



Assessment Report:	Quantitative Literacy Report
Assessment Period:	Academic Year 2025
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The following report represents the culmination of years of work by several parties at Eastern Illinois University. Work began with members of the 2014 Quantitative Learning Goal CAA Subcommittee (see [Appendix 1](#) and [Appendix 2](#)). Then, for many years, the CLA+ exam was administered to EIU freshmen and seniors. Quantitative reasoning information was gathered both from students' self-perceptions from "Frequencies and Statistical Comparisons" data in the NSSE (National Survey of Student Engagement) and from EIU instructors' perceptions of student abilities in a Quantitative Reasoning Survey.

Over the course of AY2023, mathematics faculty member of the General Education Working Group Nathan Philips, with the input of Suzie Park, architected a new quantitative literacy instrument with the feedback of several faculty members, including Alejandra Alvarado, Amanda Welch, and Jonica McBryde.

Creation of the Quantitative Literacy Instrument

The assessment was designed around EIU's six Quantitative Reasoning Learning Goals (QRLG). These goals were integrated with input from readily available QR/QL assessments, namely:

- QuaRCS, led by Kate Follette out of Amherst College
- QLRA, led by Eric Gaze out of Bowdoin College and funded by an NSF grant
- QRAI, created by Committee out of University of Virginia
- QRA Study Packet, out of Wellesley College

Keeping both the QRLG and sample assessments in mind, we created 20 tasks so that each task mapped to at least one of the six Quantitative Reasoning Learning Goals.

Principles of the Instrument

During task creation, there were three principles applied:

- 1) As much as possible, the tasks should be in real contexts using real data.
- 2) The tasks should be content neutral.
- 3) The tasks should be novel to the student.

Principle One is important to making the tasks meaningful to students. This was achieved by utilizing publicly available data (e.g., the 2020 U.S. Census) and setting contexts local to EIU.

Principle Two is important because we want to create a fair playing field for our students, where the specific courses taken by students wouldn't have undue influence on their scores (e.g., asking an English major to solve differential equations would not meet the purpose of the QRLG). Though content neutrality is both a practical and theoretical impossibility, mathematical content has been minimized by limiting the mathematics required by a student to Pre-Algebra topics.

Principle Three is important because novel problems require novel reasoning. If a student recognizes a "problem type," they may perform a quantitative procedure correctly, but this doesn't necessarily require any quantitative reasoning. By presenting tasks that are novel to the student, the student is required to reason through those tasks.

Beta Testing

The quantitative literacy instrument was first deployed in Spring 2023, with a total of 40 students from 5 different courses (3 lower-division and 2 senior-level) taking the assessment. The assessment was administered on laptops within each classroom. Students were asked to electronically sign a confidentiality agreement before beginning the assessment. In the first beta test (Spring 2023), the tasks were pared down to 15 questions (from 20) in order to minimize the amount of time students were required to spend on the assessment. We expected students to take 25 to 45 minutes to complete the assessment. In our sample from FY2023, 50% of students finished in between 17.47 minutes and 31.17 minutes with a median of 20.57 minutes.

