Title: Concepts, Content, Context: Assessment of a Strategic Redesign of a First-Year Chemistry Curriculum

Abstract:
First-year chemistry at UBC’s Okanagan campus serves as a prerequisite to later courses required of Chemistry, Environmental Chemistry, Biochemistry, and Biology majors, but is also a requirement BSc students who do not intend to proceed further in the chemical sciences. We are undertaking a multi-year strategic redesign, revision, and assessment of our first-year course sequence, with the overarching goal of identifying and pursuing learning outcomes relevant for all of our students regardless of their academic and career paths. Cognitive and affective learning outcomes were identified, followed by a mapping of concepts onto those objectives, design of a curriculum promoting those concepts, and a selection of active learning delivery methods appropriate to the sophistication of each concept. An integrated suite of active learning resources has been developed and implemented, including personal response system questions, in-class guided-inquiry assignments, flipped-class modules including interactive instructional videos, and a thematic framework demonstrating the broader societal applications of chemistry. This presentation will describe the pedagogical impetus for these changes, the detailed nature of the various learning activities, and the findings of an ongoing multi-faceted research study to assess the impacts of our redesign process, which include a dramatic increase in student success rates.

Bio:
W. Stephen McNeil is an Associate Professor at the Okanagan campus of the University of British Columbia. Following his doctoral studies with Peter Legzdins at the University of British Columbia and an NSERC Postdoctoral Fellowship with James Mayer at the University of Washington, he taught at two-year college and four-year undergraduate institutions before joining UBC Okanagan in 2005. McNeil is a 2009 recipient of the UBC Okanagan Award for Teaching Excellence and Innovation, the inaugural 2018 recipient of the UBC Okanagan Killam Teaching Prize, and the 2019 recipient of the Chemical Institute of Canada Chemistry Education Award. His professional interests include the development and assessment of active- and collaborative-learning methods, alternative conceptions of advanced chemical bonding models, and science communication and chemistry outreach. According to ratemyprofessors.com, he is “…the epitome of excellent, middle-aged teaching.”

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