

# COMMUNITY COLLEGE OF PHILADELPHIA

## General Education Essential Skills Assessment Report Fall 2023-Spring 2024

### Contents

I. EXECUTIVE SUMMARY .....	2
A. Goals and Methods: .....	2
B. Key Findings .....	5
C. Recommendations and Actions Planned/Taken: .....	15
II. ANALYSIS .....	16
III. FACULTY REFLECTIONS AND RESPONSES .....	16
IV. CONTINUOUS IMPROVEMENT FOR WRI and TEC .....	20
Appendix A: QURE Sampling Strategy .....	22
Appendix B .....	24

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## I. EXECUTIVE SUMMARY

**Overview of General Education Assessment, Fall 2023-Spring 2024:** Community College of Philadelphia revised the entirety of general education in Fall 2021. As with each of the Essential Skills, the Quantitative Reasoning definition was created in anticipation of assessment, and the general education measures (GEMs) used for assessment are derived from this definition. The third of six Essential Skills of general education assessed under the revised system, Quantitative Reasoning (QURE) assessment began with a pilot in Fall 2023 and included 6 CRNS for FNMT118 and one of each of the following Mathematics courses, MATH121, 137, 150 and 161. Aggregate data from all students who submitted the assignment (omitting zeroes for non-submission) show the 80% proficiency benchmark was not met in any GEM. Assessment continued in Spring 2024 at scale using sampling data. Overall, the benchmark of 80% was not met for any GEMs in aggregate, with the highest met being GEM 1 and 2. Proficiency in FNMT 118, which represented slightly less than half of the students assessed, was less compared to Math courses. Recommendations and actions taken for continuous improvement generally focus on data-informed instructional adjustments, supplemental instructional programs with a focus on tutoring and bridging the submission gap with a focus on increasing attendance rates.

### A. Goals and Methods:

1. **Goals:** Competency in Quantitative Reasoning (QURE) is defined by four General Education Measures (GEMs) that come directly from the QURE Essential Skill definition.<sup>1</sup>

#### General Education Measures (GEMs):

- **QURE 1:** Communicate mathematical principles and apply them to follow an extended line of formal reasoning and critical thinking
- **QURE 2:** Read and identify mathematical information that is relevant in a problem
- **QURE 3:** Interpret and critically analyze mathematical information presented; select appropriate methods and solve problems, estimating and evaluating the validity of results
- **QURE 4:** Effectively communicate quantitative concepts using correct mathematical syntax

Another goal of the assessment of the Essential Skills is the design and development of assessment tools and training for faculty use that are appropriate, accessible, well aligned, and valuable for faculty teaching and student learning both in and beyond general education. Assessment in this area

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<sup>1</sup> The definition was developed by a multidisciplinary group of faculty, approved by the College's governance structure in Summer 2021, and implemented in Fall 2021.

comes from faculty reflections on the data as well as on the general education assessment process.

## 2. Methods:

**QURE Rubric and Selection of Faculty for Fall 2023 Pilot:** The QURE rubric<sup>2</sup> was developed by the department heads for Mathematics and Foundational Mathematics, in collaboration with the Office of Assessment and Evaluation (OAE) and based upon the format used in previous general education essential skills assessment (See Appendix 1 for QURE rubric). Department heads selected faculty to pilot QURE assessment. Four faculty members participated.

**Pilot Faculty Training and Norming:** An informational meeting with QURE pilot faculty occurred on Monday, November 27, 2023, in which the norming tool and QURE rubric were shared, as was an overview of the QURE assessment pilot process. Faculty later received an information sheet with more specific information. Neither of the two departments that house all QURE courses use AEFIS software, and both are in the same Division, so the OAE developed a data collection spreadsheet that included student information, the QURE GEMs, and space for rating each student's proficiency in the GEM as **1) proficient, 2) not proficient, 3) did not submit, or 4) not applicable.**<sup>3</sup> Pilot faculty were asked to complete and return their ratings to the OAE no later than January 12, 2024. Results were compiled and shared with faculty, in both aggregate and individually, on February 19, 2024.

**Alignment of QURE assignments and QURE GEMs:** Through extensive discussion with department heads for Foundational Mathematics and Mathematics, it was determined that the comprehensive final exam would serve as the artifact for assessment in the Fall 2023 pilot and across all FNMT and MATH courses sampled in Spring 2024.

**Fall 2023 and Spring 2024 Data Collection:** The methods of data collection for QURE assessment included the use of Excel spreadsheets with pre-filled student information. This occurred in the Fall 2023 pilot as well as the Spring 2024 assessment. In addition, Spring 2024 assessment was done via sampling, considering the course as well as course modality. Please see Appendix A: QURE Sampling Strategy. For both the Fall 2023 pilot and the Spring 2024 assessment, faculty were provided with an information sheet that included an introduction, a description of the method, a timeline, the QURE rubric, and a norming tool. With the assistance of Institutional Research, each participating faculty member was again provided with a data collection sheet that included students' names and J-numbers as well as

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<sup>2</sup> See Appendix B

columns for indicating proficiency in the four GEMs using the ratings system **1)** proficient, **2)** not proficient, **3)** did not submit, and **4)** not applicable.

The QURE pilot was conducted in Fall 2023. The pilot included four faculty, five courses, ten course sections<sup>3</sup>, and 360 students.

**Table 1**

QURE Courses Assessed	Department	Sections	
		FL23	SP24
FNMT 118: Intermediate Algebra	Foundational Mathematics	6	17
MATH 121: Computer Mathematics and Logic	Mathematics	1	3
MATH 123: Mathematical Principles I	Mathematics	0	1
MATH 137: Geometry for Design	Mathematics	1	1
MATH 150: Introductory Data Analysis	Mathematics	1	6
MATH 161: Pre-Calculus I	Mathematics	1	7

Sampling was used in Spring 2024 data collection, which included twenty-two faculty, forty-three course sections (see Table 1), and 869 students.

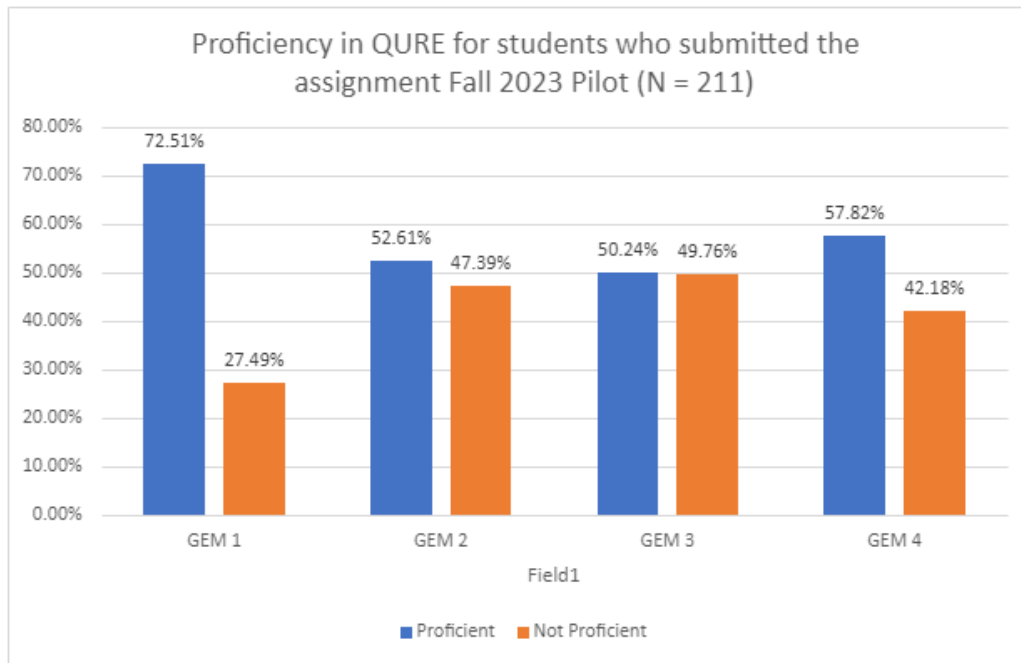
**Limitations of Spring 2024 Sampling Method:** The sampling strategy described in Appendix A was employed to determine optimal sample sizes to yield a 95% confidence interval for each course/modality combination given the population of students with earned grades in those courses. Because only 35 out of 38 of the sampled sections were assessed, the data pertaining to those courses/modalities may be less reliable and generalizable. In particular, assessment ratings for MATH 121 taught in a traditional face-to-face modality, MATH 150 taught via distance learning, and MATH 161 taught via distance learning are underrepresented, so any conclusions or recommendations for those course/modality combinations should be understood in that context. In addition, it is advisable to refrain from generalizing about proficiency among some demographic strata due to the small number of datapoints for student populations at the College that are proportionately small to begin with. Based on historical precedent at the College, it is common for about 80-90% of requested general education assessment ratings to be completed for analysis; for this reason, and because population-level data can be obtained relatively easily, it is recommended that future general education assessments at scale should be designed to seek assessment ratings for the entire population of students having earned grades in their general education courses.

