

To: Provost, Joan Lorden  
Senior Associate Provost, Jay Raja  
Associate Provost for Undergraduate Studies and Dean of University College, John Smail

From: Christine Robinson  
Cathy Sanders  
Elizabeth Wemlinger

Date: July 28, 2014

Re: Highlights of ETS Proficiency Profile Test and Supporting Graphs

Attached are highlights of the ETS Proficiency Profile test and supporting graphs with college, peer institution, and demographic comparisons. Please let us know if you would like additional information.

## Highlights of the ETS Proficiency Profile Test

### Introduction

During spring 2014, UNC Charlotte administered the online Educational Testing Service (ETS) Proficiency Profile abbreviated test to seniors with majors in UNC Charlotte's seven colleges. The exam measures college-level skills and proficiency levels in critical thinking, reading, writing, and mathematics and college-level skills in three academic areas: humanities, social sciences, and natural sciences. Proficiency levels are described in Appendix 1.

Twenty-three proctored testing sessions were administered electronically during March and April. Students were allowed forty minutes to take the online test which consisted of thirty-six multiple choice questions with nine in each of the four skills areas of critical thinking, reading, writing, and mathematics. The three academic areas (humanities, social sciences, and natural sciences) were assessed using the writing and critical thinking questions.

To understand how UNC Charlotte's seniors performed in comparison to seniors from other institutions, twelve universities with a Carnegie Classification of Research University/High Research who administered the ETS Proficiency Profile to their seniors were selected as peer institutions. The peer institutions are Florida International University, University of Colorado at Denver, University of Massachusetts-Lowell, Clemson University, Oklahoma State University, SUNY at Binghamton, Temple University, University of Akron, University of Mississippi, University of Missouri-Kansas City, University of North Carolina at Greensboro, and University of Southern Mississippi. The number of participants per University can be found in Appendix 2.

For the purpose of this report, selected significant differences ( $p < 0.05$ ) are reported in the narrative. However, all data points are presented in the supporting documentation.

### Sample

Based on the number of past graduating seniors, ETS recommended a representative sample of 350 students be tested. The goal was to have the same percentage of seniors who graduated from each of the Colleges in 2012-13 reflected in the sample. In order to create as little disruption in the instruction process as possible, many of the Colleges targeted courses with large senior enrollments or capstone courses; thus the sample is not a representative one.

Although 358 seniors sat for the exam, only 347 students answered a minimum of 75% of the questions; these were the students included in the analysis. Based on the target percentages identified for each College, the Colleges of Education and Health and Human Services were overrepresented in the sample while the Colleges of Liberal Arts and Sciences and Art and Architecture were underrepresented in the sample. ETS was not able to report mean scores for the College of Art and Architecture due to the small number (3) of students that tested.

### College Representation

College	% of Students Targeted	% of Students Tested
Art + Architecture	5%	<1%
Business	18%	13%
Computing & Informatics	5%	5%
Education	6%	11%
Engineering	15%	16%
Health & Human Services	10%	18%
Liberal Arts & Sciences	41%	36%
Enrolled in More Than 1 College		1%

### Demographics

The demographic profile of UNC Charlotte students who sat for the exam skewed ages 20-29 (90%), female (52%), White (67%), Full-time (89%), Transferred credit (53%), Working (75%), and English as the best language (72%). The demographic profile of seniors from peer institutions was similar with a few exceptions; peer institutions skewed less Transferred credit (44%) and more English as the best language (86%). See Appendices 3 and 3A for detailed demographic comparisons.

*Note: As identified in the IR Fact Book, 2014 seniors at the University tended to be male (51%), Caucasian (63%), and Full-time (74%).*

### Results

#### Peer Comparisons

Overall, UNC Charlotte's mean score was similar to that of peer institutions. However, UNC Charlotte students' mean scores was significantly lower than peer institutions' scores on critical thinking, humanities, and social sciences. Also, the percentage of UNC Charlotte students that were "Proficient" in Reading and Critical Thinking at Level 3 was significantly lower than the percentage at peer institutions. Graphs for peer comparisons are located in Appendix 4.

#### College Comparisons<sup>1</sup>

While all students' lowest scores were in critical thinking, the College of Engineering students' scores were significantly higher than those of the Colleges of Business, Education, and Health and Human Services. Also, the College of Engineering students' scored significantly higher than students in all of the other colleges in mathematics. Graphs for college comparisons are located in Appendix 5.

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<sup>1</sup> Some of these statistically significant differences should be treated with some amount of caution due to the sample size for the College of Business, College of Computing and Informatics and the College of Educations having fewer than 50 in the sample. These results may not be generalizable to the Colleges.

## Demographic Comparisons<sup>2</sup>

Demographic comparisons among UNC Charlotte students were as follows:

- Overall, women scored significantly lower than men but especially in the areas of critical thinking and mathematics.
- African American and Asian/Asian American/ Pacific Islander students scored significantly lower than White students in all areas of the exam (critical thinking, reading, writing, mathematics, humanities, social sciences, and natural sciences).
- Overall Hispanic students scored significantly lower than White students especially in the areas of reading, mathematics, and humanities.
- Overall, students who worked scored significantly lower than students who did not. Area differences by number of hours worked can be reviewed in the attached.
- Students who reported that English was not their best language scored significantly lower than students for whom English was their best language on mathematics and humanities.

Graphs for demographic comparisons are located in Appendix 6.

*Note: Demographic data from peer institutions were not available.*

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<sup>2</sup> As with the College comparisons some of the demographic comparisons, particularly the race/ethnicity comparisons should be treated with caution due to sample sizes below 50 for all of the racial/ethnic groups other than white.

## Appendix 1

### Proficiency Classifications and Proficiency Level Competencies

#### Proficiency Levels

The skills measured by the ETS Proficiency Profile test are grouped into three skill areas:

- reading and critical thinking
- writing
- mathematics

Within each of these three skill areas, the specific skills tested by the ETS Proficiency Profile test are classified into three *proficiency levels*, identified simply as **Level 1**, **Level 2** and **Level 3**. Each proficiency level is defined in terms of a set of specific competencies expected of students.

#### *Reading and Critical Thinking*

To be considered proficient at **Level 1**, a student should be able to:

- recognize factual material explicitly presented in a reading passage
- understand the meaning of particular words or phrases in the context of a reading passage.

To be considered proficient at **Level 2**, a student should be able to:

- synthesize material from different sections of a passage
- recognize valid inferences derived from material in the passage
- identify accurate summaries of a passage or of significant sections of the passage
- understand and interpret figurative language
- discern the main idea, purpose, or focus of a passage or a significant portion of the passage

To be considered proficient at **Level 3**, a student should be able to:

- evaluate competing casual explanations
- evaluate hypotheses for consistency with known facts
- determine the relevance of information for evaluating an argument or conclusion
- determine whether an artistic interpretation is supported by evidence contained in a work
- recognize the salient features or themes in a work of art
- evaluate the appropriateness of procedures for investigating a question of causation
- evaluate data for consistency with known facts, hypotheses or methods

#### *Writing*

To be considered proficient at **Level 1**, a student should be able to:

- recognize agreement among basic grammatical elements (e.g., nouns, verbs, pronouns and conjunctions)
- recognize appropriate transition words
- recognize incorrect word choice
- order sentences in a paragraph
- order elements in an outline

To be considered proficient at **Level 2**, a student should be able to:

- incorporate new material into a passage
- recognize agreement among basic grammatical elements (e.g., nouns, verbs, pronouns and conjunctions) when these elements are complicated by intervening words or phrases

- combines simple clauses into single, more complex combinations
- recast existing sentences into new syntactic combinations

To be considered proficient at **Level 3**, a student should be able to:

- discriminate between appropriate and inappropriate use of parallelism
- discriminate between appropriate and inappropriate use of idiomatic language
- recognize redundancy
- discriminate between correct and incorrect constructions
- recognize the most effective revision of a sentence

### **Mathematics**

To be considered proficient at **Level 1**, a student should be able to:

- solve word problems that would most likely be solved by arithmetic and do not involve conversion of units or proportionality (These problems can be multi-step if the steps are repeated rather than embedded).
- solve problems involving the informal properties of numbers and operations, often involving the Number Line, including positive and negative numbers, whole numbers and fractions (including conversions of common fractions to percent, such as converting  $\frac{1}{4}$  to 25%)
- solve problems requiring a general understanding of square roots and the squares of numbers
- solve a simple equation or substitute numbers into an algebraic expression
- find information from a graph (This task may involve finding a specified piece of information in a graph that also contains other information).

To be considered proficient at **Level 2**, a student should be able to:

- solve arithmetic problems with some complications, such as complex wording, maximizing or minimizing and embedded ratios (These problems include algebra problems that can be solved by arithmetic [the answer choices are numeric].)
- simplify algebraic expressions, perform basic translations and draw conclusions from algebraic equations and inequalities (These tasks are more complicated than solving a simple equation, though they may be approached arithmetically by substituting numbers)
- interpret a trend represented in a graph, or choose a graph that reflects a trend
- solve problems involving sets (The problems would have numeric answer choices.)

To be considered at **Level 3**, a student should be able to:

- solve word problems that would be unlikely to be solved by arithmetic; the answer choices are either algebraic expressions or are numbers that do not lend themselves to back-solving
- solve problems involving difficult arithmetic concepts such as exponents and roots other than squares and square roots and percent of increase or decrease
- generalize about numbers, e.g., identify the values for (x) for which an expression increases as (x) increases
- solve problems requiring an understanding of the properties of integers, rational numbers, etc.
- interpret a graph in which the trends are to be expressed algebraically or in which one of the following is involved: exponents and roots other than squares and square roots, percent of increase or decrease
- solve problems requiring insight or logical reasoning.

**Appendix 2**  
**UNC Charlotte ETS Proficiency Profile Peer Institutions**  
**(Online Abbreviated, Seniors Only Administration)**

<b><u>University</u></b>	<b><u>Number of Students</u></b>
Clemson University	2,006
Florida International University	1,023
Oklahoma State University	125
SUNY at Binghamton	164
Temple University	203
University of Akron	219
University of Colorado-Denver	258
University of Massachusetts-Lowell	119
University of Mississippi	183
University of Missouri-Kansas City	5,033
University of North Carolina at Greensboro	124
University of Southern Mississippi	<u>1,922</u>
<b>Total</b>	<b>11,379</b>

### Appendix 3

## Comparison of UNC Charlotte and Peer Institutions' Sample Demographics

<b>Gender</b>	<b>UNC Charlotte</b>	<b>Peer Institutions</b>
Male	45%	44%
Female	55%	56%

<b>Ethnicity</b>	<b>UNC Charlotte</b>	<b>Peer Institutions</b>
African American	11%	21%
Black Hispanic	<1%	2%
Hispanic	5%	5%
Latino	2%	1%
American Indian/Alaskan Native	1%	1%
Asian/ Asian American/Pacific Islander	5%	5%
White	67%	59%
Other/Decline	8%	6%

<b>Enrollment Status</b>	<b>UNC Charlotte</b>	<b>Peer Institutions</b>
Full Time	89%	90%
Part Time	11%	10%

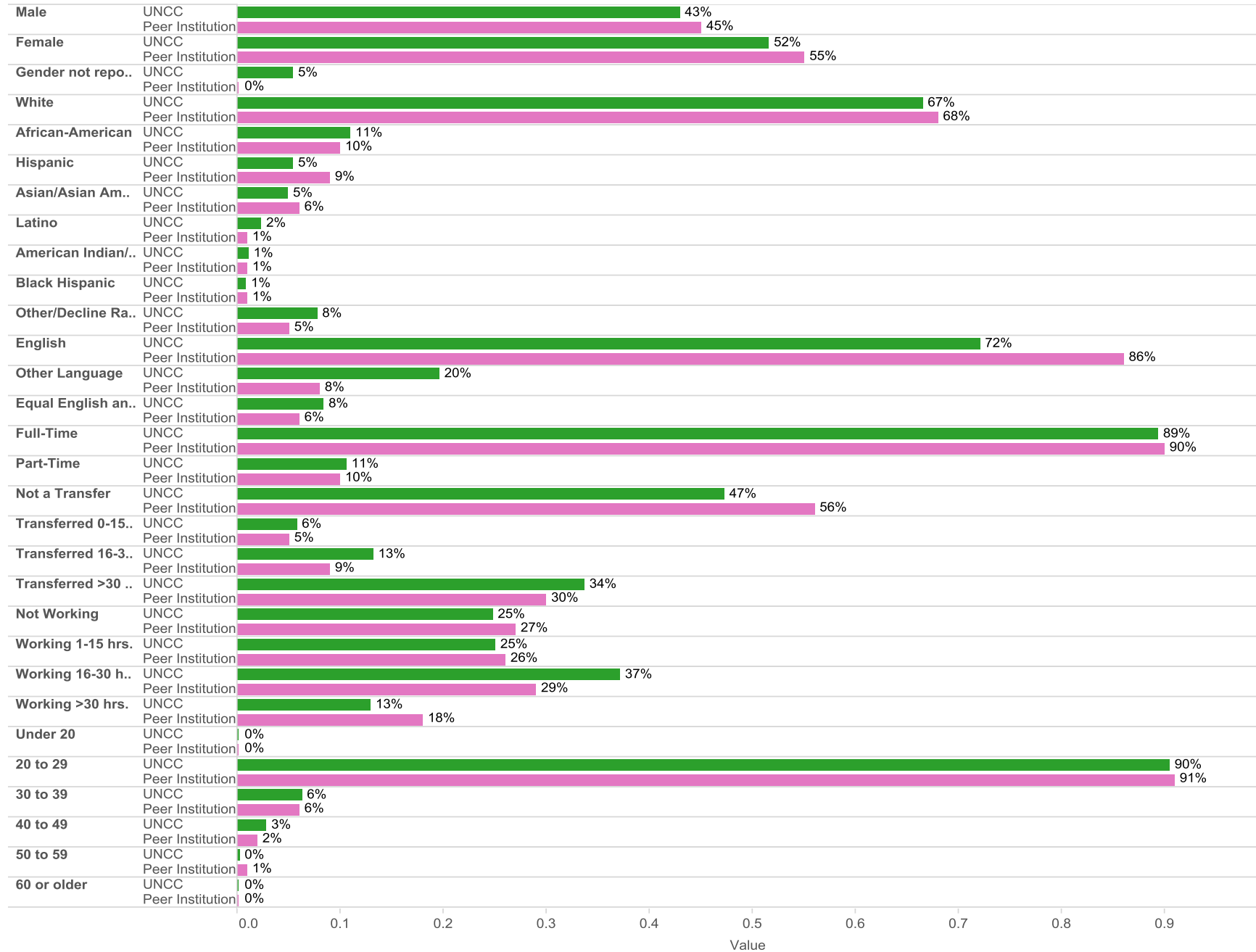
<b>Hours Working</b>	<b>UNC Charlotte</b>	<b>Peer Institutions</b>
Not Working	25%	26%
Working 1-30 Hours	62%	55%
Working > 30 Hours	13%	19%

