

# Cultural Contexts of Learning Preferences: Relative Dominance of Self-Directed versus Other-Directed Learning Styles

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**SESSION C2:** Interdisciplinary and cross-disciplinary engineering programs and learning environments

**CONTEXT** Monash University is regarded as one of the top 25 internationalised universities in the world. As part of a curriculum redesign, Monash University's Faculty of Engineering recently introduced new multidisciplinary first year (FY) blended learning units that employ a mix of flipped, project-based, peer-to-peer, and traditional learning approaches. The present study focuses on one of these FY units with the aim of investigating the cross-cultural acceptance of the non-traditional pedagogies by students belonging to Asian and western campuses. Specifically, we present an international comparative study of the preferences for the various teaching/learning and assessment components within our selected unit by students in semester 2, 2016 on the Clayton (Australia) and Sunway (Malaysia) campuses.

**PURPOSE** The objective is to investigate if there are any culturally influenced preferences in relation to self-directed versus an expert-directed learning of the FY multidisciplinary blended learning unit.

**APPROACH** We carried out online surveys as well as focus group discussions involving students from both campuses towards the end of the semester. A five-point Likert scale was employed to capture the learning component preferences by students. The teaching/learning and assessment components included in the unit are: pre-class online videos, pre-class online textual material (called "e-publications" or "e-pubs"), pre-class quizzes, pre-practical class videos and quizzes, Moodle-hosted online discussion forum, in-class (supervised) problem worksheets, and in-class lecturer-led ("expert-led") sessions.

**RESULTS** The results suggest that the self-directed out-of-class teaching/learning components (pre-class lecture videos, quizzes, online discussion forum, etc) are *slightly* more preferred by the Clayton students. The Sunway students, on the other hand, showed slightly more liking for in-class guided problem solving and lecturer-led discussion of key concepts. The latter students also showed more preference for the detailed e-pubs. The most significant differences were found for pre-class videos (74% of Clayton students compared to 60% of Sunway students perceive them as enabling learning the content before the lecturer teaches/explains,) and in-class problems solving (72% of the Sunway students compared to 59% Clayton students see this as a way of enhancing their learning).

**CONCLUSIONS** Our study suggests that Malaysia based FY students show overall relatively lower preference for self-directed learning components compared to their Australia based counterparts. It must be emphasized that the number of students with Asian background studying engineering on the Clayton campus is considerable, yet there appears to be an increased preference for self-directed learning components amongst them. The present study sheds light on the intercultural aspects of innovative pedagogical methodologies and their global reach.

**KEYWORDS** Flipped classroom, blended learning, culture, learning preference.

## Introduction

Globalisation of higher education is a growing phenomenon; the number of foreign university campuses has been steadily increasing in many countries, especially in countries considered as “education hubs”. Concurrently, the number of students carrying out education in foreign countries, commonly referred to as “international students”, is also on the rise and estimated to reach 7 million by 2020 (Altbach, Reisberg, and Rumbley 2009). The various implications and ramifications of such cross-border and transnational education ventures have been the subject of several publications (e.g., Lane, 2011; Knight, 2008; Lane et al., 2004; Skidmore and Longbottom, 2011; Waterval et al., 2017).

With globalisation of education comes the need to understand how well the curricula and pedagogies developed by a university for “native” students would be accepted by students in a foreign country doing the same education program. In engineering, obviously, it is impractical to have separate curricula and pedagogies for the originating country and target foreign country/countries. Consequently, if uniform cross-border education standards are sought within a successful and sustainable international education operation, the pedagogies used by the education provider must be compatible with the predominant teaching/learning preferences by students in all the countries involved.

Spurred on by the rapid developments in digital technologies, the past two-three decades have been witnessing a tremendous adaptation by universities across the world of blended teaching/learning methodologies as a means of providing innovative educational offerings (Friesen, 2012; Blended learning: a disruptive innovation). The blended learning approach calls for significant self-managed and self-directed learning by students. This could be particularly challenging for First Year (FY) undergraduate students coming with a secondary school training that utilises largely instructor-driven learning (Frambach et al., 2012). The cultural context also dictates student readiness for undertaking self-directed learning. In addition, the student learning styles and preferences shaped by cultural and ethnic dimensions can be of considerable importance, as shown by international comparative studies (e.g., Barron and Arcodia, 2002; Joy and Kolb, 2009; Holtbrugge and Mohr, 2010; Fang and Zhao, 2014; Budeva, Kehaiova, and Petkus, 2015).

As a leading education provider in the Asia-Pacific region Monash University will be keen for its education methodologies, largely developed in a western (Australian) context, to be acceptable to and embraced by students not only within Australia but also in foreign countries. The School of Engineering, Monash University Malaysia represents the largest engineering education operation under Monash University outside of Australia. The student population within the School of Engineering is largely Malaysian; however, approximately 25-30% of the students come from other countries in the region and typically include students from Middle Eastern and African countries as well. Thus “the Asian” or what may be termed “non-western” context should be an important consideration at Monash University in curriculum planning and redesigning. In an increasingly competitive tertiary education industry environment, changes made to education practice should not only reflect the emerging trends, but also lead to acceptance/uptake by large numbers of international students.