<sup>3</sup> FNMT 141: College Algebra I with Applications was omitted because the course ran for the first time in Fall 2023.

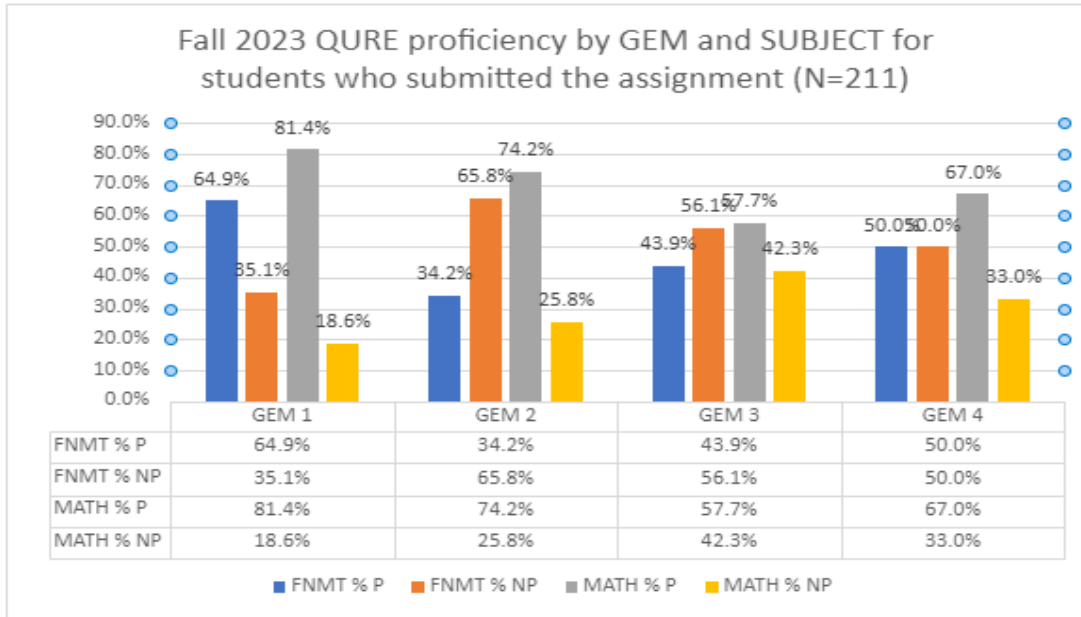
## B. Key Findings

### 1. Fall 2023 Pilot

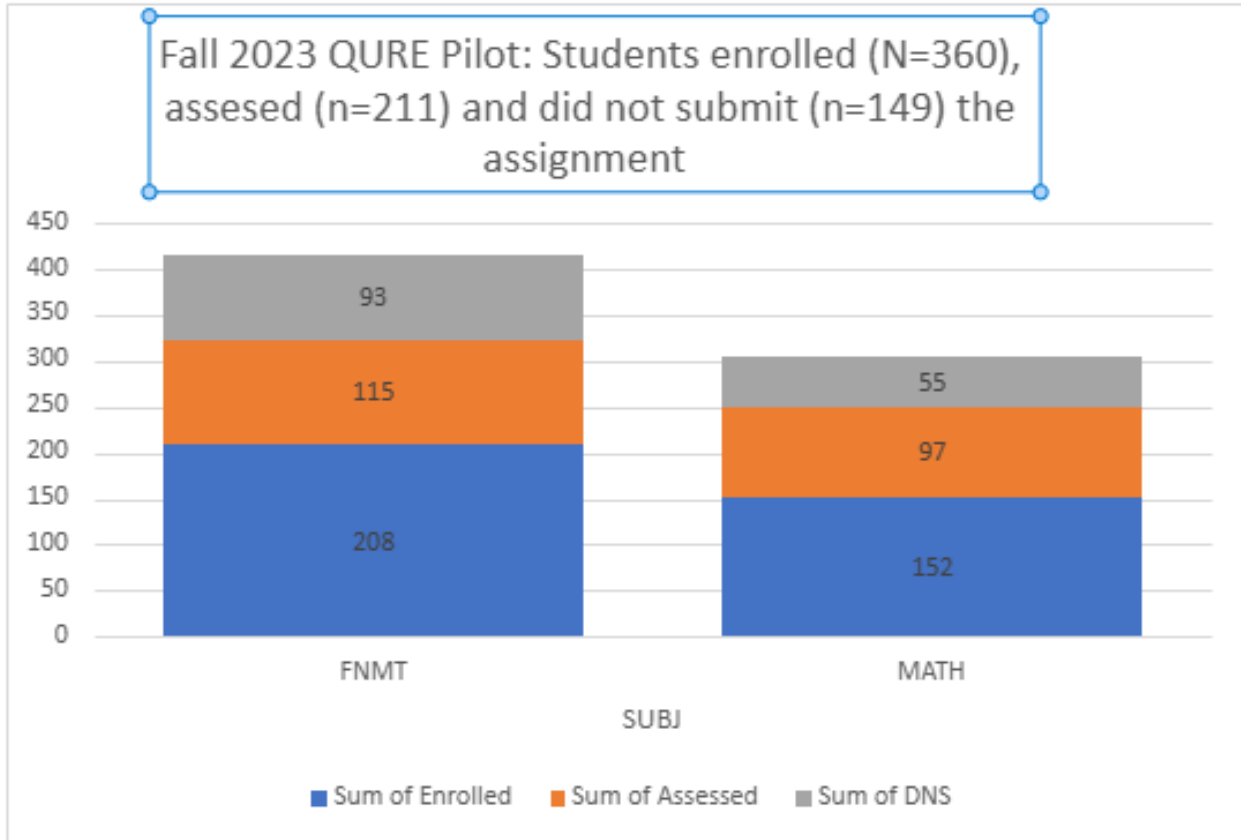
**Fall 2023 Pilot Proficiency in QURE:** Aggregate data from all students who submitted the assignment (omitting zeroes for non-submission) show the 80% proficiency benchmark was not met in any GEM.



**Fall 2023 Pilot Proficiency in QURE by GEM and SUBJECT:** When separated into MATH courses and FNMT 118, data show that the 80% benchmark was met in MATH courses for QURE1, “Communicate mathematical principles and apply them to follow an extended line of formal reasoning and critical thinking,” (81.4%) and that the benchmark was not met in any other GEM in MATH courses and was not met in any GEM in FNMT 118.

