

Oral Presentation

Research in Chemical Education Using Computers

Isn't this supposed to be the easy way?: Design and implementation issues for online research tools

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Technological advances over the past 30 years have provided chemical education researchers with new areas of inquiry (e.g. molecular visualization) and new research tools (e.g. student response systems). Often, new technologies have augmented existing research methods as in the cases of web-based surveys and videotaped classroom observations. However, technology-enhanced techniques may present research design issues for investigators.

In this presentation we will describe our positive and negative interactions with two online research instruments. First, we employed the *Questionmark*TM *Perception*TM assessment management system for two studies: 1) a Delphi survey to identify unifying themes across the chemical disciplines, and 2) an interactive pre-assessment survey of biochemistry students' misconceptions. Second, we examined the help-seeking behaviors of organic chemistry students with an online retrosynthesis tutorial. Through the web interface, we monitored students' behavioral patterns over a semester by recording the pages viewed, the hints selected, and the amount of time spent on each page and hint. In each study we identified design, implementation, or analysis issues that illustrated both the advantages and disadvantages of online research instruments.