<b>Transfer Status</b>	<b>UNC Charlotte</b>	<b>Peer Institutions</b>
Not a Transfer	47%	56%
Transferred 0-30 Hours	19%	15%
Transferred >30 Hours	34%	28%

<b>Best Language</b>	<b>UNC Charlotte</b>	<b>Peer Institutions</b>
English	72%	88%
Other Language	20%	7%
Both Equal	8%	5%



## ETS Comparison Demographics





# Appendix 4

## Peer Institution Comparisons

# UNC Charlotte Versus Peer Institutions

## Mean Total Score Comparison

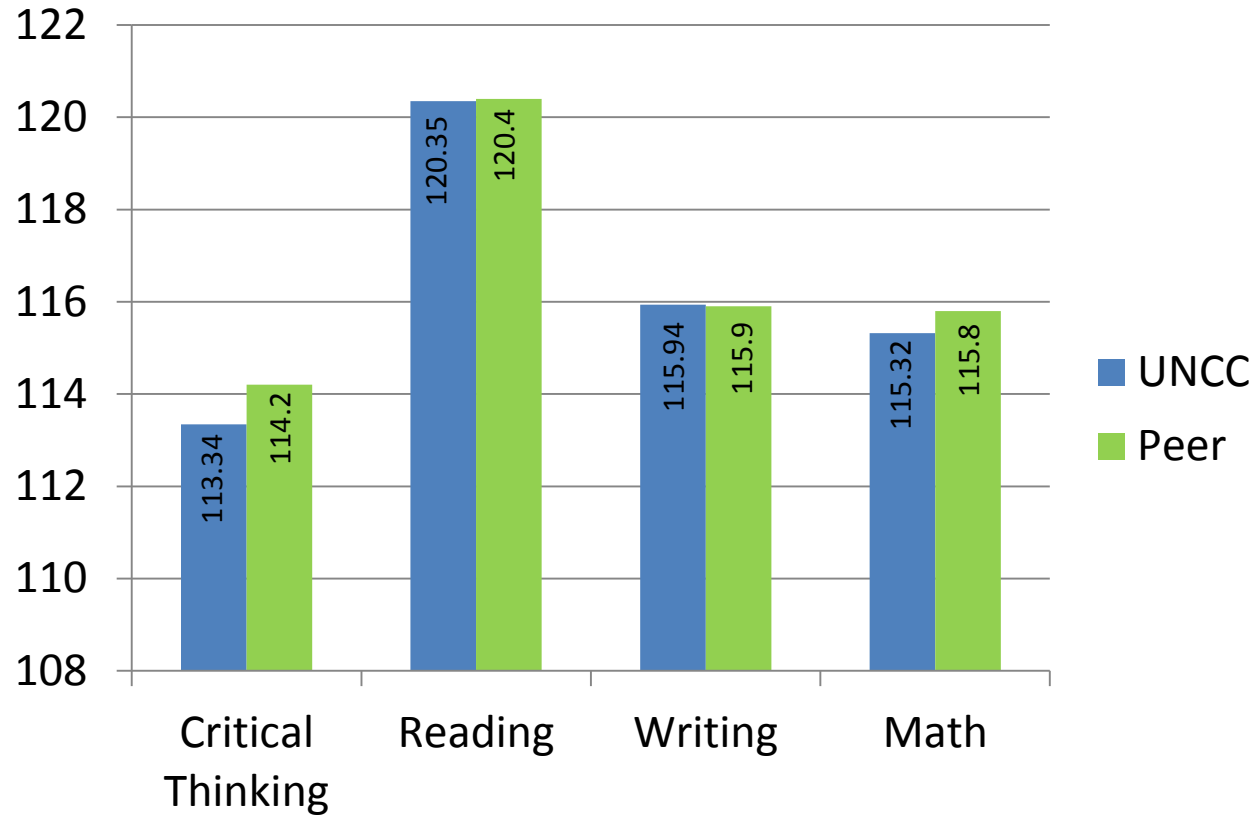
Possible Score Range (400 – 500)



# UNC Charlotte Versus Peer Institutions

## Mean Skills Subscores Comparison

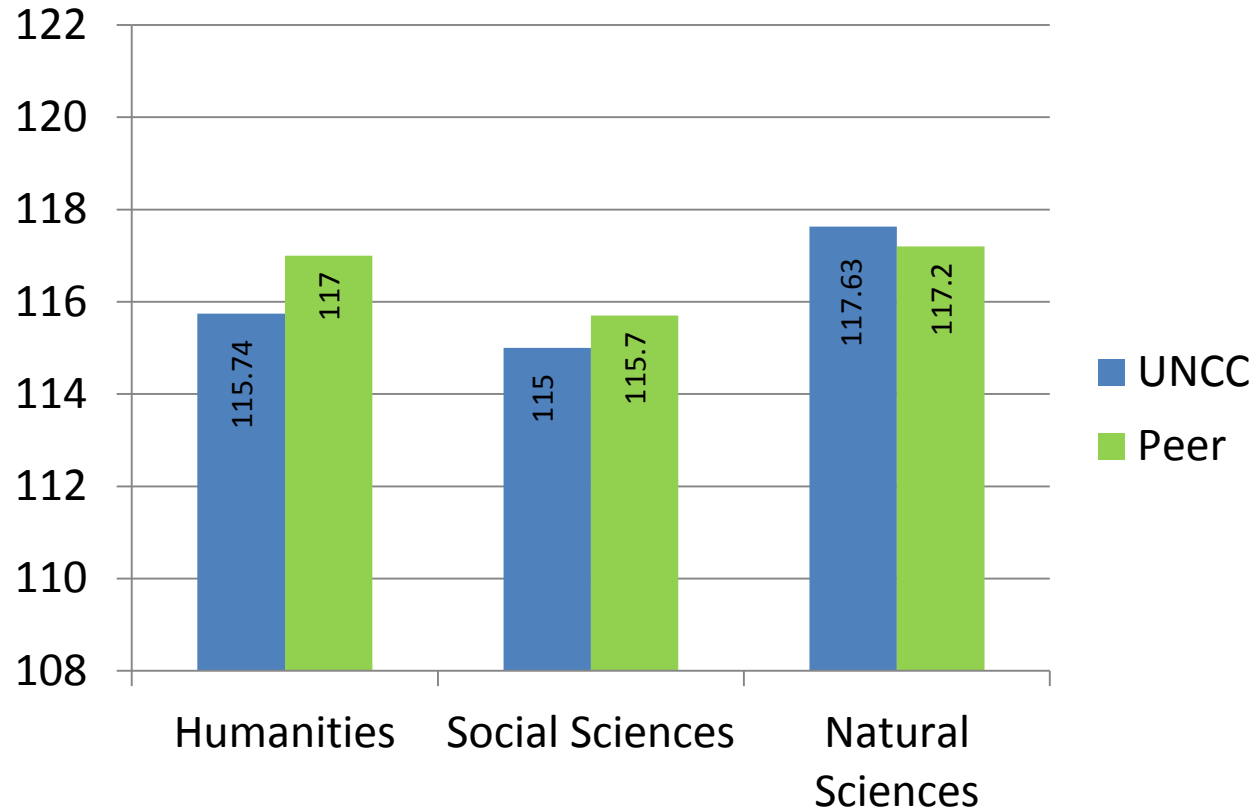
Possible Score Range (100 – 130)



SSD = UNC Charlotte students significantly lower than students at Peer Institutions on Critical Thinking.

# UNC Charlotte Versus Peer Institutions Academic Area Subscores Comparison

Possible Score Range (100 – 130)



SSD = UNC Charlotte students significantly lower than students at Peer Institutions on Humanities and Social Sciences.

	<b>Proficiency Levels</b>					
					<b>UNCC</b>	<b>Peer</b>
	<b>UNCC</b>	<b>Peer</b>	<b>UNCC</b>	<b>Peer</b>	<b>Not</b>	<b>Not</b>
<b><u>Skill</u></b>	<b><u>Proficient</u></b>	<b><u>Proficient</u></b>	<b><u>Marginal</u></b>	<b><u>Marginal</u></b>	<b><u>Proficient</u></b>	<b><u>Proficient</u></b>
Reading Level 1	77%	73%	14%	16%	9%	11%
Reading Level 2	51%	47%	20%	18%	29%	35%
Critical Thinking	7%	11%	30%	23%	63%	67%
Writing Level 1	72%	70%	22%	22%	5%	8%
Writing Level 2	27%	26%	42%	37%	32%	36%
Writing Level 3	12%	12%	31%	30%	57%	59%
Math Level 1	65%	66%	23%	20%	12%	15%
Math Level 2	40%	42%	25%	24%	35%	35%
Math Level 3	12%	15%	22%	21%	66%	64%

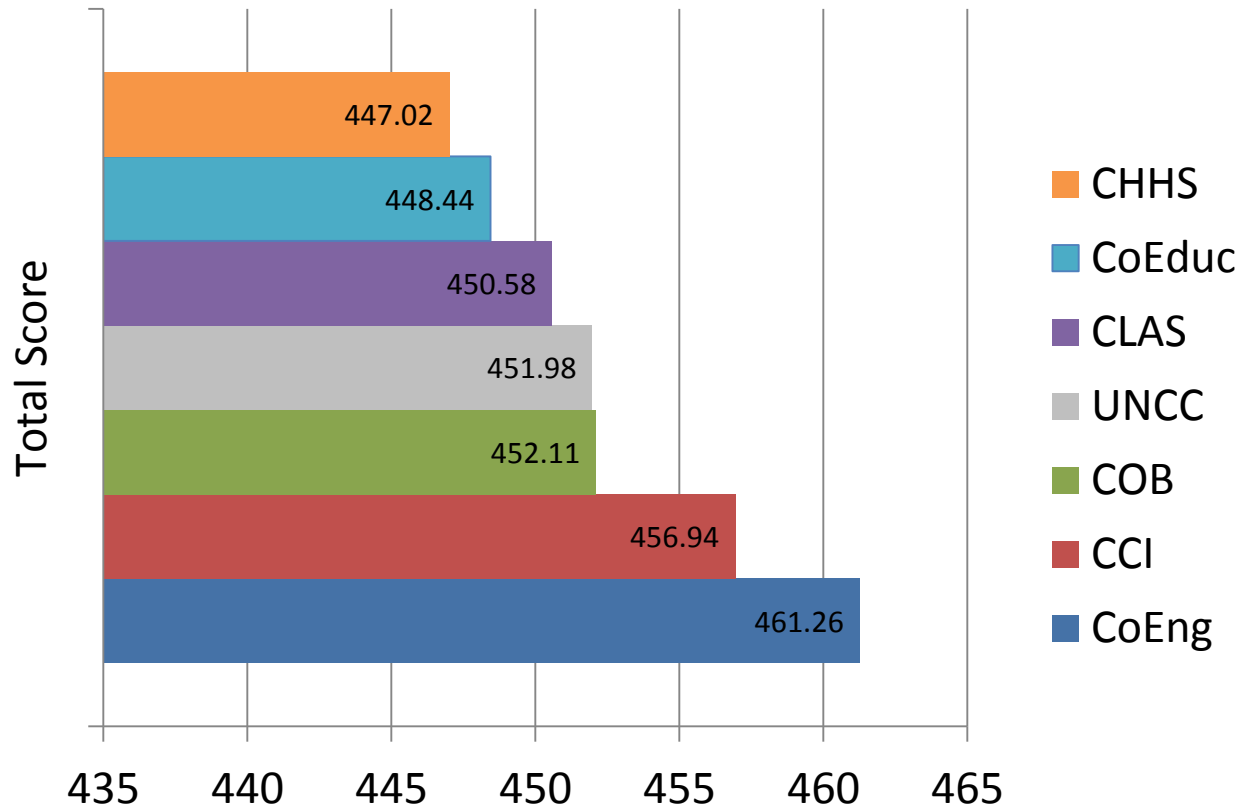


# Appendix 5

## College Comparisons

# Mean Total Score by College

(Possible Score Range 400 to 500)

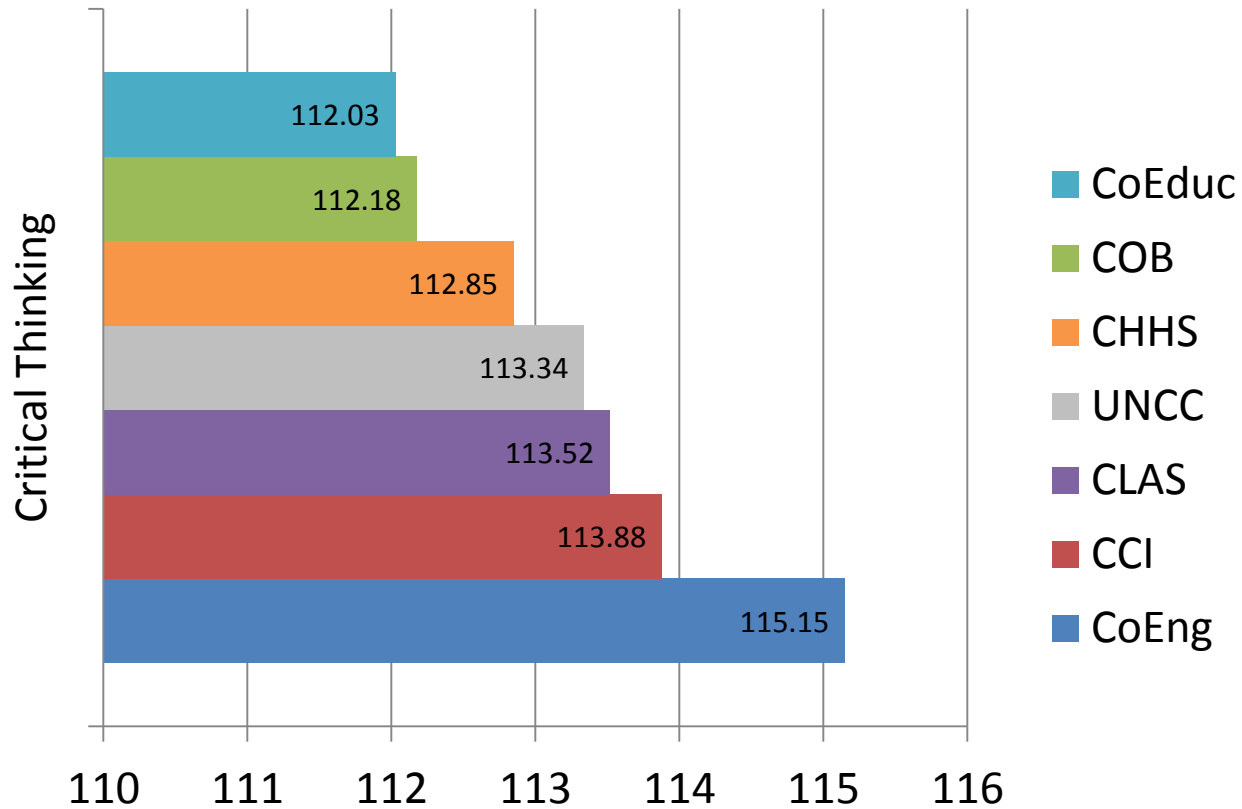


SSD = Total Scores for Colleges of Business, Education, Health and Human Services, Liberal Arts and Sciences significantly lower than Total Score for College of Engineering