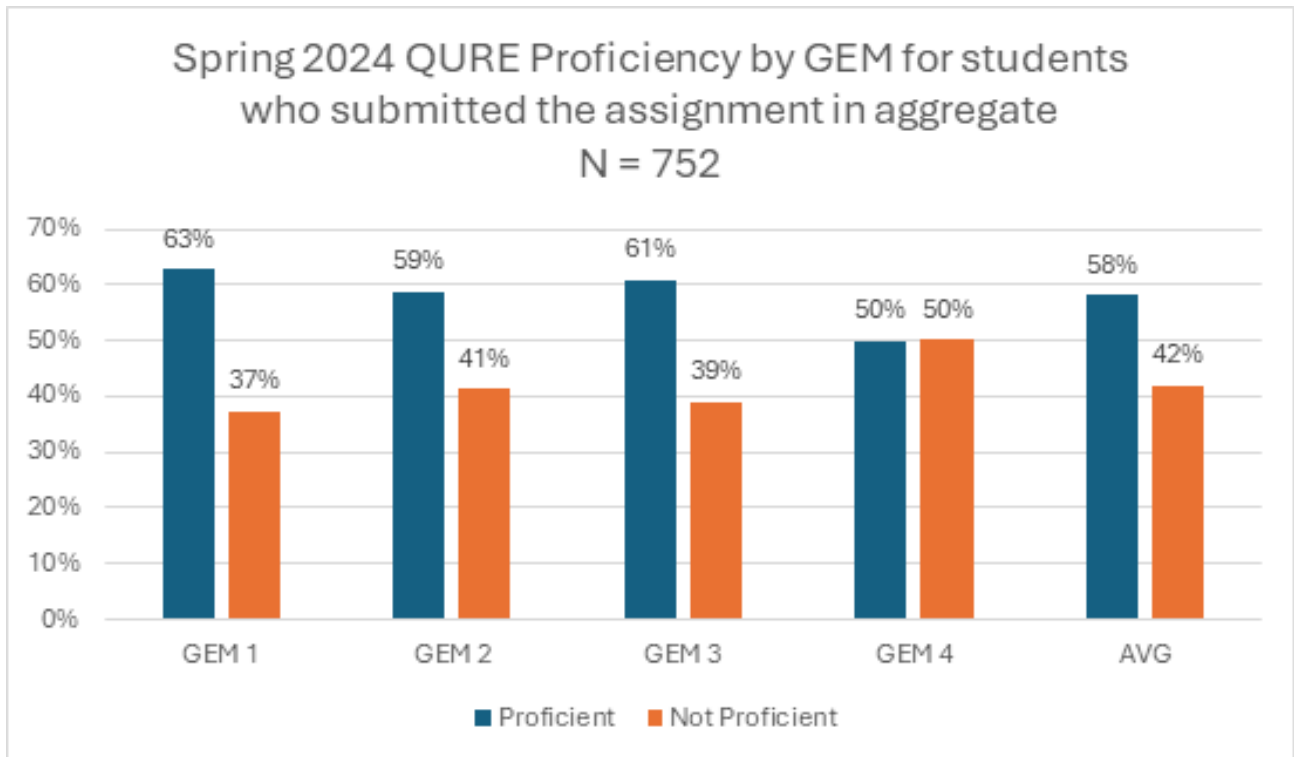


**Fall 2023 Pilot Student Submission of Assignment(s):** Results also show that 44.7% of students did not submit the final exam in FNMT 118, and 36.2% of students did not submit the final exam in the MATH courses.



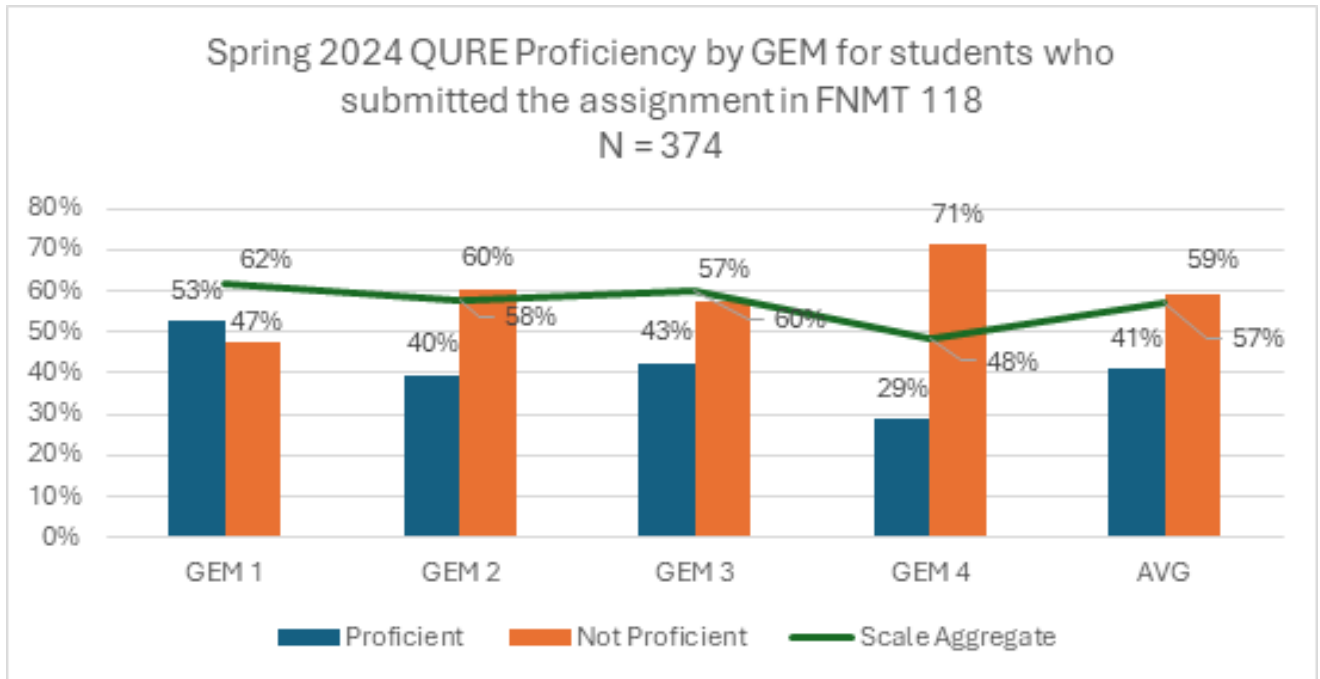
1. Spring 2024 Assessment

**Spring 2024 Assessment via Sampling:** Data was aggregated from faculty data sheets and analyzed by subject, ethnicity, gender, and modality. Most charts show proficiency using proficient (1) and not proficient (2) excluding did not submit (3) and not applicable (4). Overall, the benchmark of 80% was not met for any GEMs in aggregate, with the highest being GEMs 1 and 2. Proficiency in FNMT 118, which represented slightly less than half of the students assessed, was less compared to Math courses. Overall, Asian and White students had higher percentages of proficiency than other groups. Proficiency was highest in aggregate for GEMs 1 and 3. GEM 4 is the only instance in which the percentage of student work not proficient (50.1%) exceeds the proficient (49.9%). This consists of 752 students across 32 sections that submitted an assignment.

