

Citation for Tom Doyle

Dr. Tom Doyle, Associate Professor in the Department of Electrical and Computer Engineering, exemplifies the level of pedagogical innovation that is so valued in McMaster's most successful teachers. Dr. Doyle has been part of the teaching team for the common Engineering I year since 2006. This is a very large group of students who normally learn foundational materials by traditional methods to enable them to develop practical engineering skills later in their programs. Dr. Doyle, in his foundational course on Design and Graphics, recognized the need to bring theory and practice together earlier for these young engineers. His pedagogical philosophy led him to pursue a project-based method, even in first year, so that the theory to practice integration could develop from a Cornerstone (first year) project to a Capstone (final year) project. He wanted to allow students not only to produce theoretical designs, but to see their realization in actual models that tested the success of theory to function. This is a revolutionary idea for teaching beginner engineers who do not yet have the skills needed to undertake the modeling. Dr. Doyle introduced computer simulation software to his Design students to enable them to visualize their theoretical models (MapleSIM). He later added a 3-D printer that allows students to create a small mechanical device they designed, thus testing its actual functionality. This experience makes the students 'feel like real engineers', a boost to their knowledge and to their motivation to advance in this demanding discipline. Student comments indicate their enthusiasm for this new approach and for the cornerstone experience that improves their readiness for the capstone project undertaken in the final year of the Engineering program. They learn to work in partnerships and to think from equation to product from the beginning.

This approach is very novel and has led to many scholarly presentations and publications by Dr. Doyle and the sharing of his work with other experts in Teaching and Learning. Dr. Doyle is also sensitive to the need to evaluate the effectiveness of his innovative tools. He obtained research funding to conduct evaluations of course innovations and engaged both undergraduate and graduate students in pedagogical research. He is both an innovative teacher and a pedagogical researcher who exemplifies McMaster's orientation to the integration of scholarly teaching with pedagogical research and development. His creative development of tools to aid teaching needs, and his use of and contributions to the scholarship of Teaching and Learning, make him a deserving recipient of the President's Award for Outstanding Contributions to Teaching and Learning.