



Information Sheet: The Application of Title IX to Science and Engineering



Title IX of the Educational Amendments of 1972 is a law prohibiting discrimination based on sex in educational programs that receive Federal funds. Since the law's enactment, girls' and women's participation in sports is a great civil rights success story (National Collegiate Athletic Association, 2005), having tremendous positive benefits for American society. Some (Musil, 2007) think it boosted the entry of women into higher education. For decades the law was applied through a network of coordinators in state and school district offices, primarily to the problem of inequity in sports programs and sexual harassment. The legislation as stated offers support for targeted programs in science and engineering.

Title IX as a Tool for the S&E Talent Crisis

The talent crisis in science and engineering (S&E) has been the subject of many national reports over the same period of time. Funding and educational programs were put in place to reach out to groups that were excluded from S&E. Federally funded programs at the National Science Foundation aimed at women, minorities, and the disabled were initiated in response to the Equal Opportunities Act of 1981. Most outreach programs in S&E education, Federally funded or not, do not reference any relationship with Title IX.

At a workshop on the chemical workforce convened in 2000 by the National Academy of Sciences, Debra Rolison, a research chemist, noted that although the numbers of female graduates in chemistry had increased, the rate of those gaining faculty positions was lagging far behind. She argued that since S&E departments were receiving Federal funding, they were subject to compliance with Title IX and should be held accountable (Rolison, 2000a; Rolison, 2000b; Rolison, 2003).

Two years later, Senator Ron Wyden (D-OR), Chair of the Senate Subcommittee on Science, Technology, and Space, and Senator Barbara Boxer (D-CA) requested a Government Accountability Office (GAO) audit of Title IX enforcement among agencies funding science and engineering (Wyden, 2002; Wyden, 2003). The GAO report was issued in 2004. It reviewed the status of women's participation in S&E and promising practices. It recommended that NASA, Energy, and NSF take more action in conducting compliance reviews, as they are providing billions of dollars in Federal funding to universities and should expect more progress (U.S. Government Accountability Office, 2004).

Advocacy

Many strong statements and actions followed (National Women's Law Center & Women's Prerogative, 2004; Zare, 2006). Catherine Pieronek published a legal analysis comparing the application of Title IX to sports versus academics, and provided specific interpretations of how it would apply to S&E programs (Pieronek, 2005). The Society of Women Engineers issued a position paper and made the issue a priority for the organization in 2008 (Society of Women Engineers, 2006; Pieronek & Shanahan, 2008).

Compliance Reviews

Various efforts by the science press to track the response to the GAO report yielded very little information (Mervis, 2002; Munro, 2006; "Federal Inquiry on Women in Science," 2006; Bhattacharjee, 2007). A few

compliance reviews were conducted, specifically by NASA, and participants reported on their experience (Wilson & Birchard, 2006; Smith & Pieronek, 2008). Mostly, the agencies cited a lack of resources to conduct more reviews, or delegated their responsibility more clearly elsewhere, to the Department of Education or to the Office of Science and Technology Policy (Bhattacharjee, 2007).

Metrics and Indicators

How can anyone measure whether an institution is compliant with Title IX, that is, offering equal opportunity to female students? Various measures regarding the inclusion of women in S&E in universities have been proposed and/or developed by a number of projects. For example, regularly collected national statistics were enhanced and published describing the nation's top fifty science and engineering departments (Nelson & Rogers, 2005). Tables compared graduation rates of women and minorities (the available hiring pool) against profiles of the faculty, by institution and by top department. The American Association of University Professors identified four measures of gender equity and published data on 1,400 colleges and universities, across all fields not just S&E (AAUP, 2006). Studies commissioned by Senator Wyden looked at hiring, tenure and promotion policies, demographics, employment experience, and allocation of resources (National Research Council, 2008). A workshop funded by the National Science Foundation discussed NSF's use of a criterion for awards called "Broader Impacts" and proposed common metrics and reporting by universities that could be used to substantiate Title IX compliance (Cady & Fortenberry, 2008). The report *Beyond bias and barriers* offers a detailed discussion as well (Committee on Maximizing the Potential of Women in Academic Science and Engineering, 2007).

Recent Milestones

In 2007 a pivotal report – *Beyond bias and barriers* – made the recommendation that an inter-institutional organization be created to monitor compliance with Title IX (Committee on Maximizing the Potential of Women in Academic Science and Engineering, 2007). Several Congressional hearings endorsed the report (U.S. House of Representatives Committee on Science and Technology, 2007). Representatives Eddie Bernice Johnson (D-TX) and Silvestre Reyes (D-TX), Co-Chairs of the House Diversity and Innovation Caucus, introduced H.R. 3524 Gender Bias Elimination Act of 2007 to implement its recommendations (U.S. House of Representatives, 2007). In February, 2009, the bill was reintroduced in the 111th Congress as H.R. 1144 Fulfilling the Potential of Women in Academic Science and Engineering Act (Johnson, 2009).

Recommendations

A basic recommendation among the sources cited above is that we need to raise awareness that Title IX does apply to academic programs in S&E and we need to dispel the false notion that it pertains to sports only. Staff at universities should review their minimal compliance in terms of having a coordinator, grievance procedures, and campus communication that they do not discriminate on the basis of sex. Directors of programs targeted toward women (outreach, recruitment, retention, graduation) should cite Title IX compliance as a legal foundation for their investment, and contribute toward the development of data about students and faculty that show differences in educational opportunity as appropriate and feasible for their institution. Institutions now report gross statistics to national agencies, but they can go a step further and assess their own status in greater detail, using available "climate survey" tools (for example, *Assessing Women in Engineering*, 2009) that address the wide range of factors that are known to contribute to women's participation, such as student and faculty experience in the university environment.

Recommendations in *Beyond bias and barriers* addressed a national response and actions to strengthen Title IX compliance through an umbrella organization (Committee on Maximizing the Potential of Women in

Academic Science and Engineering, 2007). The Committee urged the development of standards and a model "climate survey" instrument for institutional self-assessments. In addition, they urged that Federal S&E agencies develop a better process for compliance review and sanctions for noncompliance.

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