



SWE General Position Statement on the Application of Title IX to the Science, Technology, Engineering, and Mathematics (STEM) Fields

One of the most daunting challenges facing engineering education today is attracting students from the entire spectrum of American society to the field. As the number of jobs requiring engineering and scientific training grows, the number of students preparing for those careers remains level, with women and minorities severely underrepresented.

Title IX of the Education Amendments of 1972¹ requires gender equity for boys and girls in every educational program that receives federal funding. In the 34 years since the enactment of Title IX, girls and women have experienced tremendous progress in educational programs and activities.

Women now comprise nearly 60 percent of all undergraduate college students, and nearly half of all master's, doctoral, law and medical students.² Yet women remain under-represented in engineering and the physical sciences, collectively known as STEM (science, technology, engineering and mathematics) disciplines, earning only 20 percent of all bachelor's degrees granted in engineering and physics, and a decreasing share of bachelor's degrees in mathematics and computer science.³

Since the impact of Title IX has been the most significant and visible with regard to women's participation in collegiate athletics, many believe that Title IX applies only to athletic programs. But athletics is only one of 10 key areas addressed by the law, which also applies to: Access to Higher Education, Career Education, Education for Pregnant and Parenting Students, Employment, Learning Environment, Math and Science, Sexual Harassment, Standardized Testing and Technology.

As National Science Board Chairman Warren Washington said in *Science and Engineering Indicators 2004*, "The United States is in a long-distance race to retain its essential global

¹20 U.S.C. §§ 1681-1688 (2000).

²National Science Foundation, Division of Science Resources Statistics, *Women, Minorities, and Persons with Disabilities in Science and Engineering: 2004*, NSF 04-317 (Arlington, VA, 2004), hereafter *NSF Report*.

³*Id.*

advantage in S&E human resources and sustain our world leadership in science and technology. For many years, we have benefited from minimal competition in the global S&E labor market, but attractive and competitive alternatives are now expanding around the world. We must (now) develop more fully our native talent."⁴

Introduction

Enforcement of Title IX has helped women to achieve a measure of equity in intercollegiate athletics. In 1972, women comprised approximately 15.0% of collegiate student-athletes,⁵ despite comprising 43.7% of bachelor's degree recipients.⁶ After the enactment of Title IX, many colleges and universities dramatically expanded their athletic offerings for women. By 1992, however, 54.3% of all bachelor's degree recipients were women,⁷ but women represented only 34.8% of student-athletes at NCAA member institutions.⁸

Thus, the 1990s saw a wave of Title IX litigation, which had the dual effects of forcing educational institutions to reevaluate their commitment to women's athletics and educating students and their parents about their rights under the law. And, because of increased awareness of their obligations under the law, educational institutions underwent a second wave of athletics program expansion for women. As a result, women today comprise 42.8% of student-athletes at NCAA member institutions.⁹

These gains in athletics have inspired many concerned about the gender disparity in STEM education to explore how Title IX can help women to achieve similar gains in academic programs still dominated by male students. And although the enforcement scheme relevant to athletics differs in fundamental and important ways from the enforcement scheme relevant to academics,¹⁰ two lessons learned from athletics do apply to academics: first, educational

⁴ National Science Board, *Science and Engineering Indicators 2004*.

⁵ National Collegiate Athletic Association, *Sports and Recreational Programs of Universities and Colleges 1957-1982* (NCAA). Please note: Between 1956-1957 and 1981-1982, participation rates were collected in five-year intervals. The data for these years was not collected in the same manner as the data from 1982 to the present and it includes recreation programs.

⁶ *NSF Report*, *supra* note 2.

⁷ *Id.*

⁸ National Collegiate Athletic Association, *NCAA Year-by-Year Sports Participation, 1981-82 – 2004-05* (2006).

⁹ *Id.*

¹⁰ Pieronek, C.F., "Title IX and Gender Equity in Science, Technology, Engineering and Mathematics Education: No Longer an Overlooked Application of the Law," *Journal of College and University Law*, vol. 31, no. 2, pp. 291-350 (2005).

institutions need to be educated about their obligations under the law; and second, students and their parents need to be educated about their rights under the law. A 2004 report by the U.S. Government Accountability Office (GAO)¹¹ and a 2004 “Dear Colleague” letter issued by the U.S. Department of Education (DED) both stress the need for applying Title IX to STEM fields to address continued disparity.¹²

Title IX imposes four basic requirements on educational institutions in exchange for coveted federal funds: (1) give assurances to federal granting agencies that programs and activities comply with Title IX; (2) designate at least one employee to coordinate Title IX compliance efforts; (3) establish a Title IX grievance procedure; and (4) disseminate information about Title IX nondiscrimination policy.¹³ The GAO report indicates that educational institutions do comply with the first of these requirements, because most funding contracts require the educational institution to sign such a statement of compliance when making the grant request.

