

# INVESTIGATING COGNITIVE OVERLOAD IN THE UNDERGRADUATE CHEMISTRY LABORATORY THROUGH THE LENS OF DECISION-MAKING

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The undergraduate laboratory has long stood as the primary avenue to teach chemistry students the technical skills of their field. However, the shift from expository “recipe” chemistry to a more inquiry-based mode of instruction creates a greater possibility for students to be overwhelmed. In contrast to experts who have refined mental frameworks through experience in research and education, novice undergraduates lack information management strategies such as ‘schema’ and ‘chunking’ (Overton & Potter, 2011). This results in saturation of the working memory and cognitive overload (Lamba, 2008). Subsequently, student performance and self-efficacy are severely hindered.

Cognitive overload is an undesirable state-of-mind, whether it arises in academia or industry. Much of the issue is thought to lie with operating without constraints and students’ apprehension to making effective experimental decisions. Approaching the subject of cognitive load through the lens of decision-making presents an opportunity to investigate factors informing students’ decisions in the laboratory and encourage development of the information-processing tools used by experts.

Herein, we present results from interviews, questionnaires and focus groups relating to student cognition in an upper-level undergraduate laboratory at Monash University. Students share their experiences in the laboratory and how a laboratory teaching intervention impacted their decision-making.

## REFERENCES

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