

SIGN LANGUAGE AS A UNIVERSALLY DESIGNED TEACHING AND LEARNING TOOL FOR 3D REPRESENTATION IN CHEMISTRY EDUCATION

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The representation of three-dimensional (3D) concepts in chemistry education has been the focus of research for decades. Whilst there is an extensive evidence-base exploring different means for 3D representation, most current studies focus on digitised 3D visualisation and modelling tools. However, chemistry sign language developed by the Sign Language Incorporation in Chemistry Education (SLICE) team (Clarke et al., 2022) offers an innovative, inclusive and free-of-charge way to model 3D concepts using only our hands. The intent of this study was to explore the impact of incorporating sign language in chemistry education for first-year, undergraduate students who do not identify as deaf/Deaf/Hard-of-Hearing. To achieve the aim, this interventional pilot study had three stages:

- (I) A broad questionnaire to explore themes about hearing students' current perceptions of chemistry education in terms of Universal Design for Learning (UDL) and the potential impacts of incorporating sign language.
- (II) Audio and video recorded intervention sessions and student artefact analysis where session content focused on molecular geometry.
- (III) Post-intervention, semi-structured focus groups to evaluate students' perceptions of using sign language for 3D representation within chemistry education.

The preliminary results of this study indicate positive results for the impacts of sign language incorporation on the teaching and learning of 3D chemistry concepts. In this presentation, the specific opportunities and challenges of utilising sign language for hearing students will be discussed.

REFERENCES

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