Experience on Teaching a Multi-Campus Systems Analysis and Design Unit Involving On-Campus and Off-Campus Students

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Abstract

At Central Queensland University (CQU), a multi-campus learning model is adopted where: (a) different campuses offer their own face-to-face classes, (b) a large teaching team is involved where teaching members reside at different campuses, and (c) a large cohort of on-campus (across different campuses) and off-campus (distance-learning) students is involved. Teaching under this setting is obviously challenging. This paper shares our experience on teaching a postgraduate systems analysis and design unit at CQU. We discuss the issues encountered and the measures implemented to alleviate these issues. Through sharing our experience, we provide some useful and practical tips to those universities which are considering adopting the same or similar multi-campus learning model as CQU.

Keywords: multi-campus teaching, distance learning, remote learning, course assessment.

1. INTRODUCTION

Today, several different types of learning models exist, such as: (a) classical face-to-face (F2F) lecturing (teaching staff and students co-located at a single classroom where learning occurs), (b) remote learning (teaching staff and students are separated from one another, and communication between them is facilitated by information technologies; learning involves synchronous and asynchronous components), (c) blended learning (students can opt for in-class, remote, or purely asynchronous learning), and (d) multi-campus learning (multiple groups of students at different campuses with separate class times and a local instructor for each campus) (Sielmann & Keulen, 2020).

This paper focuses on model (d), that is, multi-campus learning. For many universities offering multi-campus learning, teaching is conducted by a single teaching member (or presenter) at one campus and teleconference to the other campuses. Central Queensland University (CQU), however, offers multi-campus learning in a slightly different way. At CQU, every unit (see endnote 1) is associated with a "coordinating" campus where the Unit Coordinator (UC) is located (different units may have different "coordinating" campuses and UCs). For a given unit: (i) different campuses offer their own F2F "classes" (including lectures and tutorials (see endnote 2)) to their respective on-campus students, and (ii) at the same time, the UC at the "coordinating" campus centrally offers remote synchronous classes to all off-campus (or distance-learning) students regardless of their geographical living locations (see endnote 3).

Under this mode of learning, a fundamental issue is "equity and equivalence", that is, both on-campus and off-campus students must be treated equitably and receive the same teaching/learning standards.

Since teaching at CQU involves remote learning (which has been increasingly adopted by many universities in the world (Dumford & Miller, 2018; Fernández-Batanero et al., 2022; Ladyshewsky, 2004; McConnell, 2005)), careful consideration should be given on how to offer remote learning effectively. Unarguably, remote learning offers many benefits to both students and faculty staff such as increased access, better preparation of students for a knowledge-based society, and lifelong continuing education and training (Appanna, 2008). During the COVID-19 pandemic where many countries or cities have experienced compulsory lockdowns, remote learning was the only viable option for university teaching (Hollister et al., 2022; Yilmaz & Karataş, 2022). Remote learning, however, also has its own limitations. For example, remote learning excludes much of the richness of non-verbal languages (e.g., gestures, looks, and postures) involved in F2F learning, and it does not have the same capacity as F2F instruction to project the instructor's presence immediately and effectively (Fernández-Batanero et al., 2022; Reupert et al., 2009).

This paper discusses the details of multi-campus learning at CQU, illustrated by a postgraduate ICT (Information and Communications Technology) unit. Through sharing our experience, we provide some useful and practical tips to those universities which are considering adopting the same or similar multi-campus learning model as CQU.

2. BACKGROUND

CQU is located in Australia. To promote "social equity" in education, CQU runs a multi-campus system across different states in Australia. More specifically, CQU has campuses in several metropolitan cities and study centers in regional/rural areas, offering both F2F and online teaching (see Figure 1). The idea behind this arrangement is to make university education accessible to both high-school leavers and working adults who want to receive tertiary education, regardless of their living locations and walks of life.

This paper focuses on a postgraduate ICT unit related to Systems Analysis and Design (this unit is hereafter referred to as "SA&D") offered by our College of ICT. SA&D is a first-year core unit of our Master of Information Systems degree. On average, SA&D has about 180–200 students each semester. The unit involves F2F teaching across 4–5 campuses (for on-campus students) and online teaching (for off-campus students). SA&D is centrally administrated by the UC at our Melbourne Campus, who holds the ultimate responsibility of managing the unit in terms of: (a) unit planning, design, and implementation, (b) overall learning outcomes, (c) topics covered, (d) standardization of teaching and tutorial materials, and (e) assessment design and implementation. Often, this UC is also responsible for delivering Melbourne-based F2F lectures. F2F tutorials in the Melbourne campus, however, are normally delivered by "sessional" academic staff (those who are employed on a casual, short-term contract). Whereas for F2F classes in other campuses, they are delivered by either our permanent faculty staff or sessional academic staff resided in those campuses.

