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The flipped classroom model is receiving increased recognition in the higher education sector as it has the potential to revolutionize traditional teaching paradigms. A significant emphasis has been placed on examining students’ perception of learning in a flipped classroom with research highlighting students mixed feedback on their learning experience. This study reports students’ perception of their learning in a flipped classroom implemented in three first year chemistry undergraduate courses: Fundamental of Chemistry (CHEM1001), Chemistry 1A (CHEM1101) and Advanced Chemistry (CHEM1901) at the University of Sydney. Quantitative and qualitative data from the unit of study evaluations (CHEM1101, n=173, response =30%; CHEM1101, n=345, response =37%; CHEM1901, n=92, response =41%) were analyzed to identify students’ perceptions of this model and its impact on their learning. The course evaluations revealed that students appreciated the flexibility of the online component as it promoted students’ autonomy and the personalized learning environment that provided them the opportunity to self-direct their learning. Students highlighted that the interactive worksheets in the face-to-face sessions allowed them to develop their critical, analytical thinking skills whilst actively engaging in their learning process. The use of a classroom response system, Socrative, allowed students and instructors to obtain immediate feedback on students’ responses to chemistry concepts. These results provide valuable insight into students’ learning experience, and have the potential to influence future initiatives in the design and use of the flipped classroom model.
Orienting and engaging students for pre-learning

Peter Balan OAM*
Peter.balan@unisa.edu.au
University of South Australia
Adelaide, GPO Box 2471 Adelaide SA 5001, Australia

Key words: Flipped learning, Team-Based Learning, pre-learning, learning culture

Educators face at least two challenges when starting a new class that requires students to pre-learn course materials. The first is how to overcome student resistance (and even hostility) to such a teaching approach when they are used to having content presented in a lecture and then assessed at a later stage. The second challenge is how to quickly build a positive and productive learning culture.

The presenter and his colleagues have devised an orientation session that addresses these important challenges in the very first class of a typical pre-learning course (in this case using Team-Based Learning). A sequence of seven evidence-based exercises drawn from the literature helps students understand important learning processes and starts the process of building productive teams; these are critical requirements for getting students’ cooperation in making a successful transition from lectures to collaborative learning. What is particularly innovative about this approach is that it leads students to willingly develop a “learning contract” – their obligation to learn course materials before teaching sessions and their responsibilities for their own learning. Furthermore they clarify their understanding of the instructor’s role and responsibilities.

This orientation session has been conducted in classes with students from different cultures, discipline areas, and learning backgrounds. It provides a sound basis for implementing a pre-learning teaching method in the class sessions of the course that follow this orientation.

The presenter has delivered workshops and presentations demonstrating this orientation session at international conferences and in universities in UK, US, UAE, Malaysia and Australia. He has developed an implementation kit that is used by more than 100 educators around the world. The session is described in detail in: Balan, P., Clark, M. & Restall, G. 2015, 'Preparing students for Flipped or Team-Based Learning methods', Education + Training, vol. 57, no. 6, pp. 639-657 (ERA A*)
Threshold concepts in a flipped classroom to facilitate learning about income and health inequalities

Catherine Chittleborough
School of Public Health
University of Adelaide
178 North Terrace, Level 7, MDP DX 650 550, SA 5005
catherine.chittleborough@adelaide.edu.au

Key words: flipped classrooms; threshold concepts; public health

Introduction

In a second-year undergraduate epidemiology course, one threshold concept is that social stratification, in the form of income inequalities, influences achievement of life goals and health. A flipped classroom was utilised to help transform students’ existing ways of thinking about the associations between poverty, income inequality and health, moving them beyond preconceived ideas that poor people could be healthier if only they were motivated enough to do so.

Learning activities

A total of 316 students were enrolled in the course across four years (2013-2016). Students completed a pre-class online survey to ascertain their knowledge and views about income inequality and health, and recorded their life goals (e.g. related to career, health, family, recreation etc.). During the face-to-face session, students examined data on income distribution in the population. Students discussed what kind of lives they would lead, and whether their life goals were achievable, with the resources they would have available within different income quintiles. Results from the pre-class survey were presented. Evaluation was conducted using Minute Papers.

Results

Approximately 97% of enrolled students completed the pre-class survey, and 88% attended the face-to-face session. In the pre-class survey 79% of students thought that income inequality was a serious problem, but 68% thought that people have a good chance of getting ahead if they work hard. In the Minute Papers, 80% of students stated that the most important point they learnt from the class related to one or both of the main learning objectives - the extent of unequal distribution of income in Australia, or how income influences life goals and health. Queries raised by students in the Minute Papers were clarified in the following class.
Bring your smart device and engage in some Active Learning exercises! We will whiz through the “Why I flip” to the “How I flip” and demonstrate some of the free software that I use to engage the students. The software engages them, but importantly it must be used effectively to achieve the desired learning goals. Quizzing in class can test more than their understanding of pre-learned concepts, it can start discussions, especially with controversial questions. Student-generated word clouds are a great tool to get the students talking and articulating their learning. Concept mapping can build links between new and old knowledge. Case studies help them to apply their knowledge and essay plans help them to store the information logically and approach problem solving. Exit polls can be used to provide more information if required. Finally, I will show what my students find beneficial to their learning.
The Journey to Flipping a Large (N=500) Class