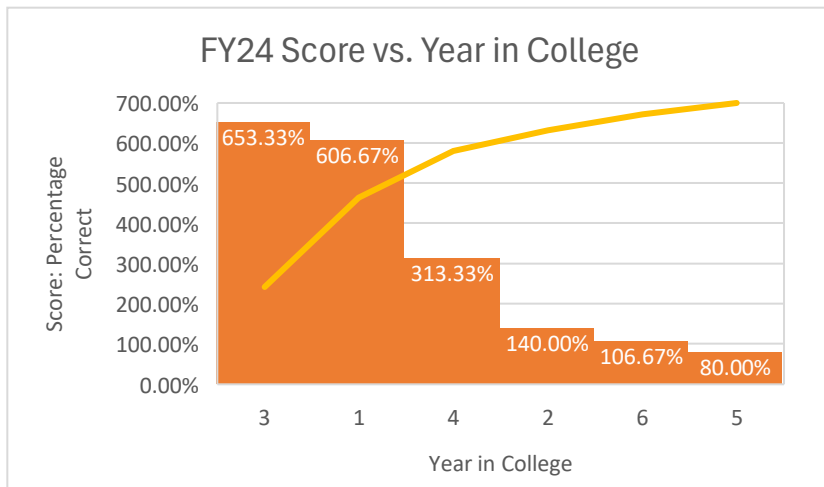
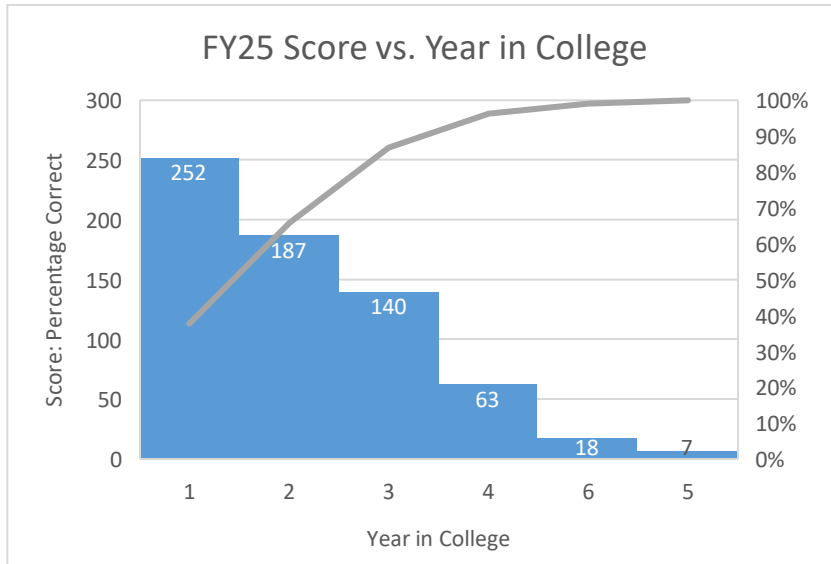
The instrument was beta tested in Spring 2024, with a total of 39 students from 3 different courses (a freshman forum class, a junior-level class, and a senior capstone class). All 3 assessments were administered in a computer lab (4450 Booth Library). The only tools given to students were a calculator, paper, and pencil.

The instrument was beta tested in Spring 2025, with a total of 96 students from 9 different courses (6 freshman classes, two junior-level classes, and a senior capstone class). All 9 assessments were administered in computer labs.

FY25 Sample: 96 observations

	1 st year	2 nd year	3 rd year	4+ years	Total
ELE 1050	6	6	3	1	16
ENG 1092	11	3	0	0	14
ENG 1099	4	5	2	0	11
ENG 4300	0	0	2	2	4
MAT 1070	1	4	3	0	8
MAT 1070	5	3	2	1	11
MAT 1070	6	2	1	2	11
PSY 3310	2	4	1	4	11
PSY 3620	1	1	5	3	10

The following charts show a significant correspondence between score and level in college.



Confidentiality Agreement



EIU – Quantitative Literacy Assessment

PLEASE READ THE FOLLOWING CAREFULLY

For the following assessment you are only allowed:

- **a calculator**
- **paper and writing utensil**

Once you have answered a question and moved onto the next, you will not have the opportunity to go back to look at or change your answers.

After you have completed the assessment, return any scratch-work to your instructor.

Confidentiality Agreement:

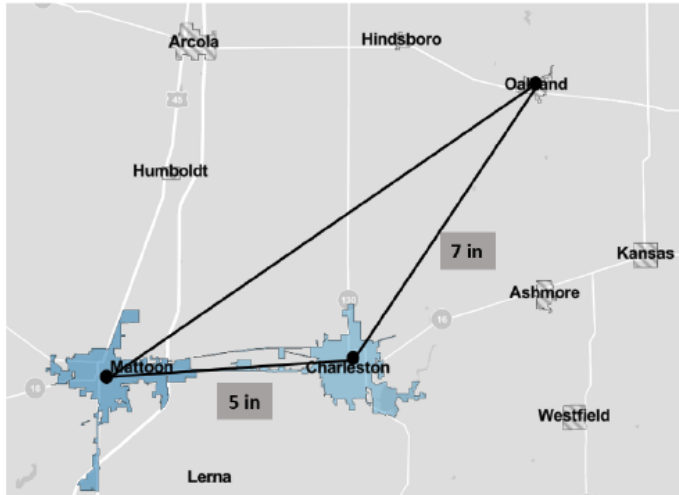
You may not disclose, publish, reproduce, copy, post, download or transmit any any part of this assessment in any form or by any means for any purpose. Any disclosure of questions, answers, or content of the EIU-QLA is a violation of the terms of the Confidentiality Agreement and could compromise the integrity and security of the assessment.

Sample Question

The sample question below assesses students' ability to understand a "scale problem."

Use the figure below to help you solve the following problem.

Note: the map below is drawn to scale.



Source: <https://www.census.gov/quickfacts/fact/map/IL/LND110210>

If the distance from Mattoon to Charleston is 9 miles, what is the distance from Charleston to Oakland?