# Mean Critical Thinking Score by College

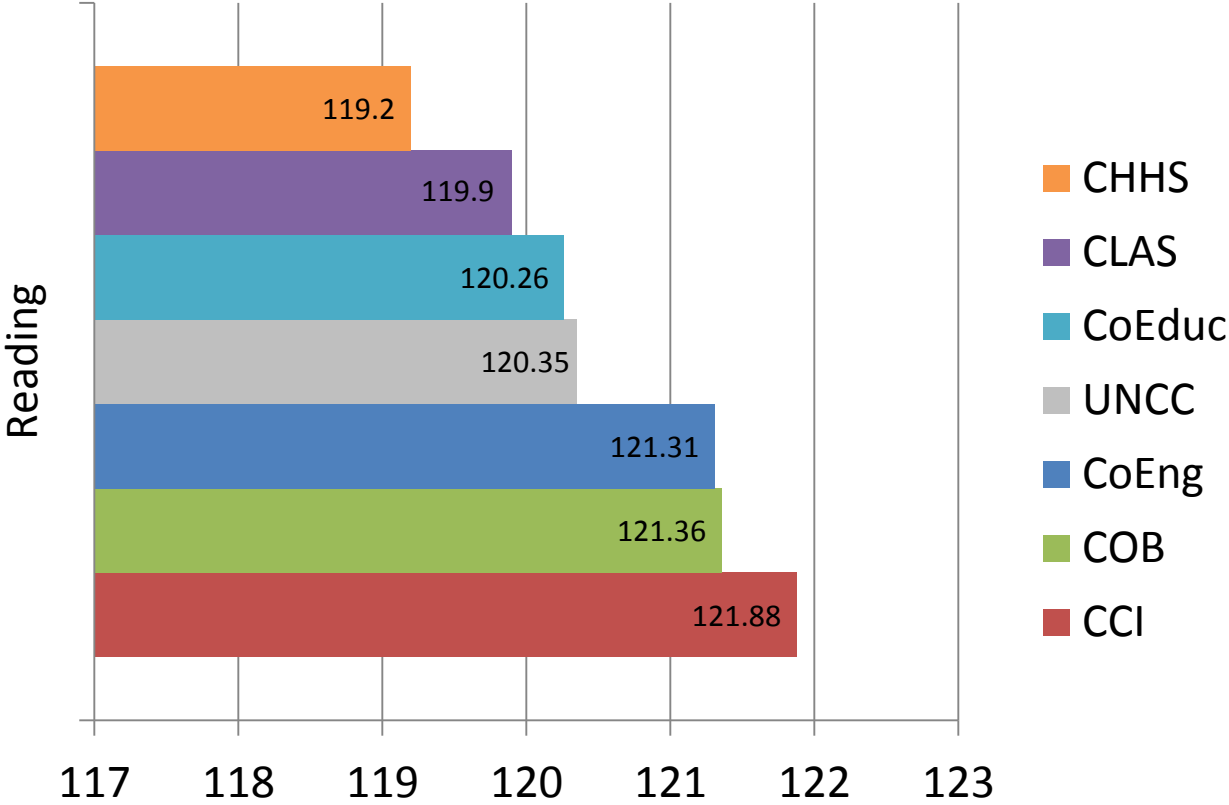
Possible Score Range (100 to 130)



SSD = Students in the Colleges of Business, Education, and Health and Human Services significantly lower on Critical Thinking than students in the College of Engineering.

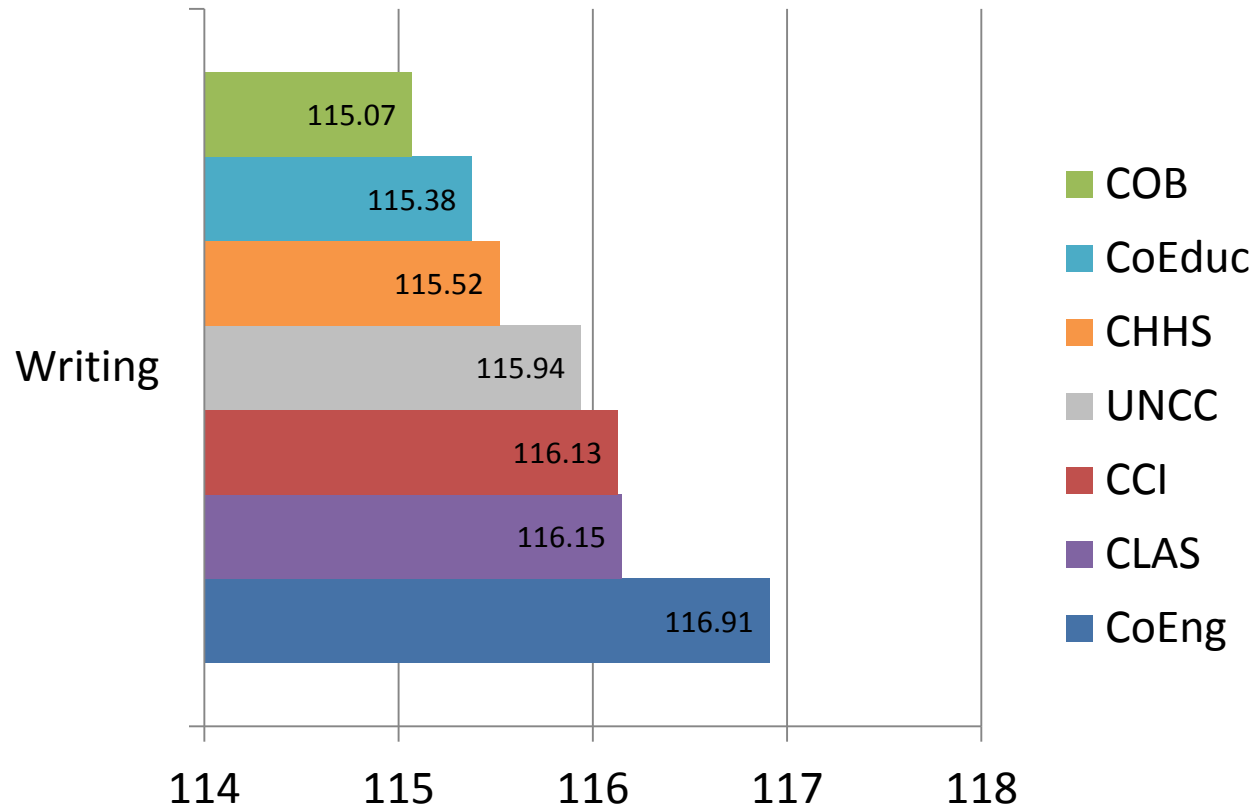
# Mean Reading Score by College

Possible Score Range (100 to 130)



# Mean Writing Score by College

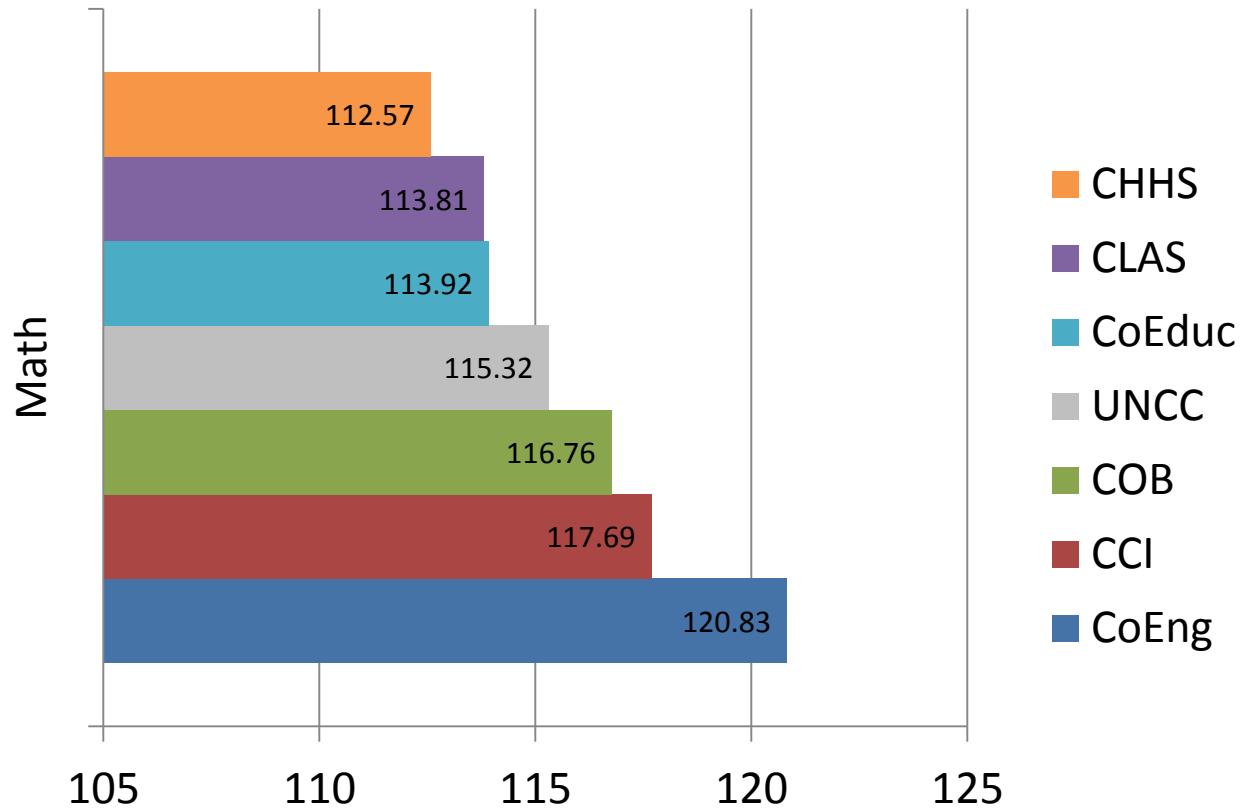
Possible Score Range (100 to 130)



SSD = Students in the College of Business significantly lower in Writing that students in the College of Engineering.

# Mean Mathematics Score by College

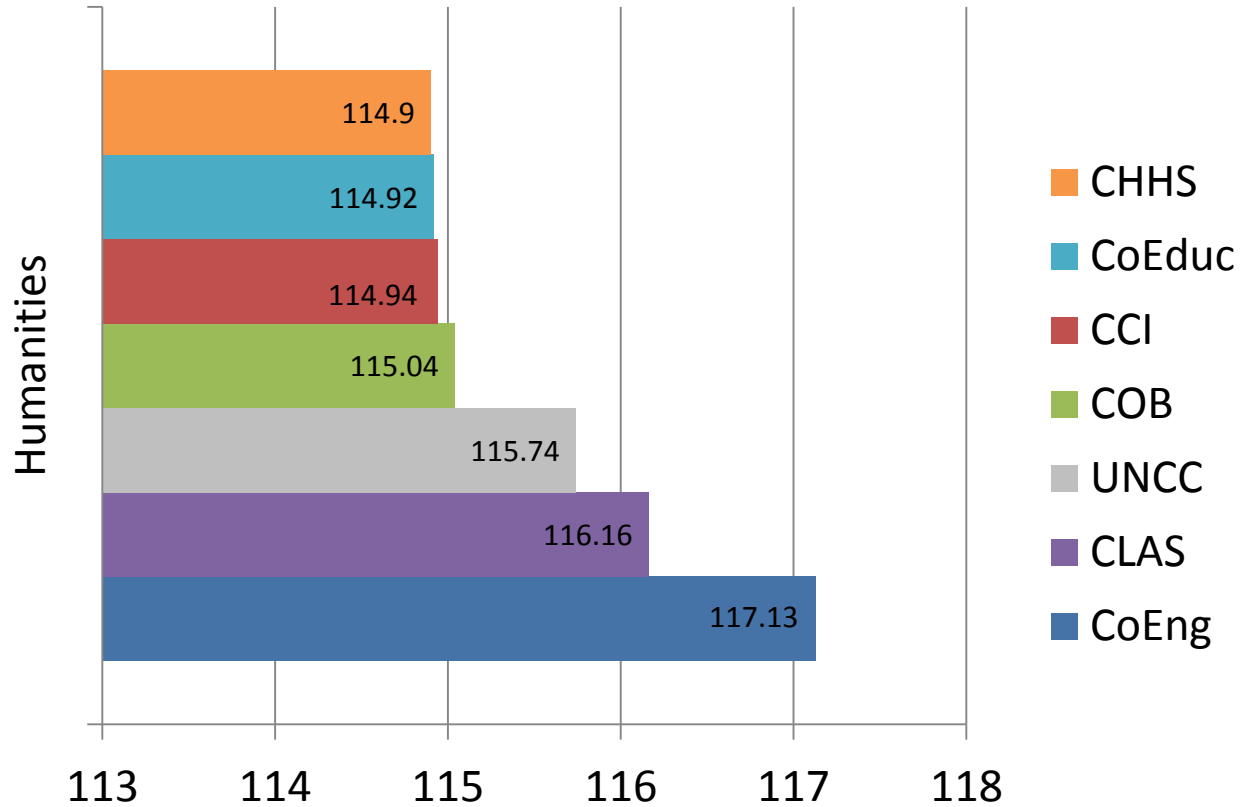
Possible Score Range (100 to 130)



SSD = Students in the Colleges of Business, Computing and Informatics, Education, Health and Human Services, and Liberal Arts and Sciences significantly lower on Mathematics than students in the College of Engineering.

