Assessing Core Competencies: Results of Quantitative Literacy and Reasoning Assessment

Graduating Seniors 2022 Fañomnåkan (Spring)
Quantitative Literacy and Reasoning Assessment 2022 Fañomnåkan (Spring) Highlights

The Quantitative Literacy and Reasoning Assessment (QLRA), an online multiple-choice test, developed by Dr. Eric Gaze at Bowdoin College is a tool for assessing quantitative literacy among US four-year colleges and universities. The University’s Mathematics Department began using this instrument in 100 and 400 level Math courses since 2014. The University Assessment Committee adopted the QLRA in 2017 as the Institutional Instrument for Institutional-Level assessment.

Possible scores for this assessment range from 0% through 100%. Of the 267 graduating seniors who took the assessment across all disciplines, the average score was 43.1%.

This average score is a 0.3-percentage point increase from Fanuchånan 2021. Since the Fañomnåkan 2021 semester, there has been no downward trend in the average score. This graph displays the average scores of students in each college/school with the UOG average at 43.1%. This report includes more detailed results of scores disaggregated by Major, and by College/School. To assure students cannot be easily identified, we did not report data for majors with less than three students.

To serve as a factor in the analysis of results, students were asked if they took the following courses at UOG: MA-085: Fundamentals of Math, MA-110: Basic Mathematical Applications, and MA-151: Introductory Statistics.

41% of seniors indicated that they had taken MA-085 and received an average score of 37.5% while the students who did not take MA-085 scored an average of 46.9%. In the last 10 semesters, the average scores of seniors who did not take MA-085 is higher than seniors who took MA-085. While this course is not required, students who are placed into developmental math must pass this course before proceeding with MA-110 or higher.

55% of seniors indicated they took MA-110 and received an average score of 39.1%. The 45% who did not take MA-110 received an average score of 47.9%. In the last 10 semesters, the average scores of seniors who did not take MA-110 is higher than students who took MA-110. Although MA-110 is a general education requirement, students may opt to take an equivalent course or higher.

63% of seniors had taken MA-151 and their average score was 44.2%. Those who did not take the course received an average score of 41.2%. This result contrasts with the previous 6 semesters, where the average scores of seniors of who took Introductory Statistics were lower than those who did not take the course.

It is important to note that in response to safety measures implemented due to COVID-19, testing was no longer held in a proctored environment on campus. Seniors were permitted to complete this assessment online at a time of their own choosing off campus.
Quantitative Literacy and Reasoning Assessment - Graduating Seniors Average Scores

<table>
<thead>
<tr>
<th>Term</th>
<th>Count</th>
<th>Avg Grade</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018 Fall Fanuchånan (n=173)</td>
<td>173</td>
<td>35.7</td>
<td>17.2</td>
</tr>
<tr>
<td>2019 Spring Fañomnåkan (n=286)</td>
<td>286</td>
<td>41.3</td>
<td>17.9</td>
</tr>
<tr>
<td>2019 Fall Fanuchånan (n=142)</td>
<td>142</td>
<td>34.8</td>
<td>16.7</td>
</tr>
<tr>
<td>2020 Spring Fañomnåkan (n=252)</td>
<td>252</td>
<td>40.0</td>
<td>18.3</td>
</tr>
<tr>
<td>2020 Fall Fanuchånan (n=124)</td>
<td>124</td>
<td>39.0</td>
<td>18.0</td>
</tr>
<tr>
<td>2021 Spring Fañomnåkan (n=276)</td>
<td>276</td>
<td>42.8</td>
<td>20.6</td>
</tr>
<tr>
<td>2021 Fall Fanuchånan (n=147)</td>
<td>147</td>
<td>42.8</td>
<td>19.3</td>
</tr>
<tr>
<td>2022 Spring Fañomnåkan (n=267)</td>
<td>267</td>
<td>43.1</td>
<td>19.9</td>
</tr>
</tbody>
</table>

