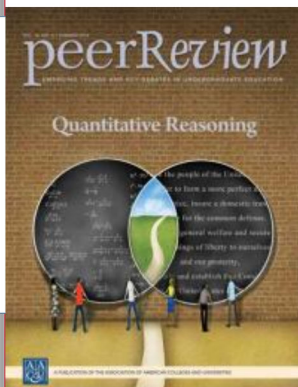




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Peer Review

Toward a Numerate Citizenry: A Progress Report

By: Nathan Grawe

The modern quantitative literacy (QL) movement finds its seeds in the 1959 Crowther Report on QL in UK secondary schools (in which the synonym “numeracy” was coined). Early years of the movement were marked by predictable debate over how to conceptualize QL and its relationship to mathematics, but the late 1980s and early 1990s provided articulation of QL as the ability to apply quantitative evidence to arguments in broad contexts of personal and public life. Twenty-five years on, what has been accomplished and what remains to be done?

Most in higher education recognize that innumeracy is a problem requiring attention. With a growing number of national statements like QL’s inclusion among the AAC&U’s Essential Learning Outcomes and curricular reforms on individual campuses, it is quickly becoming unacceptable to proclaim, “I just don’t do numbers.” These institutional reforms have been accompanied by a wide range of course and assignment revisions that have bubbled up to full-blown curriculum reforms such as state requirements or the Carnegie Foundation’s Quantway initiative, which has developed a QL curriculum for two-year colleges. And while innovation in high school curricula can be slowed by regulations, the twenty-fold growth in AP statistics examinees since 1997 to almost 170,000 per year suggests that change is afoot even in K–12 (Rodriguez 2012).

While curricular reform must ultimately be local to meet the particular institutional circumstances, the work is made infinitely easier by the development of an overlapping set of professional networks. The Mathematical Association of America’s special interest group on QL (SIGMAA-QL), the National Numeracy Network (NNN), and Project Kaleidoscope (PKAL) host professional development workshops, run conferences, archive examples of QL-rich assignments and courses, and nurture cross-pollination of ideas. The 2007 inception of the journal *Numeracy* has further provided a venue for scholars to engage in extended conversation about QL and its advancement.

Despite this progress, Steen’s 2001 warning remains disturbingly current: “Unfortunately, despite years of study and life experience in an environment immersed in data, many educated adults remain functionally innumerate.” The 2012 Program for International Student Assessment (PISA) test of mathematical literacy reported that fewer than 10 percent of American students exhibit strong (level 5 or 6) QL skill (National Center for Education Statistics 2012), a result largely unchanged from 2003.

As with any assessment tool, the PISA is imperfect and some may question whether it accurately captures the concept of QL. While the last twenty-five years have seen the development of several multiple-choice exams (notably at James Madison University and Bowdoin College) and rubric-based assessments

for application to open-ended student work (notably at AAC&U and at Carleton College), far too little is known about the efficacy of the many curricular experiments noted above. To be sure, the power of any educational intervention will vary from context to context, and I am not advocating for a single measure. Still, the foundational observation of the QL movement is that consideration of quantitative evidence invaluablely enhances our ability to understand many issues. It would seem obvious then that we should be eager to collect assessment data to ensure that efforts to improve QL curricula lead to demonstrable student learning gains.

We must continue to push forward both on our campuses and, through administrators' support of faculty involvement, in national organizations such as SIGMAA-QL, the NNN, and PKAL. With sustained engagement, we will be able to capitalize on the progress of the last twenty-five years and ensure a numerate citizenry for the twenty-first century.

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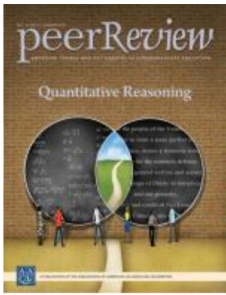
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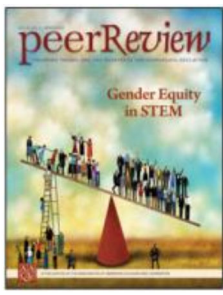
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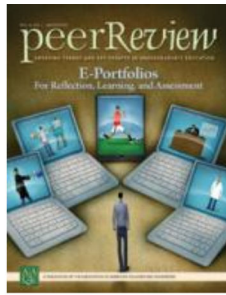
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