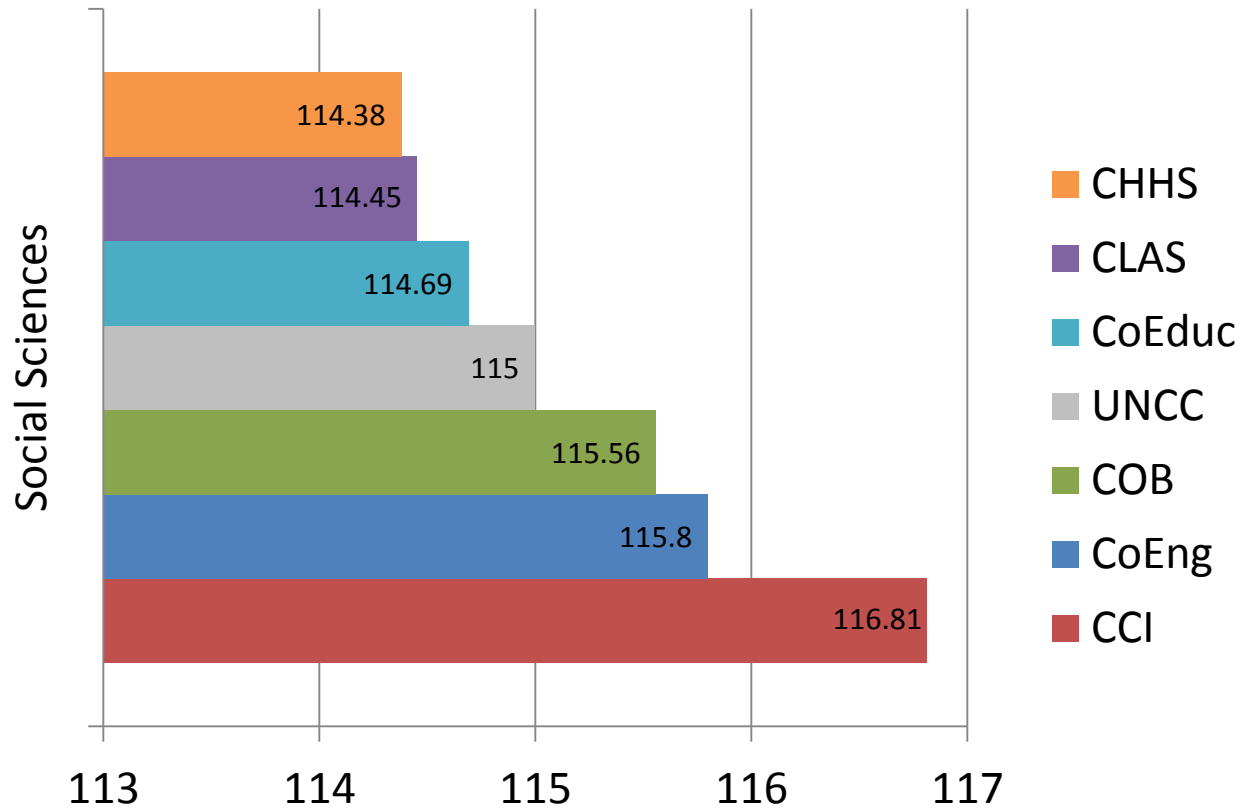
# Mean Humanities Score by College

Possible Score Range (100 to 130)



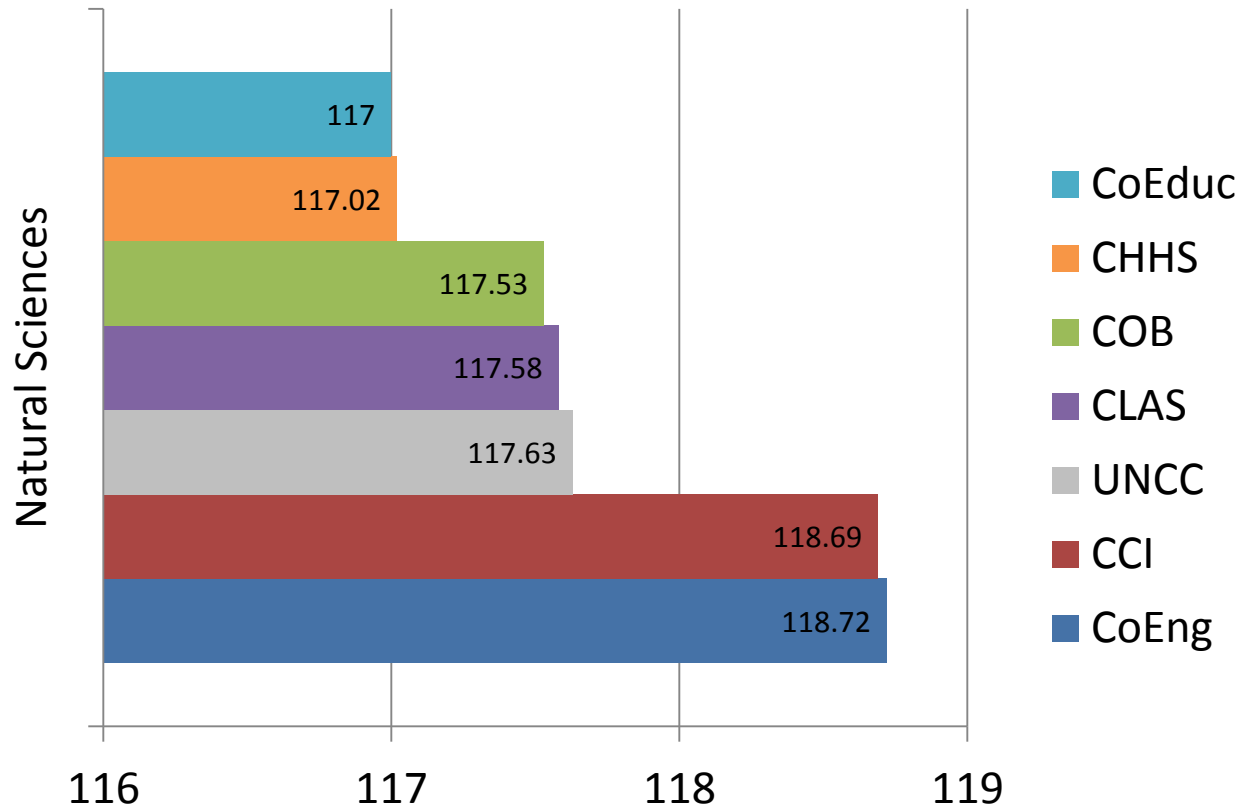
# Mean Social Sciences Score by College

Possible Score Range (100 to 130)



# Mean Natural Sciences Score by College

Possible Score Range (100 to 130)



# **Appendix 6**

## **Demographic Comparisons**



# Mean Total Score by Gender

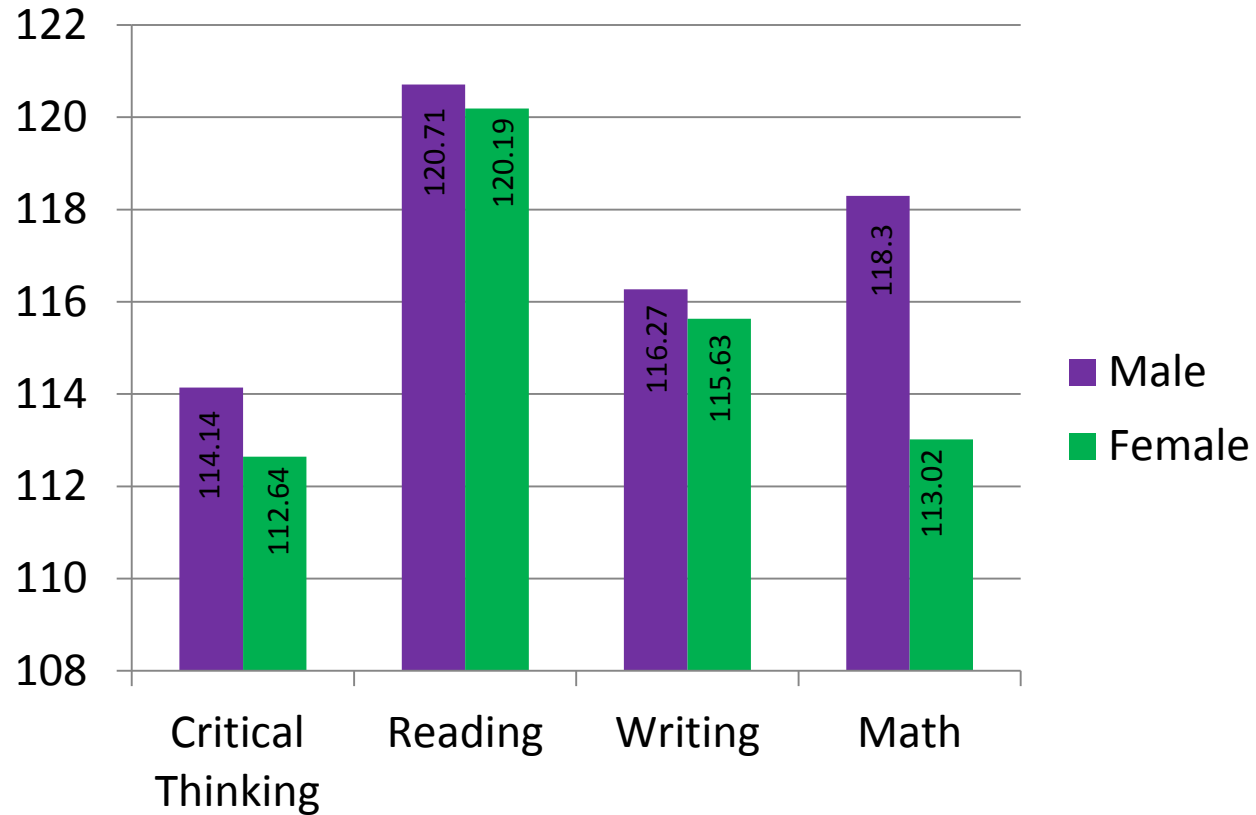
Possible Score Range (400 - 500)



SSD = Female Total Score significantly lower than Male Total Score

# Mean Skills Sub-scores by Gender

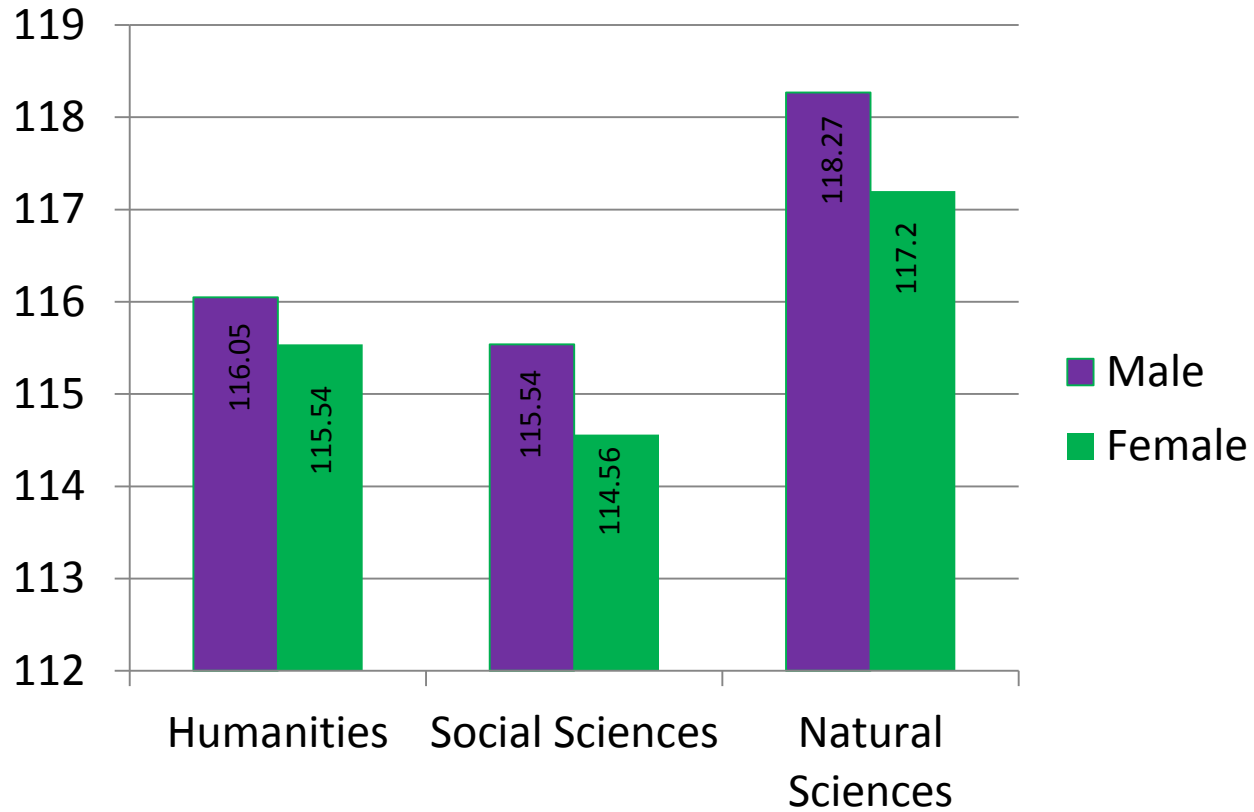
Possible Score Range (100 - 130)



SSD = Female students significantly lower than Male students on Critical Thinking and Mathematics.