Graduating Seniors Average QLRA Scores
4 Year Trend

Source: Quantitative Literacy and Reasoning Assessment Results; Moodle
### 2022 Faľomnākan Quantitative Literacy and Reasoning Assessment (QLRA) Average Scores by Course for Graduating Seniors

<table>
<thead>
<tr>
<th></th>
<th>Took MA 085?</th>
<th>Took MA 110?</th>
<th>Took MA 151?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Count</strong></td>
<td>267</td>
<td>109</td>
<td>158</td>
</tr>
<tr>
<td><strong>Percent</strong></td>
<td>100%</td>
<td>41%</td>
<td>59%</td>
</tr>
<tr>
<td><strong>Avg Grade</strong></td>
<td>43.1</td>
<td>37.5</td>
<td>46.9</td>
</tr>
<tr>
<td><strong>Std Dev</strong></td>
<td>19.9</td>
<td>17.4</td>
<td>20.6</td>
</tr>
</tbody>
</table>

#### Average QLRA Scores for Graduating Students who have taken MA 085, MA 110, and MA 151

**Took MA 085?**
- Yes (n=109): 37.5
- No (n=158): 46.9

**Took MA 110?**
- Yes (n=147): 39.1
- No (n=120): 47.9

**Took MA 151?**
- Yes (n=167): 44.2
- No (n=100): 41.2

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Source: Quantitative Literacy and Reasoning Assessment Results; Moodle

22SP_QLRA_Final Results
<table>
<thead>
<tr>
<th>Gender</th>
<th>Count</th>
<th>Percent</th>
<th>Avg Grade</th>
<th>Std Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>105</td>
<td>39%</td>
<td>46.5</td>
<td>20.6</td>
</tr>
<tr>
<td>Female</td>
<td>151</td>
<td>57%</td>
<td>41.1</td>
<td>19.5</td>
</tr>
<tr>
<td>Declined response</td>
<td>11</td>
<td>4%</td>
<td>37.7</td>
<td>13.1</td>
</tr>
</tbody>
</table>

Average QLRA Scores by Gender
Graduating Seniors 2022 Fañomnåkan

Source: Quantitative Literacy and Reasoning Assessment Results; Moodle
### 2022 Fañomnåkan Quantitative Literacy and Reasoning Assessment Math Attitudes - Indirect Assessment

<table>
<thead>
<tr>
<th>Statement</th>
<th>Response</th>
<th>Count</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numerical information is very useful in everyday life</td>
<td>Strongly Agree</td>
<td>153</td>
<td>57%</td>
</tr>
<tr>
<td>Numbers are not necessary for most situations</td>
<td>Strongly Disagree</td>
<td>51</td>
<td>19%</td>
</tr>
<tr>
<td>Quantitative information is vital for accurate decisions</td>
<td>Strongly Agree</td>
<td>124</td>
<td>46%</td>
</tr>
<tr>
<td>Understanding numbers is as important in daily life as reading and writing</td>
<td>Strongly Agree</td>
<td>184</td>
<td>69%</td>
</tr>
<tr>
<td>It is a waste of time to learn information containing a lot of numbers</td>
<td>Strongly Disagree</td>
<td>140</td>
<td>52%</td>
</tr>
</tbody>
</table>

Higher Math Attitudes Scores correspond to more positive attitudes towards Math. The highest possible Math Attitude Score is 25.

The QLRA has been administered to graduating seniors as a requirement for graduation since Spring 2017.

Every semester since then has shown a positive relationship between math attitudes and QLRA test scores with the exception of the 2020 Fanuchānan semester.

