

# Within $\epsilon$ of independence: An attempt to produce independent proof-writers via an IBL approach in a real analysis course

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**Abstract:** For three consecutive semesters, the speaker taught an introduction to proof course to both mathematics and mathematics education majors at a small state university. The first two iterations of the course were taught via a traditional lecture-based approach, where students only engaged in the process of proof while working on homework or exam problems. However, the third instance of the course was taught using an inquiry-based learning (IBL) approach with an emphasis on collaboration. When the speaker taught an abstract algebra course containing students from both styles of the introduction to proof course, anecdotal evidence suggested that the students taught via IBL were stronger proof-writers and more independent as learners than those introduced to proof in a lecture-style course. Inspired by the apparent effectiveness of IBL, the speaker chose to adopt this approach in his real analysis course and study it with a mathematics education specialist. In this talk, we will relay the speaker's approach to engaging students in the proof-writing process, present quantitative data supporting the effectiveness of a collaborative IBL approach, and present qualitative data describing student perception of knowledge acquisition with regards to proof in an upper-level mathematics course.