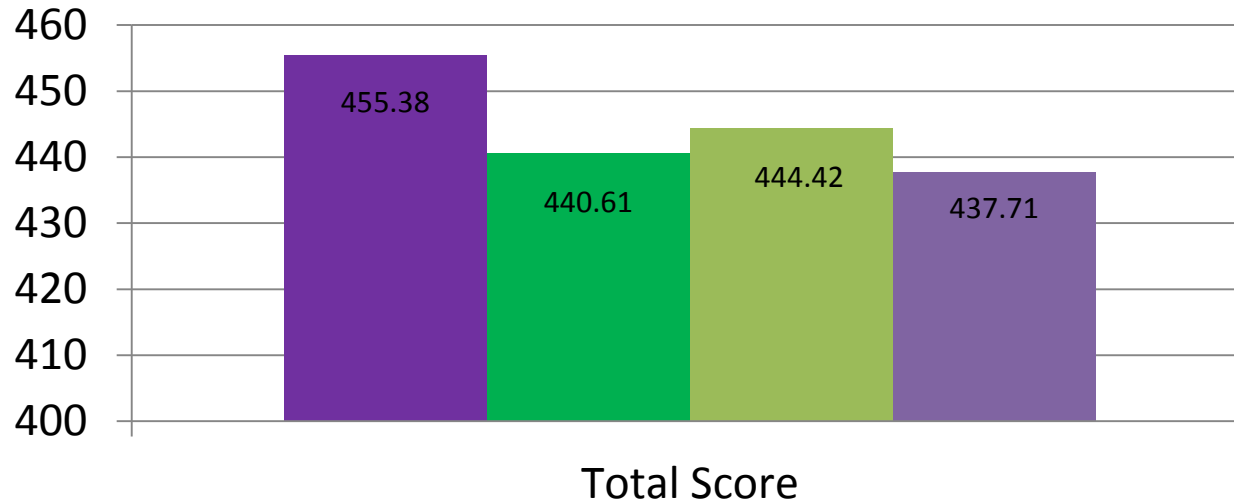
# Mean Academic Area Sub-scores by Gender

Possible Score Range (100 - 130)



# Mean Total Score by Ethnicity

Possible Score Range (400 - 500)

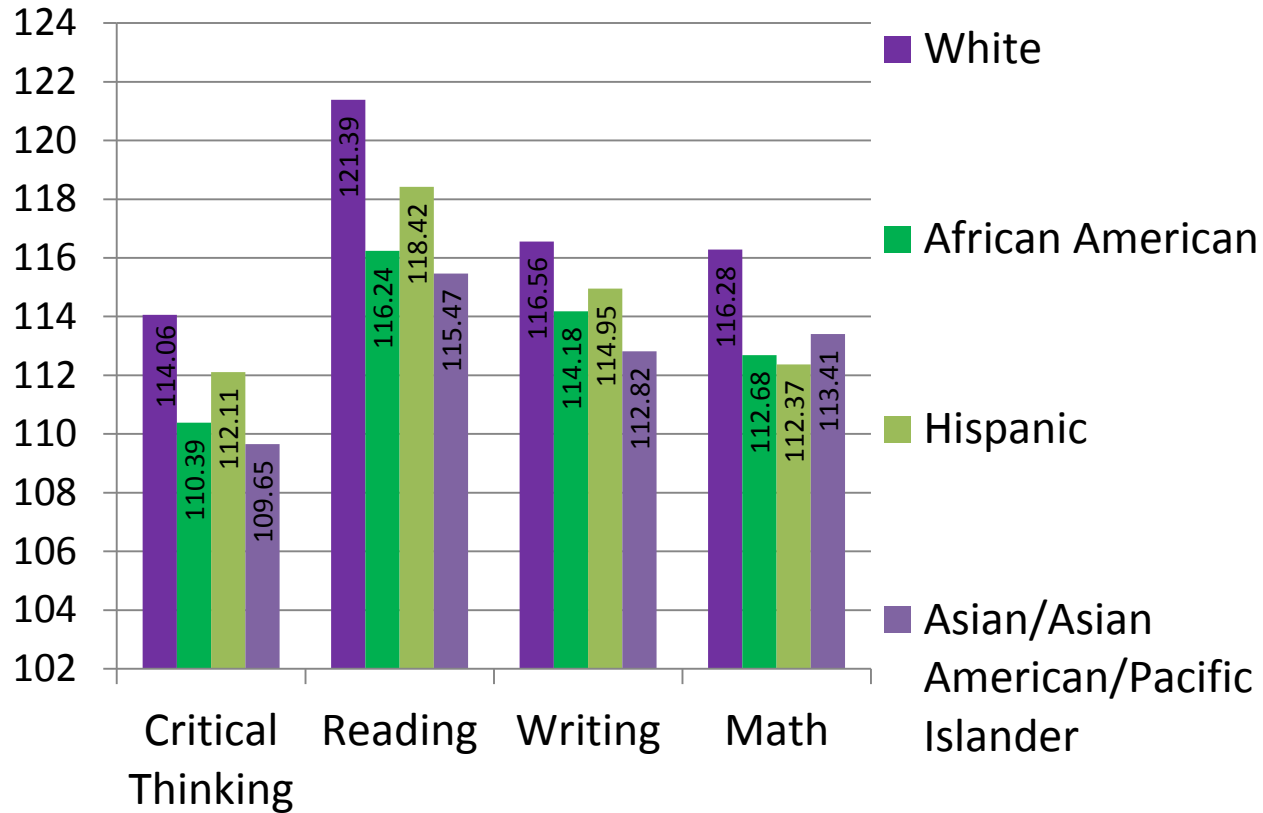


- White
- African American
- Hispanic
- Asian/Asian American/Pacific Islander

SSD = Total Scores for African American, Hispanic, and Asian/Asian American/Pacific Islander significantly lower Than White Total Score

# Mean Skills Sub-scores by Ethnicity

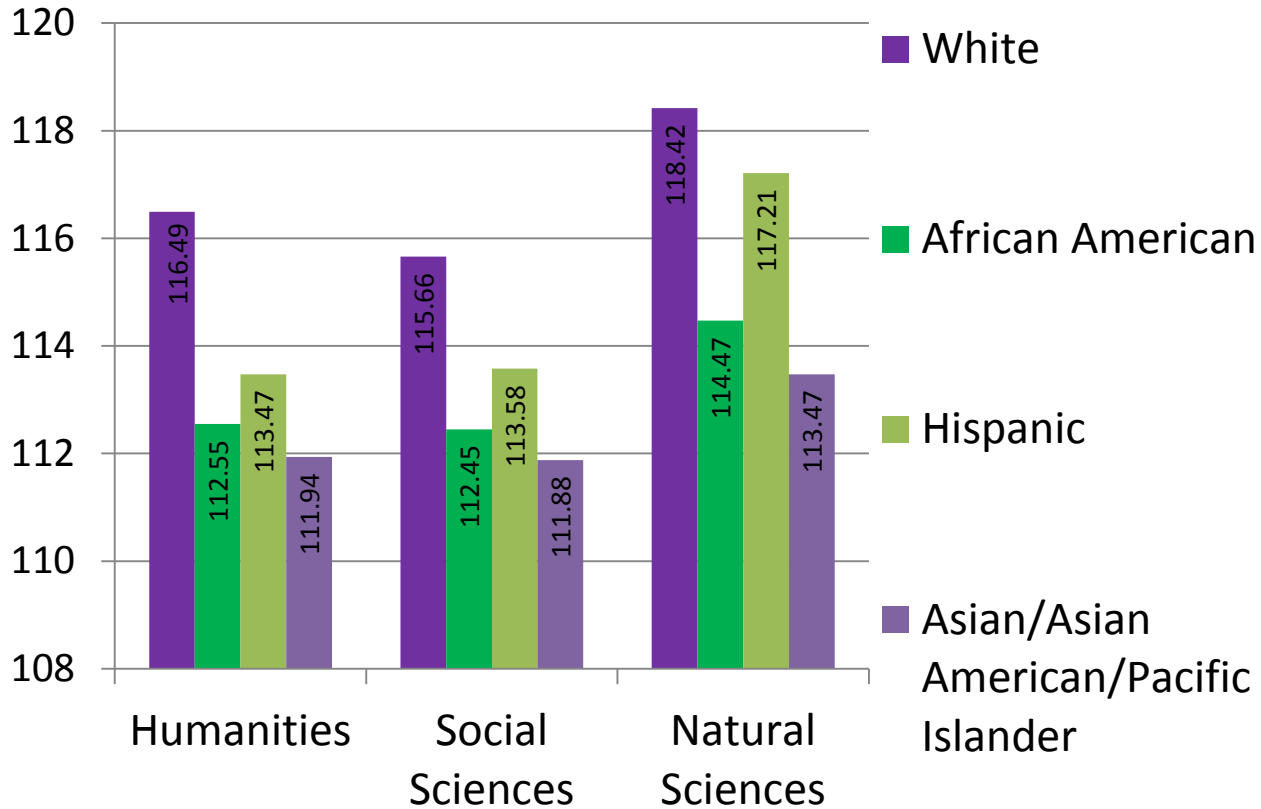
Possible Score Range (100 - 130)



SSD = African American and Asian/Asian American/Pacific Islander students significantly lower than White students on Critical Thinking, Reading, Writing, and Mathematics. Hispanic students significantly lower than White students on Reading and Mathematics.

# Mean Academic Area Sub-scores by Ethnicity

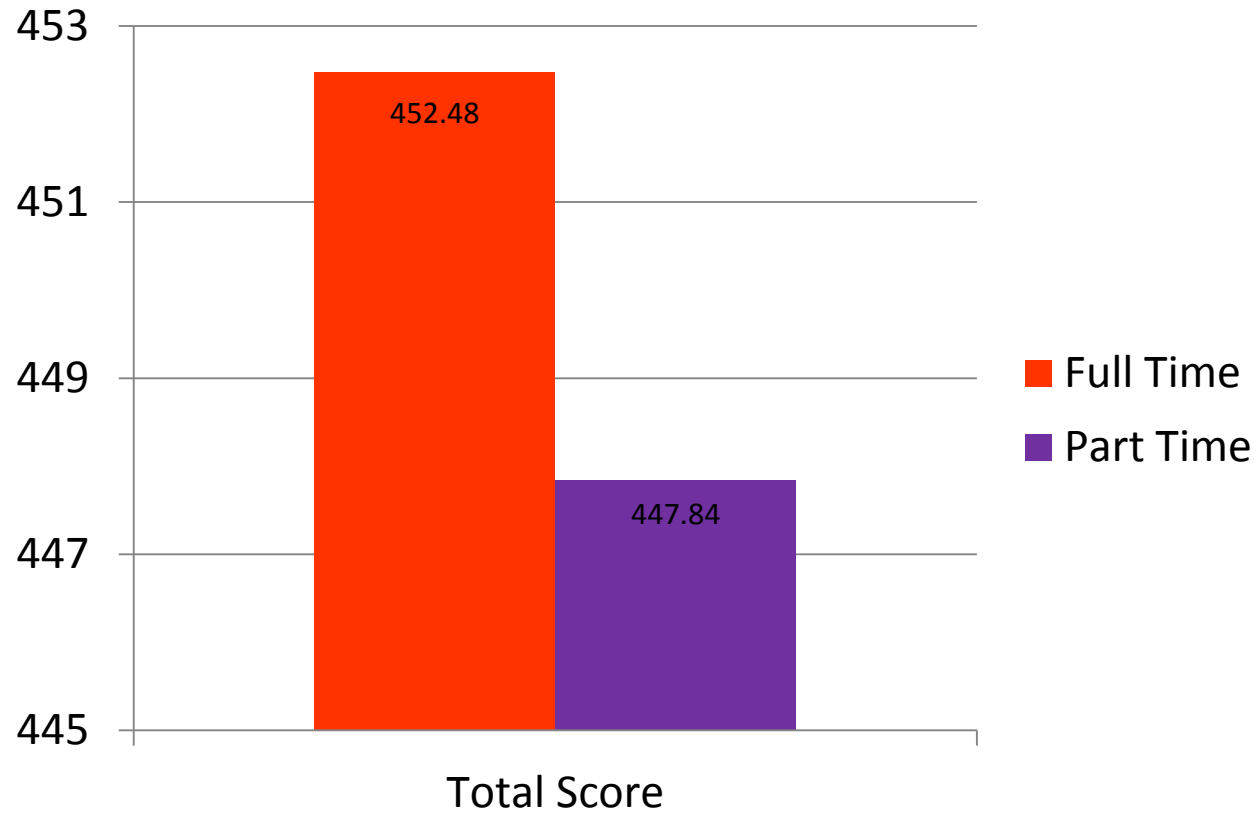
Possible Score Range (100 - 130)



SSD = African American and Asian/Asian American/Pacific Islander students significantly lower than White students on Humanities, Social Sciences, and Natural Sciences. Hispanic students significantly lower than White students on Humanities.

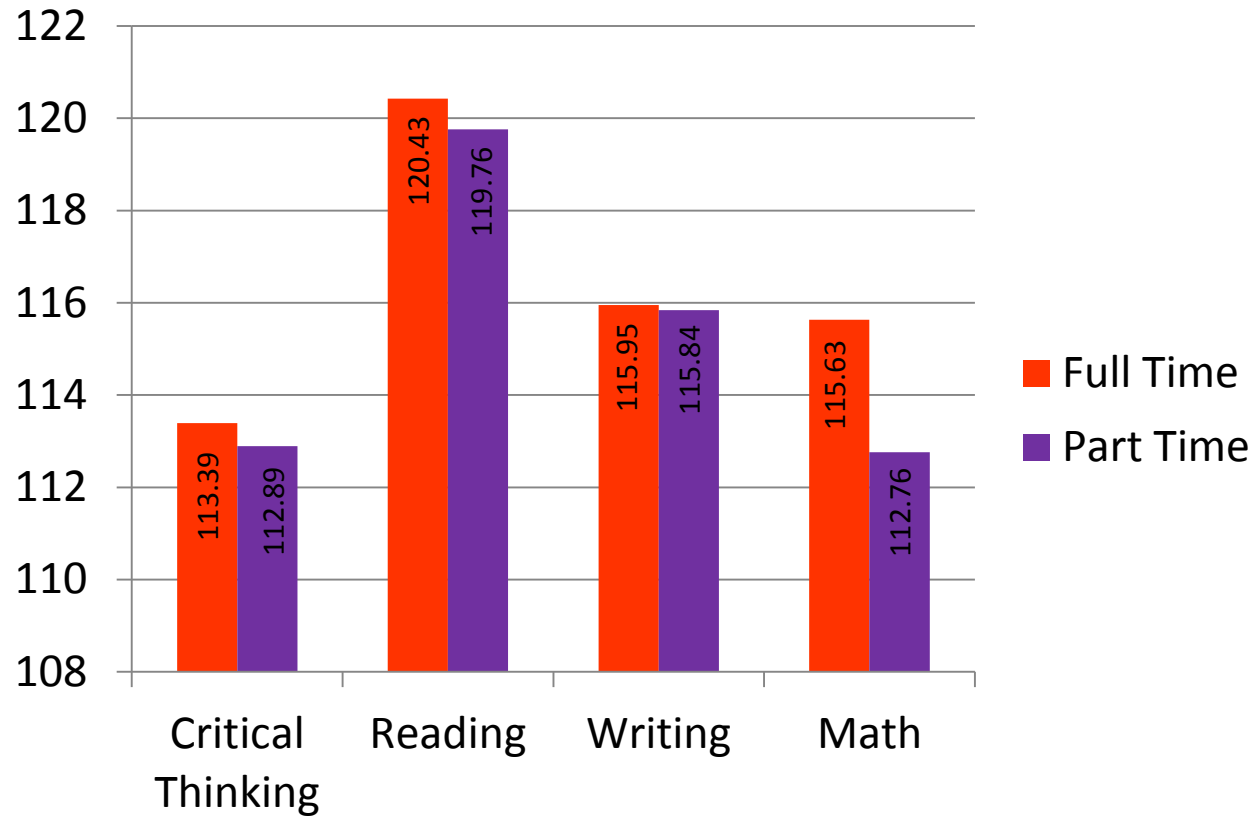
# Mean Total Score by Enrollment Status

Possible Score Range (400 - 500)



# Mean Skills Sub-scores by Enrollment Status

Possible Score Range (100 - 130)

