

The Future of STEM Education – summary of discussion held at the CBMS Council Meeting on December 4, 2020

A related discussion centered around the 2020 National Academies [Symposium, *Imagining the Future of Undergraduate SYEM Education*](#)

This gathering asked participants to envision what STEM education might look like in 2040 and how we might get there, what should mathematics education look like in 2040? What should the curriculum be - one that supports students in moving into industry as well as heading toward research/teaching careers? What are the implications for institutions? Professional organizations?

The discussion began with statements of the importance of modeling and problem-solving across the mathematics curriculum. There was recognition both that these develop the skills that students will need in their careers and that this is the approach that is most likely to excite and motivate students from under-served groups. Part of this involves breaking down silos. As one participant remarked, “The departmental structure: socially it makes sense, but intellectually it doesn’t.”

Pursuing the theme of breaking down silos, the group talked about the role of data science. Many statistics departments are now incorporating data science, but mathematics departments have been slow to embrace this field. The Joint Policy Board for Mathematics (AMS, ASA, MAA, and SIAM) has recognized that data science is broad field that can go in many different directions, but that mathematics, statistics, and computer science all have important roles to play. The recent ABET program for accrediting data science programs is standards based, but there is concern that data science may come to be dominated by computer science. Those who have reviewed new departments of data science have found that often there is little or no recognition that mathematics has a role to play.

Returning to the theme of equity, the group cited one of the commissioned papers for the symposium, [*Transformation in the U.S. Higher Education System: Implications for Racial Equity*](#) by Lindsey Malcolm-Piqueux. We need to fight against the messages that emphasize deficiencies or the need for “innate talent,” messages that serve to push people out.