

# BRIDGING THE GAP: FACE-TO-FACE OR ONLINE?

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## BACKGROUND

The transition between high school study and the first year of an undergraduate science degree can be difficult. Undergraduate science (and often, engineering) students are required to study chemistry. This presents challenges that are most salient in students who have not studied high school chemistry. To meet these challenges, students without HSC chemistry are encouraged to enrol in a pre-session "bridging course", which provides a foundation for tertiary-level chemistry.<sup>1</sup>

The transition to tertiary chemistry also has challenges for those with the requisite high school credentials, which the University of Wollongong (UOW) bridging course fails to meet. Many of these students have gaps in their knowledge, or do not fully understand key chemical concepts. Only when the topic is re-taught at the university level, do these students realise their lack of ability. This can impede their progress, with consequent reductions in marks and academic confidence.<sup>2</sup>

## AIMS

The primary objective was to test electronic ways of providing student support in transitioning and compare these with traditional face-to-face methods. Thus we have published a cross-platform chemistry e-book that acts as an alternative or supplement to the first-year bridging course and a synchronous online help service. A secondary objective was to analyse and compare student attitudes to online learning compared with face-to-face.

## DESIGN AND METHODS

The e-book was published as two versions, an iBook and an EPUB3. The content was developed from the bridging-course subject manual. Development of the online help service went through several incarnations as the demands for it changed – eventually being delivered via Adobe Connect. Surveys and focus groups were used to obtain feedback: survey participants were selected using convenience sampling from a population of all first-year students.<sup>3</sup> Focus group<sup>4</sup> participants were selected purposively, since we wanted a non-proportional quota of students from five main categories, that is, those: (i) who had taken the face-to-face bridging course (ii) who had used the e-book (iii) who had used both (iv) who had used the online help service (v) who had taken HSC chemistry.<sup>5</sup>

## RESULTS

Analysis and interpretation of the data about the e-book was specific and informative. Students had some difficulty accessing and using the iBook, due to size and layout issues. Students cited eye fatigue and lack of note-taking features as problems with the EPUB3 version. Interestingly, most students used laptop computers (rather than tablets) for reading. Rather than a portable replacement for a textbook, students used the e-book as both a revision tool, and a supplement to lecture learning. They regarded the worked problem sets as extremely useful, but somewhat insufficient.

The analysis of student attitudes to online learning was more diffuse: (i) online learning, when discussed generally, was overwhelmingly lauded but mobile learning was not (ii) student engagement with new tools such as the online help service was bimodal (iii) while student engagement was driven by a complex suite of motivations where assessment was the strongest motivator (iv) students appreciate a variety of delivery modes to meet their particular set of learning styles. There appears to be no "one size fits all" solution.<sup>6</sup>

## CONCLUSIONS

The e-book needs to move online as mobile learning is not a key driver, and the content should have greater focus on worked problem sets and interactive simulations to account for the multiple learning styles of students. This will also allow the online help service to be integrated into it. Examples of these will be demonstrated at the presentation.

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