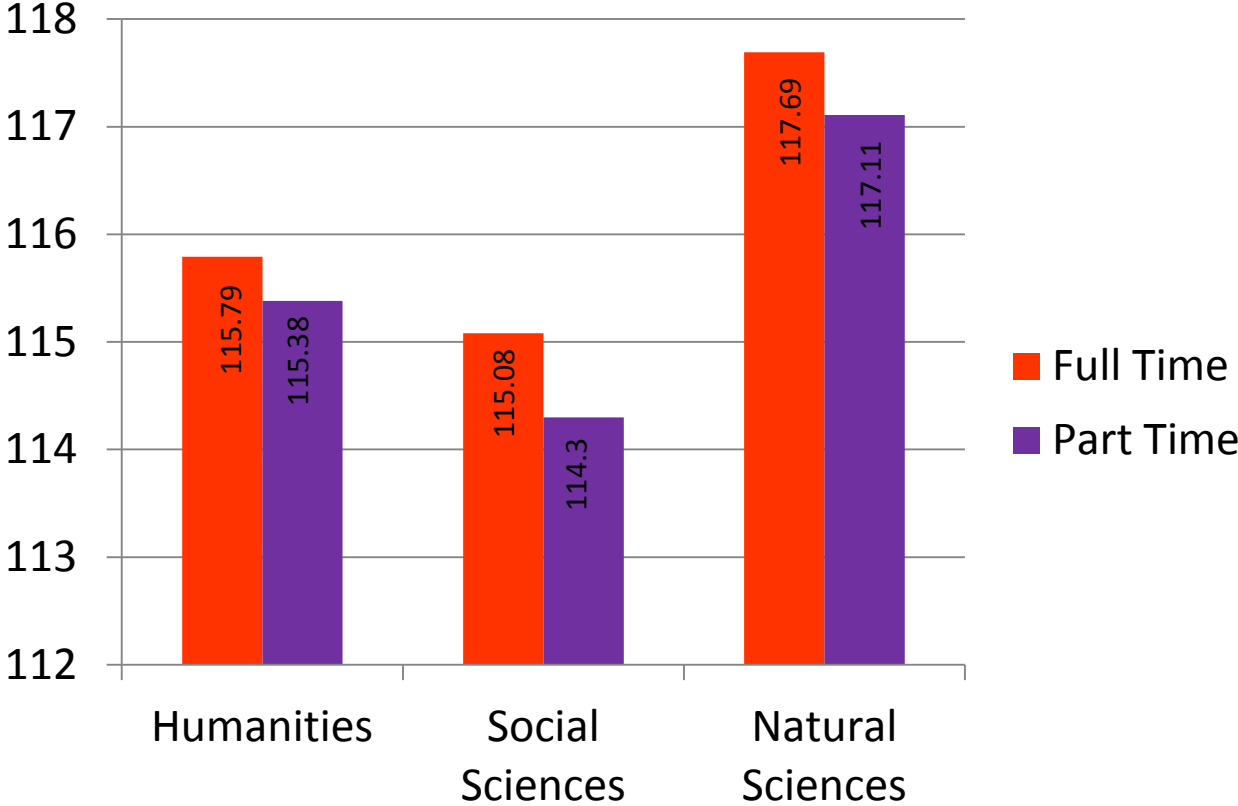


SSD = Part Time students significantly lower than Full Time student on Mathematics.



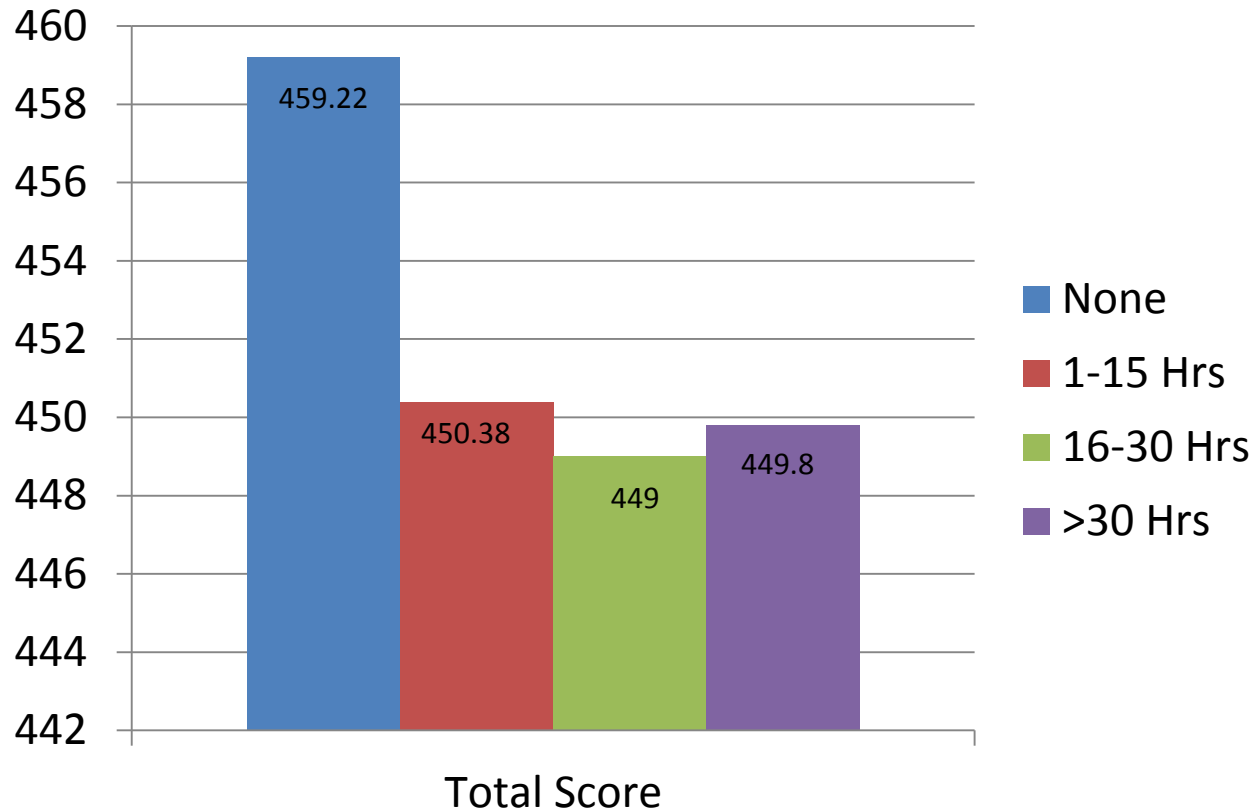
# Mean Academic Area Sub-scores by Enrollment Status

Possible Score Range (100 - 130)



# Mean Total Score by Hours Working

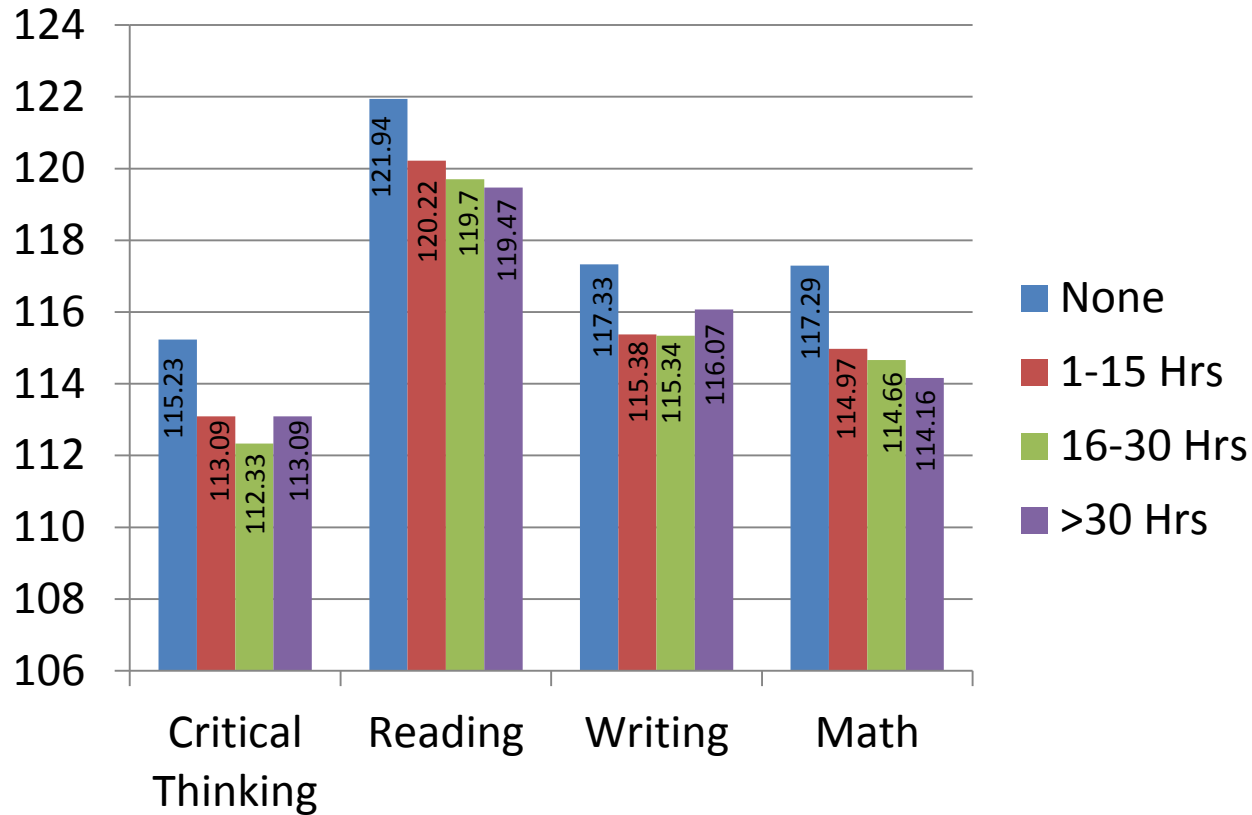
Possible Score Range (400 - 500)



SSD = Students working 1-15 hours, 16-30 hours, and greater than 30 hours per week significantly lower on Total Score than students not working.

# Mean Skills Sub-scores by Hours Working

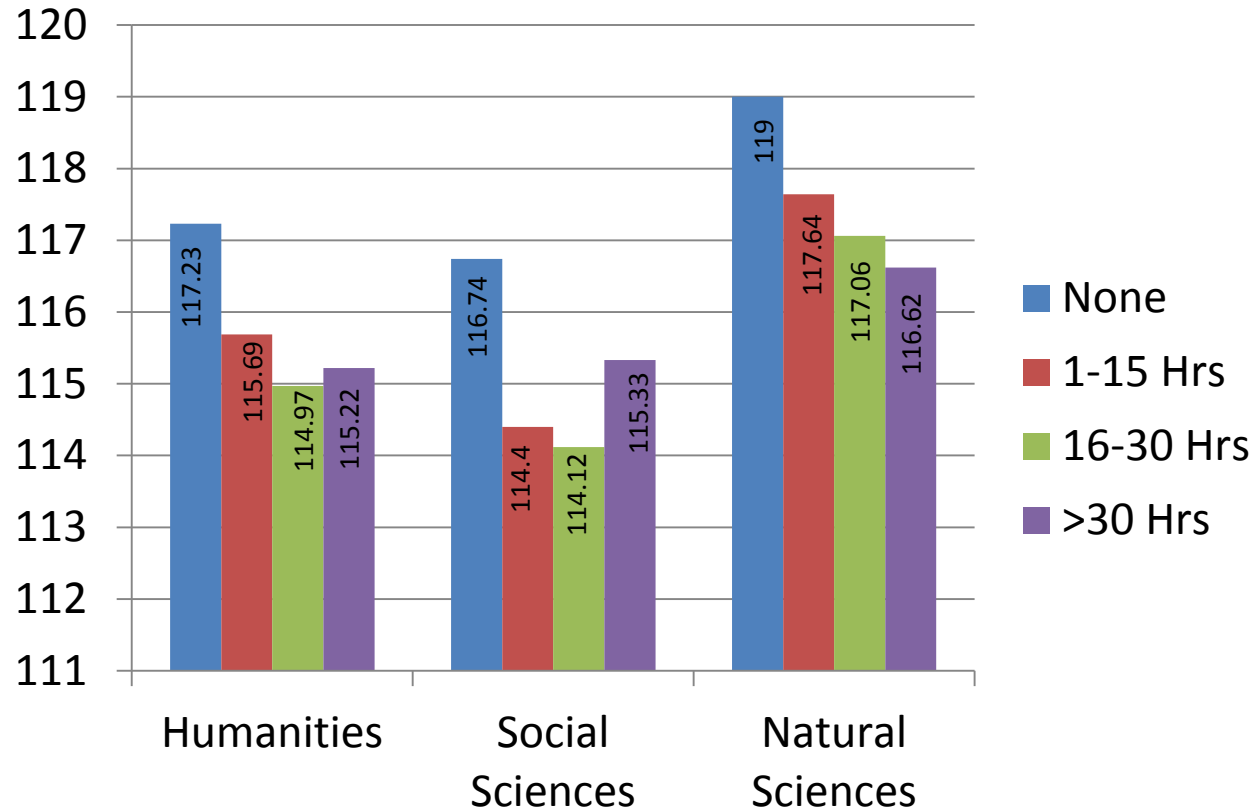
Possible Score Range (100 – 130)



SSD = Students working 1-15 hours/week significantly lower than students not working on Critical Thinking, Writing, and Mathematics. Students working 16-30 hours/week significantly lower than students not working on Critical Thinking, Reading, Writing, and Mathematics. Students working >30 hours/week significantly lower than students not working on Reading and Mathematics.

