



THE UNIVERSITY OF
**WESTERN
AUSTRALIA**



Educational
Enhancement
Unit

UWA Learning & Teaching Position Papers

Position Paper No. 1:
The Flipped Classroom



UWA Learning & Teaching Position Papers

A revised and refined vision for the delivery of learning and teaching at The University of Western Australia (UWA) is under way as part of the UWA 2030 Vision process and the development of the University's education strategy. This approach places an emphasis on enhancing the student learning experience. In support of this process a series of position papers will be delivered as part of the strategy development process and the ongoing need for continuous professional development and discussions on improving learning and teaching pedagogy and enhancing the student experience.

Position Paper No. 1: The Flipped Classroom

Statement of the position

The University of Western Australia encourages a student-centred approach to excellence in education, and positively supports the design and implementation of the flipped classroom model, underpinned by the delivery of evidence-based pedagogies.

Executive summary

The flipped classroom model has a range of benefits for both students and teachers. The model is couched in a student-centric approach to learning which shifts away from didactic teaching. This setting places the onus of learning on the student, empowering them with greater control over their learning experience. By highlighting flexibility in delivery it develops the ability to explore in-depth discussions and collaborations in-class with an emphasis on engagement in collaborative complex problem-solving activities.

The flipped classroom model is not mandatory, but an alternative approach to learning and teaching that the University supports. Therefore, this paper establishes the University's position on flipped classrooms, through identifying the internal and external drivers for change, current literature on flipped classrooms, contextual information on flipped classroom activity within the University, and a horizon scan of other Group of Eight universities (herein as Go8) implementing the flipped classroom model. The paper then identifies possible risks and solutions, and concludes with a list of recommendations. These recommendations include:

- Establish a flipped classroom definition and supportive approach to implementation at UWA
- Provide a theoretical framework of the pedagogy of flipped classrooms
- Establish a support package for teaching staff
- Improve education technologies and Learning Management Support (LMS) resources
- Undertake an audit of appropriate flipped learning spaces and allocating these spaces based on priority needs
- Develop a flipped classroom community of practice, including the promotion of scholarly activity



Definition of flipped classroom

Flipped classroom is a growing trend in the education sector. From a pedagogical standpoint flipped classroom can be defined as:

- The movement of information-transmission teaching out of the classroom
- Use of class time for learning activities which are active and social
- A requirement for students to complete pre- and/or post-class activities to fully benefit from in-class work¹

The key common characteristics of a flipped classroom are outlined as²:

- A change in use of out-of-class time
- Completing traditional in-class activities out of class
- Pre-class activities
- Post-class activities
- Use of technology
- A change in use of classroom time
- Completing traditional homework activities in class
- In-class activities which emphasise active learning, peer learning, and problem-based learning

Identification of the issue

Establishing the University’s position on flipped classrooms requires an identification of the internal and external drivers shaping education excellence at UWA. These drivers have consequently become the catalyst for the development of the Education Plan. They include:

External drivers for change

- The changing nature of learning and social interaction in the modern digital age
- The impact of technology on work, education and training
- Millennial students entering the tertiary sector as the first ‘digital native’ generation and their engagement with ‘digital immigrants’ who comprise the majority of university staff
- Advancement of digital technology and new software platforms to support the learning experience
- Greater flexibility in student choice and the impact of university learning and teaching performance in informing perspective student choices
- Changes to Government funding with the potential for resourcing outcomes built around the student experience and university teaching performance
- The relationship of academic staff to course and unit content in the digital age
- The critical importance of the role of academic staff in an age of social and political disruption and the interrelationship with their roles as experts in their fields of study and the saturation of society with information and disinformation

