RELATIONSHIPS BETWEEN CONFIDENCE, GENDER, HIGH SCHOOL PERFORMANCE, A CONCEPT INVENTORY, AND SUCCESS IN FIRST YEAR CHEMISTRY

Gwen Lawrie[a], Madeleine Schultz[b], William Macaskill[b]

Presenting author: Gwen Lawrie (g.lawrie@uq.edu.au)
[a]School of Chemistry and Molecular Biosciences, University of Queensland, St Lucia QLD 4072, Australia.
[b]School of Chemistry, Physics and Mechanical Engineering, Queensland University of Technology, Brisbane QLD 4000, Australia

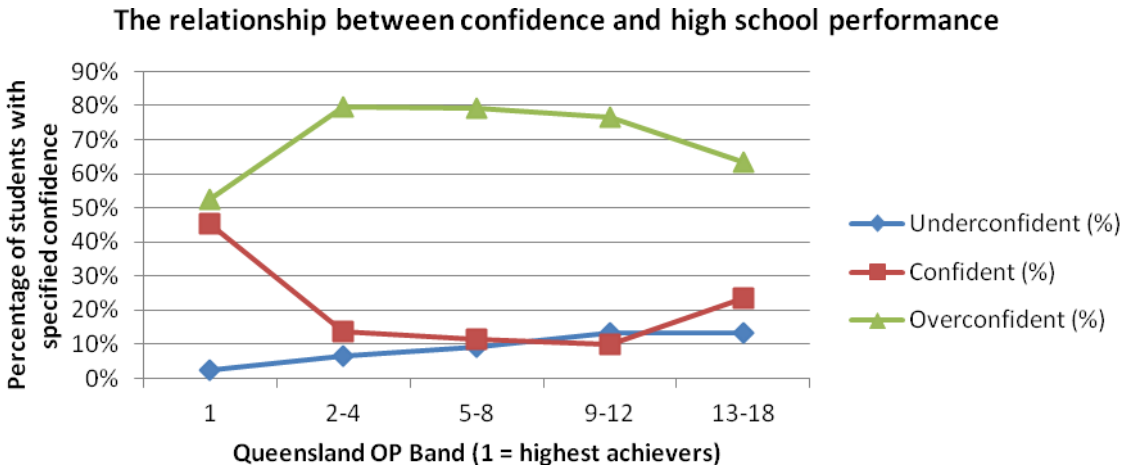
KEYWORDS: first-year experience, concept inventory, confidence, gender effects

ABSTRACT

We have profiled the range of existing conceptual understanding of first-year students entering chemistry at two major research-intensive tertiary institutions in Queensland in 2011 and 2012. Chemical concept inventory items (CCI) have been drawn from across a number of validated literature instruments and delivered in an online questionnaire in week 1 of the first semester of chemistry.

The number of students giving the correct answer for each concept inventory question did not change significantly from 2011 to 2012. High school performance (Queensland OP) was not a significant predictor of performance in the concept inventory. A significant gender difference emerged, with female students (across both institutions) receiving a lower mean score in the concept inventory than males.

In 2012, the students' confidence in their answer to each question was also explored (Potgieter & Davidowitz, 2012). A number of unexpected results emerged that contrast with published findings (Sharma & Bewes, 2011); in particular, females were significantly more likely to be overconfident than males, and the most overconfident students were those in the mid-range band of high school achievement (Queensland OP 2-8) (see Figure). These results will be discussed in terms of factors such as program of study, age and institution, as well as metacognitive factors.



REFERENCES

Potgieter, M. & Davidowitz, B. (2012). Preparedness for tertiary chemistry: multiple applications of the Chemistry Competence Test for diagnostic and prediction purposes. *Chemistry Education Research and Practice*, *12*, 193-204.

Sharma, M. D & Bewes, J. (2011). Self-monitoring: confidence, academic achievement and gender differences in physics. *Journal of Learning Design*, *4*, 1-13.

Proceedings of the Australian Conference on Science and Mathematics Education, University of Sydney, Sept 26th to Sept 28th, 2012, page 22, ISBN Number 978-0-9871834-1-5.