



UNIVERSITY of HAWAII'
MĀNOA

Presentation to the Mānoa Faculty Senate
on April 15, 2015
by the Quantitative Reasoning Working Group [Monica Stitt-Bergh]

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Quantitative Reasoning (QR) for Mānoa Undergraduates

by the Mānoa Quantitative Reasoning Working Group

I am co-chair of the Quantitative Reasoning Working Group. Mike Nassir, from Physics, is the other co-chair. Half of our working group is here today to answer your questions.

I'd like to describe a few key points from our working group in this short presentation.

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Rationale

All undergraduates need
quantitative reasoning (QR) skills

Let me start with the rationale. First, faculty have been concerned with students quantitative reasoning skills for several years.

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Rationale

WASC requires that undergraduates
have QR competency

Second, as of 2013, WASC requires that Mānoa demonstrate that undergraduates have quantitative reasoning competency.

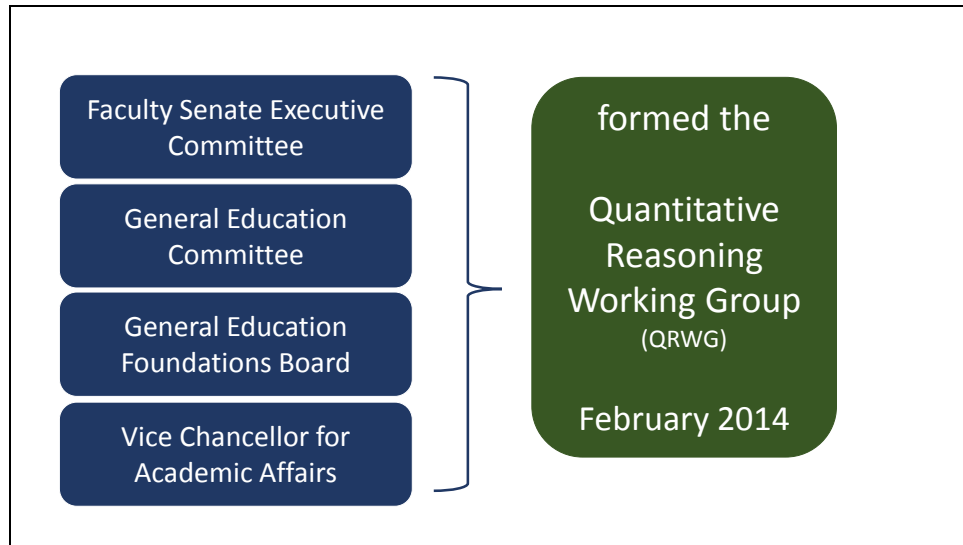
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Rationale

Foundations Symbolic Reasoning
does not mandate
sufficient QR skills

Third, the current General Education Foundations Symbolic Reasoning course requirement does not mandate sufficient QR skills.

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Thus, in February 2014, the Faculty Senate Executive Committee, the General Education Committee, the General Education Foundations Board, and the Vice Chancellor for Academic Affairs formed the Quantitative Reasoning Working Group.

We were charged with developing a plan that would ensure undergraduates have quantitative reasoning competency.

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Quantitative Reasoning Working Group

Robert Bachini, Dir, Undergrad Programs, Shidler

Lorraine Baron, Asst Prof, Institute for Teacher Education

Dawne Bost, Ed Spec, General Ed Office

Linda Furuto, Assoc Prof of Math Ed, Curriculum Studies

Joy Logan, Prof, Spanish

Miguel Felipe, Asst Prof, Music

Michael Nassir, Instr, Physics & Astronomy

Scott Rowland, Spec, Geology & Geophysics

Todd Sammons, Assoc Prof, English

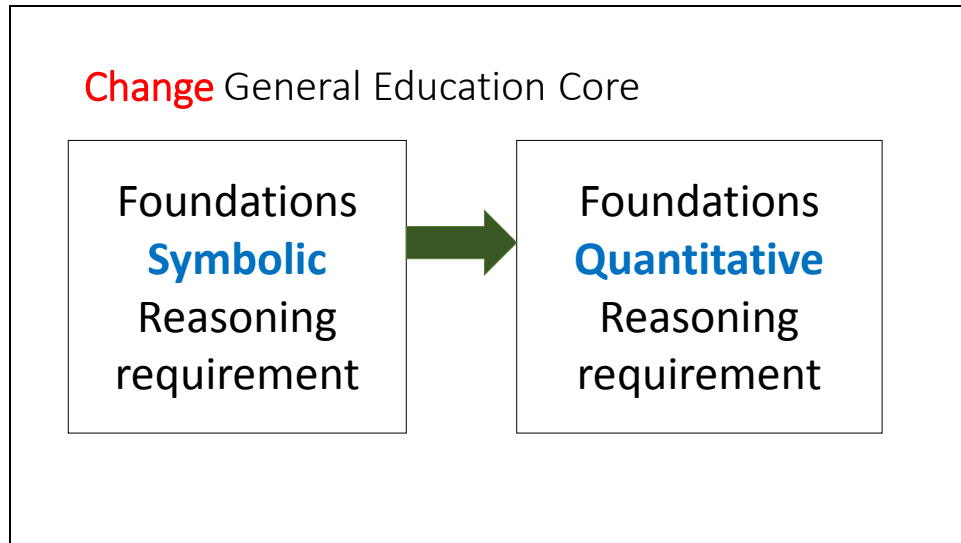
Kiana Shiroma, Asst Spec, Pre-Health/Pre-Law Advising Ctr

Monica Stitt-Bergh, Assoc Spec, Assessment Office

Gary Tachiyama, Advisor, Student Support Services

We come from across the campus. It was intentional by the four groups that formed the QRWG to select working group members from no departments that offer FS.

