

Students' Perception of Effort and Emotional Costs in Chemistry Courses

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Abstract : It is well known that chemistry is one of the most feared courses in college. Although many students enjoy learning about science, most of them perceive that chemistry is "too difficult". These perceptions of chemistry result in many students not considering Science, Technology, Engineering, and Mathematics (STEM) majors because they require chemistry courses. Ultimately, these perceptions are also thought to be related to high attrition rates of students who begin STEM majors but do not persist. Students perceived costs of a chemistry class can be many, such as task effort, loss of valued alternatives, emotional, and others. These costs might be overcome by students' interests and goals, yet the level of perceived costs might have a lasting impact on the students' overall perception of chemistry and their desire to pursue chemistry and other STEM careers in the future. In this mixed methods study, we investigated task effort and emotional cost, as well as a mastery or performance goal orientation, and the impact these constructs may have on achievement in general chemistry classrooms. Utilizing cluster analysis as well as student interviews, we investigated students' profiles of perceived cost and goal orientation as it relates to their final grades. Our results show that students who are well prepared for general chemistry, such as those who have taken chemistry in high school, display less negative perceived costs and thus believe they can master the material more fully. Other interesting results have also emerged from this research, which has the potential to have an impact on future instruction of these courses.

Keywords : chemistry education, motivation, affect, perceived costs, goal orientations

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