In this paper, we present a cross-border comparative study of the preference for self-directed versus other-directed teaching/learning components in a FY undergraduate multidisciplinary engineering unit offered by Monash University with the aim of investigating the relative cross-cultural acceptance of non-traditional pedagogies by students belonging to Asian and non-Asian campuses. Specifically, we present a comparative study of the preferences for the various teaching/learning and assessment components within the unit by students in semester 2, 2016 on the Clayton and Sunway campuses representing a predominantly “western” and “Asian” cultural context, respectively

## Research Method

The present project forms part of a major study carried out on students doing two different FY multidisciplinary engineering blended learning units on the two campuses. The study presented here focused on the preferences by students on both campuses for various teaching/learning/assessment materials included in the unit. The teaching/learning and assessment components included are: pre-class videos, pre-class textual materials (“e-pubs”), pre-class quizzes, pre-practical class videos and quizzes, Moodle-hosted online discussion forum, in-class (supervised) problem worksheets, and in-class lecturer (“expert”)-led sessions”. It is to be mentioned that majority of the unit delivery aspects is the same on the two campuses. These include: (1) students from both campuses having access to the same teaching materials; (2) nearly identical assessments: pre-class quiz, class-participation quiz, pre-practical quiz, practical participation, laboratory work, projects demonstration and reports, and final examination; (3) the same amount of contact hours for the two cohorts; (4) the “experts” (lecturers) in the teaching team having similar expertise and backgrounds on both campuses. The only differences between the campuses are the background of the students taking this unit and, perhaps, the background of the teaching assistants.

Online surveys and focus group discussions in relation to students’ preference/liking for the learning and assessment components were carried out on both campuses towards the end of Semester 2, 2016. Ethics clearance from Monash University Human Research Ethics Committee (MUHREC) was obtained prior to carrying out the survey and focus group. Consent form and explanatory statements approved by MUHREC were provided to each participant. The online survey and the focus group participation was on a voluntary basis.

The online survey instrument was designed using Google Forms and the responses were gathered through a 5-point Likert scale, ranging from *strongly agree* to *strongly disagree*. Questions asked in the online survey consist of items such as “*The pre-class videos on Moodle helped me to learn the course content even before the lecturer explained/discussed it in the expert-led session (ELS)*”, “*The epub on Moodle helped me to learn the course content even before the lecturer explained/discussed it in the ELS*,” “*The pre-lecture online quizzes helped me to assess my learning progress*,” “*I made efforts to learn the course content using resources other than that posted on Moodle*”, and “*The problem sheet helped me with enhanced learning of the theory content*”. In all, 78/515 students from Australia and 65/212 students from Malaysia participated in the study. Independent 2-sample *t*-test (a value of 0.294) and ANOVA (significance value of 0.702) suggested no significant differences student perception of self-directed (flipped) learning between the two campuses.

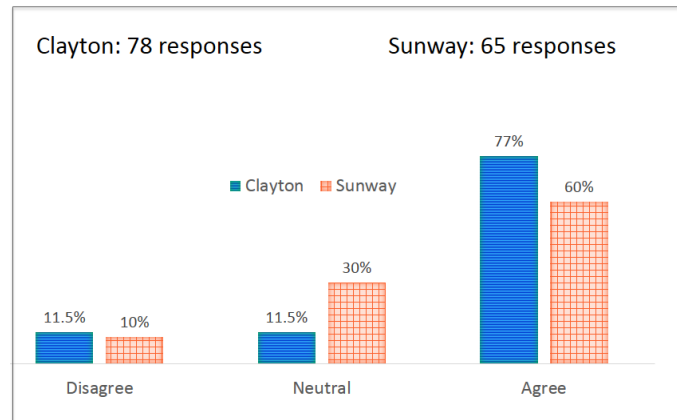
Semi-structured interviews were also conducted with randomly selected students who also participated in the online survey. The focus-group interview consisted of 7 students from the Malaysian cohort and 3 students from the Australian cohort. However, owing to the lack of coherency in the feedback in relation to the present topic (a result of the small number of participants from Australia), the focus group results are not discussed further.

## Results and Conclusion

Figure 1 shows the cumulative responses to the question asking whether or not the students learned better with the flipped mode compared to the traditional mode. As the purpose of the present study was to determine the overall inclination of students to self-directed study (and not the degree of the preference) in the present analysis both “*agree*” and “*strongly agree*” responses have been combined. Similarly, both “*disagree*” and “*strongly disagree*” responses have also been combined.

