

# 2017 AMS Award for Impact on the Teaching and Learning of Mathematics

KRISTIN L. UMLAND has received the 2017 AMS Award for Impact on the Teaching and Learning of Mathematics.



**Kristin L. Umland**

## Citation

Kristin Umland is a mathematician and mathematics educator who worked in the Mathematics and Statistics Department at the University of New Mexico for almost two decades before leaving to work with Illustrative Mathematics (IM), a nonprofit organization she helped establish in 2013. While on the faculty at the University of New Mexico, she worked to improve the mathematics

courses for both elementary and secondary pre-service teachers, adding rigor as well as more relevant material for the students. Dr. Umland has also been deeply involved in supporting the national K–12 mathematics community in the transition to the Common Core State Standards in Mathematics (CCSS-M). Most notably she is the vice president for Content Development at IM, where she is focused on the very practical issue of developing high-quality resources to help teachers realize the goals of the CCSS-M in their classrooms. Initially conceived as a project to accompany the CCSS-M effort, it has grown to include resources that can improve K–12 mathematics learning more broadly. It has enormous potential to support the improvement of K–12 mathematics education by putting high quality resources only a click away from the K–12 math teachers across the country. She has been praised for her breadth of vision, combined with an incredible attention to detail.

IM was started by William McCallum, lead of the writing team of the CCSS-M, to illustrate the new standards with task examples. Working together

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with Dr. Umland, they took this idea deeper by developing the vision of an open, online resource created by a community of mathematicians, mathematics educators and teachers that would help teachers learn about the standards and their progressions. Since 2011, Dr. Umland has been one of the driving forces behind IM. In her role as vice president for Content Development, she has been instrumental in forming a community of one hundred editors and five hundred fifty reviewers who have created over 1,200 highly vetted tasks illustrating the standards. The public success of IM measured by its use around the country is staggering: The website sees 170,000 sessions per month (on average) with 5,000 to 10,000 sessions per day. Since 2012, [illustrativemathematics.org](http://illustrativemathematics.org) has had over four million visitors viewing tasks over fourteen million times. One day alone, February 9, 2015, saw over 60,000 page-views. What makes this effort so valuable is not just the final product of a powerful resource for millions of educators in the US, but the process of creating and working with the tasks serves as highly effective professional development for hundreds of educators, who are gaining deep knowledge of mathematics while creating the tasks and discussing and using them together.

## Biographical Sketch

Kristin Umland received her PhD in mathematics in 1996 from the University of Illinois at Chicago, under the direction of Stephen D. Smith. She taught her first mathematics class at the University of New Mexico in the spring of 1996, joining the tenure stream faculty in 2002. In her time at the University of New Mexico, she taught twenty-four different courses ranging from Intermediate Algebra to Measure Theory, as well as many courses for elementary and secondary teachers.

In the summer of 2003, she visited the Vermont Mathematics Initiative at the invitation of Ken Gross. Her observations of Ken's work with elementary teachers was inspirational and set her on her current path working to improve K–12 mathematics teaching and learning. In 2004 she received a grant to provide mathematics professional development for middle school teachers in New Mexico. Over the next six years, approximately 600 teachers

participated in content-based professional development, supported through this grant.

While on the faculty at the University of New Mexico, she worked as a mathematics expert on a number of education research projects, including evaluating the mathematical quality of state standards; measuring teachers' mathematical knowledge for teaching; and comparing measures of teachers' mathematical knowledge, the mathematical quality of instruction, and measures of student growth. She worked on a project, funded by the National Science Foundation, to document the impact of Math Teachers' Circles on middle school mathematics teachers. During this time, she also worked on several policy-related projects. She was an associate professor until leaving in 2016 to work full time as vice president for IM Content Development.

In her time at IM, she has worked on a wide range of projects aimed at improving the quality of mathematics resources used by teachers, curriculum and assessment developers, and policy makers. She is currently working with a team of mathematicians and mathematics teachers to develop an open education resource middle school mathematics curriculum that will be freely available to all teachers starting in the summer of 2017.

### Response

I confess that I was not aware of the AMS Award for Impact on the Teaching and Learning of Mathematics, so imagine my surprise upon learning that I had received the award! And once I learned of Ken Gross' important role in its creation and the people who had received it in previous years, I was very humbled. Just as Ken Gross is a model to me for how mathematicians can work to improve K-12 mathematics, so, too, are Paul Sally and Jim Lewis. It is truly an honor to receive this award.

### About the Award

The Award for Impact on the Teaching and Learning of Mathematics was established by the AMS Committee on Education (COE) in 2013. The US\$1,000 award is given annually to a mathematician (or group of mathematicians) who has made significant contributions of lasting value to mathematics education. Priorities of the award include recognition of (a) accomplished mathematicians who have worked directly with pre-college teachers to enhance teachers' impact on mathematics achievement for all students, or (b) sustainable and replicable contributions by mathematicians to improving the mathematics education of students in the first two years of college. The endowment fund that supports the award was established in 2012 by a contribution from Kenneth I. and Mary Lou Gross in honor of their daughters Laura and Karen. The award is presented by the COE acting on the recommendation of a selection subcommittee. For the 2017 award, the members of the subcommittee were Erica Flapan, Tara Holm (Chair), Manmohan Kaur, and Kay Somers.

Previous recipients of the Impact Award are Paul J. Sally, Jr. (2014), W. James Lewis (2015), and Michael Gage and Arnold Pizer (2016).

—AMS Committee on Education

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