

(Poster Presentation)

Student-Reported Learning Gains and the Use of Writing Portfolios as a Bridge between General Chemistry and Forensic Science

Nathan W. Bower and Murphy Brasuel, Chemistry and Biochemistry Department, Colorado College, Colorado Springs, CO 80903

The goal of this study was to determine if student-reported learning gains for written and oral communication as well as “critical thinking” skills could be improved using an explicit self-reflective piece in a writing portfolio for a linked General Chemistry/Forensic Science course. In a presentation at the July 2009 BCCE (Biennial Conference on Chemical Education, Bloomington, IN), we gave an analysis of student-reported learning gains in courses that had been impacted by the CWCS (Center for Workshops in the Chemical Sciences). These were paired with “standard” courses in General Chemistry, with and without a POGIL component. They were controlled for variables such as instructor and time of the year. Results of that study will be summarized and used as a foundation for this analysis.

The combined study uncovered some factors that impact student-reported learning gains, some of which were predicted, and some not. Of particular interest was an unexpected inverse relationship between the time spent on developing communication skills in these courses and the reported gains made. More integration of the writing topics into and between courses was hypothesized necessary to improve these scores, and this was included in our fall offering of a linked General Chemistry – Forensic Science course. Results of this analysis, its relationship to a multi-faculty effort to evaluate first year student writing based on these portfolios, and the self-reported impact on critical thinking skills will be presented. A preliminary analysis demonstrated a strong correlation between the cross-disciplinary, faculty-graded, self-reflective writing portfolios, and students’ SAT-V, SAT-W and ACT-EN scores. Disciplinary differences in the correlation of writing samples within these courses were more significant than they were for the summative self-reflective pieces. These differences may shed some light on how best to construct disciplinary-specific portfolios that bridge and integrate courses throughout an entire major.