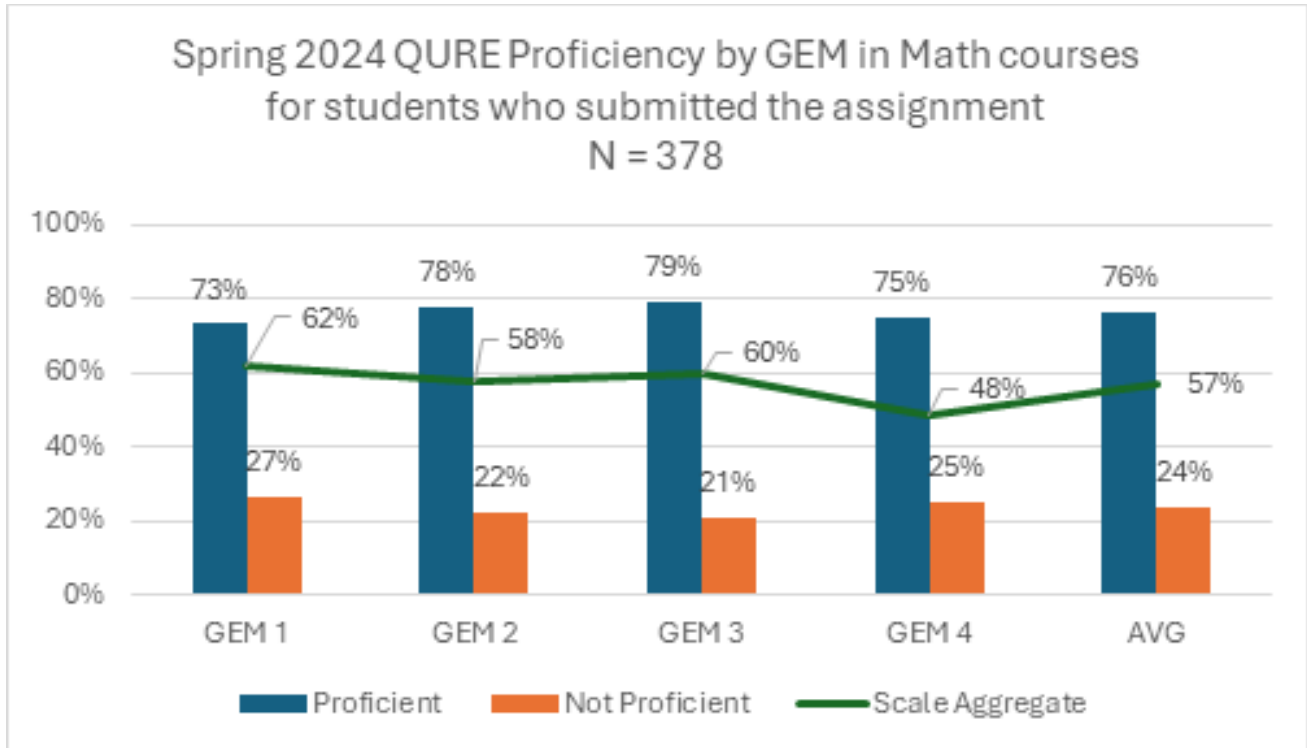




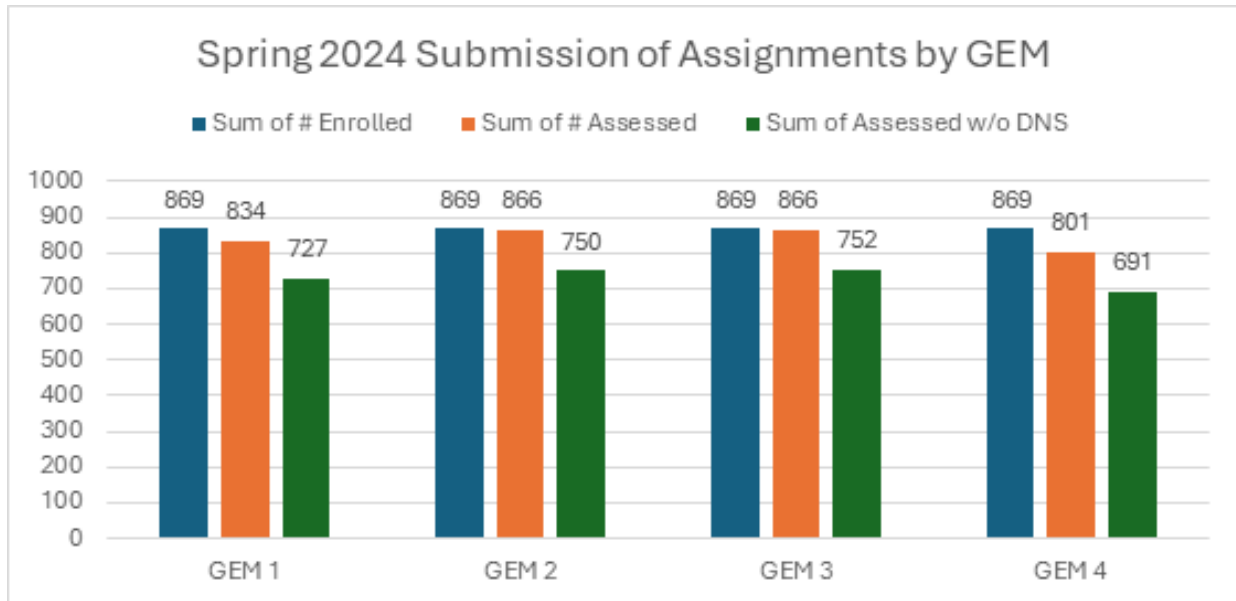
**Spring 2024 QURE Proficiency by GEM in FNMT 118:** FNMT 118 makes up about half of the QURE total with 374 students across 15 class sections. Proficiency was low with the lowest outcome for GEM 4 and the highest for GEM 1. GEM 1 is the only skill in which the percentage of proficient student work exceeds the percentage not proficient.



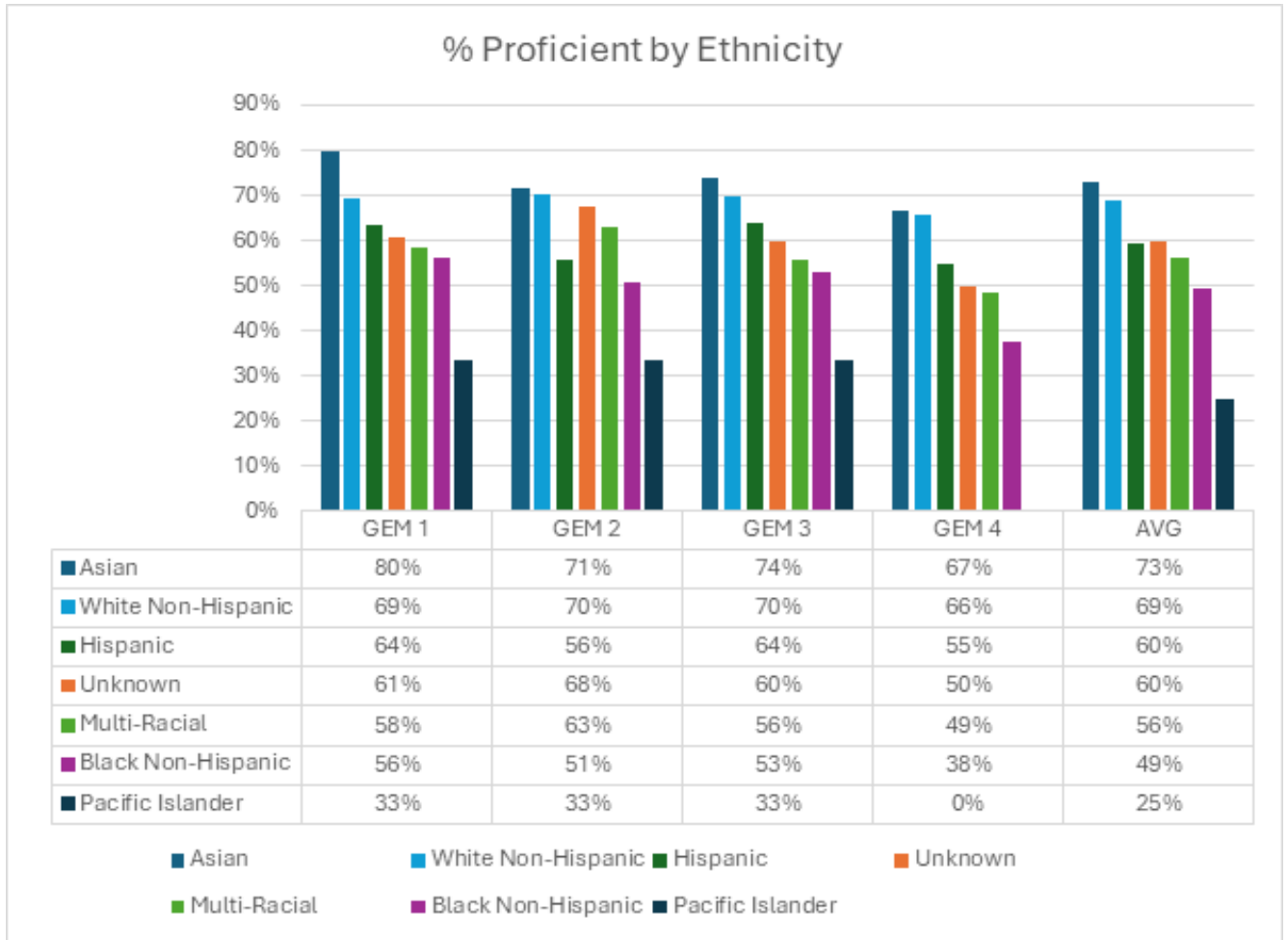
**Spring 2024 QURE Proficiency by GEM in Math Courses Other than FNMT 118:** The remaining QURE data is from 5 Math courses (MATH 121, 123, 137, 150, and 161) with 378 students across 17 class sections. Proficiency is better in Math courses than FNMT 118 although no skills exceeded the benchmark of 80%. The highest proficiency was in GEM 3 and the lowest in GEM 1 although by a small margin. This is interestingly opposite from FNMT 118, where the highest proficiency was in GEM 1.



