

Using Provided Guided Notes in Coordinated First-Year College Mathematics Courses

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Lecture-based instruction prevails as the primary pedagogical approach used to teach undergraduate proof-based courses; thus, mathematics education researchers should investigate ways to improve the lecture rather than replace lectures (Melhuish et al., 2022). Course coordination has been successfully implemented in mathematics programs to standardize student experience (Regier et al., 2024), to meet legislative needs (Jensen-Vallin, 2013), and to shift the pedagogical approach across multiple sections of the same course (Golnabi et al., 2020; Rahman et al., 2021). Alternatively, at the individual level, instructors and students have observed positive impacts of the use of guided notes during classroom lecture (Cardetti et al., 2010; Krapf and Pfefforkorn, 2022). As the pedagogy of mathematics education evolves, universities are encountering the overlap of course coordination with the use of guided notes.

The goal of our study is to examine the use of guided notes in coordinated courses. Specifically, for the coordinated courses considered in this study, the guided notes were created by a current/former coordinator of the course and not by the instructor. This study will investigate the research question, “What is the impact of coordinated guided notes (not co-created) in a post-secondary mathematics course from both the perspective of instructor pedagogical choices and student behaviors and expectations?”

Methodology

The study will focus on first-year undergraduate mathematics courses at a public R1 university in the U.S. We will pilot the study with multiple sections of a coordinated course in Spring 2025 and plan to expand the study to gather data on additional coordinated courses in Fall 2025. The goal of the poster will be to outline the methodology and seek feedback.

To understand the coordination expected of the instructors in our study, we first will interview the course coordinators to determine what curricular materials are provided and how instructors are expected to use the provided materials. Then, we will ask the instructors about their plans to use provided guided notes while teaching their course and survey their Mathematics Teacher Self-Efficacy (Zuya et al. 2016). During the semester in which they are teaching the coordinated course, we will host group interviews of the instructors to discuss their classroom approach, focusing on their use of guided notes and their math teacher self-efficacy. Each of these components will provide insight on how and why the post-secondary math instructors use guided notes in lectures. We will investigate the degree to which instructors incorporate their mathematical insight in their lectures.

Additionally, we will observe class meetings that cover common mathematical content to assess student engagement in coordinated courses with guided notes. After the observed class meetings, the researchers will gather student note-taking artifacts to document how students record formal and informal mathematics. A questionnaire will be shared with students to obtain their perception and expectation of utilizing guided notes in the class lectures. These components will focus on the students’ behaviors and expectations. Compiling the various resources will delineate the instructor-student interaction to determine how the student and instructor expectations align.

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