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Alliance *viewpoint*

Technicalities & Ideology Limit MWD Participation in SMET Workforce

Recently, we read that *Forbes* magazine thinks there are too many American math and science Ph.D.s. Imagine our consternation, especially since we just completed a request from the Executive Office of Science and Technology Policy for our views on why there are so few minorities, women and persons with disabilities (MWD) in the science, mathematics, engineering and technology (SMET) workforce. While some think that there are just too many scientists, academia, the private and public sectors are all competing for the few MWD candidates in the SMET pipeline and asking how can academia deliver more.

While reasons for this dearth are numerous, and solutions are hard to come by, we can identify seven distinct factors that contribute to this problem.

Three of these factors are technical—lack of student and parental understanding of SMET careers; poor and/or undervalued SMET instruction and mentoring, and the consistently low standardized test scores of MWD applicants. The remaining reasons are ideological and speak to how we as Americans think and feel about science and technology, about minorities, women and persons with disabilities and about ourselves. These ideological factors include the elitist cultural theory of SMET ability; the perceived incompatibility of science and technology with gender/cultural roles; the current anti-affirmative action movement that is fostering a climate of racial, sexual and cultural hostility, and the cold, unwelcoming climate many MWD students find on college campuses, especially top tier Research 1 schools, that all too often leads many of them to turn back before they have reached their goal.

Technical problems are a matter of lack of resources. Today, society needs to demonstrate its willingness to utilize its complex array of social agencies for its own benefit with resolute determination that this action be governed by the intent to bring fairness and equity to underrepresented peoples, knowing this will ultimately benefit us all. Society must ask itself how far is it willing to go to bring the remedy of resources to the technical problems of limited MWD participation in the science/technology workforce. Is government willing to identify the SMET leaders of today and encourage them to commit to more public participation? Can the communications industry be



convinced to produce a positive and more accurate portrayal of scientists, mathematicians, engineers, technology experts and the work that they do?

To effectively address the problem of the lack of MWD participation in the SMET workforce, work must start at the K-12 level. Can state boards of education, local school boards, national and local teachers' unions work together to get more SMET information into the schools and to improve the credentials of preschool, primary and secondary school SMET teachers? Who will fund on-line teacher workshops and resource identification? Who will facilitate bringing noted scientists, engineers and researchers into the schools in person, on videotape or on line?

It is well accepted that there are not enough MWD mentors available, but this is a circular problem—there are not enough MWD mentors
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Too many scientists?

Technicalities and Ideology Limit MWDs in SMET Workforce

because there are not enough underrepresented students in the SMET educational pipeline, so there is limited MWD participation in the SMET workforce. This issue must be kept at the forefront and continually addressed, but its resolution will be slow and incremental. In the meantime, how far is government willing to go to reap mentors from the crops of able-bodied white males that dominate SMET fields? Can colleges and universities, tenured professors and academic consortiums work together to increase the professional merit of mentoring and encourage mentoring programs for underrepresented people in SMET fields? Is government willing to fund institutions and associations that emphasize mentoring as an outcomes-oriented approach to recruitment, retention and encouragement of MWD into the SMET workforce? Will corporations encourage summer mentoring and internship programs for MWD students?

Finally, from a technical standpoint, how will society work with K-12 educational and behavioral counselors to provide guidance to MWD students starting to realize their SMET potential. Will government programs encourage these students to participate in school activities, like SMET tutoring, to make themselves well rounded college applicants and help them prepare for taking and perhaps retaking SAT tests?

Remedies to these technical problems are difficult, but ideology is an even harder nut to crack. How can society help to open minds, calm fears and eradicate racial, sexual and cultural bias? It will take a lot of work to change the elitist culture of science, to make SMET more open, respectful of differences and welcoming to underrepresented groups. One cannot legislate it, but social and financial pressure applied continuously and in the right places can be surprisingly successful. Hopefully, we can think of ways to stem the rising tide of reverse discrimination litigation.

Back in the days of the industrial revolution the captains of industry had no problem with manipulating the American social

system, education or communication networks to produce the workers and consumers they needed. Today corporate America, through advertising and product decisions, can influence to an even greater extent our social values and create needs/desires to link markets with consumers. Can the gatekeepers of our communication networks be encouraged to promote SMET and minorities, women and persons with disabilities in their products, advertising and communication campaigns? This is a challenge that speaks to the issue of changing the perceptions of and in our diverse nation to sustain our competitive edge for future generations.

Also, government and academia need to keep up efforts to add MWD to policy- and decision-making boards in all the sciences since their perspectives are not generally articulated. Years ago, some of the Historically Black Colleges and Universities (HBCUs) used to require year-long honors seminars of all students with a certain grade point average. Together these students and a faculty mentor would talk about the future, their talents, their obligations and how they would cope in the real world. Perhaps the government could work with colleges and universities, high schools and junior high schools and academic organizations and consortiums to promote these kinds of future-oriented seminars to help young people get a glimpse into a future many do not currently envision.

Alliance viewpoint is a semi-annual policy letter published by the Leadership Alliance, a consortium of twenty-seven institutions of higher education, including leading research and teaching colleges and universities, dedicated to improving the participation of underrepresented students in Ph.D. programs. Please direct all comments, questions or requests to the Alliance press office, (212) 854-2968, or executive offices, (401) 863-1474.



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