

CHEMISTRY IN YOUR KITCHEN: AT HOME CHEMISTRY PRACTICALS FOR FIRST YEAR HEALTH SCIENCE STUDENTS

Christine Devine^a, Joshua Wang^a, and Dana Burfeind^a

All authors presenting; Corresponding Author: Joshua Wang (reillyj@qut.edu.au)

^aStudent Success group, Learning and Teaching Unit, Queensland University of Technology, Brisbane QLD 4000, Australia

KEYWORDS: remote learning, laboratory skill development, chemistry education

COVID-19 has permanently changed teaching and learning in higher education. There is an increased need for flexibility in learning activities for students. One innovation that provides flexibility for students is the use of take-home laboratory practicals. Take-home practicals provide a remote learning opportunity in a space where hands-on learning may not normally be possible. There are several examples of one-off take-home practicals (Andrews et al., 2020; Caruana et al., 2020; Orzolek & Kozlowski, 2021; Parel et al., 2021; Santiago et al., 2022) as well as semester-long integration of take-home practicals (Funnell et al., 2022; Burns et al., 2021). Our intervention is one of the first reported large-scale, semester-long trials of take-home practicals aligned with the curriculum. In semester 1 2022, we designed and delivered co-curricular take-home kits for 170 first-year chemistry students. Each kit included everything needed to conduct five experiments, adapted from the five assessed experiments conducted face-to-face in the unit. The kits were supplemented with self-led practical instructions and optional synchronous zoom sessions with support staff to conduct the experiments together. In this presentation, we will discuss student engagement and learning outcomes from this large-scale pilot as well as recommendations for future co-curricular kit development.

REFERENCES

- Andrews, J. L., de Los Rios, J. P., Rayaluru, M., Lee, S., Mai, L., Schusser, A., & Mak, C. H. (2020). Experimenting with At-Home General Chemistry Laboratories During the COVID-19 Pandemic. *Journal of Chemical Education*, 97(7), 1887–1894. <https://doi.org/10.1021/acs.jchemed.0c00483>
- Burns, A., Andronicos, N., Henderson, S., & Labeur, L. (2021). Student response to a multi-topic kitchen practical experience in undergraduate core biology [conference presentation]. *Proceedings of the Australian Conference on Science and Mathematics Education 2021*, Australia.
- Caruana, D. J., Salzmann, C. G., & Sella, A. (2020). Practical science at home in a pandemic world. *Nature Chemistry*, 12(9), 780–783. <https://doi.org/10.1038/s41557-020-0543-z>
- Funnell, A., Fullwood, J., Lazari, P., & Williams, G. (2022). One kit to rule them all: Designing take home lab kits at programme level. *2022 IEEE Global Engineering Education Conference (EDUCON)*, 1490–1495. <https://doi.org/10.1109/EDUCON52537.2022.9766600>
- Orzolek, B. J., & Kozlowski, M. C. (2021). Separation of Food Colorings via Liquid–Liquid Extraction: An At-Home Organic Chemistry Lab. *Journal of Chemical Education*, 98(3), 951–957. <https://doi.org/10.1021/acs.jchemed.0c01286>
- Parel, P., Burnett, L., Geoffroy, M., Parel, J., & Hao, L. (2021). Determining the Acetic Acid Concentration in White Vinegar: An At-Home Undergraduate Chemistry Experiment During the COVID-19 Pandemic. <https://doi.org/10.26434/chemrxiv-2021-hxb4r>
- Santiago, D. E., Pulido Melián, E., & Vaswani Reboso, J. (2022). Lab at home in distance learning: A case study. *Education for Chemical Engineers*, 40, 37–44. <https://doi.org/10.1016/j.ece.2022.05.001>

Proceedings of the Australian Conference on Science and Mathematics Education, The University of Western Australia, 28-30 September 2022, page 27, ISSN 2653-0481