

ZMATH 2016e.00369

Kensington-Miller, Barbara; Novak, Julia; Evans, Tanya

Just do it: flipped lecture, determinants and debate.

Int. J. Math. Educ. Sci. Technol. 47, No. 6, 853-862 (2016).

Summary: This paper describes a case study of two pure mathematicians who flipped their lecture to teach matrix determinants in two large mathematics service courses (one at Stage I and the other at Stage II). The purpose of the study was to transform the passive lecture into an active learning opportunity and to introduce valuable mathematical skills, such as debate, argument and disagreement. The students were told in advance to use the online material to prepare, which had a short handout on matrix determinants posted, as the lesson would be interactive and would rely on them having studied this. At the beginning of the lesson, the two mathematicians worked together to model the skill of professional disagreement, one arguing for the cofactor expansion method and the other for the row reduction method. After voting for their preferred method, the students worked in small groups on examples to defend their choice. Each group elected a spokesperson and a political style debate followed as the students argued the pros and cons of each technique. Although one lecture does not establish whether the flipped lecture model is preferable for student instruction, the paper presents a case study for pursuing this approach and for further research on incorporating this style of teaching in Science, Technology, Engineering and Mathematics subjects.

Classification: D40 H60

Keywords: flipped lecture; matrix determinants; argumentation; debate; STEM subjects

doi:10.1080/0020739X.2015.1129075