Source: Quantitative Literacy and Reasoning Assessment Results; Moodle
### 2022 Fañomnåkan Quantitative Literacy and Reasoning Assessment Average Scores by College/School

<table>
<thead>
<tr>
<th>College/School</th>
<th>AVERAGE GRADE</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Liberal Arts and Social Sciences - CLASS (n=39)</td>
<td>37.7</td>
<td>16.5</td>
</tr>
<tr>
<td>College of Natural and Applied Sciences - CNAS (n=59)</td>
<td>50.4</td>
<td>21.1</td>
</tr>
<tr>
<td>School of Business and Public Administration - SBPA (n=85)</td>
<td>41.3</td>
<td>21.5</td>
</tr>
<tr>
<td>School of Education - SOE (n=25)</td>
<td>34.4</td>
<td>15.5</td>
</tr>
<tr>
<td>School of Engineering - SENG (n=7)</td>
<td>57.9</td>
<td>12.9</td>
</tr>
<tr>
<td>School of Health - SOH (n=52)</td>
<td>43.8</td>
<td>17.2</td>
</tr>
<tr>
<td>UOG Total (n=267)</td>
<td>43.1</td>
<td>19.9</td>
</tr>
</tbody>
</table>

**Average QLRA Scores**

**Graduating Seniors 2022 Fañomnakan**

Source: Quantitative Literacy and Reasoning Assessment Results; Moodle
## 2022 Fañomnåkan Quantitative Literacy and Reasoning Assessment Average Scores by Major - CLASS

<table>
<thead>
<tr>
<th>Major</th>
<th>Average Grade</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Studies (n=7)</td>
<td>42.1</td>
<td>11.1</td>
</tr>
<tr>
<td>English (n=7)</td>
<td>34.3</td>
<td>10.6</td>
</tr>
<tr>
<td><strong>Fine Arts (n=6)</strong></td>
<td>28.3</td>
<td>17.8</td>
</tr>
<tr>
<td>History (n=3)</td>
<td>43.3</td>
<td>18.9</td>
</tr>
<tr>
<td>Political Science (n=7)</td>
<td>50.0</td>
<td>22.2</td>
</tr>
<tr>
<td>Psychology (n=7)</td>
<td>32.9</td>
<td>15.5</td>
</tr>
<tr>
<td>CLASS Subtotal (n=39)</td>
<td>37.7</td>
<td>16.5</td>
</tr>
<tr>
<td>UOG Total (n=267)</td>
<td>43.1</td>
<td>19.9</td>
</tr>
</tbody>
</table>

### Average QLRA Scores - CLASS
Graduating Seniors 2022 Fañomnåkan

<table>
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<tr>
<th>Major</th>
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<tr>
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<td>English (n=7)</td>
<td>34.3</td>
</tr>
<tr>
<td><strong>Fine Arts (n=6)</strong></td>
<td>28.3</td>
</tr>
<tr>
<td>History (n=3)</td>
<td>43.3</td>
</tr>
<tr>
<td>Political Science (n=7)</td>
<td>50.0</td>
</tr>
<tr>
<td>Psychology (n=7)</td>
<td>32.9</td>
</tr>
</tbody>
</table>

*The Philosophy program did not have enough students to report*

**Fine Arts** combines Fine Arts/Art and Fine Arts/Theater majors

Source: Quantitative Literacy and Reasoning Assessment Results; Moodle

May 2022
2022 Fañomnåkan Quantitative Literacy and Reasoning Assessment Average Scores by Major - CNAS

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>AVERAGE GRADE</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology (n=30)</td>
<td>50.0</td>
<td>21.0</td>
</tr>
<tr>
<td>Chemistry (n=8)</td>
<td>55.6</td>
<td>22.4</td>
</tr>
<tr>
<td>Computer Info System (n=3)</td>
<td>41.7</td>
<td>18.9</td>
</tr>
<tr>
<td>Computer Science (n=12)</td>
<td>55.0</td>
<td>21.3</td>
</tr>
<tr>
<td>Mathematics (n=4)</td>
<td>50.0</td>
<td>22.7</td>
</tr>
<tr>
<td>CNAS Subtotal (n=59)</td>
<td>50.4</td>
<td>21.1</td>
</tr>
<tr>
<td>UOG Total (n=267)</td>
<td>43.1</td>
<td>19.9</td>
</tr>
</tbody>
</table>