Figure 1: Different Campuses of CQU in Australia

Each semester lasts for 12 weeks: the first 11 weeks (teaching weeks) are allocated for teaching and the last week (revision week) is reserved for unit revision. For on-campus students, their weekly class times are often different across campuses. For off-campus students (regardless of their physical locations), the UC specifically conducts an online Zoom tutorial for them every week. However, no online lectures are organized for these off-campus students. Instead, the UC video-records his Melbourne-based F2F lecture every week and then uploads the recorded video online into the unit webpage for off-campus students for later watching. Table 1 summarizes the details of the teaching arrangement.

Students	Weekly Lectures	Weekly Tutorials	Access to Recorded Video Classes (Conducted by the UC)
On-campus	Yes (F2F)	Yes (F2F)	Yes [†]
Off-campus	No	Yes (via Zoom with the UC)	Yes

[†] This gives an opportunity to those on-campus students who are absent from a F2F class to self-study the relevant topic they have missed.

Table 1: Teaching Arrangement

3. TEACHING/ASSESSMENT ISSUES AND REMEDIES

SA&D involves multi-campus classes with a team of teaching staff (including lecturers and tutors; permanent and sessional) who are geographically apart, further complicated by a large cohort of on-campus and off-campus students. Thus, achieving the pre-set learning outcomes requires dedicated and thoughtful effort to address all the teaching/assessment hurdles. Drawn from our previous teaching experiences of SA&D in the last few years, this section discusses some major issues we encountered in teaching this unit and the corresponding remedies implemented to address these issues.

F2F Class Attendance and Engagement
In each semester, the class times across all campuses are centrally scheduled by the CQU's Timetabling team rather than by the UC. Under this arrangement, it is possible that, within a teaching week: (a) the Melbourne-based F2F lecture conducted by the UC (which is video-recorded for off-campus students to watch later) is scheduled before its corresponding F2F lectures conducted by teaching staff in other campuses, and (b) the online Zoom tutorial conducted by the UC (organized for off-campus students and is also video-recorded) is scheduled before its corresponding F2F tutorials conducted by teaching staff in other campuses.

If the above scenario (a) or (b) applies, special attention should be made regarding the timing of uploading the recorded video into the unit webpage. Otherwise, student attendance and engagement in F2F classes can be adversely affected. Consider, for example, scenario (a) mentioned above. Suppose the Melbourne-based F2F lecture is scheduled on every Wednesday and F2F lectures (for the same topic in the same teaching week) are also offered on every Thursday and Friday in other campuses. If the UC uploads the recorded video of his Wednesday F2F lecture into the unit webpage on Thursday morning (i.e., the next day after his Wednesday lecture), some on-campus students (whose campuses are not Melbourne) may watch the uploaded video before their scheduled F2F classes on Thursday or Friday. If this happens, these students may lose their incentives to attend their F2F classes. This adversely affects the class attendance and engagement.

An apparent and straightforward solution to avoid this problem is for the UC to upload the recorded video into the unit webpage only after all the F2F classes (across all the campuses) in the same teaching week have finished. For this solution, we caution that the time gap between delivering the last weekly F2F class and uploading the recorded video should be short (preferably no longer than one calendar day). Otherwise, off-campus students may consider this rather long delay as an "unfairness" of learning, since they can only self-study the same topic "much later" than the on-campus cohorts (we actually encountered this complaint from off-campus students previously). Note that one may argue that, even with a short delay in uploading the recorded videos into the unit webpage, the utility of the recordings is reduced because off-campus students can only access to these recordings few days later.

