

Flipping Three Different Mathematics Courses: Common Conclusions and Plans for the Future

Larissa Schroeder, Fei Xue, and Ray McGivney, University of Hartford



Larissa B. Schroeder is an assistant professor of mathematics at the University of Hartford. She earned an A.B. in mathematics from the College of the Holy Cross, a M.S. in mathematics from the University of North Carolina – Chapel Hill and a Ph.D. in curriculum and instruction from the University of Connecticut. Her research interests are mathematics education and pedagogy.



Fei Xue is an assistant professor of mathematics at University of Hartford. He earned his B.S. degree from

There are numerous models of flipped classrooms at the college level. However, most involve science and engineering classes. In January 2012, our department began discussions of flipping our 4-credit introductory calculus course (Calculus I). Independently, the authors decided to experiment with flipping three very different courses – Precalculus with Trigonometry, Calculus II, and Discrete Mathematics II. The first two courses were flipped for several weeks; the last course was flipped throughout the semester. We were particularly interested in the question of whether there were common themes and experiences in flipping our classes that occurred irrespective of the material, abilities, or mathematical maturity of our students. Answers to this question form the basis of this article.

"Flipping a course" refers to an instructional approach in which content (presentations, solved problems, definitions, etc.) is presented before class through online videos, lecture notes, and readings. The ability to pause, rewind, and fast forward these videos enables students to learn at their own pace.

At the same time "homework," often completed in small groups, is moved into the classroom. Therefore, instructors in flipped courses are free to devote class time to assisting groups of students who are engaged in collaborative discussion and problem solving.

South China University of Technology, and Ph.D. from the West Virginia University. His research interests are asymptotic analysis of differential and difference systems and pedagogical calculus research.



Ray McGivney is a professor of mathematics at the University of Hartford. He earned his A.B. and M.A. in mathematics at Clark University and his Ph.D. in mathematics at Lehigh University. He has served as mathematics consultant for several school systems in Connecticut and has presented at numerous local, regional, and national meetings.