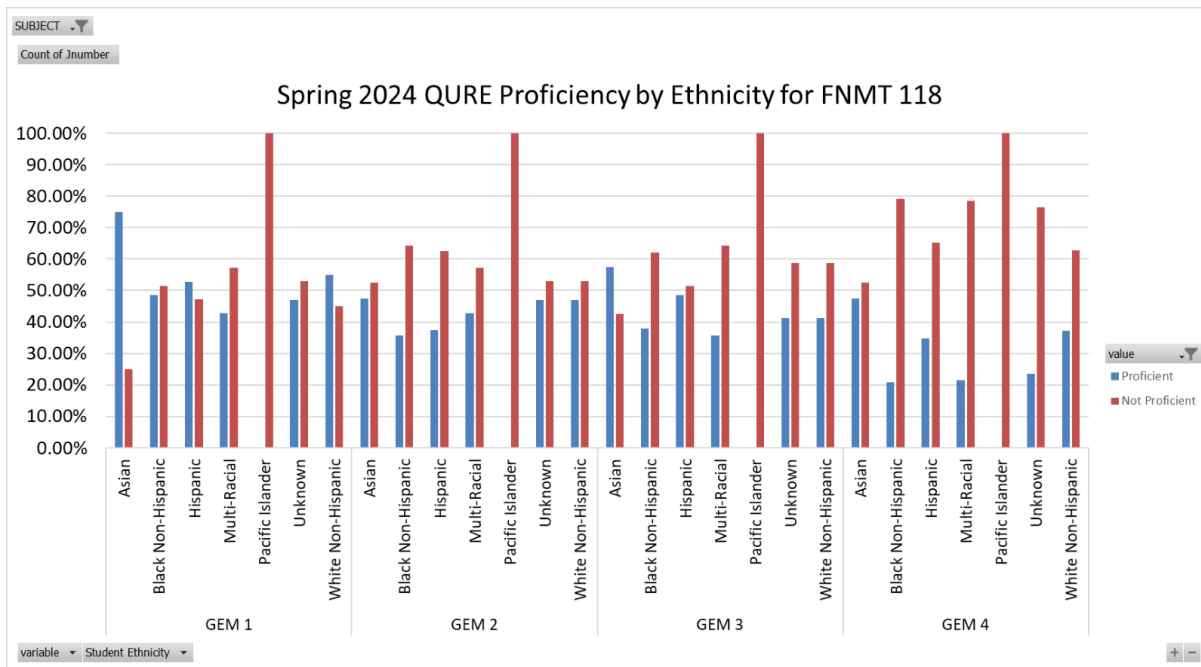
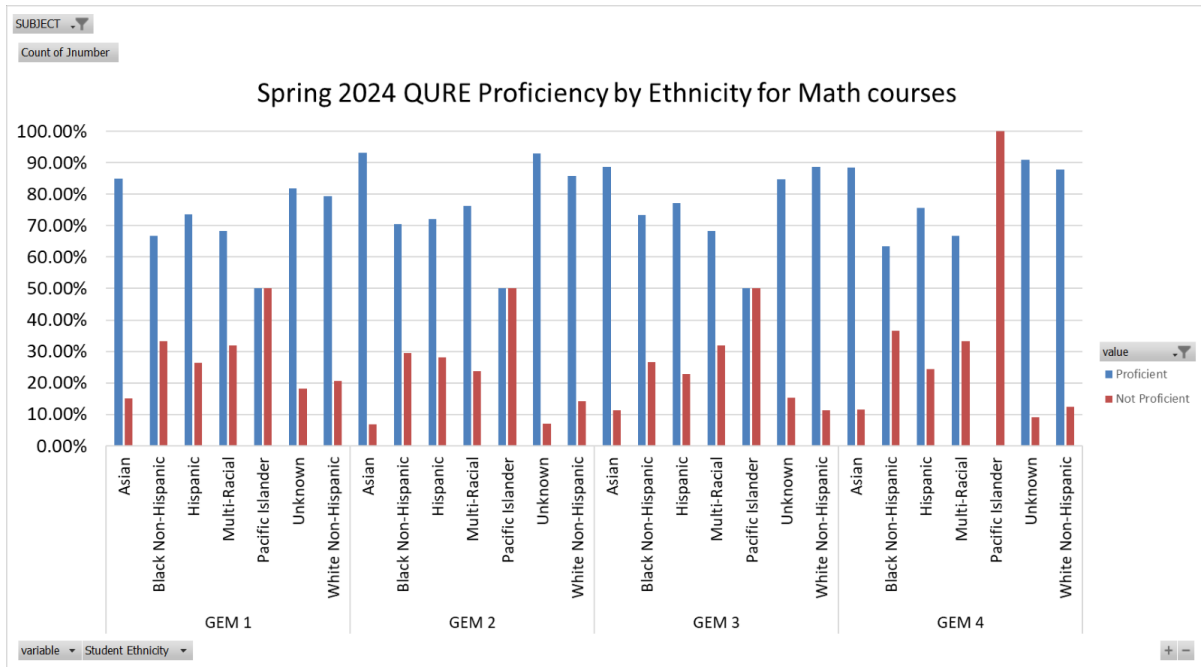
**Spring 2024 Submission of Assignments by GEM:** The sum of enrolled is for all students listed in faculty data sheets. The sum of number assessed includes students given a score from 1-3 (does not include scores of 4 or blanks). The sum of assessed without DNS is only scores 1 and 2.



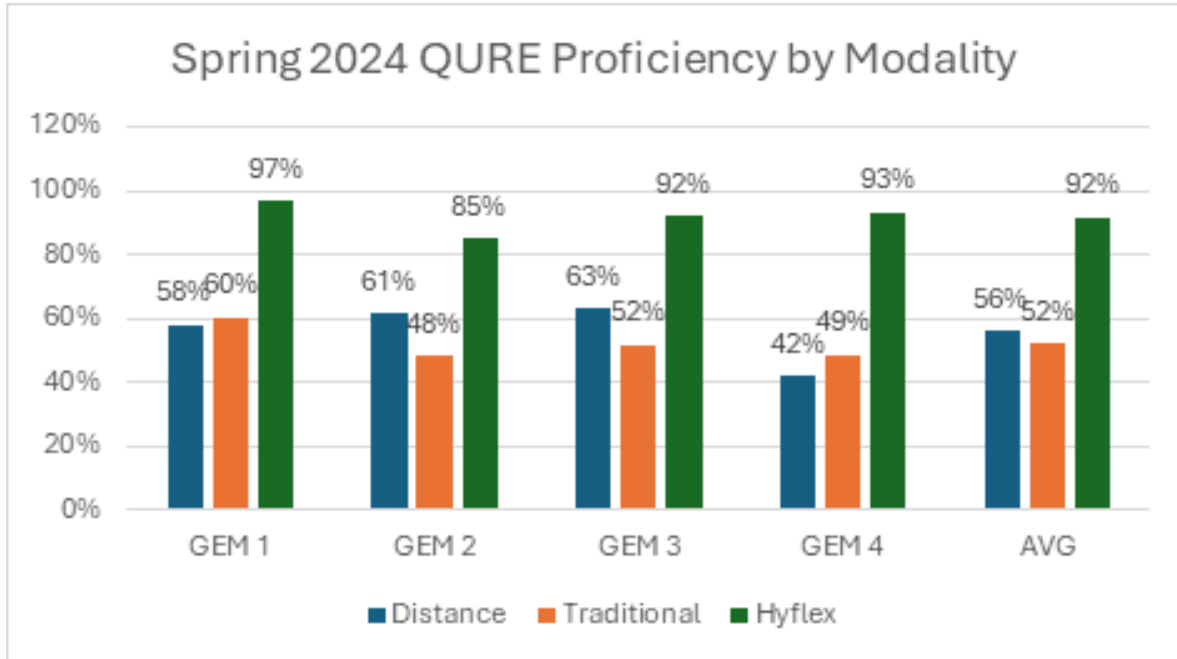
**Percent Proficiency by Ethnicity:** Asian students had the highest percentage of proficiency than other groups with the highest in GEM 1 and lowest in GEM 4 consistent with the overall trend. White students' work shows a similar trend but smaller difference between skills. Hispanic students' work similarly follows the same trend. Black students' work indicated lowest proficiency across all categories (excepting Pacific Islander students, n = 3). Black students' proficiency was lowest for GEM 4.



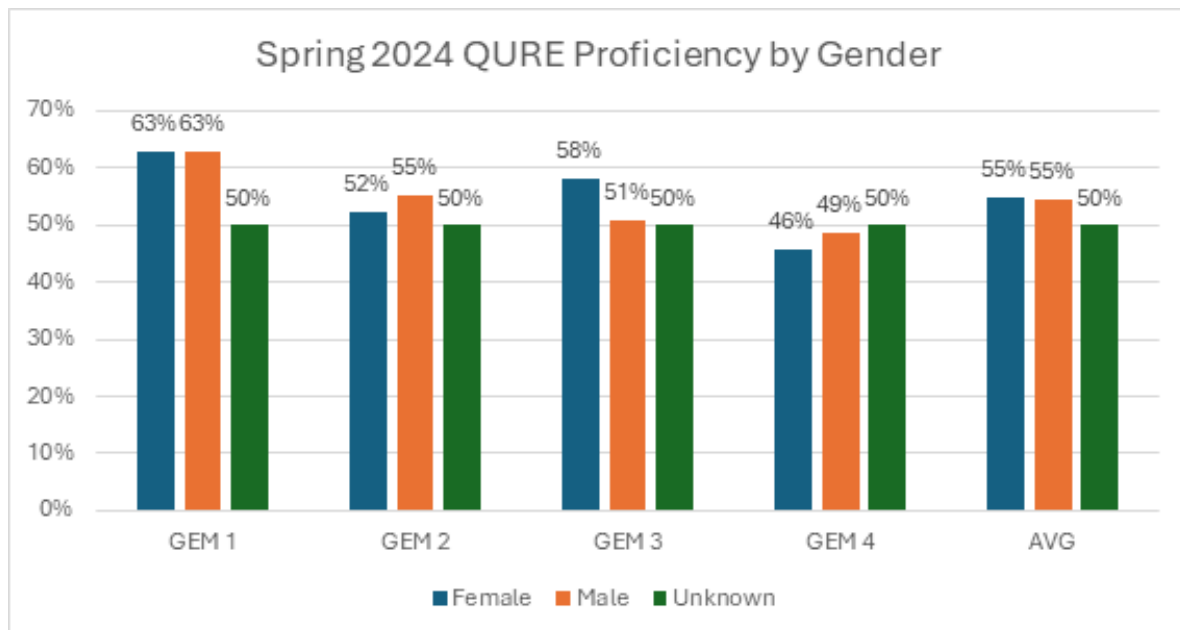
**Spring 2024 Proficiency by Ethnicity for by Math Course:** There are more students proficient across all skills and ethnicities for only Math courses. Asian students’ work met the benchmark across all GEMs. White students’ work met the benchmark across all GEMs except GEM 1 at 79.5% proficiency. Unknown students’ work met the benchmark across all GEMs. Neither Hispanic nor Black students’ work met the benchmark for any GEMs. No ethnic groups’ work met the benchmark for FNMT 118. Asian students’ work had the highest percentage of proficiency at 75% for GEM 1.



