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Responsibility for proving and defining in abstract algebra class.

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Summary: There is considerable variety in inquiry-oriented instruction, but what is common is that students assume roles in mathematical activity that in a traditional, lecture-based class are either assumed by the teacher (or text) or are not visible at all in traditional math classrooms. This paper is a case study of the teaching of an inquiry-based undergraduate abstract algebra course. In particular, gives a theoretical account of the defining and proving processes. The study examines the intellectual responsibility for the processes of defining and proving that the professor devolved to the students. While the professor wanted the students to engage in all aspects of defining and proving, he was only successful at devolving responsibility for certain aspects and much more successful at devolving responsibility for proving than conjecturing or defining. This study suggests that even a well-intentioned instructor may not be able to devolve responsibility to students for some aspects of mathematical practice without using a research-based curriculum or further professional development.

Classification: E50 E40 H40

Keywords: abstract algebra; defining; proving; inquiry-based learning

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