Interest in Online Classes
In general, off-campus students face many challenges when studying online. Examples of these challenges are: (a) lack of motivation (due to the lack of social F2F contact with the teaching staff and fellow students), (b) lack of peer pressure (which is a driving force for students to keep their interest in a unit alive), (c) boring (partly due to the "monotonous" system of learning since off-campus students primarily sit in front of a computer screen for self-learning), and (d) high pressure from work (e.g., long working hours) or family (e.g., a stay-at-home mother struggles with her online study while taking care of her kids). Studies (Holder, 2007; Yilmaz & Karataş, 2022) have reported that the dropout rates are about 10–20% higher for online units than for traditional, F2F units.

In view of this issue, in Weeks 1 and 2, our teaching team will closely monitor the online tutorial attendance and the activities via the

remote learning system (e.g., how long a student has not logged on to the system for downloading/watching the recorded lecture videos) of the off-campus students. For those off-campus students with little online attendance and activities, the Student Engagement Team of the College of ICT will make contact with them via emails or phones to understand their study difficulties, and offer appropriate advice and assistance accordingly. For example, if students are suffering from excessive mental pressure or emotional stress, they will be directed to the CQU's Health and Wellbeing Team for mental advice and assistance. If students are experiencing heavy workload from their full-time jobs and, hence, are unable to devote sufficient time and effort to their studies, they will be advised to apply for study deferment (possibly by one semester) during the Add/Drop Period so that they do not need to pay for the unit fee and not get a poor (or even fail) grade at the end of the semester.

Group Project
Team formation: SA&D adopts a 100% continuous assessment approach — it involves three assignments without a final examination. Among these three assignments, Assignments 1 (30%) and 3 (40%) are individual, and Assignment 2 (30%) is a group project. Since our Master of Information Systems degree is accredited by the Australian Computer Society (ACS), ACS stipulates that at least one of the assignments in SA&D must be a group task and each group should have no less than four students. This ACS requirement is addressed by Assignment 2.

Employability remains an important concern for universities as well as their graduates. In view of this, Assignment 2 (a team exercise requiring each group to produce a design of a hypothetical commercial information system) is designed based on real-world tasks that mirror professional practice (e.g., designing an information system as a team) (Winterbotham et al., 2018). Besides, collaborating with other students in a group is a valuable way of learning, particularly on soft skills such as communication, negotiation, and conflict resolution (McConnell, 2005).

Despite its various benefits, a group project can be challenging particularly for off-campus students. Group formation is one of these challenges. In SA&D, students are allowed to form their own groups. This arrangement does not pose any major problem to on-campus students. This is because they can readily get to know each other quickly by being in the same F2F

classes, so that they can decide on whom they like to work with. We advise on-campus students only form groups with their fellow students in the same tutorial sessions. The rationale is that, in some F2F tutorials, free time will be given to on-campus students to discuss Assignment 2 in their own groups, and if any group has questions regarding this assignment, they can ask their tutors immediately.

While it is relatively easy for on-campus students to form their own groups, forming groups for off-campus students could be an issue because off-campus students hardly know each other via online Zoom classes. To alleviate this problem, in Week 1, we ask each off-campus student to upload a self-introduction video stating his/her undergraduate discipline of study (see endnote 4), current working field (e.g., ICT, engineering, accounting, or general business administration), physical living location (exact home address is not needed), and available free time in a week for online project meeting. We then make these self-introduction videos available to all off-campus students to facilitate the team formation process.

Project coordination and communication: Team formation is only the first step of the group project. Thereafter, effective project coordination and communication is important so that students can achieve the expected learning outcomes. In this regard, we implement two measures to facilitate project coordination and communication: (a) a Microsoft Teams group account will be created for each project group, and (b) in some online Zoom tutorials, breakout rooms will be created for individual project groups to facilitate their meetings. Note that measure (a) is not only applicable to off-campus students. This is because, for on-campus students, they may not have classes on every weekday and, hence, will not come to their respective campuses for attending F2F project meetings.

The above measures are implemented to promote the concept of virtual teams, that is, geographically distributed collaborations that use technology to communicate and cooperate (Morrison-Smith & Ruiz, 2020). Today, virtual software teams are popular because this approach allows companies to partner experienced developers located in high-cost economic areas with less-experienced team members in low-cost centers so that both locations can be leveraged to their best advantage (Bakshi & Krishna, 2008; Casey & Richardson, 2004).

