

# PROMOTING INCLUSION IN ONLINE FIRST-YEAR CHEMISTRY THROUGH THE IMPLEMENTATION OF THE UNIVERSAL DESIGN FOR LEARNING FRAMEWORK

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## BACKGROUND

The Universal Design for Learning (UDL) framework promotes inclusion by minimising barriers against, and maximising opportunities for learning. Implementing the three principles of the UDL framework (providing multiple means of representation, action and expression, and engagement) through its 31 checkpoints, provides strategies that allow diverse learners optimal participation in a meaningful and challenging learning environment.

## AIMS

This paper will present an exploratory multiple-case design implementing UDL in first-year chemistry courses at two universities in Australia and one in the Philippines.

## DESIGN AND METHODS

The UDL framework was integrated in the design and delivery of five chemistry topics, namely, periodic table and trends, chemical bonding, Lewis structures, molecular shapes, and polarity. Survey, focus groups, and interviews were conducted to gather students' perceptions on the impact of UDL-based features in their learning.

## RESULTS

Results from surveys, focus groups, and interviews reveal that, irrespective of their individual contexts, students from these three universities perceived positive impacts from the UDL-based features of their online chemistry learning environment. Students reported that their learning benefitted from provisions for enhanced visualisation of chemistry concepts, especially those that require chemical representations (i.e. bond formation, chemical structures, molecular geometry), improved accuracy, flexibility, self-evaluation of progress, and increased motivation.

## CONCLUSIONS

These results suggest that applying the UDL framework in a first-year chemistry online environment can support and further enhance students' learning irrespective of their individual contexts.

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