

ZMATH 2016e.00408

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Writing-to-learn activities to provoke deeper learning in calculus.

PRIMUS, Probl. Resour. Issues Math. Undergrad. Stud. 26, No. 1, 67-82 (2016).

Summary: For students with little experience in mathematical thinking and conceptualization, writing-to-learn activities (WTL) can be particularly effective in promoting discovery and understanding. For community college students embarking on a first calculus course in particular, writing activities can help facilitate the transition from an “apply the formula” approach to problem-solving, to a “conceptual understanding of the formula” to initiate mathematical knowledge-building. Community college students face several common challenges in a beginning calculus course, including difficulties using mathematical notation, applying theorems, and understanding the language of proof. Several WTL assignments are discussed, ranging from low-stakes assignments to more formal assignments with a chance for revision, which effectively addressed these difficulties. Samples of students’ work are presented to highlight the learning objectives different writing tasks help attain, student’s understanding of concepts, and the benefits of frequent, low-stakes writing assignments. An analysis of individual students’ work shows that WTL activities not only help students cement mathematical knowledge, deepen understanding, and develop appreciation for the rigor and concision of mathematical language, but also enable them to develop learning habits essential to their success in any field.

Classification: D45 I15

Keywords: calculus; writing-to learn mathematics; community college

doi:10.1080/10511970.2015.1053642