

Adventures in flipping the classroom

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The lecture is a mainstay of University teaching and learning practice. However, it's a passive approach to teaching and learning, that, from my experience has always struggled to consistently engage students. Furthermore, my experience with assessments at Deakin University of 2nd and 3rd year exercise physiology subjects showed students were able to recall and comprehend basic physiological concepts and molecular pathways, but they were a long way from being able to apply this knowledge or use it creatively. For these reasons, we began looking for more effective, active and authentic ways to teach and for students to learn. Throughout 2011, I led a small team of teaching staff to implement Team Based Learning (TBL) to the 3rd year undergraduate subject Exercise Metabolism. TBL is an educational "flipped classroom" strategy involving individual and team learning with instant feedback, with students being motivated by this process to hold each other accountable for preparation and contribution (Sweet & Michaelsen, 2012). TBL, when compared to traditional lecture approaches has higher levels of student engagement and evidence of higher scores in examinations, particularly for lower performing students (Sisk, 2011). Translating this evidence-based approach to teaching, students first learn the content through Deakin University's online e-learning platform, CloudDeakin, and then to apply this knowledge in team-based face-to-face interaction. This in-class assurance and application of knowledge is developed and assessed for each topic through student-led learning teams that are facilitated by academic staff who are discipline experts.

Data analytics, peer review comments, my own student evaluation research (Wadley *et al.*, 2012) and Deakin University student evaluations all demonstrated improved student critical thinking, engagement, teamwork and learner self-management. Feedback from graduates also confirms higher engagement and enhanced student experience using TBL and suggests strong retention of knowledge and capabilities. Unsolicited comments from the national Graduate Destination Survey (students have graduated 6 months prior and are asked questions about the entire course they studied) specifically mention the benefits of the TBL approach in our subject "*the team based work in exercise metabolism was a great subject- I retained the most knowledge of it*" and "*Exercise metabolism, the lecturers would do it online. So in class it was more interactive with each other*" and "*I liked the exercise-metabolism unit/the way it was structured and learnt it in groups rather than attending lectures*".

Over the past seven years TBL has been progressively refined. In response to student feedback, additional learning resources, learning activities and assessments that are focussed on the intended learning outcome of "developing team-work skills" have been implemented. Dissemination of our experiences with implementing TBL has also inspired colleagues to implement TBL approaches in three other undergraduate subjects at Deakin University.

In summary, students overwhelmingly prefer the TBL method of learning for this subject compared to the traditional lecture format, with student engagement also being maintained across the duration of the subject and support for improved critical thinking skills.

Sweet M. In *Team-Based Learning in the Social Sciences and Humanities: Group Work that Works to Generate Critical Thinking and Engagement* (eds) Sweet M and Michaelsen, LK, (2012) pp 18. Sterling: Stylus Publishing.

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