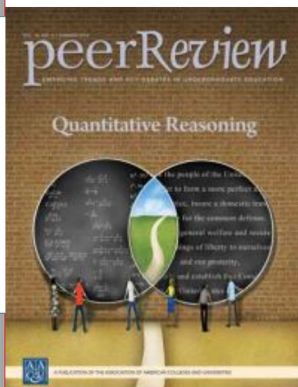




# Association of American Colleges & Universities

CELEBRATING 100 YEARS OF LEADERSHIP FOR LIBERAL EDUCATION

[Home](#) > [Peerreview](#) > [2014](#) > [Summer](#) > [From the Editor](#)



Summer 2014, Vol. 16, No. 3

## Current Issue

Search Periodicals

Search

## TABLE OF CONTENTS

[Overview](#)

[From the Editor](#)

[Quantitative Reasoning: The Next "Across the Curriculum" Movement](#)

[Beyond Calculation](#)

[Improving Success of Students in Introductory Mathematics and Statistics Courses](#)

[Quality Collaborative to Assess](#)

[Quantitative Reasoning: Adapting the LEAP VALUE Rubric and the DQP](#)

[Quantitative Literacy VALUE Rubric](#)

[Service Learning in a Quantitative Reasoning Course](#)

[The Quantitative Skills Center at Pomona College: Year One Review](#)

[Toward a Numerate Citizenry: A Progress Report](#)

Peer Review

## From the Editor

By: [Shelley Johnson Carey](#)

In 2012, founder and editor-in-chief of the *FiveThirtyEight* blog Nate Silver aggregated poll data to perform a statistical analysis that allowed him to correctly predict that Barack Obama would be the presidential election winner. He also correctly forecasted the outcome of all thirty-five US Senate races held that year. After the election, Trudy Steinfeld, New York University's executive director of career development, wrote in *forbes.com* that Silver had "made math cool" and she reported "a notable increase in the number of students asking how they might investigate careers involving polling or data analysis." She finished her remarks by listing a range of over twenty careers—from animator to urban planner—for which math skills "can make all of the difference."

While not every student will use complex math skills professionally, in this data-rich era when information from the Internet is available instantly, all students must graduate with the ability to analyze and synthesize knowledge of the world around them. From deciding whether it is more advantageous financially to buy or lease a car to understanding the devastating effects of greenhouse gases on climate change, graduates need the ability to process quantitative information. This capability is called many things: *quantitative reasoning*, *quantitative literacy*, and *numeracy*.

The National Numeracy Network, an organization dedicated to developing this capability in all citizens, addresses the use of these various terms with this explanation:

Some call it *numeracy*, an expression first used in the UK's 1959 "Crowther Report" to include secondary school students' ability to reason and solve sophisticated quantitative problems, their basic understanding of the scientific method, and their ability to communicate at a substantial level about quantitative issues in everyday life. Others call it *quantitative literacy*, and describe this comfort [and] competency... in working with numerical data as being as important in today's highly quantitative society as reading and writing were in previous generations. Still others refer to it as *quantitative reasoning*, emphasizing the higher-order reasoning and critical thinking skills needed to understand and to create sophisticated arguments supported by quantitative data.

In this issue of *Peer Review*, we use all three terms in various articles below, depending on the particular focus of each article.

This issue of *Peer Review* offers many lenses on this important topic, including discussions on why quantitative reasoning should be taught interdisciplinarily and across the curriculum, and why quantitative reasoning classes must move beyond calculation to include issues surrounding social constructions. Also included are articles highlighting innovative courses, including one that blends service learning with a quantitative

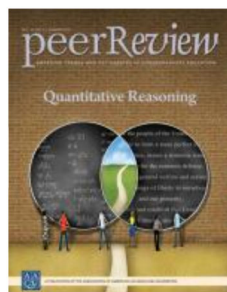
reasoning curriculum and an introductory math course that uses faculty taskforce findings to increase student success. Another author provides practical advice based on lessons learned after establishing a campus quantitative reasoning skills center. Finally, we explore how the quantitative literacy movement has progressed in the past twenty-five years.

The Association of American College and Universities' LEAP Essential Learning Outcomes include quantitative literacy as one of its six intellectual and practical skills important for all students to acquire as part of a high-quality liberal education. This facility with quantitative information, as defined in the VALUE rubrics, is "a habit of mind," competency, and comfort in working with numerical data. Individuals with strong quantitative literacy skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence and they can clearly communicate those arguments in a variety of formats (see page 17 for the full rubric and next steps for use of the VALUE quantitative literacy rubric).

Strong quantitative reasoning skills empower students to gain insight into many of the world's most complex problems. An earlier *Peer Review* article from 2011 got it right. Shannon W. Dingman and Bernard L. Madison suggest that "[T]he educational experiences we offer to students need to reflect this complicated world in which they operate... in fact, we must work to ensure that students possess both the knowledge and skills desired of a learned citizenry."

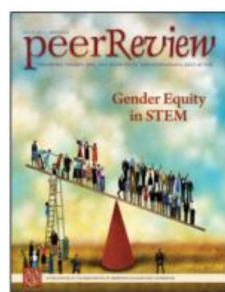
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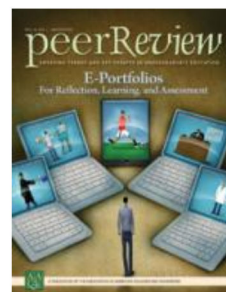
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