# Mean Academic Area Sub-scores by Hours Working

Possible Score Range (100 - 130)

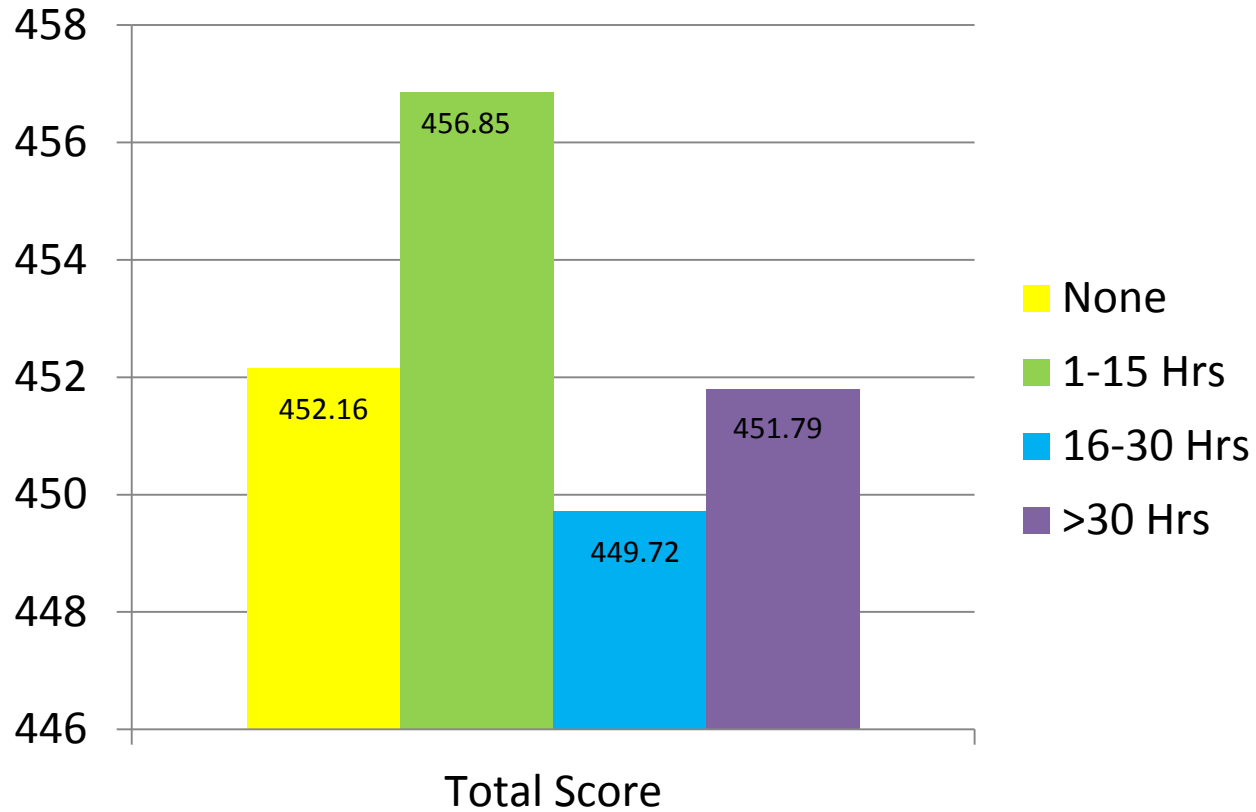


SSD = Students working 1-15 hours/week significantly lower than students not working on Social Sciences.

Students working 16-30 hours/week significantly lower than students not working on Humanities, Social Sciences, and Natural Sciences. Students working >30 hours/week significantly lower than students not working on Natural Sciences.

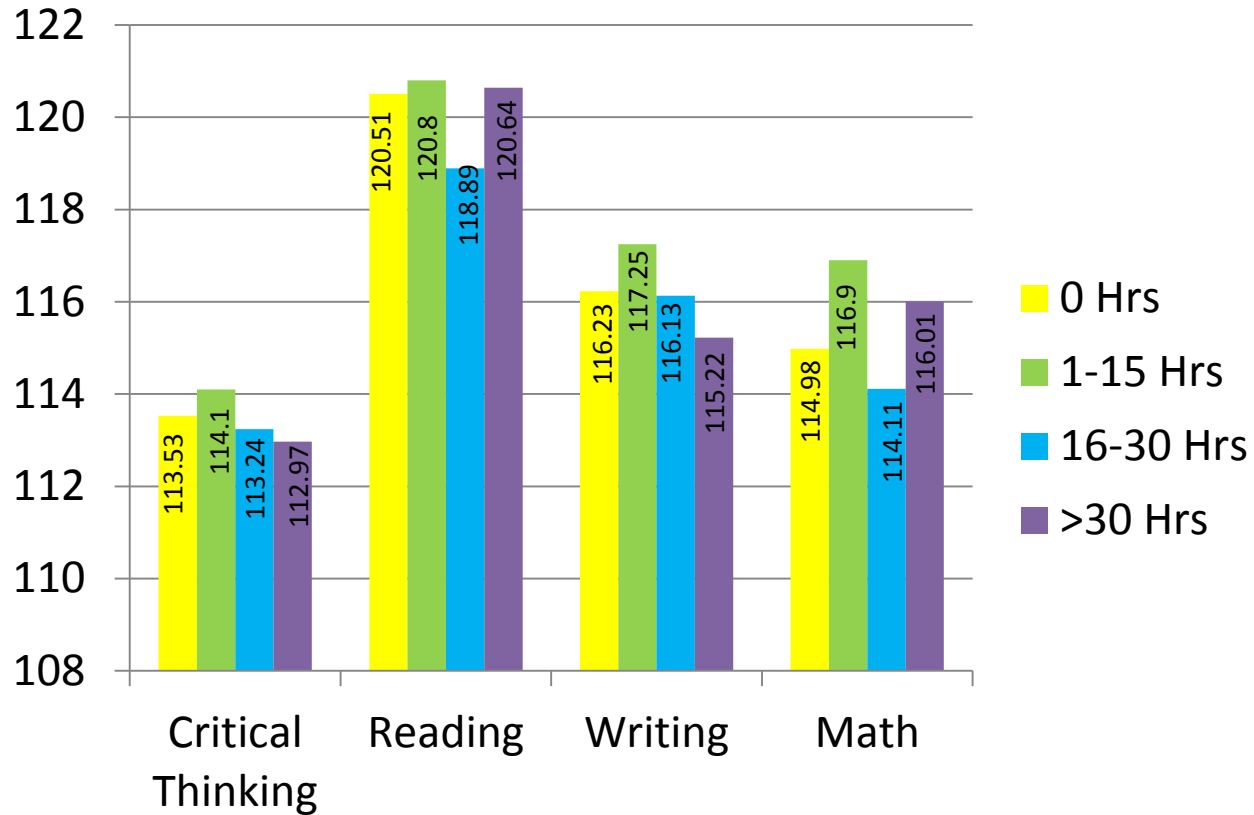
# Mean Total Score by Hours Transferred

Possible Score Range (400 - 500)



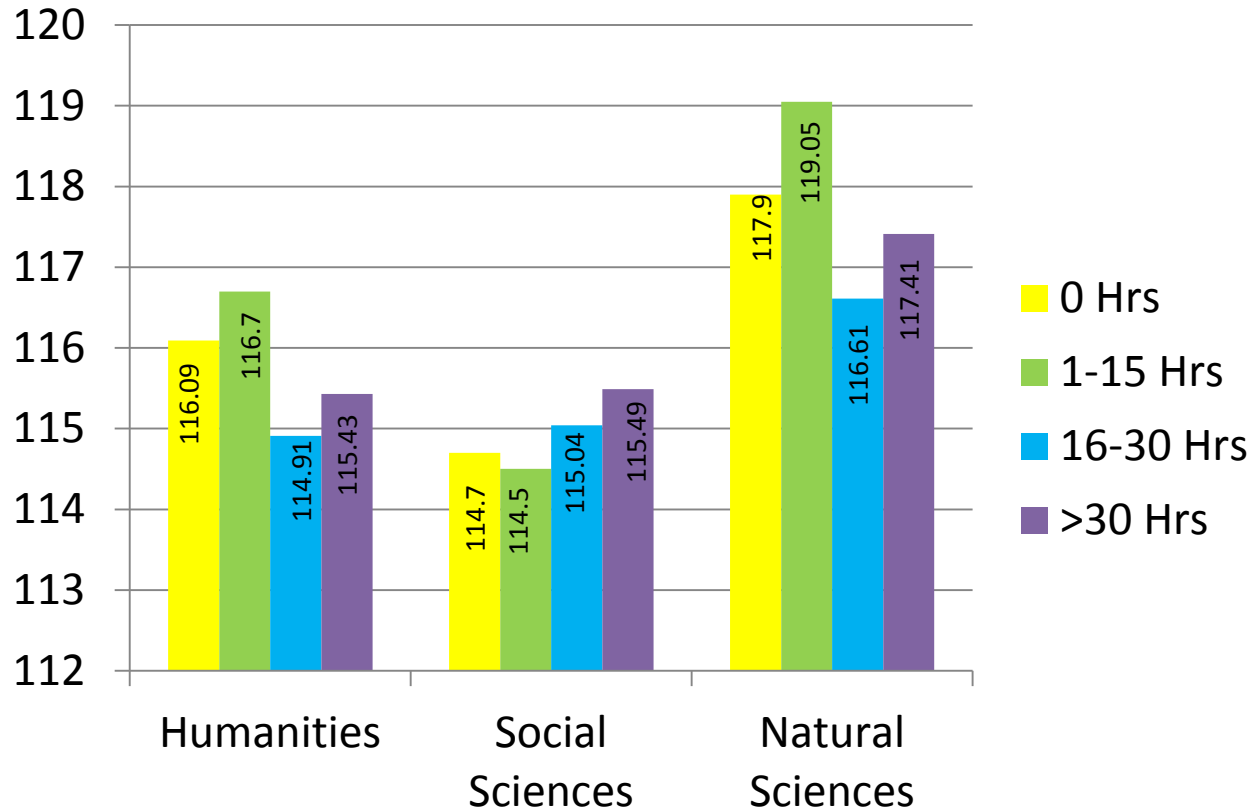
# Mean Skills Sub-scores by Hours Transferred

Possible Score Range (100 – 130)



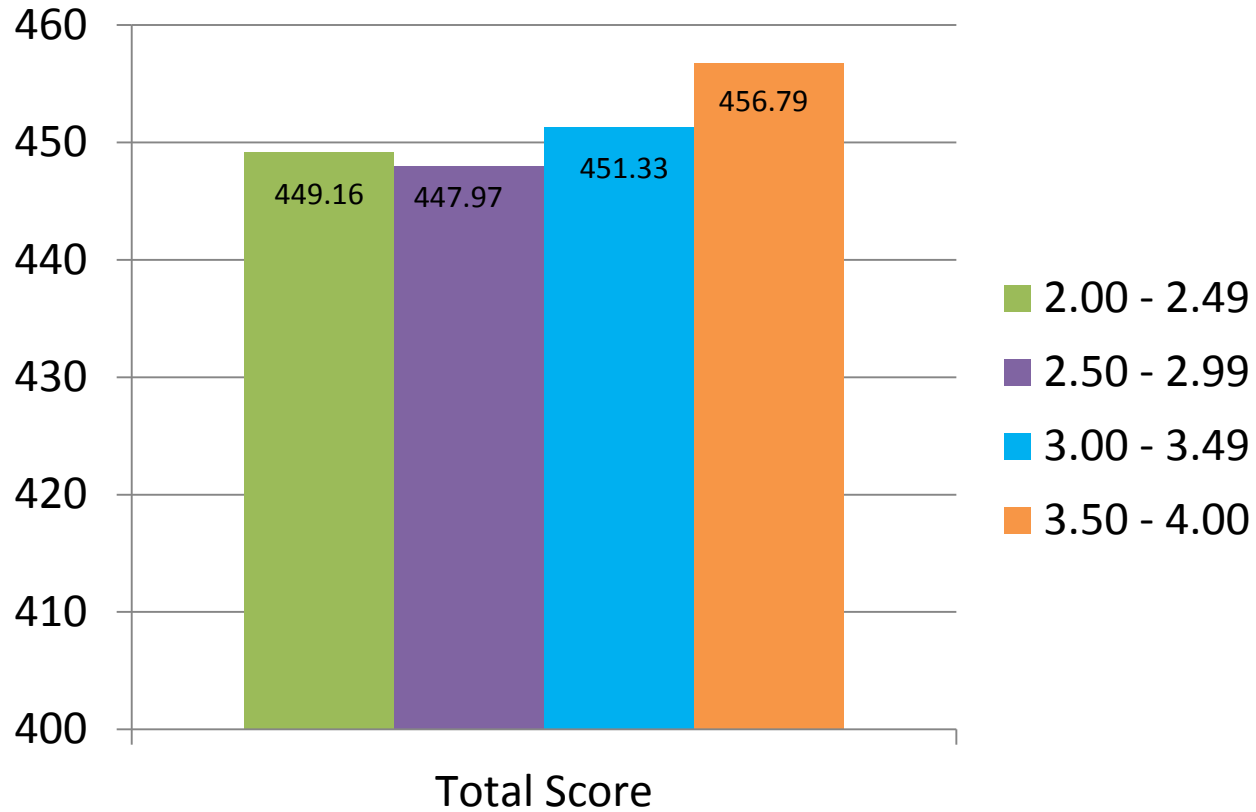
# Mean Academic Area Sub-scores by Hours Transferred

Possible Score Range (100 - 130)



# Mean Total Score by GPA

Possible Score Range (400 - 500)

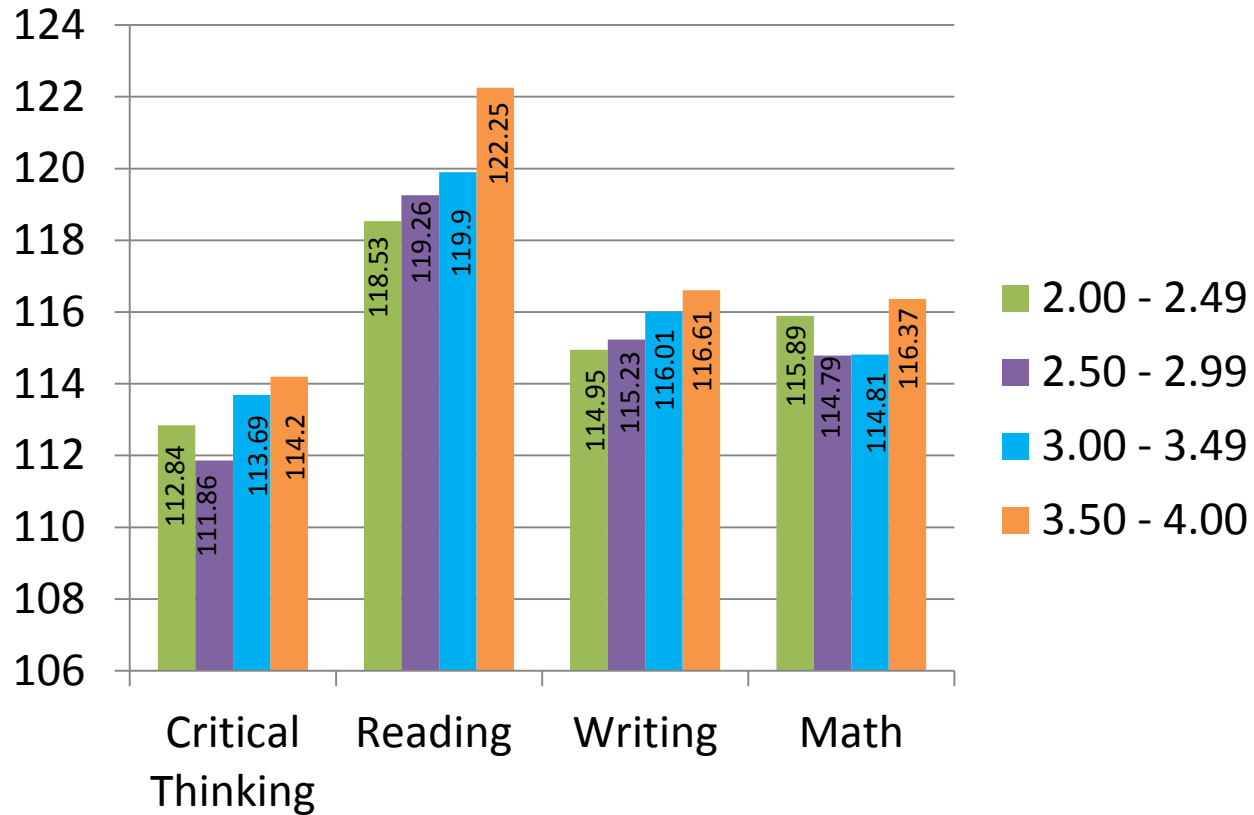


SSD = Students with 2.50 – 2.99 and 3.00 – 3.49 GPAs significantly lower Total Score than students with 3.50 – 4.00 GPA