**Spring 2024 Proficiency by Modality:** Proficiency was significantly higher in Hyflex courses with all GEMs exceeding the benchmark of 80%. Proficiency was slightly higher in distance courses than traditional. Since only MATH 150 and MATH 161 were taught via Hyflex, that likely explains the difference.



**Spring 2024 Proficiency by Gender:** Female and male students' work demonstrate identical proficiency on average with female students' work having higher proficiency in GEM 3.



### C. Recommendations and Actions Planned/Taken:

- 1) **Participating Department<sup>4</sup> Recommendations and Actions Taken:** In December 2024, department heads from the participating departments were asked to review the QURE assessment data, respond to reflection questions, suggest changes, and describe innovations or changes that are already being addressed, particularly those that align with the QURE assessment findings. The recommendations below are derived from these reflections.
- 2) **Feedback from Yusefa Smith, Foundational Math Department Head:**
  - a) Existing Interventions
    - i) Targeted Support in FNMT 118 (Intermediate Algebra):
      - (1) Early Alerts via Starfish: Implementing frequent early alert systems to identify and intervene with students who are struggling or at risk of non-submission.
      - (2) Active Learning and Structured Group Work: Promoting collaborative problem-solving activities during class to enhance engagement and reinforce GEM 1-3 skills.
      - (3) Improved Assessment Alignment: Revision to Final Exam & CLO Alignment: Revising the final exam to better align with Course Learning Outcomes (CLOs) to provide meaningful and actionable feedback at the course level for both instructors and the department. This ensures assessments explicitly measure GEM proficiency while identifying specific areas for instructional improvement.
      - (4) Technological Tools for Student Engagement: Pearson & MyLab & Mastering: Utilizing Pearson for personalized practice, providing students additional support to address skill gaps in foundational areas.
      - (5) Interactive Practice Tools: Integrating interactive tools such as EdPuzzle for review sessions and formative assessments.
      - (6) Professional Development: Conducting ongoing workshops on teaching strategies for quantitative reasoning, including methods to improve communication of mathematical syntax (GEM 4).
    - ii) Planned Interventions
      - (1) Supplemental Instruction Programs: Partnering with academic support services to provide out-of-class tutoring sessions tailored to FNMT 118 and lower-proficiency areas.
      - (2) Data-Informed Instructional Adjustments: We are analyzing the performance trends (e.g., GEM 4 proficiency issues) to revise

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<sup>4</sup> Architecture, Design, and Construction; Art & Design; Computer Technologies; Music; Social Science

course materials, especially for students in historically underperforming demographic groups.

- (3) Bridging the Submission Gap: Improve attendance by proactively reaching out to disengaged students. Higher attendance rates increase student engagement, which supports course completion and improves assignment submission rates.
- (4) Modality-Based Strategies: Expand high-performing modalities while also providing flexible learning options that demonstrated success in the report.

**3) Feedback from Brenton Webber, Mathematics Department Head:**

- i) The Mathematics department head reported that the only feedback he received from faculty was that the reporting process was tedious and burdensome and that they begrudgingly did it. Mathematics faculty request that any future data request be more streamlined and less time-consuming (for some, it took hours of extra work).
- ii) Dr. Webber noted that streamlined integration with CANVAS is very difficult when almost all math assessment happens outside of CANVAS.

- 4) **Academic and Student Success Council Recommendations and Actions Planned:** In January 2025, the Academic and Student Success Council returned the 2023-2024 general education report with the recommendation that analysis include factors such as students' placement level, academic progress, age, and time status. As the College grows in our ability to use assessment technology for general education assessment, the General Education Coordinator and the Office of Assessment and Evaluation will look for ways to deepen the analysis of general education data.

## II. ANALYSIS

- A. **Comparison with previous Quantitative Reasoning assessment results:** The most recent QURE report is from 2014, which was before the General Education revision in Fall 2021. However, it is worth noting a few key items. In 2014, the data was made up of 61 students, 2 students from each math faculty. The data was aggregated into beginner (course with no pre-requisites) and advanced (math course with pre-requisites), which is similar to the data presented in this report (aggregated data for math courses). In both 2014 and 2024, proficiency was higher in non-FNMT118 math courses, compared to FNMT 118 proficiency.

## III. FACULTY REFLECTIONS AND RESPONSES

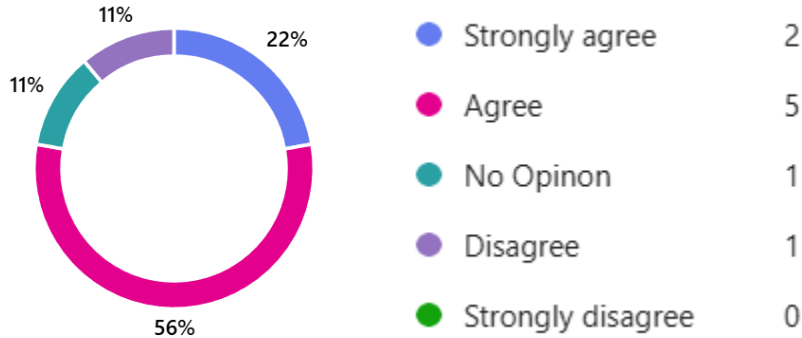
- A. **Participation:** In fall 2024, faculty were asked to provide their feedback on the rubrics and training materials as well as on their experience with the assessment process.



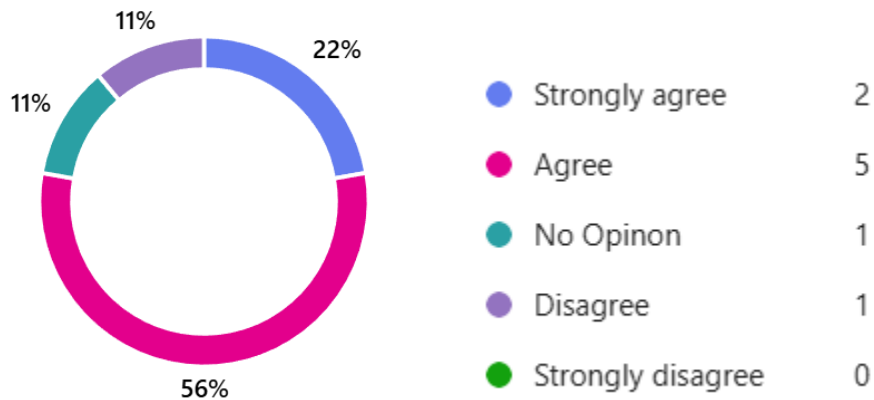
Additionally, faculty reviewed the aggregate QURE data and were asked to share their reflections. Nine faculty members completed the feedback form, which is summarized below.

**B. Responses:**

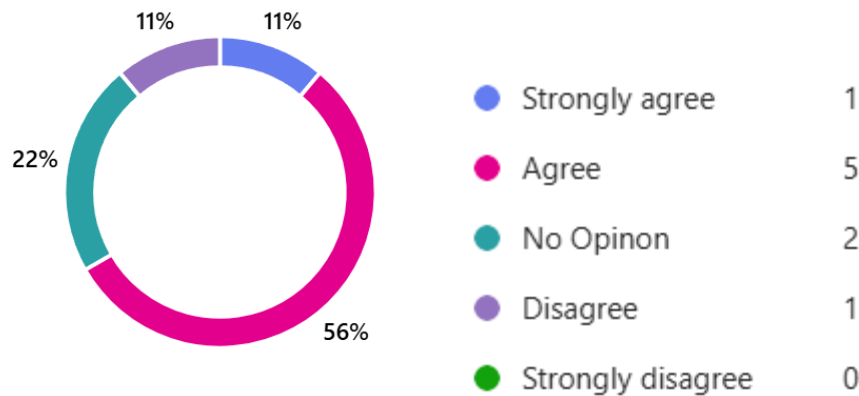
1. When asked to rate the helpfulness of the QURE Assessment Information Sheet (including general info, rubric, and norming tool), 78% of respondents either agreed or strongly agreed it was helpful.



2. When asked to rate the appropriateness of the design and content of the QURE rubric for assessing Quantitative Reasoning, 78% of respondents indicated they agreed or strongly agreed it was appropriate.



3. When asked to rate the usefulness of the norming tool in assessing student work for general education, 67% of respondents indicated they strongly agreed or agreed it was useful.



