

# AN INVESTIGATION OF INQUIRY-BASED LEARNING IN CHEMISTRY LABORATORIES IN SENIOR SECONDARY SCHOOL AND FIRST-YEAR UNIVERSITY

Michael Calarese<sup>a</sup>, Alexandra Yeung<sup>a</sup>, Mauro Mocerino<sup>a</sup>, David Treagust<sup>b</sup>

Presenting Author: Michael Calarese (michael.calarese@postgrad.curtin.edu.au)

<sup>a</sup>School of Molecular and Life Sciences, Curtin University, Bentley, WA 6102, Australia

<sup>b</sup>School of Education, Curtin University, Bentley, WA 6009, Australia

**KEYWORDS:** guided-inquiry, mixed-methods, senior secondary school laboratory

Inquiry within chemistry education is generally taught through laboratory experiments through various methods ranging from traditional, guided inquiry and open inquiry experiments (Furtak, Seidel, Iverson & Briggs, 2012). This proposed research investigates the level of inquiry-based learning in the chemistry curriculum offered in Western Australian secondary schools and first-year university chemistry units. An in-depth review of common laboratory resources, such as the Science Teacher Association of Western Australia (STAWA) laboratory manual, can determine how frequently schools participating in the Australian Tertiary Admission Rank (ATAR) system in Western Australia utilise them. Laboratories will be evaluated using the Advancing Science and Engineering through Laboratory Learning (ASELL) inquiry slider (Cornish et al., 2019) and the Typology of Curriculum (van den Akker, Kuiper, & Hameyer, 2003). Selected experiments will be modified to incorporate guided inquiry in the experiment and trialed with teachers. This proposed research will be undertaken using a mixed-method approach, collecting data through surveys, semi-structured interviews and case studies. Research findings can benefit teachers struggling to teach required laboratory skills, focusing on inquiry skills necessary for chemistry at university. The research will compare the potential change in perceptions of students and teachers who experience guided inquiry-based experiments via workshops, benefiting further development of laboratory manuals for educational purposes.

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Proceedings of the Australian Conference on Science and Mathematics Education, 29 September - 1 October 2021, page 11, ISSN 2653-0481