

OLUWASEUN AGUNBIADE & OLUWATOBI ODELEYE, Department of Chemistry, West Virginia University, Morgantown, WV 26506. Mixed-Methods Study of Students' Definitions of Science Based on Their Experiences with A General Chemistry Course

This mixed-methods study examines how undergraduate students define science based on their experiences. Data were collected through open-ended interviews and questionnaires with 840 students enrolled in a first-semester general chemistry course (CHEM 1) in the Fall 2024 and Spring 2025 semesters. However, only 181 students completed both the pre- and post-survey administration and could be matched across time points. Students were asked about their definitions of science and items from the modified attitude towards science inventory (mATSI), which were used to measure students' attitudes towards science. Six themes emerged from the data, which show the common patterns in how students defined and understood the topic we studied: "study of everything/All things/life" "exploration of the natural world", "discovery of knowledge", "science as a scientific process", "scientific as contributing to human life", "field of study", and "random". Students who reported a positive change in their perception of chemistry, the most prominent definition themes were Exploration / How Things Work (52%) and Study of Everything / All Things / Life (48%). Overall, no pronounced association was observed between students' definitions of science and the direction of change (positive, no change, or negative) in their perceptions of science after completing the course. Changes in students' perceptions of chemistry were not systematically linked to any specific definition-of-science theme identified in the analysis. These findings suggest that the ways students conceptualize science may not directly influence shifts in their perceptions of chemistry within the course context. This study therefore provides insight for educators and researchers by highlighting that students' definitions of science alone may not predict changes in their perceptions of the discipline. Understanding this distinction can support efforts to more intentionally design instructional strategies that cultivate broader awareness, engagement, and meaningful connections to STEM through chemistry education.