Exploring the Barriers and Facilitators for Neurodiverse Learners in Tertiary Chemistry Education

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Abstract

Neurodiversity influences 15-20 % of the world's population. Neurodiversity is a cognitive difference in how the brain processes information and includes a variety of diagnoses, such as dyslexia, dyscalculia, Autism Spectrum Disorder (ASD), and ADHD, to name a few. Neurodiverse people have differing abilities, with strengths in creativity, outside-the-box thinking and problem-solving. Society's view of neurodiversity is directed towards the challenges. While this effort is well-intended, it does not capture the value of neurodivergent strengths. Supporting and developing neurodiverse skills is the key to enabling students and allowing them to fulfil their potential in higher education.

This study employs phenomenological methodology and co-design elements to understand the neurodiverse experience in tertiary education. Learning how-to-learn workshops based on Universal Design for Learning are implemented to measure the impact of alternative learning and teaching methods on student learning and experience. The study utilises a multi-methods process for data collection, including surveys, reflective journals, focus groups and semi-structured interviews. This research allows us to gain insights into the social viewpoints of neurodiversity in higher education and how neurodiverse learners engage with chemistry. Key themes are explored, including the benefits and challenges of neurodiversity as a student in higher education, the accessibility and inclusivity of chemistry education in the tertiary sector, and the overall impact of neurodiverse learning techniques. The goal is to compile a database of knowledge from a student perspective on supporting neurodiverse learning in tertiary chemistry education and enabling informed university course creation that aligns with the student's needs.

Keywords: Chemistry Education, Higher Education; Inclusion, Neurodivergence, UDL