However, with regard to the other three basic obligations, the DED letter indicates that recent investigations have uncovered “several instances” of noncompliance, and the GAO report indicates that federal granting agencies do not routinely verify whether educational institutions have satisfied these obligations. Further, the GAO report points out that students and faculty do not know that Title IX applies to anything other than athletics, and relatively few Title IX complaints had been filed with the four federal agencies that grant the most funding to STEM research at the college or university level. The report concluded that faculty and students did not file complaints because they did not know they could, and implied that a comprehensive campaign to educate students and faculty about their rights could lead to greater exercise of those rights.

Another obstacle to enforcing Title IX rights is the fear of retribution. As the GAO report noted, some faculty and students “suggested [that] they would be unlikely to file a complaint for fear of retribution from supervisors or colleagues,”¹⁴ which could ultimately hamper faculty from achieving tenure or students from earning their degrees. Although civil rights laws clearly prohibit retaliatory actions directed toward individuals who act to enforce their civil rights, further education could clarify this matter among faculty and students.

In the K-12 environment, parents need to know that certain practices might unfairly discriminate

¹¹U.S. G.A.O., *Women’s Participation in the Sciences Has Increased, but Agencies Need to Do More to Ensure Compliance with Title IX*, GAO-04-639 (Washington, DC, 2004), hereafter *GAO Report*.

¹²Kenneth L. Marcus, Deputy Assistant Secretary for Enforcement, *Dear Colleague Letter on Title IX Grievance Procedures, Postsecondary Education* (Aug. 4, 2004).

¹³*Code of Federal Regulations*, vol. 34, part 106 (2004).

¹⁴*GAO Report*, *supra* note 11.

against their daughters. An honors math or physics class full of boys does not, by itself, violate Title IX. But if that condition occurs because the teacher in charge of the class actively discourages girls from participating, or because counselors routinely steer girls away from such demanding courses, it is more than prejudice – it is discrimination. Again, a comprehensive education campaign could alert parents to situations that deserve more explanation.

While most educational institutions do sign *pro forma* statements that assure federal granting agencies that they comply with Title IX, many go no further in discharging the obligations set forth in the implementing regulations. Educational institutions should be challenged to prove that they have appointed a Title IX compliance officer, have established a Title IX grievance policy and have disseminated information about that grievance policy. Frequently, organizations such as the National Women’s Law Center publish lists of schools deemed, in their judgment, noncompliant with various aspects of Title IX with regard to athletics. These lists do pose some problems, in that they do not allow any visibility into why an educational institution might actually be in compliance with the law but appear, on the surface, not to be. Nevertheless, publicizing the names of those educational institutions that do not meet the most basic Title IX requirements can serve to educate the public about which schools take their gender-equity obligations seriously, and to alert those educational institutions to their noncompliance.

The GAO Report points out very clearly that the federal funding agencies that grant the most money to STEM research in higher education have not engaged in any comprehensive monitoring and enforcement activities to ensure that grant recipients do not discriminate on the basis of gender.¹⁵ In their responses to the report, the federal funding agencies other than DED – that is, the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE) and the National Science Foundation (NSF) – all indicated that they relied on DED to conduct such investigations. DED, on the other hand, indicated that lack of financial and personnel resources prohibited the agency from embarking on any comprehensive review of Title IX compliance in STEM fields, particularly when faced with congressional directives to conduct other investigations into compliance with other similar laws. In the wake of the report, however, NSF has announced plans to conduct a Title IX review of the science departments at four postsecondary institutions during 2006, but will not publicize the names of the institutions reviewed or the questions asked; and NASA has announced plans to conduct a Title IX review of the aerospace engineering and physics departments at the University of Michigan.¹⁶ While these selective reviews are a start and may uncover interesting information relevant to the five institutions involved, more widespread reviews should help to bring about more widespread change.

¹⁵GAO Report, *supra* note 11.

¹⁶Wilson, R. and Birchard, K., “Looking for Gender Equity in the Lab,” *Chronicle of Higher Education*, Jan. 20, 2006.

Title IX should not and cannot force women to study in disciplines in which they are not interested. But active enforcement and application of the law can uncover policies, procedures or practices that discourage women from pursuing education in the traditionally male-dominated STEM disciplines. In other words, an educational institution that actively embraces Title IX's mandates can create an environment that ensures that any under-representation of women in STEM disciplines results from the personal interests of women, and not from environmental factors that discourage them from pursuing education in these fields.

Recommendations

To remain competitive in a global economy, the U.S. must develop its technological literacy, talent, and expertise across all sectors of society. SWE offers the following recommendations to improve the climate for women in STEM disciplines through the application of Title IX:

- Policymakers should step up enforcement of Title IX with regard to STEM disciplines, and fund programs that will help educate students and their parents, and STEM faculty, of their rights under the law.
- Educational institutions should fulfill their obligations under the law; examine their institutional policies, procedures or practices for gender bias; provide suggestions for areas to examine when evaluating programs for gender bias; and make this information accessible to the public.
- Federal funding agencies should fulfill their monitoring and enforcement obligations under the law, and make this information available to the public.