Internal drivers for change

- UWA’s performance in the Quality Indicators for Learning and Teaching (QILT) scores suggest the University continue its work in enhancing the scholarship of learning and teaching
- Student engagement with technology and the diversification of methods for content delivery is changing the higher education landscape and the traditional role of lectures
- Changes in student learning styles, study patterns and use of technology has meant student physical attendance in traditional didactic lectures is rapidly decreasing
- The rise of student engagement with ‘lectures’ through means alternative to physical presence in the lecture hall
- Student demand for small group teaching as part of the delivery of units
- An emerging disconnect between institutional identity and delivery of brand
- The changing role of the lecturer/instructor in the delivery of education
- Planned upgrades to existing digital infrastructure via multimedia suits and additional software packages that will expand UWA’s ability to deliver the flipped classroom model and interactive lectures

Quality Indicators for Learning and Teaching (QILT) 2017

The QILT (2017) results illustrated the overall undergraduate satisfaction at UWA to be below the national average.³ Similar results also emerge for the overall postgraduate coursework satisfaction, however learner engagement at UWA surpasses the national average:

Table 1. UWA Undergraduate & Postgraduate QILT Scores compared to the National Average Undergraduate & Postgraduate QILT Scores

	UWA Undergraduate	National Average Undergraduate	UWA Postgraduate	National Average Postgraduate
Overall Quality of Educational Experience	77.8%	79.3%	65.8%	75.6%
Teaching Quality	79.0%	80.9%	71.6%	80.1%
Learner Engagement	62.1%	64.1%	66.8%	60.4%
Overall Graduate Satisfaction	74.3%	80%	78.7%	82.2%



Flipped classroom literature

The literature on the pedagogy of the flipped classroom model demonstrates that it supports student achievement, through its pedagogical flexibility in promoting active learning. This style of learning fosters deep learning, concentration, and conscientiousness.⁴ While research into the pedagogy of flipped classrooms is still growing, current literature captures flipped classrooms through the lens of academic self-efficacy, intrinsic and extrinsic motivation, and cognitive load. Pedagogical theories such as self-determination theory and cognitive load theory are applied to underpin the pedagogical support for flipped classrooms.⁵ As the flipped classroom emphasises the student's responsibility in completing pre-class activities to be able to engage in in-class discussions, understanding student motivation can further enrich this engagement, and empower students to support their basic cognitive needs within the learning context.

Numerous studies portray positive student satisfaction with flipped classrooms, including adaptation, and active learning methods employed.⁶ Research demonstrates the flipped classroom model fosters necessary graduate attributes to be work ready, including enhancing communication skills, problem-solving and interpersonal skills, critical thinking, independent learning, and enhancing group collaboration.⁷ Examples of active learning⁸ incorporated into the flipped classroom setting include collaborative learning⁹, cooperative learning¹⁰ and problem-based learning.¹¹

Contextual information

Who is flipping at UWA?

At UWA there are a variety of teaching staff throughout the faculties utilising the flipped classroom model. Each referenced a variety of different reasons, with all experiencing diverse results. A majority of units flipped from the list below ran during the semesters; however, a small portion of these were summer school units from 2017/2018. In total 19 UWA staff were consulted on their experiences of flipping their units, from the following Faculties and Schools:

Faculty of Arts, Business, Law, and Education

- School of Humanities
- School of Social Sciences
- UWA Law School
- School of Music
- UWA Business School
- Graduate School of Education

McCusker Centre for Citizenship

Faculty of Engineering and Mathematical Sciences

- School of Physics, Mathematics, and Computing
- School of Engineering

Faculty of Health and Medical Sciences

- School of Biomedical Sciences
- School of Allied Health

Faculty of Science

- UWA School of Agriculture and Environment
- School of Molecular Sciences

School of Indigenous Studies

StudySmarter

Consultations with teaching staff and their experiences – main themes

A variety of themes emerged from consultations with UWA staff. Illuminating the strengths of the flipped classroom model, such as the flexibility to adapt resources to support different student learning styles. These consultations also identified challenges experienced by UWA staff.

Institutional themes

Uncertainty around university policy on recorded content and intellectual property

Some staff commented on a lack of clarity around the University policies related to teaching staff creating videos and the content developed for the flipped classroom model. Other queries included the protocol as to how often the videos should be reviewed, and updated, and who owned the content.

