

INSIGHTS INTO HOW STUDENTS' 'SELVES' IMPACT ON THEIR SELF-REGULATION AND SELF-DIRECTION IN ONLINE LEARNING

Gwendolyn Lawrie^a, Chantal Bailey^a, Joanne Blanchfield^a, Madeleine Schultz^b

Presenting Author: Gwendolyn Lawrie (g.lawrie@uq.edu.au)

^aSchool of Chemistry & Molecular Biosciences, The University of Queensland, St Lucia, 4072, Australia

^bScience & Engineering Faculty, Queensland University of Technology, Brisbane, 4001, Australia

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Background

Students entering tertiary studies are required to quickly adapt to hybrid learning environments in which online learning is blended into university courses, often differently in each of their courses. Flipped classrooms or other variants of blended learning are multiplying and digital objects are routinely used as supporting resources (videos, simulations, animations etc) embedded in learning management systems. For many students, skills to navigate these learning environments must first be developed before they become more self-aware of their study and learning processes.

Through a multi-institutional Office for Learning and Teaching project to enhance the student transition to tertiary chemistry studies, online modules were developed to support student self-regulated learning (Lawrie et al, 2013; Lawrie et al 2015). Different strategies were adopted at each institution. In the part of the study reported here, the self-regulation was scaffolded through a sequence of formative activities which students engaged independently in prior to a summative assessment task each week. Self-direction became very important in how students engaged in management of their studies in terms of time and persistence across the semester.

Aims

The aim of this study was to explore the factors that impacted on students' self-regulation as they engaged with formative feedback and linked online activities to remediate gaps in their understanding of chemistry concepts.

Description of intervention

The intervention at a single institution took the form of structured online weekly modules that supported the lectures in a large first-year chemistry course. The instructional design integrated three elements into each module: a short concept quiz (step 1) from which feedback was provided instead of marks to point students to specific online activities to address alternate or missing conceptions; a suite of interactive online learning objects (step 2) and a summative quiz based on lecture concepts (step 3). Students were required to complete a minimum number of weekly summative quizzes to gain course marks.

Design and methods

In this evaluative study, data was collected from four sources including Blackboard™ log data, website analytics (Google Analytics), an end of semester online questionnaire and focus group interviews. Five motivation and six learning strategies scales, originating from the well-characterised motivated strategies for learning questionnaire (MSLQ), were embedded in the online questionnaire to triangulate quantitative and qualitative data.

Results

Students found the modules to be valuable in sustaining their currency in concepts and engagement with the lectures across the semester. Analysis of quantitative data revealed that students had applied multiple strategies in managing their learning and these could be attributed to their individual motivation and persistence. A surprising outcome from this study was the diversity in technological skills possessed by students. A small but significant number of students failed to persist in

overcoming access hurdles that arose in online resources and summative quizzes in spite of the extensive support available.

Conclusions

Student self-regulated learning was successfully supported through the design of integrated formative and summative activities. Student self-directed learning was dependent on multiple traits of their 'self', including motivation and particularly persistence.

References

- Lawrie, G., Wright, A., Schultz, M., Dargaville, T., O'Brien, G., Bedford, S., Williams, M., Tasker, R., Dickson, H., & Thompson, C. (2013). Using formative feedback to identify and support first-year chemistry students with missing or misconceptions. *International Journal of the First Year in Higher Education*. 4(2) 111-6.
- Lawrie, G., Wright, A., Schultz, M., Dargaville, T., Tasker, R., Williams, M., Bedford, S., O'Brien, G., Thompson, C. (2015). Closing the loop: A model for inter-institutional collaboration through delivering formative assessment in large, first-year STEM classes. In G. Weaver, W. Burgess & L. Slakey (Eds.), *Transforming institutions: Undergraduate STEM education for the 21st Century*. (pp 399-410) Purdue University Press: Indiana.

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