63 miles

12.6 miles

6.4 miles

3.9 miles

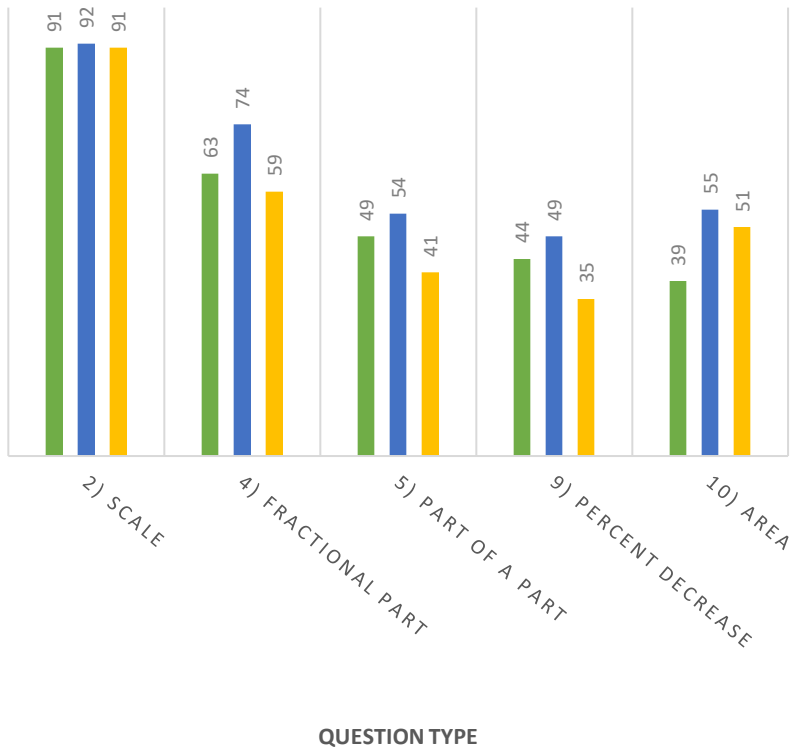
Quantitative Learning Goals & Corresponding Tasks/Questions on the Assessment

The quantitative literacy assessment addresses a total of 6 quantitative learning goals. Here are the goals with their corresponding tasks. Scored results are tabulated in 6 charts (pages 8-10 of this report).

LEARNING GOAL	Scale Problem	Fractional Part	Part of a Part	Percent Decrease	Area	Second Difference	Unit Conversion	Bars Problem	Poverty #1	Poverty #2	Least Time	Race #1	Race #2	Venn Diagram	Average Rate
1) Perform basic calculations & measurements	•	•	•	•	•										
2) Apply quantitative methods & use the resulting evidence to solve problems							•	•					•		
3) Read, interpret, & construct tables, graphs, charts, & other representations of quantitative material						•			•	•					
4) Critically evaluate quantitative methodologies & data												•		•	•
5) Construct cogent arguments utilizing quantitative material											•				
6) Use appropriate technology to collect, analyze, and produce quantitative materials															

