Metacognitive reporting provides insight on students' out-of-class study activities geared toward their learning of chemistry

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Abstract

Prompting students to practice metacognition, and encouraging the growth of metacognitive strategies improves student success in chemistry coursework. In this study, students were encouraged to submit weekly metacognitive reports providing (i) their time devoted to the course, including hours devoted to out-of-class additional study, and (ii) detailed summaries of additional study activities. This study was administered to students in two different courses, introductory chemistry and general chemistry I. Introductory chemistry students submitted 1,513 metacognitive reports with self-reported overall means of 2.81 hour per week devoted to attending lecture, 4.75 hours per week engaged in additional study, and 7.56 hours per week devoted to the course overall. Weekly patterns indicate that students' additional study was focused on days of the week that preceded formal assessments. Our expectation was that general chemistry I students would report more time devoted to additional study outside of class than introductory chemistry students because of the preparatory nature of the course. General chemistry I students submitted 3,551 weekly metacognitive reports with self-reported overall means of 2.83 hours per week devoted to attending lecture, 4.83 hours per week engaged in additional study, and 7.66 hours per week devoted to the course overall. We will discuss the seeming equivalence of time spent on out-of-class additional study for the two populations of students. In addition, we will present qualitative analysis of students' out-of-class study strategies, including classification of study strategies as deep or surface-level. This work is partially supported by the NSF-funded First2 Network.