#### 4. Responses to Data:

- a. **Looking at the aggregate data you received in a separate document, in what ways is the institution successful at helping students become proficient in quantitative reasoning?** On the other hand, what gaps do you see? Faculty indicated that the institution was successful at helping students become proficient in the first three GEMS. A gap exists with the remaining GEMS. One faculty noted a gap with students who do not submit their assignments who demonstrate lower proficiency in quantitative reasoning. This group may struggle to engage fully in the learning process, which may provide an opportunity for faculty to explore this for continuous improvement.
- b. **Does the aggregate data jibe with your general sense of how the institution is doing with quantitative reasoning? Why or why not?** Overall, the majority of respondents shared that the aggregate data jibes with the overall sense of how the institution is doing with quantitative reasoning. While some indicated the methods of assessment are appropriate, there are opportunities for improvement in supporting students' quantitative reasoning learning.
- c. **How does the individual data from your QURE course(s) compare to the aggregate data?** The majority of respondents indicated that their individual data aligns with the aggregate data.
- d. **Considering the individual data from your QURE course(s) and your own teaching experience, in what ways do you currently or are you planning to address the gaps that you've seen? What practices do you find to be the most successful? What, if anything, would you do differently next time?** Faculty respondents indicated a number of methods to address the gaps, such as increased group activities, providing opportunities for more support, use of starfish to track student performance, and connecting with colleagues to collaborate on improved methods.

#### 5. Responses to Overall QURE Assessment Process:

- a. When asked **"How would you characterize your overall experience with general education assessment (QURE)?"**, respondents shared that overall,

they felt good about the process, which allowed time for reflection and planning for improvement for future teaching. The majority of respondents felt the process provided positive benefits to support assessment of student learning.

## IV. CONTINUOUS IMPROVEMENT FOR WRI and TEC

- A. **WRI Update:** First assessed in 2021-2022; Link to full report: [WRI College Writing Report of Assessment Project.docx](#)

### College Writing Unit 2023-2024 Assessment Project Summary

By Jason Esters

In the first Unit meeting of 2023, College Writing faculty examined the Writing, Research, and Information Literacy (WRI) data generated in AEFIS from Spring and Fall 2022. A striking result from our initial collection of WRI data was that students are struggling with building information literacy. The Unit appointed a subcommittee whose charge was to develop a recommendation, strategy, or set of practices that would help the Unit integrate information literacy into the composition sequence more concretely and create more student opportunities to improve their information literacy skills in College Writing, particularly in ENGL 101. The sub-committee found that there was little alignment between WRI GEMs #3 and #4 and the CLOs within ENGL 101, the introduced level.

The College Writing Unit decided that to properly address our approach to information literacy in ENGL 101 (and prepare to later assess our attempts at improvement), it needed to re-evaluate the CLOs, particularly ENGL 101 CLO #5, which most closely aligned with the goals of WRI GEMs #3 and #4. In Spring 2023, the Unit created and revised a scoring rubric for CLO #5. During Fall 2023, the Unit initiated “closing the assessment loop” processes for the investigation of CLO #5 in ENGL 101. With this in mind, the Unit began a unit-wide assessment project where faculty collected essays to norm the artifacts according to the revised CLO #5 rubric. Norming of the collected essays took place throughout the Spring 2024 semester. The goal of the assessment project was to generate data that would allow the unit to recalibrate our assignments and language around information literacy for 101, determine if our current integration of accessible information literacy activities is sufficient, and help justify any recommendations for revised/new CLOs. At the conclusion of our assessment project, we will resume WRI assessment through the assessment management system approved through the GEES committee.

*Key Takeaways from the Assessment Project:* Most of the essays normed did not show strong evidence of information literacy. Furthermore, there was no clear indication that low or mid-tier essays incorporate less information literacy techniques than high-tier essays. In the normed essays selected for review, Interpretation and Analysis were the weakest areas of emphasis from CLO #5 according to the rubric scores. Moving forward, the Unit has elected to focus on improving in 3 areas:

**Teaching Tools:** The Unit will clarify its definition of information literacy and how it connects to our learning opportunities for Interpretation and Analysis, which will broaden our tool chest for introducing information literacy in 101.

**Soft Skill Supports:** The Unit will work with other offices across the campus to build avenues of academic intervention for students

**Measures of Assessment:** Even though we won't officially transition to our new assessment management system until next year, The Unit is committed to creating more long-term norming activities for more organic assessment opportunities.

**B. TEC Update:**

- a. **CIS 103:** First assessed in 2022-2023, assessment results from that cycle indicated the need for targeted improvement in CIS 103, where proficiency was below the benchmark in TEC3, "Use electronic spreadsheets and/or database management systems to organize, analyze, and/or retrieve data" (60%) and TEC4, "Use word processing and slide presentation software to design clear academic and professional documents that integrate design concepts, elements, applications, and objects" (69%). Since CIS 103 faculty have also noted the same gaps in proficiency while doing course assessment for CIS 103, the CIS 103 Teaching Circle has made changes to the course in these two areas, and the General Education Coordinator and Director of Assessment met with CIS 103 leadership in Spring 2024 to plan a reassessment of those two GEMs in Fall 2024.
- b. **GEES Core Committee:** The General Education Essential Skills (GEES) Core Committee has proposed additional inquiry into the TEC definition, infusing more critical thinking into TEC instruction, and investigating a possible TEC placement test. Two subcommittees were created for this purpose in Spring 2024, to be reported on in Spring 2025, with action items to be determined.

## Appendix A: QURE Sampling Strategy

### QURE Sampling Strategy

Prepared by: Eric William Shannon, PhD – Director of Institutional Research

Prepared for: Amy Birge-Caracappa, PhD – Director of Assessment

Prepared on: April 16, 2024

Table 1 QURE Courses by Modality

		FNMT 118	MATH 121	MATH 123	MATH 137	MATH 150	MATH 161
<b>Distance</b>	Distinct # of Sections	15	2	1	1	6	7
	Distinct # of Student	397	64	29	23	163	229
<b>Hybrid</b>	Distinct # of Sections	1					
	Distinct # of Student	32					
<b>Hyflex</b>	Distinct # of Sections					1	1
	Distinct # of Student					32	35
<b>Traditional</b>	Distinct # of Sections	23	2			2	5
	Distinct # of Student	606	40			47	119

- Table 1 presents the distinct number of sections and distinct number of students for the courses to be assessed for QURE in the Spring '24 semester separated by modality.
  - At the direction of the Director of Assessment, only students with an *earned* grade are included in the distinct number of students<sup>1</sup>
- To determine a sample size, sample size calculations are stratified within course and modality when appropriate using a confidence level of 95% and margin-of-error of 5%
- Although sampling will be done at the *section level*, sample size calculations are based on the number of students who are to be assessed.

Table 2 Optimal Sample Size

		FNMT 118	MATH 121	MATH 123	MATH 137	MATH 150	MATH 161
<b>Distance</b>	Sample Size	196	55	27	22	115	144
	<b>Hybrid</b>	Sample Size	30				
<b>Hyflex</b>	Sample Size					30	33
	<b>Traditional</b>	Sample Size	236	37		42	91

- Table 2 presents the optimal sample size, as measured by student counts, for each course by modality

- o Cells highlighted in yellow [sic] are those which all sections will need to be assessed in order to meet the optimal sample size
- o For those courses which do not require all sections to be assessed; a random sample of the remaining sections will be selected in order to approximate the optimal sample size

## Appendix B

### Contents:

1. QURE Rubric
2. GEMs Essential Skills Assessment Norming Tool
3. Fall 2023 Analysis, Evidence, and Faculty Reflections
4. GEES Core Committee Members
5. Writing, Research, and Information Literacy GEMs
6. Technological Competency GEMs



