Identifying Effective Learning Strategies for Students in STEM Fields

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Numerous studies have demonstrated the effectiveness of Metacognitive Learning Strategies (MCLS) in enhancing academic performance. Given the relatively low success and retention rates in STEM fields of study, teaching metacognitive skills may be particularly helpful to students in STEM courses. Throughout two consecutive fall semesters, daily study journals were collected from two cohorts of students enrolled in an Inquiry 100 section that focused on teaching MCLS. The first cohort was composed of 10 students while the second included seven students. Each cohort contained roughly the same number of males and females. The students were instructed in the various types and benefits of MCLS and were asked to choose a STEM class they are taking and record everything they do to study for that class outside of the regular class/lab sessions. The study journals contained both qualitative reflections (ex. what study strategy was used on a given day and how well it worked for the student) and quantitative data (ex. the number of hours spent studying each day). Results showed that, among both cohorts the most effective of the learning strategies included paraphrasing material and explaining or teaching concepts to others. This presentation will summarize further findings obtained from qualitative and quantitative analyses conducted on the student journals, as well as report the correlations between the use of MCLS and students’ college GPAs. Overall, this study contributes to understanding the effectiveness of teaching MCLS and improving student learning in STEM courses at Concordia College.