*The Agriculture and Life Sciences program did not have enough students to report*

Source: Quantitative Literacy and Reasoning Assessment Results; Moodle
2022 Fañomnåkan Quantitative Literacy and Reasoning Assessment Average Scores by Major - SBPA

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>AVERAGE GRADE</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accounting (n=18)</td>
<td>60.3</td>
<td>18.3</td>
</tr>
<tr>
<td>Business Administration (n=40)</td>
<td>38.9</td>
<td>18.7</td>
</tr>
<tr>
<td>Criminal Justice (n=23)</td>
<td>33.0</td>
<td>21.1</td>
</tr>
<tr>
<td>Public Administration (n=4)</td>
<td>27.5</td>
<td>16.6</td>
</tr>
<tr>
<td>SBPA Subtotal (n=85)</td>
<td>41.3</td>
<td>21.5</td>
</tr>
<tr>
<td>UOG Total (n=267)</td>
<td>43.1</td>
<td>19.9</td>
</tr>
</tbody>
</table>

Source: Quantitative Literacy and Reasoning Assessment Results; Moodle
### 2022 Fañomnåkan Quantitative Literacy and Reasoning Assessment Average Scores by Major - SOE

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>AVERAGE GRADE</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary Education (n=12)</td>
<td>31.3</td>
<td>10.3</td>
</tr>
<tr>
<td>Secondary Education (n=13)</td>
<td>37.3</td>
<td>19.1</td>
</tr>
<tr>
<td>SOE Subtotal (n=25)</td>
<td>34.4</td>
<td>15.5</td>
</tr>
<tr>
<td>UOG Total (n=267)</td>
<td>43.1</td>
<td>19.9</td>
</tr>
</tbody>
</table>

**Average QLRA Scores - SOE**

Graduating Seniors 2022 Fañomnåkan

- **Elementary Education (n=12)**: 31.3
- **Secondary Education (n=13)**: 37.3

Source: Quantitative Literacy and Reasoning Assessment Results; Moodle
2022 Fañomnåkan Quantitative Literacy and Reasoning Assessment Average Scores by Major - SENG

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>AVERAGE GRADE</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil Engineering (n=7)</td>
<td>57.9</td>
<td>12.9</td>
</tr>
<tr>
<td>SENG Subtotal (n=7)</td>
<td>57.9</td>
<td>12.9</td>
</tr>
<tr>
<td>UOG Total (n=267)</td>
<td>43.1</td>
<td>19.9</td>
</tr>
</tbody>
</table>

Average QLRA Scores - SENG
Graduating Seniors 2022 Fañomnåkan

Source: Quantitative Literacy and Reasoning Assessment Results; Moodle
### 2022 Fañomnåkan Quantitative Literacy and Reasoning Assessment Average Scores by Major - SOH

<table>
<thead>
<tr>
<th>MAJOR</th>
<th>AVERAGE GRADE</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Science (n=10)</td>
<td>52.0</td>
<td>19.7</td>
</tr>
<tr>
<td>Nursing (n=31)</td>
<td>46.0</td>
<td>15.7</td>
</tr>
<tr>
<td>Social Work (n=11)</td>
<td>30.5</td>
<td>12.1</td>
</tr>
<tr>
<td>SOH Subtotal (n=52)</td>
<td>43.8</td>
<td>17.2</td>
</tr>
<tr>
<td>UOG Total (n=267)</td>
<td>43.1</td>
<td>19.9</td>
</tr>
</tbody>
</table>

Source: Quantitative Literacy and Reasoning Assessment Results; Moodle

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**Average QLRA Scores - SOH**

Graduating Seniors 2022 Fañomnåkan

[Bar chart showing average QLRA scores for Health Science, Nursing, and Social Work majors, with data points: Health Science (52.0), Nursing (46.0), Social Work (30.5)]