Discipline-based issues

Some conflicting views were raised about the relative usefulness of the flipped classroom model amongst teaching staff in the hard sciences. This was split between those who perceived the flipped classroom model could be applied to any discipline if done correctly, and others who believed that the flipped classroom model was not entirely suitable for hard science disciplines. While this issue has been a feature of discussion within the STEM teaching environment, it has been noted that the flipped classroom model has and is being used to account for threshold concepts by providing students different material to support learning, and designing workshops to reiterate these concepts. The key factor in the discussion of STEM subjects is that over half of STEM majors are delivered in a traditional classroom setting, with evidence reinforcing this as an ineffective method to engaging students and delivering content.¹² Some of the keys to opening up more student centred approaches is to provide training to academic staff in student-centred learning approaches, and developing more open classroom layouts.

Student experience

Student expectations of teaching and learning

The teaching staff consulted were perceptive to student needs and expectations, with a few staff members identifying some students who believed they were not being taught accordingly to their perception of learning at university, nor for what they paid for. One staff member experienced an initial decline in Student Unit Reflective Feedback (SURF) scores in their flipped unit. Identifying the need for lecturers and university leaders to recognise that the adoption of new pedagogies may very well lead to short term declines in student satisfaction through feedback and survey instruments such as SURF. Significantly it reiterates the need to engage students in conversations about teaching approaches and styles and the overall benefits to students. Generally, this issue is offset by increasing student demand for access to unit content outside of physical attendance at lectures and the overall UWA QILT results noted above.

Concern with student motivation to complete pre-class activities and attend lectures

Motivating students to engage in content is an inherent challenge characteristic to the scholarship of learning and teaching. The flipped classroom model shifts the responsibility of learning to the learner with its student-centred approach. This relies on students both understanding the approach of the model and their motivation to complete pre-class activities. In adapting to this approach to learning, anecdotal evidence has indicated a broad range of levels of engagement of students in completing pre-class activities. These activities are essential for students to participate in in-class activities, so as to reap the full benefit of the flipped classroom model. These concerns however need to be offset against the



adaption a new student-centred approach and the decline in students attending lecturers as the semester progresses. This is a trend not only evident at UWA but across the sector generally.

Another concern voiced by teaching staff was attaching marks to pre-class activities to increase student motivation, and implicitly suggested students are outcome-oriented, rather than focused on the learning process. Furthermore it was perceived the flipped classroom model impinged on student home/study balance, with some students expressing an issue with the increased responsibility to complete pre-class activities. Such issues are legitimate but fall within the scope of the required engagement with student learning. It is important to note that flipping a class focuses on moving what is often seen as homework activities to classroom activities for additional student support. The process is not designed to increase context or workloads for academic staff or students, but rather is focused on a new approach to utilising existing expectations of workloads and study loads.

Teacher experience

Shifting staff perceptions towards teaching

UWA fully supports all aspects of academic work (teaching, research and service) and as part of the new University strategic direction it is highlighting the importance of excellence in teaching. The University supports teaching staff that are driving change to enhance the student learning experience. However, it must be recognised that some involved in such innovative and adaptive processes have perceived resistance to new methods in teaching. One staff member commented on the difficulty associated with being teaching-focused in a research intensive university. Another cited the difficulty of being a productive teacher in a system which rewards research outputs over teaching. This is a key concern of many academic staff at both UWA and other research intensive universities.

The clear vision and direction of UWA, as expressed through the development of the new UWA strategic plan, is for the requirement for excellence in both research and teaching. Truly world class tertiary institutions excel at both of these core elements of academic practice and it should not be the case of one at the exclusion of the other. If UWA is to achieve its vision of being a top 50 ranked university, excellence in teaching must be a priority alongside research performance. Position Paper No. 2 on the Higher Education Academy and UWA will address one of the means that the University is undertaking to recognise and reward teaching excellence.

