

Abstract 1094

Validation of Biomolecular Visualization Assessments through Large Scale Field Testing and Student Focus GroupsJosh Beckham, *The University of Texas at Austin*

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Keywords: assessment, visual literacy, biomolecular visualization, mixed methods study

A brief glance through molecular biology and biochemistry textbooks underscores the importance of interpreting visual images in the molecular life sciences. In fact, biomolecular visual literacy has been deemed a threshold concept, essential for student success in the field. As one example, grasping the information displayed in visual representations is a gateway to a deep understanding of structure-function relationships, a core concept in biology education. Despite much interest, few studies have examined the assessment of visual literacy skills in the area of biomolecules. Ten years ago, BioMolViz began an initiative to improve biomolecular visualization instruction and assessment, which focused on developing validated assessments to probe students' visual literacy skills. In 2023, we introduced the BioMolViz Library, a repository where instructors can access the instruments built by our community. A subset of these assessments were administered in classrooms in a pilot field test during the 2022–2023 academic year. We gained invaluable information from both quantitative and qualitative data collected. Lessons learned from this first classroom test guided the design of the 2023–2024 large-scale field testing we describe here with over ten partner institutions, high enrollment classes, and an increased number of items per survey. We present the results of our analysis of item difficulty, discrimination, and distractor analysis, alongside a robust analysis of the influence of gender and race/ethnicity on student performance. To improve the statistical power of the study, we exchanged open-ended written feedback for an increased number of assessment items administered on each survey. However, recognizing the value of student feedback obtained through a mixed methods analysis from our 2022–2023 study, we followed up with focus groups to explore the perceptions and problem solving process of both low- and high-performing students. We present the results of our assessment validation, including an analysis of the influence of learner level, gender identity, and race/ethnicity on performance. We include suggestions for equitable and inclusive assessment methods as we continue to strive to improve visual literacy instruction.

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Abstract 1098

Medicinal chemistry and drug design, A collaborative course redesign (CCRD) experience at Eastern Michigan UniversityJennifer Kean, *Eastern Michigan University*

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Keywords: scholarship of teaching and learning (SoTL), Course Redesign, Medicinal Chemistry, Student Collaboration

CCRD, collaborative course redesign, is a scholarship of teaching and learning (SoTL) project at Eastern Michigan University where faculty-student partners come together as part of a learning community to change/alter their course with a current student. Professors from various departments meet together with their student partners to learn about SoTL and apply principles learned to change learning tactics or class format for each faculty member's course in order to enhance the learning experience for the class and make the content more accessible and less daunting. The course of interest for our CCRD process is Medicinal Chemistry and Drug Design. This is an upper-level undergraduate/graduate cross-listed chemistry course that builds on organic and biochemistry content and applies it to the specialized field of medicinal chemistry, including principles of drug discovery (receptors, enzymes, metabolism and drug design) and various classes of pharmaceutical agents. Emphasis is placed on organic structure-biochemical activity relationships (correlation of functional groups to pharmacological activity) and mechanism of action. The class format was altered from a primarily lecture style with individual student presentations and papers to one that also includes more interactive groupwork, partner presentations, and group discussions addressing the primary literature. The student partner collaborated with the professor in many aspects of course format as well as choice of textbook and literature papers, discussion topics, assignments, point distributions, and rubrics for assessment. In this poster, these changes will be discussed along with presentation of the redesign process. Student class data was also collected through weekly surveys and focus groups. This data will also be presented regarding student feelings of level of engagement as well as perceived barriers and facilitators to engagement, and student reflections and attitudes about content difficulty and general mode of delivery/course design. Overall, the process was successful in modification of the course to enrich the learning experience from both the student and faculty perspective.

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