

Mary P. Dolciani Award

Al Cuoco

Educational Development Center

The 2018 Mary P. Dolciani Award is presented to Al Cuoco, Distinguished Scholar at Educational Development Center, for his contributions to mathematics education, especially the highly original and highly mathematical nature of these contributions to mathematics education and the national stature of his programs.

Dr. Cuoco has dedicated his professional life to all aspects of mathematics and the teaching of mathematics. He has worked as a teacher, as a mathematician, and as an educator, and has also made research contributions within both mathematics and mathematics education. Distinctive of his approach to mathematics education is his gentle but persistent emphasis on Mathematics at the Core. His ideas about mathematical habits of mind have had a powerful influence on the way mathematicians think about mathematics education and the way educators think about mathematics. As a result, these ideas were incorporated into the Common Core State Standards for Mathematical Practice.

Dr. Cuoco believes that students benefit when their teachers have a rich experience of doing mathematics for themselves, and he has worked hard to assure that teachers have access to such experiences. For many years, in conjunction with Boston University's PROMYS for Teachers program, he has organized sessions in which teachers and mathematicians collaborate on mathematical investigations arising out of their own teaching. He was also involved in Math Circle-type activities as early as 1999, when he founded a program called Building Regional Capacity, a collaboration of Lawrence Public Schools and the University of Massachusetts at Lowell, supported by NSF. The central activities were Study Groups for teachers, which were built around teachers, focused on mathematics, and run in public school settings in collaboration with mathematicians. Dr. Cuoco continues to this day to work closely with teachers at Lawrence High School—an urban Massachusetts school district.

Through his work in curriculum development, Dr. Cuoco has also brought mathematical habits of mind directly to students in their classrooms. He is the lead author of the highly regarded CME Project, a lively four-year curriculum that succeeds at illustrating mathematical habits of mind in the context of high school mathematics. The CME Project has brought rich mathematical thinking to students in New York, Chicago, Pittsburgh, Boston, and San Diego, among many other urban and rural communities. He has a vision of school mathematics informed by his own research in number theory and experience as high school teacher. He elevates high school mathematics into something interesting for students, something accessible, and something beautiful. By putting the discipline of mathematics at the center of his work, he elevates the work of teaching; mathematical ideas that are soft-pedaled by many curricula are addressed forthrightly.

Most recently, Dr. Cuoco's work has taken an equity focus. Together with national experts in equity and social justice and with teachers in the Pittsburgh Public Schools he is working to extend all of these models in ways that ensure all students have access to high quality mathematical materials and teaching.

Al Cuoco's life work closely mirrors Mary Dolciani's—a teaching career that blossomed into the development of curricula and textbooks for school mathematics. He is most deserving of the Dolciani Award.

Response

Wow. As far back as I can remember, mathematics has always been my haven, my refuge from the so-called real world. Almost by accident, I discovered that I could make my haven accessible to young people,

and that launched a career driven by two passions—for the discipline and for helping others learn to love the discipline. MAA has always been a home for people with this dual passion, and this award is one more example of MAA's dedication to bridge building.

I'm s lucky to be able to do this work. It's supported by brilliant friends and colleagues, most of whom make me look good. It's supported by my family: Micky, Alicia, Scott, and the wonderful young man, Atticus. It's supported by the talented and expert teachers I know who make me glad to be part of their profession. And it's supported by thousands of my high school students who made me understand that kids are much more talented than most grown-ups think.

Biographical Sketch

Al Cuoco grew up in the Boston area, earning his AB degree in Mathematics from Boston College in 1969. For twenty-four years (1969–1993) he taught mathematics at Woburn High School, serving as chair of the department from 1983 to 1993. In 1974, while still working full time at Woburn High School he earned his Masters Degree in Mathematics at Bowdoin College. Inspired by his involvement in the NSF Summer Institutes for Secondary Teachers at Bowdoin, he went on to earn his PhD in Mathematics at Brandeis University under the supervision of Ralph Greenberg. His highly regarded PhD thesis opened the field of higher dimensional Iwasawa Theory; he went on to publish three more influential papers, one with Paul Monsky, within the field. He eventually moved to EDC in 1991, where he has created deeply mathematical programs for students, teachers, and mathematicians inspired by his own personal experiences. Al co-authored, with Joseph Rotman, the MAA book *Learning Modern Algebra from Early Attempts to Prove Fermat's Last Theorem*. He has also published in each of the three MAA journals. He has served on many policy boards, including the Institute for Mathematics and Education, the Illustrative Mathematics Project, and the Conference Board of the Mathematical. Currently, Al is a member of the International Program Committee of ICMI Study 24.