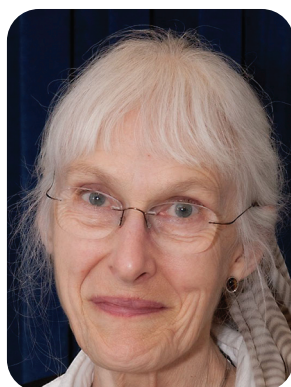




Award for Impact on the Teaching and Learning of Mathematics

The Award for Impact on the Teaching and Learning of Mathematics was established by the AMS Committee on Education (COE) in 2013. The award is given annually to a mathematician (or group of mathematicians) who has made significant contributions of lasting value to mathematics education.



Deborah Hughes
Hallett

Citation

Deborah Hughes Hallett

Professor Deborah Hughes Hallett, currently professor of mathematics at the University of Arizona and adjunct professor at the Harvard Kennedy School of Government, has devoted her professional career to improving the teaching and learning of mathematics and promoting international cooperation between mathematicians. She has served on

committees for the National Academy of Sciences and organized three international conferences on the teaching of mathematics. She is a fellow of the American Association for the Advancement of Science and the author or coauthor of seven books, which have been translated into several languages.

It is not an exaggeration to claim that Professor Hughes Hallett has had a profound impact on the teaching and learning of collegiate mathematics. She was one of the foundational figures of the calculus reform movement in the early 1990s. With Harvard professor Andrew Gleason she formed the NSF-funded Calculus Consortium for Higher Education that resulted in a series of textbooks from algebra through multivariable calculus that have touched the lives of millions of students. These books helped instructors all over the world reimagine how mathematics should be taught and learned, placing greater emphasis on mathematical concepts and engaging students with

problems that make connections between graphical, numerical, algebraic, and verbal representations.

Collaboration is a hallmark of Professor Hughes Hallett's work. She has brought together a dynamic, diverse, and changing group of educators, including high school teachers, community college instructors, and faculty at four-year colleges and research universities, to work together to provide the best possible learning experience for the largest number of students. She has also been a beloved mentor to hundreds of people including graduate students, high school teachers, postdocs, and faculty at all levels of mathematics. She has taught thousands of students and mentored generations of teaching assistants and postdocs at the University of Arizona and Harvard Kennedy School of Government. Her mentees describe her as "math educator, teacher, mentor, and professor with a magic touch."

Professor Hughes Hallett has worked to improve the teaching and learning of mathematics and empower marginalized communities and women all over the world: Africa (Senegal, Niger), the Middle East (Lebanon, Oman, Qatar, Saudi Arabia, Turkey), and Asia (China, Brunei, Bangladesh, Guam). At the same time, her work is also cross-cutting in that she has helped to reframe the mission of undergraduate mathematics education as central not to just the sciences, engineering, and business, but to every discipline in which human decisions, empowered by quantitative reasoning, have the potential to affect public life.

For her many sustainable and replicable contributions to mathematics and mathematics education, the AMS is delighted to award Professor Hughes Hallett the 2022 AMS Award for Impact on the Teaching and Learning of Mathematics.

Biographical Note

Deborah Hughes Hallett is regularly consulted on the design of curricula and pedagogy for undergraduate mathematics at the national and international level, and she is an author of several college-level mathematics texts. With Andrew M. Gleason at Harvard, she organized the Calculus Consortium, which brought together faculty from a wide variety of schools to work on undergraduate curricular issues. In 1998, 2002, and 2006, she co-chaired the International Conference on the Teaching of Mathematics, attended by several hundred faculty from about 50 countries. She has designed courses in Brunei, Colombia, and Niger. Hughes Hallett was awarded the Louise Hay Prize and elected a fellow of the American Association for the Advancement of Science for contributions to mathematics education. She has also received prizes from Harvard, the University of Arizona, and the Mathematical Association of America.

Response from Deborah Hughes Hallett

Mathematics finds its way everywhere and into everything. It is an inspiration to me to see the excitement in students' eyes as they see mathematics illuminating something they are passionate about—racial justice, economic inequality, partisan redistricting, climate change, corruption, spread of disease, sports, astronomy, medical science, and language. There are still too many students who believe that mathematics is only useful “later”—a time that never comes. Wanting to challenge this, I taught a linear algebra course in which I decided all the discussions of applications should be written by people in the corresponding field, not mathematics. This quest took me to libraries I hadn't known existed and vividly demonstrated that mathematics is everywhere—law, archaeology, anthropology, demography, economics, business—ready for us to adapt for students. More recently, COVID-19 and climate change have provided data and contexts crying out for mathematics. My inspiration is to watch students find the courage to spread their mathematical wings and fly.

Who inspired me? Andy Gleason listened to everything and directed me not at all; Dan Flath has a breathtaking range of experience and equal patience; Bill McCallum sees the flaw in any argument, strengthening all of them; my Calculus Consortium colleagues invent ever better ways to engage students. Most of all, I have been inspired by my students, from the one who said “Deb, never do that again” to the author of the recent *Guardian* article “No one is born ‘bad at maths’” to the one who said an SIR model of COVID-19 made the pandemic much less scary.

Credits

Photo of Deborah Hughes Hallett is courtesy of Harvard Kennedy School/Rasvan Iliescu.