Department of Chemistry
Departmental Seminar:
Chemistry Education

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You are cordially invited to a lecture presented by

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Supervised by Prof Lynne Pilcher, and Dr Angelique Kritzinger

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Date:	Friday, 08 April 2022
Time:	11:30 – 12:20
Venue:	Orbital
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Self-regulated learning strategies for first-year chemistry during COVID-19

Self-regulated learning (SRL), also defined as metacognitive, motivational, and behavioral active participation of students in their own learning process, has an influence on their academic success. SRL strategies such as rehearsal, elaboration, organization, critical thinking, metacognitive self-regulation, time and study environment management, effort regulation, peer learning and help seeking are known to be effective in traditional settings of mostly face-to-face teaching, however these strategies are also effective in blended and online environments. The purpose of this study was to identify SRL strategies associated with success in a first-year chemistry course ran online due to COVID-19. A case study methodology with a mixed methods design was used. Quantitative data was collected using a survey consisting of the Learning Strategies scale of the Motivated Strategies for Learning Questionnaire augmented with questions from the Online Self-regulated Learning Questionnaire to probe constructs unique to online learning environment. To gain deeper understanding of the

quantitative findings, qualitative data was collected through a follow-up survey. 430 out of 1370 students participated. Rasch analysis was performed and the help seeking, and peer learning subscales had a persistent misfit to the Rasch model. The misfit was attributed to the fact that students were subjected to several constraints because of the unusual context of lockdown. Differential item functioning analysis revealed that students who passed the exam used more effort regulation and goal setting, whereas those who failed the exam used more critical thinking, and the differences were statistically significant. Students also demonstrated poor use of task strategies, help seeking, and peer learning, and a follow-up qualitative survey revealed that this failure was due to factors such as confusion, fear, and isolation from lockdown. It can be concluded that effort regulation and goal setting were associated with success in first-year chemistry during the pandemic. Additionally, the lockdown regulations had an impact on the use of task strategies, peer learning and help-seeking strategies. Therefore, there is a need to provide a safe environment in which to ask questions and opportunities for students to connect with their peers.