Spotlight on the teacher/student dynamic

Maintaining a positive teacher/student relationship was a key observation of staff who flipped their units at UWA. Some staff expressed concerns around the flipped classroom model potentially breaking down this dynamic. However others believe student interaction was enhanced through digital engagement in the LMS and emphasising the importance of small group teaching interactions, such as tutorials and workshops. As one staff member reiterated in striving to achieve a lived, campus experience for students is that the *'flipped classroom is not a substitute for contact with students'*, and that *'pastoral care is an important part of pedagogy'*.

Concern around workload model and employment

Teaching staff are content experts, and the value they bring to the University is reflected in the irreplaceable student/teacher dynamic. However, a small number of staff perceived a concern around the teaching workload model. These concerns concentrated on how time devoted to recording and developing content would be counted towards an academic's workload for teaching. There was a concern that the creation of high quality video material could open the possibility of questioning employment security, only to be replaced by a cheaper employee such as a student to teach the unit, or for high quality "pre-baked" lectures to be delivered online by world expert academics as a substitute for lectures.

Such concerns are valid and important. They must, however, be viewed in the context of the role of the University, its focus on teaching and research excellence and the value add that academic staff provide to the student learning experience that goes beyond the didactic lecture as the primary form of content delivery and information dominance. In an era of "fake news" and the "questioning" of societal experts on issues ranging from the environment to social and political issues, the role universities has never been more important. The focus of UWA must be on the nexus between research and teaching and on the role that academic staff play in improving the outcomes of students through meaningful, interactive learning experiences. This must also be understood in the context of the University workload model and in the evolving role of adaptive pedagogy in education.

The flipped classroom model

Understanding the flipped classroom model

From the consultation it was evident there were varying degrees of understanding the conceptual framework of the flipped classroom model, and the application of the model to UWA units. In some areas there was a tone of resistance to the flipped classroom model; however this may well be attributed to a lack of understanding of the model, and its theoretical and pedagogical foundations and perceptions around academic security and workloads. Some staff found demonstrating the positive outcomes amongst peers diffused misconceptions around the model.

University technology and software

There was some understanding that the technology and software provided by the University could be improved. There was difficulty with file size and embedding resources such as videos in the LMS, and some frustration with the University IT system, with further support resources required.

While there is a fixed set-up cost for the technology, there is a perceived long-term benefit. IT issues such as infrastructure and Wi-Fi were also perceived to be problematic. There is an implicit assumption that academic staff possess the digital literacy to utilise the technology at their own will.

Costs associated with implementing a flipped classroom model

There are costs associated with purchasing software and recording equipment, and these costs must be recognised and resourced by the University. There was also a time/workload cost associated with implementing a flipped classroom model, as well as professional development and training requirements. Such resourcing must be a key part of the development of a flipped classroom approach, as should be the scope and function of the Education Enhancement Unit (EEU) and the timing and allocation of the University budget.

Risks and solutions

The following are considered to pose significant risk to the successful implementation of the flipped classroom model at UWA. These risks are identified, and are accompanied with possible solutions of mitigation.

Student engagement

A possible risk is students do not complete the required pre-class activities, which are intrinsic to the flipped classroom model. Anecdotal evidence has noted that students can be critical of completing pre-class activities in their own time. Due to the familiarity and didactic teaching method students, as well as staff, can be hesitant to move away from the traditional lecture.¹³ Teaching staff are also aware that student perception of achievement is too often linked to grades, and the process of learning and knowledge creation to be secondary to the university experience, but seen as a means to employment. The key to overcoming these issues is implementing classroom activities and assessments underpinned by student self-determination and academic self-efficacy to encourage students through motivation.¹⁴ Another critical measure to improve this dynamic is to bring employability, through Work Integrated Learning (WIL), into the classroom.

