

**Theme: EPD: Assessment and curricular practices:
Teaching and engaging with Gen Z**

Abstract 1089

**A Tale of Two Perspectives: Comparing
Student and Faculty Perceptions of
Biomolecular Visualization Assessment**Kristen Procko, *The University of Texas at Austin*Josh Beckham, Bonnie Hall, Rachel Mitton-Fry,
Shelly Engelman, Pamela Mertz, Roderico Acevedo,
Didem Vardar-Ulu, and Daniel Dries

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

Visual literacy is recognized as a threshold concept in biochemistry and molecular biology. However, a consensus on the optimal methods for teaching and evaluating remains elusive. For a decade, BioMolViz has strived to enhance biomolecular visualization assessment. Through workshops and online working groups, we guide instructors on how to probe biomolecular visual literacy using accessible images and questions, which are ultimately shared broadly through our online repository (the BioMolViz Library). Here, we present the final step of our assessment validation process which occurred during the 2022-2023 academic year. We engaged life science students from seven U.S.-based institutions in a pilot field test. Students responded to the multiple choice, multiple select and free response items, rated them on their perceived difficulty, and provided optional open-ended feedback. As we examined the data, we became curious about whether instructors viewed the difficulty level of the items similarly to students. We followed up with an instructor survey where respondents rated and commented on the difficulty of 14 assessment items that were administered to students in the pilot field test. Subsequently, we conducted a mixed methods study to analyze our quantitative and qualitative data. Our analysis revealed a statistically significant disparity between instructors' and students' perceptions of assessment difficulty. Notably, regression models suggest that students' performance predicts their perceived difficulty, with high-performing students finding the assessment generally easier than their lower-performing peers. This points to the crucial role of performance in shaping students' perceptions, while also indicating that instructors, on the whole, tended to view the assessment as less challenging than students. To gain deeper insights into these findings, we performed thematic coding of both student and instructor responses. Our analysis unveiled three pivotal themes in visual literacy assessment: (a) expectations about images guide student performance, (b) disparities exist in visual literacy problem solving, and (c) content knowledge can be both a help and hindrance in visualization. Importantly, these results have changed the way members of our team now approach teaching and evaluating biomolecular visualization skills in our own classrooms. We will share our revised

approaches alongside results from our study and provide practical recommendations to aid educators in effectively teaching and evaluating visual literacy in their classrooms.

This material is supported by the National Science Foundation (NSF) under grants RCN-UBE #1920270 and NSF-IUSE #1712268

105895, <https://doi.org/10.1016/j.jbc.2024.105895>