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Facilitating instructor adoption of inquiry-based learning in college mathematics.

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Summary: Faculty development workshops are one strategy for increasing instructor use of evidence-based teaching practices that are known to improve student outcomes in mathematics and other STEM (science, technology, engineering and mathematics) disciplines. Yet relatively little is known about the impact of professional development on teaching practice in higher education. We report findings on participant outcomes from a series of annual, weeklong professional development workshops for college mathematics instructors about Inquiry-Based Learning (IBL) in undergraduate mathematics. We gathered data from surveys with the 139 workshop participants and interviews with a subset of 16 participants. These workshops were found to be effective in encouraging instructors to try this student-centered approach to teaching mathematics, as 58 % of participants reported implementing IBL strategies in the year following the workshop they attended. Analysis suggested that certain features of the workshops supported participants' adoption of IBL strategies. The findings pointed to the importance of (1) sharing broad, inclusive definitions of IBL, (2) representing viewpoints and experiences from diverse institutional contexts, (3) allowing sufficient time within the workshop to explore and revisit topics, (4) addressing common concerns such as content coverage, student resistance, and skills to implement IBL, and (5) providing ongoing follow-up support and inclusion in the community of IBL practitioners. We also make connections with studies of the impact of instructional development in other STEM disciplines and share implications for effective professional development in general.

Classification: D45 B40

Keywords: inquiry-based learning; student-centered teaching; pedagogy; professional development; workshops

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