able to read and interpret a bar graph, but not necessarily a scatter plot or comprehend a regression analysis. Tables may be out of reach for basic students as well.</p>
PROFICIENT	<p>Students at the proficient level should be able to extract the major relevant pieces of evidence provided in the documents and provide a cohesive argument and analysis of the task. Proficient students should be able to distinguish the quality of the evidence in these documents and express the appropriate level of conviction in their conclusion given the provided evidence. Additionally, students should be able to suggest additional research and/or consider the counterarguments. Minor errors in writing need to be defined rigorously.</p> <p>Proficient students have the ability to correctly identify logical fallacies, accurately interpret quantitative evidence, and distinguish the validity of evidence and its purpose. They should have the ability to determine the truth and validity of an argument. Finally, students should know when a graph or table is applicable to an argument.</p>
ADVANCED	<p>Students at the advanced level demonstrate consistency, completeness, and show a command of the English language in their response. They have a level of sophistication that is not seen in the proficient or basic levels. Advanced students create and synthesize the provided evidence, are comfortable with ambiguity, are able to structure their thoughts, understand causality, add new ideas, and introduce new concepts in order to create or seek new evidence. They think about conditions and nuances and express finer points and caveats by proposing a conditional conclusion.</p> <p>The students at this level display creativity and synthesis, while understanding the finer points in the documents. For example, advanced students will be able to synthesize the information across multiple documents and address the ambiguities in the data that are presented, such as outliers and knowing how sample size affects outcomes. Advanced students will also be able to identify and highlight gaps in logic and reasoning.</p>

APPENDIX C: CLA+ PERFORMANCE TASK RUBRIC

SCALE	DESCRIPTION	1	2
ANALYSIS AND PROBLEM SOLVING	Making a logical decision or conclusion (or taking a position) and supporting it by utilizing appropriate information (facts, ideas, computed values, or salient features) from the Document Library	<ul style="list-style-type: none"> ▪ May state or imply a decision/conclusion/position ▪ Provides minimal analysis as support (e.g., briefly addresses only one idea from one document) or analysis is entirely inaccurate, illogical, unreliable, or unconnected to the decision/conclusion/position 	<ul style="list-style-type: none"> ▪ States or implies a decision/conclusion/position ▪ Provides analysis that addresses a few ideas as support, some of which are inaccurate, illogical, unreliable, or unconnected to the decision/conclusion/position
WRITING EFFECTIVENESS	Constructing organized and logically cohesive arguments. Strengthening the writer's position by providing elaboration on facts or ideas (e.g., explaining how evidence bears on the problem, providing examples, and emphasizing especially convincing evidence)	<ul style="list-style-type: none"> ▪ Does not develop convincing arguments; writing may be disorganized and confusing ▪ Does not provide elaboration on facts or ideas 	<ul style="list-style-type: none"> ▪ Provides limited, invalid, over-stated, or very unclear arguments; may present information in a disorganized fashion or undermine own points ▪ Any elaboration on facts or ideas tends to be vague, irrelevant, inaccurate, or unreliable (e.g., based entirely on writer's opinion); sources of information are often unclear
WRITING MECHANICS	Demonstrating facility with the conventions of standard written English (agreement, tense, capitalization, punctuation, and spelling) and control of the English language, including syntax (sentence structure) and diction (word choice and usage)	<ul style="list-style-type: none"> ▪ Demonstrates minimal control of grammatical conventions with many errors that make the response difficult to read or provides insufficient evidence to judge ▪ Writes sentences that are repetitive or incomplete, and some are difficult to understand ▪ Uses simple vocabulary, and some vocabulary is used inaccurately or in a way that makes meaning unclear 	<ul style="list-style-type: none"> ▪ Demonstrates poor control of grammatical conventions with frequent minor errors and some severe errors ▪ Consistently writes sentences with similar structure and length, and some may be difficult to understand ▪ Uses simple vocabulary, and some vocabulary may be used inaccurately or in a way that makes meaning unclear

CLA+ NATIONAL RESULTS, 2013-14

3	4	5	6
<ul style="list-style-type: none"> ▪ States or implies a decision/conclusion/position ▪ Provides some valid support, but omits or misrepresents critical information, suggesting only superficial analysis and partial comprehension of the documents ▪ May not account for contradictory information (if applicable) 	<ul style="list-style-type: none"> ▪ States an explicit decision/conclusion/position ▪ Provides valid support that addresses multiple pieces of relevant and credible information in a manner that demonstrates adequate analysis and comprehension of the documents; some information is omitted ▪ May attempt to address contradictory information or alternative decisions/conclusions/positions (if applicable) 	<ul style="list-style-type: none"> ▪ States an explicit decision/conclusion/position ▪ Provides strong support that addresses much of the relevant and credible information, in a manner that demonstrates very good analysis and comprehension of the documents ▪ Refutes contradictory information or alternative decisions/conclusions/positions (if applicable) 	<ul style="list-style-type: none"> ▪ States an explicit decision/conclusion/position ▪ Provides comprehensive support, including nearly all the relevant and credible information, in a manner that demonstrates outstanding analysis and comprehension of the documents ▪ Thoroughly refutes contradictory evidence or alternative decisions/conclusions/positions (if applicable)
<ul style="list-style-type: none"> ▪ Provides limited or somewhat unclear arguments. Presents relevant information in each response, but that information is not woven into arguments ▪ Provides elaboration on facts or ideas a few times, some of which is valid; sources of information are sometimes unclear 	<ul style="list-style-type: none"> ▪ Organizes response in a way that makes the writer's arguments and logic of those arguments apparent but not obvious ▪ Provides valid elaboration on facts or ideas several times and cites sources of information 	<ul style="list-style-type: none"> ▪ Organizes response in a logically cohesive way that makes it fairly easy to follow the writer's arguments ▪ Provides valid elaboration on facts or ideas related to each argument and cites sources of information 	<ul style="list-style-type: none"> ▪ Organizes response in a logically cohesive way that makes it very easy to follow the writer's arguments ▪ Provides valid and comprehensive elaboration on facts or ideas related to each argument and clearly cites sources of information
<ul style="list-style-type: none"> ▪ Demonstrates fair control of grammatical conventions with frequent minor errors ▪ Writes sentences that read naturally but tend to have similar structure and length ▪ Uses vocabulary that communicates ideas adequately but lacks variety 	<ul style="list-style-type: none"> ▪ Demonstrates good control of grammatical conventions with few errors ▪ Writes well-constructed sentences with some varied structure and length ▪ Uses vocabulary that clearly communicates ideas but lacks variety 	<ul style="list-style-type: none"> ▪ Demonstrates very good control of grammatical conventions ▪ Consistently writes well-constructed sentences with varied structure and length ▪ Uses varied and sometimes advanced vocabulary that effectively communicates ideas 	<ul style="list-style-type: none"> ▪ Demonstrates outstanding control of grammatical conventions ▪ Consistently writes well-constructed complex sentences with varied structure and length ▪ Displays adept use of vocabulary that is precise, advanced, and varied