



Open Forum on Broadening Participation in STEM (OFBP)

Reflecting on Our Reflections: Teachers for the 21st Century - by Shirley Malcom

Reflecting On Our Roots is a series of essays outlining some of the historical context of the field of broadening participation. The essays were originally published in the NSF INCLUDES Open Forum group on Trellis, and are now located in the new Open Forum on Broadening Participation microsite. Shirley Malcom is the Senior Advisor and Director of SEA Change at the American Association for the Advancement of Science and co-PI on NSF grant 1748345 which supports the NSF Open Forum on Broadening Participation in STEM.

Reading the original essay, "Teachers for the 21st Century," I was moved to consider how much has changed since that was written and how much has not. Teachers are still central to inspiring and creating the next generation of scientists, engineers, mathematicians and health professionals we will need to address the even greater challenges on the horizon that we face as a nation. It was interesting to note that in the original essay climate, poverty and food insecurity made the list, but emerging infectious diseases were not even on our radar! And suddenly that challenge trumped almost everything else! Teachers were suddenly thrown into needing to provide online instruction because of a global pandemic! How to keep everyone engaged and safe, learn new techniques for instruction and deal with the social isolation and concern for students who are trying to learn without proper access to the technology. This wasn't covered in their college or university education programs!

So now we are looking at students' learning losses, notably in mathematics. Teacher retirements and resignations have increased, and districts are scrambling to address shortages. And then there are the ongoing problems of teacher shortages of teachers of science and mathematics teachers from minoritized populations. However, there are also notable successes, In 2020, 100K in 10 has exceeded its goal of hiring "bringing 100,000 excellent K STEM teachers to American classrooms by 2021 in 10 years. The Robert Noyce Teacher Scholarship Program has just celebrated its 20th anniversary, preparing highly qualified teachers who, in exchange for financial support for their STEM education programs, commit to service in high needs schools. But even with these successes the challenges remain, largely because we have not fixed the larger system of professional education and continuing professional development for STEM teachers to which these and other worthy efforts contribute positive results.



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Why must we depend on special programs? Why can't the same energy be built into regular programs? What transformations do we need to make these things that happen in special programs normative in regular programs? Is it just the preparation programs that need to be reviewed or also challenges within the profession itself, such as salaries, working conditions, and satisfying the expectations of multiple stakeholder groups?

A panel of the Carnegie Forum on Education and the Economy produced a report in 1986, "A Nation Prepared; Teachers for the 21st Century" that raised similar questions about the teaching profession overall about 36 years ago. I don't think we are likely to survive as a country by kicking these issues around for another 36 years. The economy has become even more needful of a high quality, diverse STEM workforce; we need science, engineering, and health professionals to address the challenges faced by the country and the world. As with many reports, some things have withstood the test of time and others have not. With 20/20 hindsight it's clear why some elements did not gain traction. But the times have changed as well as the societal forcing factors have become more obvious in regard to STEM educators. Engaging in discussions of what didn't work and why may help us see what might work and how. Perhaps we need to drag all of those 1980s and 1990s reports off our shelves to see what they might contribute to thinking anew about changing systems to produce, promote, support, retain and empower teachers who can enable success by each and every student.