Student perception of learning and the flipped classroom model

There is some evidence that a flipped classroom model is not suitable for every discipline¹⁵, however there were conflicting findings with student perception and engagement with the flipped classroom as currently practiced in a small number of units at UWA. Student engagement is contingent on the style and delivery of content. Students are more engaged when a teacher encourages critical thinking, expects high results, and provides support in a pro-active learning setting.¹⁶ As one UWA unit coordinator who surveyed their students noted fully online lectures were only accepted when paired with face-to-face small group teaching time to clarify content. The University of Adelaide suggests communicating to students the purpose of the flipped classroom approach, present evidence promoting its effectiveness, and request feedback from the students as part of the process. What is clear is that adopting multimedia to replace the traditional lecture as a mode of delivery of content without addressing pedagogy does not improve learning outcomes.¹⁷

Support with technology, LMS, and blended pedagogy

Ensuring the right levels of digital literacy of teaching staff and students to effectively enable the flipped classroom model is critical to achieving success. While the vast majority of students have grown up in a modern, digitally enhanced world, some students may need support to ensure they can optimise their learning experience. This can be achieved through strong student support by both academic staff and institutional level student support services. Academic staff must possess a baseline of digital competency with technology. Absence of these skills can be a barrier to producing and delivering high quality learning material. Teaching staff are encouraged to seek support through existing structures; such as the EEU, and the Blackboard team, and free online resources, such as the Flipped Learning Global Initiative or other universities who have excelled in the quality of this style of educational experience such as The University of Queensland.¹⁸

Horizon scan

Flipped classroom experience in the Group of Eight

A search of flipped classroom practices across the Group of 8 universities reveals a depth of diversity in utilisation of flipped classrooms. Some universities actively encourage the use of flipped classrooms, establishing communities of practice, while other universities are applying a surface approach to the pedagogy of flipped classrooms and active learning. Below is a brief summary of Go8 universities which actively promote and excel in flipped classrooms.

The University of Adelaide

Adelaide has clearly grounded their learning and teaching strategies in evidence, and has established a flipped classroom community of practice, consisting of academics, e-learning advisors, teachers and researchers representing each faculty. This community provides online resources and videos, supports teacher professional development and encourages dialogue for scholarly activity structured by monthly meetings. The group has held flipped classroom symposiums, with staff becoming certified flipped classroom educators as part of the Flipped Learning Global Initiative.

The University of Queensland

The University of Queensland, the leading Go8 institution in QILT is another institution which champions the use of flipped classrooms. The university recently refined their student strategy to encompass student flexibility, in which flipped classrooms is neatly positioned under. The university presents podcasts on evaluating the effectiveness of flipped classrooms using a program logic model, active learning strategies, and a plethora of resources, links, and academic papers to guide teaching staff in implementing flipped classroom strategies.

The University of New South Wales

UNSW advocates for the use of flipped classrooms, and provides comprehensive resources to support teaching staff, such as case studies, videos, support in planning and designing a blended unit, including guidelines in analysing student needs and communication, desired learning outcomes, and managing workloads.¹⁹ The website is a host with direct links to other educational platforms such as Massachusetts Institute of Technology (MIT) OpenCourseWare and Technology, Entertainment, Design (TED). Accompanying these links are pages that give a step-by-step guide to embedding the links into the LMS. UNSW has a flipped classroom community of practice, and has also completed projects dedicated to enhancing active learning through manipulating learning spaces.

The University of Melbourne

In recent years this university has set up a self-service video recording studio to assist with flipped classroom model, similar to the media room housed in the EEU, and the One-Button Studio housed in FABLE at UWA. The university pairs the self-service video recording studio with staff support to assist with the editing of videos and subject redesign, and sends a positive message of integrating technology into blended learning. The university also promotes learning analytics to assist teachers in supporting their students in their learning experience.



Recommendations

Following are a series of recommendations based on consultations with UWA staff that are utilising the flipped classroom model, contextualised against the current literature on flipped classrooms.