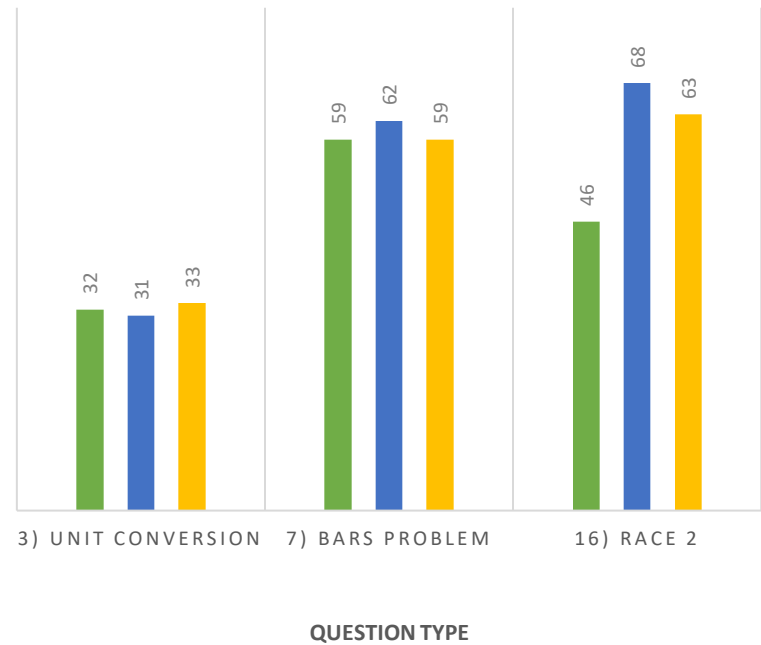
LEARNING GOAL 1: PERFORM BASIC CALCULATIONS & MEASUREMENTS

■ % correct FY23 ■ % correct FY24 ■ % correct FY25



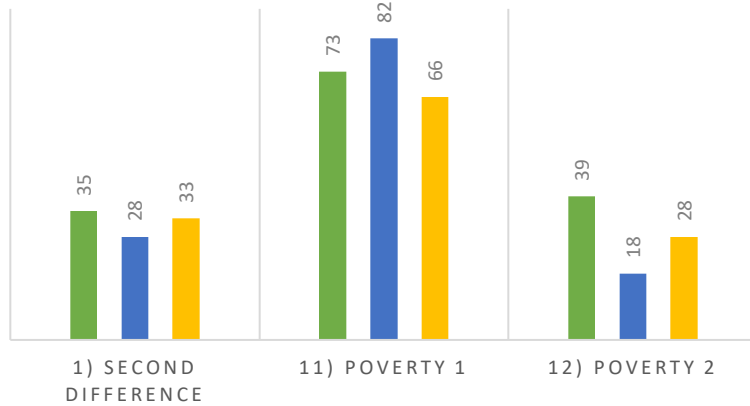
LEARNING GOAL 2: APPLY QUANTITATIVE METHODS & USE THE RESULTING EVIDENCE TO SOLVE PROBLEMS

■ % correct FY23 ■ % correct FY24 ■ % correct FY25



LEARNING GOAL 3: READ, INTERPRET, & CONSTRUCT TABLES, GRAPHS, CHARTS, & OTHER REPRESENTATIONS OF QUANTITATIVE MATERIAL

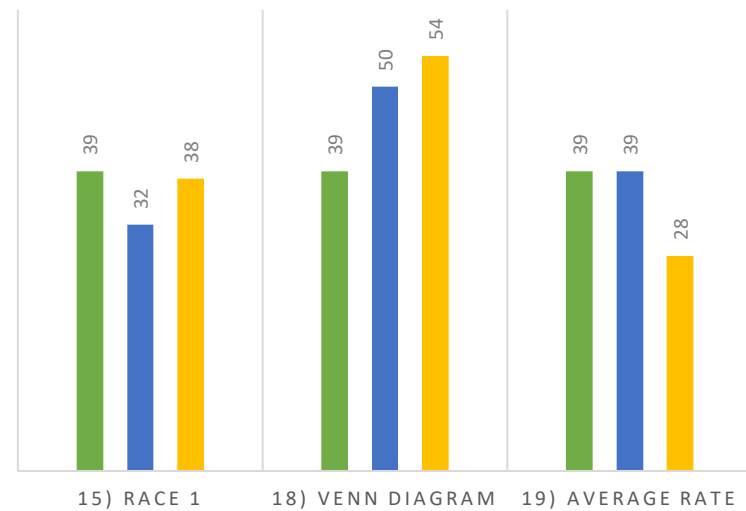
■ % correct FY23 ■ % correct FY24 ■ % correct FY25



QUESTION TYPE

LEARNING GOAL 4: CRITICALLY EVALUATE QUANTITATIVE METHODOLOGIES & DATA

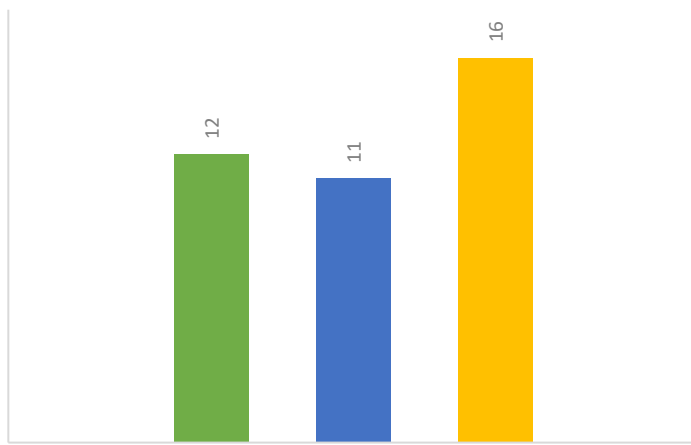
■ % correct FY23 ■ % correct FY24 ■ % correct FY25



QUESTION TYPE

LEARNING GOAL 5: CONSTRUCT COGENT ARGUMENTS UTILIZING QUANTITATIVE MATERIAL

■ % correct FY23 ■ % correct FY24 ■ % correct FY25



13) LEAST TIME

QUESTION TYPE

LEARNING GOAL 6: USE APPROPRIATE TECHNOLOGY TO COLLECT, ANALYZE, AND PRODUCE QUANTITATIVE MATERIALS

■ average on 5-point scale (1=strongly disagree to 5=strongly agree)

