Title
Student learning outcomes in the biomedical sciences: the role of capstones

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Teaching and Learning/Graduate outcomes

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Description (not to exceed 75 words)
Evidence-based models for capstones that assess learning outcomes and evaluate the program of study are lacking in the life sciences. A mixed-methods study was designed examining both student and academic staff perceptions around graduate outcomes and capstone course design and delivery. Findings reveal that students value content knowledge over skill development and academics feel more comfortable teaching content versus skills. Implications for designing effective capstones are discussed using two case studies from the biomedical sciences.

Abstract (not to exceed 500 words) indicate the literatures, methods, evidence, and conclusions.

Capstones represent a culminating academic experience meant to amalgamate previously learned skills and content within an academic discipline as well as facilitate the transition from university to the professional workplace (Cuseo, 1998; Hencheid, 2000). Designed effectively, capstones can also reveal the extent to which students are achieving the intended and desired learning outcomes for a given program of study (Rowles, Koch, Hundley & Hamilton, 2004; Forde, 2006; Brown & Benson, 2005). While the idea of a culminating experience to prepare students for the “real world” is not new in higher education, evidence-based models for capstones that assess student learning outcomes and evaluate the program of study are lacking in the life sciences.

This study is reporting initial data from a research project aiming to develop and test effective models for capstones in the biomedical sciences. Specifically, this presents data on graduating biomedical science student beliefs about their learning outcomes, and how this data informs the development of a biomedical sciences capstone course at a research-intensive university in Australia. A mixed methods approach is utilised (Creswell, 1994) examining both student and academic staff perceptions. A survey to capture final year student perceptions of their learning outcomes was administered

Perceptions of academic staff were collected via observations of capstone development meetings and informal interviews.

Preliminary survey analysis reveals that final year biomedical science students value content knowledge over skills like teamwork, scientific writing and communication, and quantitative skills. Findings indicate that students believe content knowledge is emphasised and assessed more in the undergraduate curriculum than skills. They feel more confident about the knowledge they have gained, compared to the skills they have developed. As a result, students place less importance on skill development.

Academics teaching into the biomedical science program feel more confident teaching and assessing content knowledge; however, they adamantly acknowledge the importance of student skill development. The challenges of redesigning curricula, changing pedagogy and assessment practices is overwhelming and they struggle to see how they can do this within the constraints and culture of their environment. While the academics appreciate the opportunity that capstones present to “teach skills”, they feel overwhelmed by the task of developing and implementing a capstone. Gathering graduating student learning data from a capstone course is viewed positively, with academics believing that data could prompt cultural change around teaching and learning.

References


