

# SUPPORT FOR PROBLEM SOLVING THROUGH SCAFFOLDING

Kimberly Vo<sup>a</sup>, Mahbub Sarkar<sup>b</sup>, Paul White<sup>a</sup>, Elizabeth Yuriev<sup>a</sup>

Presenting Author: Vo, K. (Kimberly.vo@monash.edu.au)

<sup>a</sup>Faculty of Pharmacy and Pharmaceutical Sciences, Monash University, Parkville VIC 3052, Australia

<sup>b</sup>Faculty of Medicine, Nursing and Health Sciences, Monash University, Clayton VIC 3800, Australia

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Students often have difficulty solving chemistry problems. This difficulty may be compounded by students trying to solve problems by memorised algorithms and/or meaningless manipulation of mathematical operations. To address these challenges, our group developed a scaffold (Goldilocks Help) to support students through structured problem solving and its phases, such as planning and evaluation (Yuriev et al., 2017). This study explored how first-year chemistry students engaged with the problem-solving scaffold and how that engagement affected their learning, particularly in the context of the stressful online environment of the 2020 COVID-19 semester. Mixed-method data was collected from the assignments, which involved students: (i) solving an allocated problem and (ii) reflectively comparing their effort to an expert solution. Initially, many students did not engage with the scaffold due to viewing it as an “extra” work that needs to be done in addition to solving a problem. Through repeated assignment cycles, students showed greater engagement with the scaffold. Problem-solving success rate increased throughout the semester. By applying the scaffold to a range of chemical problems, students came to appreciate that it supported them in solving problems. Understanding students’ problem-solving processes will inform innovations in teaching problem solving.

## REFERENCE

Yuriev, E., Naidu, S., Schembri, L., Short, J. (2017). Scaffolding the development of problem-solving skills in chemistry: guiding novice students out of dead ends and false starts. *Chemistry Education Research and Practice*, 18, 486-504.

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