# Mean Skills Sub-scores by GPA

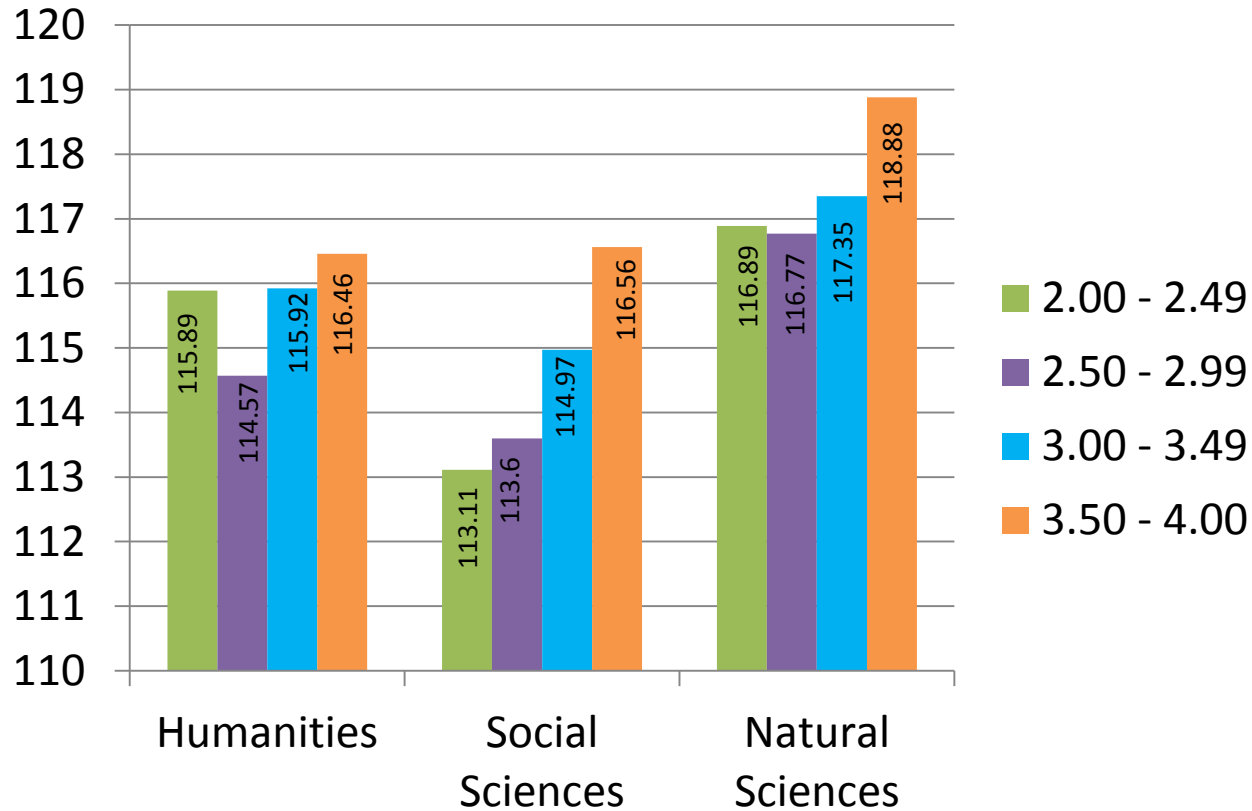
Possible Score Range (100 - 130)



SSD = Students with 2.00-2.49 GPA significantly lower than students with 3.50-4.00 GPA on Reading. Students with 2.50-2.99 GPA significantly lower than students with 3.50-4.00 GPA on Critical Thinking, Reading, and Writing. Students with 3.00-3.49 significantly lower than students with 3.50-4.00 GPA on Reading and Mathematics.

# Mean Academic Area Sub-scores by GPA

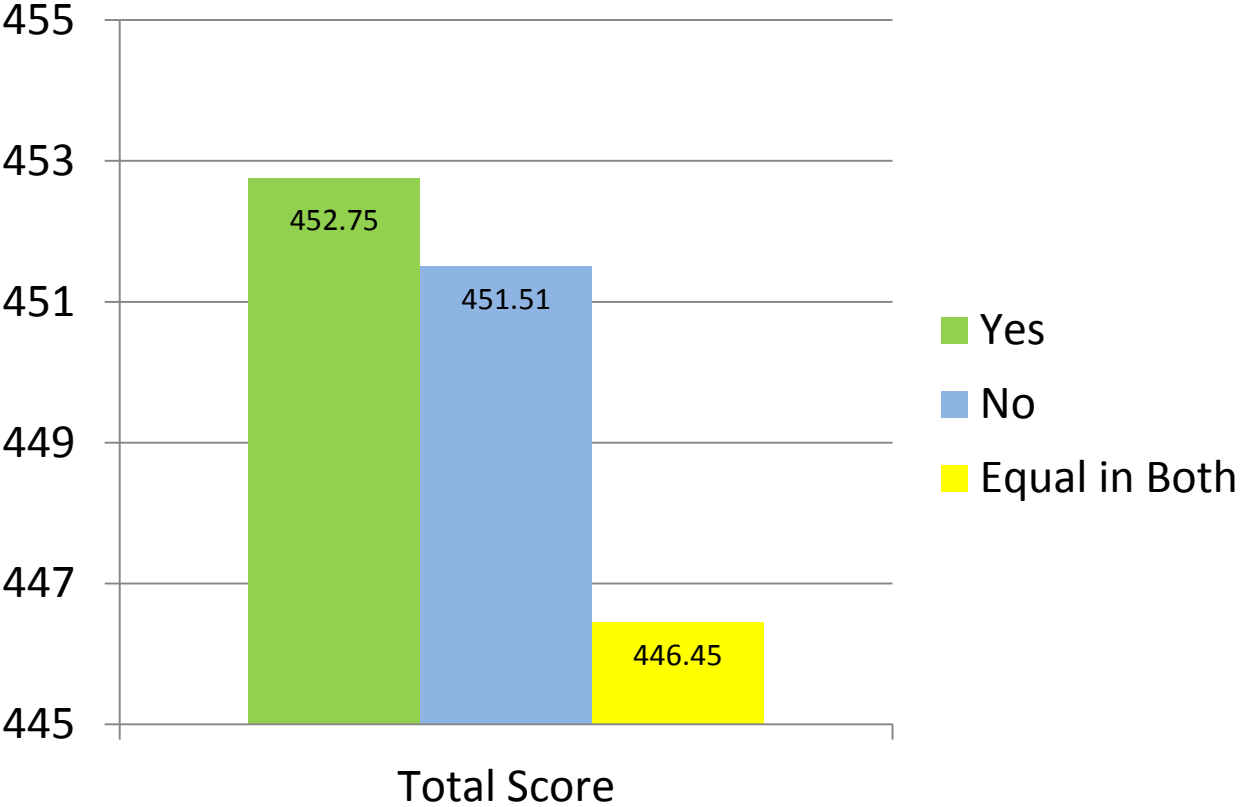
Possible Score Range (100 - 130)



SSD = Students with 2.00-2.49 GPA significantly lower than students with 3.50-4.00 GPA on Social Sciences. Students with 2.50-2.99 GPA significantly lower than students with 3.50-4.00 GPA on Social Sciences and Natural Sciences. Students with 3.00-3.49 GPA significantly lower than students with 3.50-4.00 GPA on Natural Sciences.

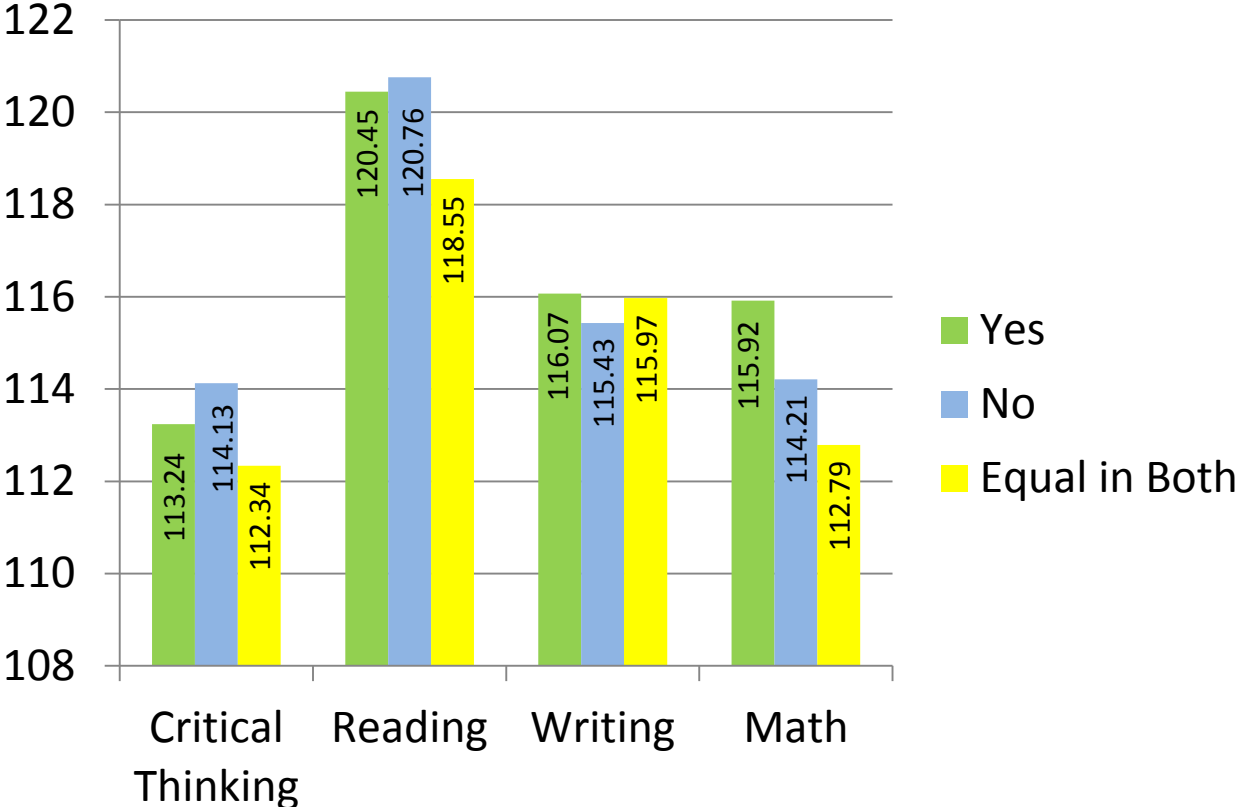
# Mean Total Score by Whether English is Best Language

Possible Score Range (400 - 500)



# Mean Skills Sub-scores by Whether English is Best Language

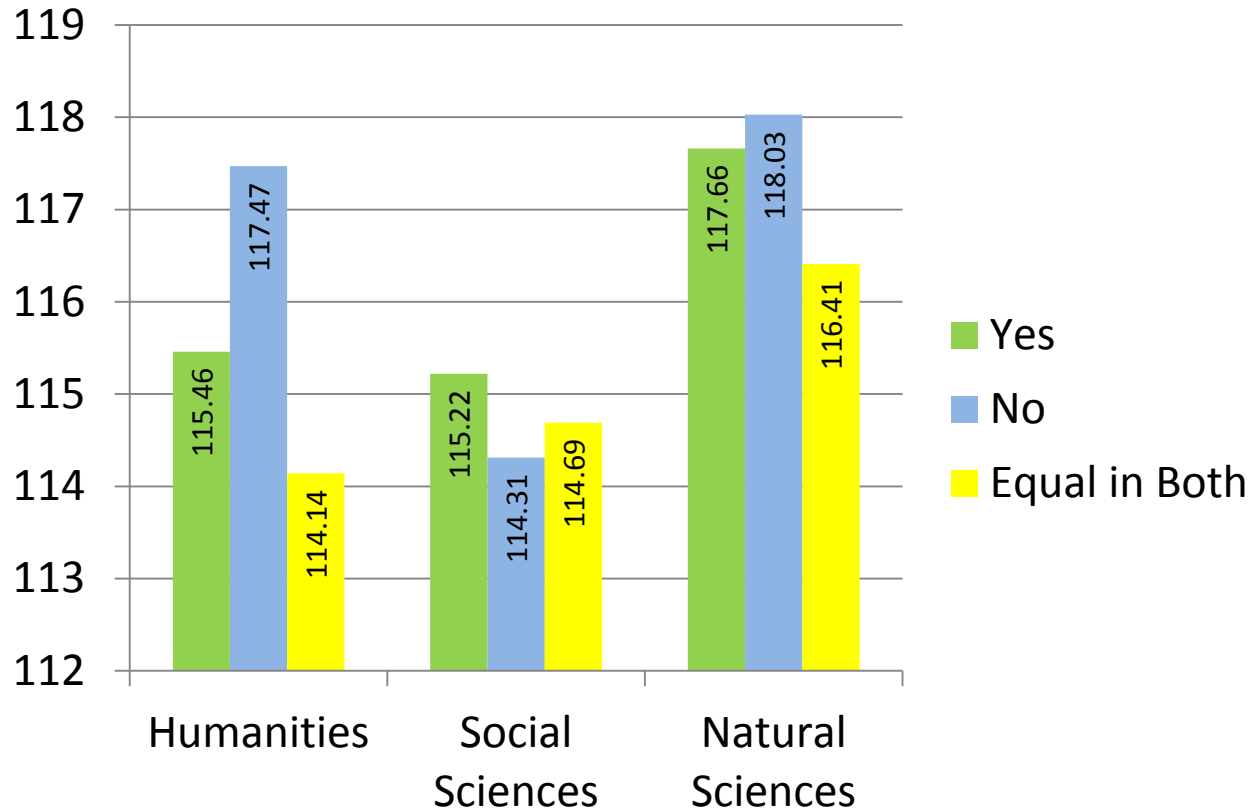
Possible Score Range (100 - 130)



SSD = Students whose best language is not English significantly lower than students whose best language is English on Mathematics. Students who are equally fluent in English and another language significantly lower than students whose best language is English on Mathematics.

# Mean Academic Area Sub-scores by Whether English is Best Language

Possible Score Range (100 - 130)



SSD = Students whose best language is not English significantly lower than students whose best language is English on Humanities.