1. Establish a flipped classroom definition and policy

It is recommended that in line with other institutions, and based on the literature, UWA develop a definition as part of university learning and teaching policy. This definition should encompass the values and be contextualised in the UWA setting, and set clear the expectations and boundaries for unit coordinators, teaching staff, and students.

2. Provide frameworks for the pedagogy of flipped classrooms

Provide a variety of frameworks for flipped classroom models as guides for teaching staff.

3. Establish a support package for teaching staff

The EEU develop a support package to be provided for teaching staff. This should include prescriptive strategies on best practice, with references to unique idiosyncrasies for disciplines, providing evidence-based guidance. It will also provide support targeting student motivation and assist with management of student expectations, drawing on EEU support as well as online resources readily available.

4. Technology and LMS support – EEU support

It is recommended teaching staff who implement the flipped classroom model be given technology-related support. This can include EEU support through Learning Designers and Educational Technologists to ensure baseline levels of knowledge and skills with recording devices, advice on using the technology and editing support.

5. Allocated flipped learning spaces

It is recommended the University investigate the provision of additional flexible learning spaces, where desks, white boards, and other manual and digital devices be easily manoeuvred to encourage active learning and facilitate student engagement.

6. Flipped classroom community of practice and promotion of scholarly activity

There is scope for UWA researchers to take the lead in delivering quality research into evidence-based learning and teaching. It is recommended the EEU collaborates with experience UWA staff to establish a flipped classroom community of practice. This community will promote scholarly activity and professional development of flipped classrooms. It is suggested this community of practice also expand to include prominent academics and universities leading the discussion on flipped classroom on the global scale, promoting cross-collaboration across institutions.

Endnotes

1. Despite the uptake of ‘flipping’ a class, academic research over an agreed definition and pedagogical framework are still developing see: Abeysekera, L., & Dawson, P. Motivation and cognitive load in the flipped classroom: Definition, rationale and a call for research. *Higher Education Research & Development* 34, no. 1 (2015): 3, Sarah J. DeLozier & Matthew G. Rhodes, “Flipped Classrooms: A Review of Key Ideas and Recommendations for Practice,” *Educational Psychology Review* 29, no. 1 (2017): 141-143. Min Kyu Kim, So Mi Kim, Otto Khera, & Joan Getman, “The Experience of Three Flipped Classrooms in an Urban University: An Exploration of Design Principles.” *Internet and Higher Education* 22 July (2014): 37-50. Jacqueline O’Flaherty, & Craig Phillips, “The Use of Flipped Classrooms in Higher Education: A Scoping Review.” *Internet and Higher Education* 25 April (2015): 85-95.
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8. De Lozier & Rhodes, “Flipped Classrooms: A Review”, 147.
9. See Femke Kirschner, Fred Paas, & Paul A. Kirschner, “A Cognitive Load Approach to Collaborative Learning: United Brains for Complex Tasks,” *Educational Psychology Review* 21, no. 1 (2009): 31-42.
10. See David W. Johnson, Roger T. Johnson, & Karl A. Smith. “Cooperative Learning Returns to College What Evidence is There that it Works?” *Change: The Magazine of Higher Learning* 30, no. 4 (1998): 26-35.
11. See Filip Dochy, Mien Segers, Piet Van den Bossche, & David Gijbels, “Effects of Problem-Based Learning: A Meta-Analysis,” *Learning and Instruction* 13, no. 5 (2003): 533-568.
12. Scott Schrage, “Massive Study Finds Lectures Still Dominate STEM Education,” *Faculty Focus: Higher Ed Teaching Strategies from Magna Publications*, May 7, 2018, accessed May 7 2018, https://www.facultyfocus.com/articles/teaching-and-learning/massive-study-finds-lectures-still-dominate-stem-fields/?utm_medium=Social&utm_source=FFweb
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15. See Jeremy F. Strayer, “How Learning in an Inverted Classroom Influences Cooperation, Innovation and Task Orientation,” *Learning Environments Research* 15, no. 2 (2012): 171-193.
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