

PRIOR KNOWLEDGE AND/OR PERCEPTION OF READINESS MAY LEAD TO SUCCESS IN UNDERGRADUATE FIRST YEAR CHEMISTRY

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Background and aims

First year chemistry courses are a compulsory part of a range of undergraduate programs at most universities. The entry requirements for students enrolling into these programs through the various state systems or direct entry are varied, even within programs offered at the same University. As a result, students undertaking first level chemistry courses have a high degree of variation in their prior background knowledge, education or experience. Many Universities also provide students the opportunity to upgrade or obtain skills essential for entry into degree programs, through tertiary preparation programs or bridging courses.

The intent of this research is to determine if there is a correlation between prior knowledge (Chemistry and Mathematics) and/or perception of readiness (confidence) on academic achievement in first level chemistry, and which of these has a greater effect on the outcomes.

Methodology

An online survey asking students to indicate their educational history, confidence and concerns with mathematics and chemistry and their expected outcomes was sent via email (voluntary basis) to all students enrolled in first year chemistry courses (follow up email sent 2 weeks later).

A final survey will be given at the end of term (after completion of the end of semester examination) focusing on how students perceived their achievement and what they believed had the most impact on their level of achievement (prior knowledge; chemistry and mathematics, or readiness/perception of readiness). This survey also asks students to provide details of any support services, available at the University, which they may have utilised. Students have the option to share their results and provide further insight into their journey.

Results

The initial survey was sent to 589 students across two courses (553 follow up email). From this, 101 survey responses were collected.

Analysis of the initial survey identified that 85% of students indicated that their final year of high school was year 12 (6% year 11). Overall it was clear that there was large difference in the educational background (high school, preparation programs, previous undergraduate study and time since last studied) of the respondents. Of particular note was that whilst 85% of the students participated in senior study at high school, only 36% completed senior chemistry. A high proportion of the respondents had undertaken a preparation course in chemistry and/or mathematics (22%), or undergraduate chemistry (16%). A substantial variation in the level of confidence with performing a range of mathematical processes was evident. Overall, there was a high level of concern about studying chemistry (e.g. time, content, no prior learning, mathematics, distance mode, or not finishing school). The final survey may provide information about how student's belief in, and understanding of their prior knowledge and confidence, has affected their outcomes.

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