## 1. QURE Rubric

<b>QUANTITATIVE REASONING (QURE) RUBRIC</b>				
<i>Definition: Students communicate mathematical principles and apply them to follow an extended line of formal reasoning and critical thinking. Students read and identify mathematical information that is relevant in a problem; interpret and critically analyze mathematical information presented; select appropriate methods and solve problems, estimating and evaluating the validity of results and effectively communicating quantitative concepts using correct mathematical syntax.</i>				
<b>General Education Measures (GEMs)</b>	<b>Proficient (Satisfactory)</b>	<b>Not Proficient (Not Satisfactory)</b>	<b>Did Not Submit</b>	<b>Not Applicable</b>
<b>QURE 1:</b> Communicate mathematical principles and apply them to follow an extended line of formal reasoning and critical thinking	<ol style="list-style-type: none"> <li>The student can correctly explain an extended deductive line of reasoning appropriate to the course.</li> <li>The student can create and form an extended line of deductive reasoning.</li> <li>Student can identify flaws in an incorrect line of reasoning.</li> </ol>	<ol style="list-style-type: none"> <li>The student cannot correctly explain an extended deductive line of reasoning appropriate to the course.</li> <li>The student cannot create and form an extended line of deductive reasoning.</li> <li>Student cannot identify flaws in an incorrect line of reasoning.</li> </ol>	Student did not submit the assignment.	<b>QURE1</b> is not assessed in this course.
<b>QURE 2:</b> Read and identify mathematical information that is relevant in a problem	<ol style="list-style-type: none"> <li>Student can extract relevant information needed to solve a problem.</li> <li>Student can recognize and interpret mathematical symbols and terms.</li> </ol>	<ol style="list-style-type: none"> <li>Student cannot extract relevant information needed to solve a problem.</li> <li>Student cannot recognize and interpret mathematical symbols and terms.</li> </ol>	Student did not submit the assignment.	<b>QURE 2</b> is not assessed in this course.
<b>QURE 3:</b> Interpret and critically analyze mathematical information presented; select appropriate methods and solve problems, estimating	<ol style="list-style-type: none"> <li>Student can correctly select the appropriate method to solve a problem or prove a statement.</li> <li>Student can correctly apply mathematical procedures,</li> </ol>	<ol style="list-style-type: none"> <li>Student cannot correctly select the appropriate method to solve a problem or prove a statement.</li> <li>Student cannot correctly apply mathematical</li> </ol>	Student did not submit the assignment.	<b>QURE 3</b> is not assessed in this course.

and evaluating the validity of results	<p>techniques, and theory to a problem.</p> <p>3. Student can check and verify that a final answer makes mathematical sense and answers the original question.</p>	<p>procedures, techniques, and theory to a problem.</p> <p>3. Student cannot check and verify that a final answer makes mathematical sense and answers the original question.</p>		
<b>QURE 4:</b> Effectively communicate quantitative concepts using correct mathematical syntax	<p>1. Student can present and articulate a variety of complex concepts and results in a logical and comprehensive manner.</p> <p>2. Student can present work in a mathematically correct form.</p> <p>3. Student can communicate mathematical principles or information using appropriate charts and diagrams.</p>	<p>1. Student cannot present and articulate a variety of complex concepts and results in a logical and comprehensive manner.</p> <p>2. Student cannot present work in a mathematically correct form.</p> <p>3. Student cannot communicate mathematical principles or information using appropriate charts and diagrams.</p>	Student did not submit the assignment.	<b>QURE 4</b> is not assessed in this course.

## Glossary

*The definitions that follow were developed to clarify terms and concepts in this rubric only.*

- **Critical thinking:** A habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion. (from AACU Critical Thinking VALUE rubric)
- **Formal reasoning:** A form of deductive reasoning that is concerned with deriving valid conclusions or evaluating the validity of conclusions based on a set of assumed-true premises, using the rules of logic and mathematical models.
- **Mathematical information:** The concepts, procedures, facts, symbols, and tools used to quantitatively and/or logically describe, explain, or predict phenomena. (derived from <https://www.ncbi.nlm.nih.gov/books/NBK396094/>)
- **Mathematical syntax:** the set of rules that defines the meaning and validity of strings of mathematical symbols.

This rubric was adapted from the Association of American Colleges and Universities (AAC&U) VALUE rubrics.

## 2. GEMs Essential Skills Assessment Norming Tool

## GEMs Essential Skills Assessment Norming Tool

Explanation of the Ratings System for General Education Measures (GEMs) Essential Skills Assessment	
RATING	EXPLANATION
Proficient	<ul style="list-style-type: none"> <li>Exemplified by student work that would earn a <b>grade of C- or better, e.g., “satisfactory”</b></li> <li>The student’s achievement of the GEM meets or exceeds the assignment’s criteria.</li> <li>The student’s achievement of the GEM demonstrates at least average competence but may have room to grow in proficiency.</li> </ul>
Not Proficient	<ul style="list-style-type: none"> <li>Exemplified by student work that would earn a <b>grade below 70, e.g., “not satisfactory”</b></li> <li>The student’s attempt to meet the GEM is discernable but inconsistently or only partially realized.</li> <li>The student submitted the assignment but did not meet the GEM.</li> </ul>
Did Not Submit	<ul style="list-style-type: none"> <li>The student did not submit the assignment.</li> </ul>
Not Applicable	<ul style="list-style-type: none"> <li>This GEM is not measured in this course/assignment.</li> </ul>

### 3. Fall 2023 Analysis, Evidence, and Faculty Reflections

**Fall 2023 Preliminary Analysis:** Preliminary data show slightly higher proficiency in the MATH courses and the need for improvement across all GEMs.

**Fall 2023 Indirect Evidence:** Pilot faculty were asked to share their reflections on the QURE pilot process and materials, including the information sheet, the rubric, and the norming tool. Faculty were also asked to provide reflections on aggregate and individual data.

**Fall 2023 Pilot Faculty Materials and Training Reflections:** Three out of four faculty participated. Of those three, two agreed that the materials were helpful in the process.

**Fall 2023 Pilot Faculty Data Reflections:** Faculty reflections were varied, noting the slightly higher rate of proficiency in the MATH courses and identifying GEMs #3 and 4 as the weakest areas for MATH students. Suggested improvements included writing specific QURE rubrics for each course and discussing QURE proficiency at a departmental and interdepartmental level. It was also suggested that lower proficiency is due to students not giving themselves enough time to complete course requirements.

## 4. GEES Core Committee Members

<b>GEES Core Committee Members (as of 11/14/2024)</b>		
<b>Name</b>	<b>Department</b>	<b>Division</b>
1. Amy Birge-Caracappa	Office of Assessment and Evaluation	EMSC
2. Angela Barnes	Allied Health/DCAF	MSHC
3. Beena Patel	Biology	MSHC
4. Brent Webber	Mathematics	MSHC
5. Chris Popescu	Business Administration/DCAF	Business & Technology
6. Cynthia Paul	Foundational Mathematics	MSHC
7. David Prejsnar	History, Philosophy, Religious Studies	Liberal Studies
8. Dawn Janich	Biology	MSHC
9. Girija Nagaswami	English/Assistant to Dean	Liberal Studies
10. Jason Esters	English/College Writing	Liberal Studies
11. Jennifer Tront	Biology/Gen Ed Coordinator	MSHC
12. Joel Tannenbaum	Humanities/DCAF	Liberal Studies
13. Lizzie Gordon	Office of Assessment and Evaluation	EMSC
14. Laura Davidson	Allied Health	MSHC
15. Lauren Leonard	Computer Technologies	Business & Technology
16. Laurence Liss	Computer Technologies	Business & Technology
17. Lisa Johnson	Nursing	MSHC
18. Lynsey Madison	Curriculum Development	AaSS
19. Massah Nuni	English	Liberal Studies
20. Paula White	English/DCAF	Liberal Studies
21. Rebecca Garvin	Business Administration/DCAF	Business & Technology
22. Richard Chu	Biology/DCAF	MSHC
23. Ruqayyah Archie	Business Administration	Business & Technology
24. Sean Sauer	Art and Design	Liberal Studies

## 5. Writing, Research, and Information Literacy GEMs

**Writing, Research, and Information Literacy GEMs:** Competency in WRI is defined by five General Education Measures (GEMs) derived from the WRI Essential Skill definition developed by a multidisciplinary group of faculty, approved via the College's governance structure, and implemented in Fall 2021.<sup>5</sup>

- **WRI 1:** Develop significant ideas in support of a thesis or research question
- **WRI 2:** Appropriately reflect context and audience, using conventions of grammar, spelling, and formatting specific to the area of study
- **WRI 3:** Use information to accomplish a specific purpose
- **WRI 4:** Determine the extent of a need for information, access information effectively and efficiently, and evaluate information critically
- **WRI 5:** Participate ethically in communities of learning

## 6. Technological Competency GEMs

**Technological Competency (TEC) GEMs:** Competency in Technological Competency (TEC) is defined by six General Education Measures (GEMs) that come directly from the TEC Essential Skill definition.

- **TEC 1:** Identify, create, and manipulate technological tools and digital content.
- **TEC 2:** Operate computers, peripherals, electronic devices, learning management systems (LMS), and other technology as related to their program of study.
- **TEC 3:** Use electronic spreadsheets and/or database management systems to organize, analyze, and/or retrieve data.
- **TEC 4:** Use word processing and slide presentation software to design clear academic and professional documents that integrate design concepts, elements, applications, and objects.
- **TEC 5:** Use computer technology to collaborate and network.
- **TEC 6:** Identify and respond appropriately to ethical and legal issues related to privacy and security in information technology and the handling of data.

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<sup>5</sup> <https://www.ccp.edu/college-catalog/general-education-requirements>