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Coaching to Learn: Does In-Person Coaching Help?

Study Design

This study aimed to understand whether peer-led in-person coaching that provided evidence-based learning strategies would improve academic outcomes compared to online-only access material that described the same strategies for undergraduate students enrolled in introductory calculus. Each student was randomly assigned to one of two groups:

1. Control (n=578) - online access to effective learning strategies ("Knowledge-only")
2. Treatment group - peer-led strategy intervention consisting of 8-hour in-person coaching (n=582)

The study was conducted across four cohorts from Fall 2022 through Spring 2024 at Syracuse University. Data collection for the final cohort ended in Spring 2024, creating a complete analytical dataset of 1,160 students.

Study Components

The study consists of multiple assessments, including enrollment, study strategy utilization, and academic outcomes. Screening ensured all participants were enrolled in Calculus I. Academic outcomes tracked included final exam grades, same semester GPA, and same semester GPA excluding Calculus I.

For the experiment, all students in the treatment group received 8 hours of peer-led coaching on five evidence-based learning strategies: retrieval practice, organization, spacing, interleaving, and elaboration. The control group received online-only access to the same learning strategy information.

All students were asked to complete the Motivated Strategies for Learning Questionnaire (MSLQ) before and after the intervention to assess their understanding and use of learning strategies. Students in subsequent semesters (after their intervention semester) completed follow-up surveys about their continued use of these strategies.

Findings

This study was designed to estimate the effectiveness of peer-led in-person coaching on learning strategies compared to online-only access to the same information. Several key findings emerged:

1. **No overall treatment effect**: Across the full sample, in-person coaching did not produce statistically significant differences in final exam grades, semester GPA, or semester GPA excluding Calculus I compared to the online-only control group.

2. **Significant benefits for international students**: International students who received in-person coaching showed robust, statistically significant improvements in both final exam grades and same semester GPA.

3. **Self-reported strategy use increased**: Students in the treatment group reported significantly higher use of retrieval practice, spaced study, task value, and elaboration strategies compared to control students. This finding demonstrates that in-person coaching was effective at increasing strategy adoption, even though these increases did not translate into measurable performance improvements in most cases.

4. **Strategy-specific coaching effects**: The intervention showed differential effects across strategies. Organization showed the most dramatic impact on understanding (32.9-point gap), while retrieval showed moderate gains (15.4 points). Spacing, interleaving, and elaboration showed minimal differentiation between groups. This suggests some strategies require explicit coaching to understand (organization, retrieval) while others are more intuitive regardless of intervention.

5. **Understanding versus adoption**: A critical finding was that understanding a strategy does not guarantee its adoption. Spacing and elaboration both showed high comprehension but low enthusiastic adoption across both groups, while organization demonstrated massive comprehension gains yet substantial implementation resistance remained.

6. **Conceptual shifts matter**: The intervention's strongest effect was shifting how students conceptualized strategies rather than simply whether they understood them. For example, the intervention shifted students' understanding of retrieval from "brain dumps" toward active recall and interleaving from subject-switching toward conceptual connections.