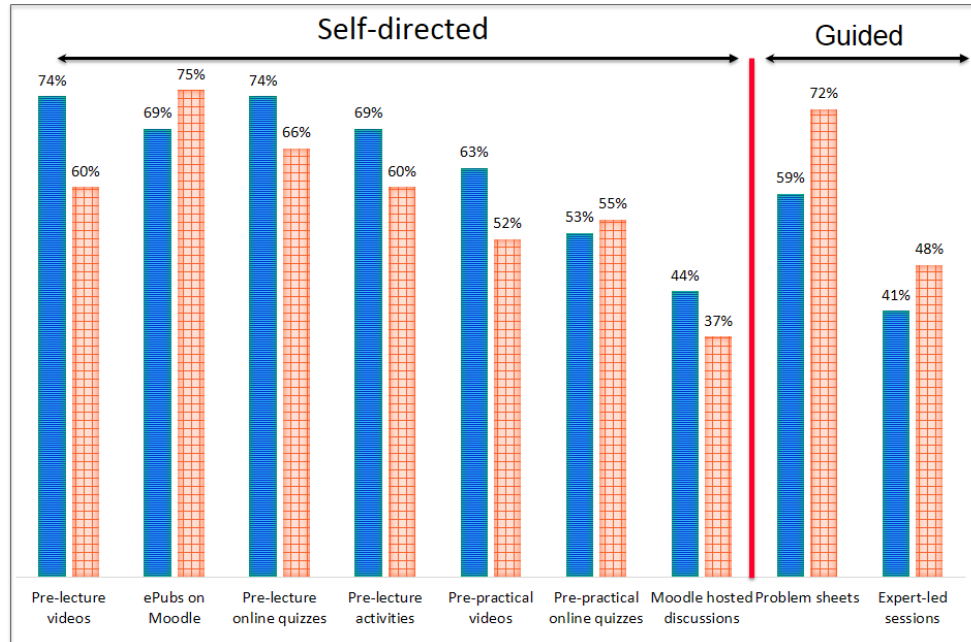
It is clear that students from the “western” (Clayton) campus show relatively higher preference for the self-managed, self-directed (flipped) learning mode. The students from the

Asian (Sunway) campus are significantly more ambivalent in their preference for the self-directed, flipped learning mode compared to the traditional instructional mode of learning.



**Figure 1: Cumulative student responses to preference for the flipped learning mode. Clayton students (solid bar) and Sunway students (cross hatched bar).**

More insights can be gained by analysing the detailed student preferences for the various learning and assessment components employed in the unit (Figure 2). These components have been grouped into two categories: “self-directed” and “guided.” Learning using the self-directed components are managed entirely by students themselves in their own time whereas the guided components are supervised or directed by the lecturers concerned.



**Figure 2: Student preferences for the various learning and assessment components embedded within the unit. Symbols as in Figure 1.**

The online survey results suggest that the self-directed, out-of-class learning and assessment components (pre-class lecture videos, quiz, online discussion forum, etc) are slightly more preferred by the students doing their unit in a western environment (Clayton campus). The students representing the Asian cultural context (Sunway campus), on the

other hand, showed slightly more liking for in-class guided problem solving and lecturer-led in-depth discussion of the key concepts. Students from the Asian context appear to have a higher preferences for examination-oriented learning activities such as the problem sheets and also would most likely to prefer a more face-to-face and physical interaction in the expert-led sessions compared to students in the western context, as observed in some other study also (Chen, 2014). The students from the Asian campus also showed slightly more preference for the detailed e-pubs, possibly reflecting their relatively more dependence on “delivered” content than own “researched” content.

The most significant differences were found for pre-class videos (74% of Clayton students perceive it as helping them learn the content on their own before the lecturer teaches/explains, compared to 60% of Sunway students) and in-class worksheet based problems solving (72% of the Sunway students compared to 59% Clayton students see this as a way of enhancing their learning). A striking aspect of the results is the relatively lower student interest (from both campuses) in the online discussion forum (intended to facilitate peer-to-peer sharing of learning) and lecturer-led sessions intended for in-depth and “big picture” discussions. Empirically, we have observed a significant “spike” in online discussion immediately prior to the final examination, particularly originating from students based on the Clayton campus discussing the concepts in great depth; the Sunway students have been thus far relatively less enthusiastic about such online discussions and keener to consult lecturers in person. It is clear that although flipped/blended learning approach is designed to facilitate just-in-time learning, there is a considerable amount of “catch up” learning occurring towards the end of the semester. Interestingly, we have observed that the learning preferences displayed by students on the two campuses do not translate to significantly different “learning outcomes” achieved by students as measured by their grades.

From the foregoing discussion of self-directed versus other-directed learning behaviours of students representing predominantly western and Asian cultural contexts it is clear that there is a significant, albeit small, underpinning cultural bias in relation to student readiness for self-directed learning. The Asian students have a higher preference for guided learning activities. This is particularly important in relation to one of the necessary engineering learning outcomes for undergraduate students as stipulated by the International Engineering Alliance (Washington Accord): life-long learning skills development by the students. It is also clear that despite such learning preference differences students from both cultures are able to adapt and perform equal well.

A number of questions arise from the above discussion. How much independent learning can students achieve when situated in different cultures? To what degree the pre-university education shapes the students’ readiness to successfully embrace self-directed learning in their tertiary education? Do factors such as English proficiency and cultural conditioning play a part in determining students’ ability to learn using the emerging pedagogical innovations? It would also be worth carrying out an in-depth study of the learning preferences of domestic versus foreign students in a “western” campus.

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