Dr Peter Strelan
School of Psychology
University of Adelaide, Australia

The flipped classroom model is becoming increasingly popular. It has been shown to be particularly effective when class sizes are small and students are highly motivated. However, flipping a large course that effectively involves service teaching presents a new set of challenges, particularly in relation to logistics and student commitment. This paper describes the development, over a four-year period, of a flipped classroom for a large (N=500) class, specifically, a research methods course in psychology. In particular I discuss the challenges we faced in implementing the course, and the changes we introduced to improve the delivery and student uptake. Student evaluations of the course (quantitative ratings) will be compared. Final mark distributions and retention rates will also be compared between years 1 and 5. I discuss how changes implemented in response to ongoing student feedback and reflection are associated with improvements in student engagement, performance, and involvement. The take-home message is that large-scale courses can be successfully flipped but they don't happen overnight!

The evolution from a flipped intention towards a flipped actuality was to ensure that f2f be momentous, with a sense of lively progress which foreshadowed, prepared and propelled students onto assignments after f2f.
Two knowledge bases for face-to-face thinking skill development and assessment

John Willison
john.willison@adelaide.edu.au
University of Adelaide
North Terrace, Adelaide, Australia

Key words: Two knowledge bases, thinking skill development, thinking routines, constructive alignment, flipped learning

This presentation explores the evolving flipped learning design, from 2011 to 2016, of a Masters in Education course that ran as intensive and semester models. Initially the rationale drew heavily of Team Based Learning blended with online modules in advance of class. However, the evolution of the course could be characterised to be from complex to simple and from ‘assumed preparation’ to ‘for marks’ preparation.

Students’ engagement with content pre-face-to-face (f2f) was made known to me through their online responses such as to MCQs and open-ended questions. A major aspect that changed from 2011 to 2016 pre-f2f was the increased value I placed on students portraying their experiences that were relevant to the topic. Therefore the pre-f2f addressed two knowledge bases, one of discipline content-knowledge and the other of relevant student experience. Clarifications and corrections of content knowledge were provided in f2f mini-lectures which had students’ own relevant experiences incorporated; valuing student experience in this way enriched the learning environment and nurtured mutual trust.

The two knowledge bases and the trust provided a solid platform from which to build, during the f2f, thinking skills structured according to the six facets of the Research Skill Development framework. Week after week, the six thinking facets were reanimated and deployed in different contexts, enabling them to become a Thinking Routine. Thinking skill development was both a vital part of in-class activity and core to post-f2f assignments. Assignments comprised an assessment regime based on the six thinking facets, and looked for the evidence of student thinking processes in their assignment products, providing constructive alignment of the course components.
Flipped, Online or Face-to-Face: 
A Cluster-Randomised Trial of Lecture Format

Michael Noetel¹*, Matthew Pink², 
Justine Stynes¹, & Gert-Jan Pepping² 
School of Exercise Science 
163-167 Albert Rd, Strathfield, NSW¹ 
1100 Nudgee Rd, Banyo, QLD² 
Australian Catholic University 
*Michael.Noetel@acu.edu.au

Key words: Flipped classroom, active learning, e-learning, online video

With the advent of online educational technologies, university lecturers can now choose to deliver traditional face-to-face lectures, online lectures, and flipped lectures where materials are delivered at home before class, and ‘homework’ (e.g., a case study) is explored in class. This paper presents the quantitative findings of a mixed-methods analysis of these three lecture formats. The study compared the three methods amongst 261 students learning the same unit, with the conditions cluster-randomised across three university campuses: one cohort received face-to-face lectures before online homework; flipped condition watched online lectures before completing homework in a collaborative environment; and the third did both lectures and homework online, with a 2-hour, face-to-face consultation time, as opposed to online consultations in the other two conditions. All three conditions were matched for: lecturer presenting lecture content; degree of active learning in lecture; staff contact time; and lecturer preparing homework. In the first and last weeks of semester, students completed a 30-item measure of their understanding of the unit content, and measures of autonomous and controlled motivation. While there was a significant increase in understanding across the semester ($\eta^2_{p} = .39$) there were no significant between-group differences ($\eta^2_{p} = .01$) and no within-between interactions ($\eta^2_{p} = .02$). There was a significant decline in autonomous motivation across the semester ($\eta^2_{p} = .10$) and a significant interaction ($\eta^2_{p} = .03$), suggesting a greater reduction in autonomous motivation for the face-to-face condition. There were no significant differences in controlled motivation either between ($\eta^2_{p} < .01$) or within groups ($\eta^2_{p} = .01$). Students reported significantly more perceived autonomy-support in the online condition than either the face-to-face or flipped conditions. Results suggest that there are limited pedagogical advantages of one lecture format over the other, provided teaching staff provide equivalent opportunity for student-content and student-teacher interaction.