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After much consideration, research, and extensive consultation, we developed a plan in which there would be one change to the General Education core requirements: replace the current Foundations Symbolic Reasoning requirement with a Foundations Quantitative Reasoning requirement.

To develop the course hallmarks, we consulted expert sources, including the following:

- Syllabi, assignments, course descriptions, including StatWay, QuantWay, Math 100, science courses that require quantitative reasoning and financial literacy initiatives
- Association of American Colleges & Universities' Quantitative Literacy VALUE rubric
- Common Core Math Standards, grades 9-12 Recommendations from the Mathematical Association of America
- Publications such as Health Literacy and Numeracy and Mathematics and Democracy

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Enhance General Education Core

**In courses that lend themselves to QR,
faculty attend to students' QR skills**

E.g., Diversification Physical Sciences courses

Second, faculty who teach courses that lend themselves to QR attend to students' quantitative reasoning skills and build off the learning that took place in the foundational QR course.

This is NOT a change in requirements. Instead, it's asking faculty to be aware of how they can help develop students QR skills and provide appropriate learning opportunities.

We included this because of faculty responses to our requests for feedback and the research on teaching and learning indicate that increased, explicit exposure to knowledge and skills leads to more learning.

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QR definition and hallmarks

Based on national Association of American
Colleges & Universities VALUE rubric and WASC

Reviewed by many faculty and advisors

Third, we spent time on a QR definition and Hallmarks for a Foundations QR course. The Hallmarks were based on the national Association of American Colleges & Universities VALUE rubric, which was jointly created by faculty in colleges across the nation and is currently being used by hundreds of higher education institutions. We started with the WASC definition of QR and modified it.

The definition and hallmarks were reviewed by many faculty and advisors. The General Education Committee, the Foundations Board, and the UH System Foundations Board have also given feedback. We used everyone's input to revise.

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Extensive Consultation

**We emailed all UH faculty
(all campuses) three times.**

Materials on website

We have been committed to an open, collaborative, and transparent process.

All UH faculty (at all UH campuses) were emailed three times. Our materials, meeting minutes, FAQs, etc. were regularly posted on a website, which has received over 2,000 visits in the last year. Comments via email from over 60 individual faculty members. Because this is a general education issue, it is important to involve our colleagues at other UH campuses. We received feedback from faculty at all of the other (9) UH campuses.

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Extensive Consultation

- Affected departments
- UHM Council of Academic Advisors
- UHM Department of Mathematics
- UHM General Education Committee
- UHM Foundations Committee
- UHM Arts & Sciences Faculty Senate Executive Committee
- UHM Deans and Directors
- UH System-wide Foundations Committee
- UH Academic Advising and Transfer Network
- UH University Council on Articulation
- UH Council of Chief Academic Officers
- UH All-Campus Council of Faculty Senate Chairs

In addition, we made sure these groups and committees were aware of our plans and requested they give feedback. Some of these groups were consulted more than one time. A representative from the QRWG met in person with all of the committees/boards listed and most of the groups.

[A Ka Leo article was published on the topic and our efforts..]

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Addressing concerns

Only 3/81 “no QR” comments

A) Implementation concerns

Response:

- Start in 2018
- Provide support
- Existing FS courses already satisfy QR hallmarks

B) Loss of symbolic reasoning

Response: UHM’s need for students to have QR outweighs continuation of FS

Out of the 81 comments we received via email, only 3 said that Mānoa should not pursue a Quantitative Reasoning requirement.

Overall feedback was positive. We received comments that indicated misunderstandings and we addressed those individually and revised our documents to increase clarity and prevent further misunderstanding.

We did receive some comments expressing concerns.

Concerns centered on implementation. To address those, we

--created a timeline in which the requirement would go into effect with the fall 2018 incoming class.

--engaged in conversations with the General Education Office and the Learning Assistance Center to start planning how support can be provided to faculty and departments

--and finally, we have looked into the current FS courses and find that QR hallmarks are already being satisfied which will ease transition

A second concern was the loss of a symbolic reasoning requirement.

--The QRWG agrees that symbolic reasoning is valuable. However, the need for the students to have QR outweighs keeping FS and adding QR which would increase students’ time to degree.

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Broad Support

“. . . replacing the Foundations SR with a QR [is] the best option across all departments. . . . Thanks for working on this much needed project!” (Mānoa faculty, History)

“I found that QR was excellent for students pursuing non-STEM majors” (Mānoa teaching assistant, Bio-engineering)

“Yes, UH Mānoa should add a QR requirement to the GE . . . UH Hilo already has two QR requirements” (Hilo faculty, Art History)

As I mentioned earlier, we used an open process during the last year that is characterized by extensive consultation and use of feedback received. Our process has been inclusive and welcomed by faculty and administrators at Mānoa and across the system. The result is broad support for our plan. Here are three representative quotes from faculty who provided feedback.

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Mahalo for your consideration