Formative and Summative Feedback

Feedback given to students can be summative or formative (Houston & Thompson, 2017). Summative feedback (e.g., overall grade/score of the unit) is normally given at the end of the learning process and serves to inform students how well they have done with an overall assessment of their learning. By its nature, summative feedback does not primarily aim at helping students improve their performance during the learning process. Formative feedback, by contrast, is given during the course of the learning process. In this way, formative feedback is effective to help students recognize their knowledge gaps, areas of misunderstanding and improvement, and learning strategies students might use to better satisfy the unit's learning outcomes (Shute, 2008).

Because of the benefits associated with formative feedback, we adopt a policy that marked scores and (formative) feedback of any assignment must be released to students no later than two weeks after the assignment's submission due date (see endnote 5). Note that, in SA&D, all the three assignments are based on the same information systems development case study. Therefore, any learning problems or misunderstandings of Assignments 1 and 2 will not only affect a student's performance in these two assignments, but they will also affect his/her performance in the subsequent assignment(s). This is the main reason behind our two-week feedback policy. To further improve and standardize the formative feedback comments given to on-campus students across different campuses and off-campus students, the UC also prepares and uploads a recorded video into the unit webpage to discuss some common issues made by students in their submitted assignments (also within two weeks after the assignment's submission due date).

Standardization of Unit's Teaching Materials and Assessments

Because SA&D involves a teaching team of about 5–6 permanent and sessional members across 4–5 different campuses, standardizing the unit's teaching and assessment materials (corresponding to the three assignments) is of utmost importance. This is achieved by the following:

- A well-designed syllabus, including a set of learning outcomes and all the topics to be covered.
- The UC prepares a set of teaching slides and tutorial questions which cover all the topics in SA&D, and makes these materials accessible online (via the unit webpage) to all the other teaching members and students.

- Flexibility and discretion are given to individual teaching members to cover related concepts/ideas which are not mentioned in the UC's teaching materials (teaching slides and tutorial questions), provided that individual teaching members have gone through all the UC's teaching materials with students in sufficient depth. Note that, teaching additional concepts/ ideas by individual staff will not create unfairness in assessment because each of the three assignments is prepared by the UC. In other words, any additional concepts/ ideas taught by individual staff to some, but not all, students will not be assessed.
- For every assignment, the UC prepares the suggested answers and the marking schemes, and then distributes them to all the teaching members responsible for marking. Each marker sends three marked assignments (of high, medium, and low performance) to the UC for moderation. After receiving and considering the UC's moderation feedback, each marker then adjusts his/her marking standard (if necessary) for all the remaining assignments yet to be marked.

4. UNIT EVALUATION AND PERFORMANCE

CQU, like many other universities, conducts a unit evaluation exercise with the students at the end of each semester to collect their feedback on various teaching/learning aspects of individual units. In the last-semester teaching of SA&D, the percentage of overall unit satisfaction was 90.91% (at CQU, it is considered very satisfactory if this percentage is 85% or higher). Table 2 shows some students' positive comments on SA&D. The pass rate of SA&D in the last semester was 87.25%, which was considered highly satisfactory in CQU.

Feedback Comments
Provided clear and detailed explanations
Challenged me to think and question
Provided valuable and timely feedback
Created an inclusive learning environment
Encouraged students to interact
Connected teaching content to real-world applications
Teaching members showed passion and enthusiasm in the discipline

Table 2: Students' Feedback Comments on SA&D

The success of the CQU's multi-campus approach

also depends on positive faculty evaluation and buy-in. Although CQU does not have a formal evaluation mechanism on this dimension, our faculty staff members have repeatedly expressed their positive opinions on the teaching approach in regular staff meetings. They commend the approach in terms of: (a) its flexibility in local-campus teaching, but yet with standardized teaching and tutorial materials; (b) its ability to provide local-campus support; and (c) its ability to cater for the study needs (e.g., flexible study hours) of off-campus students who are working full time.

5. LIMITATIONS

Several CQU's campuses are located in commercial buildings, where part of these buildings is occupied by commercial companies. This creates restrictions on our teaching. For example, the facilities management teams of these buildings require our campuses not to offer evening classes after 7:30pm between Monday and Saturday, and must be closed on Sunday and holidays. During these "restrictive" periods: (a) offering F2F classes is not possible, and (b) teaching staff members are unable to offer remote synchronous classes (via Zoom meetings) in their offices.

Several studies (Bolton, 2020; Darby, 2023) reported that more university students prefer remote learning than F2F teaching. Despite this finding, the Australian Government Department of Education stipulates that universities and other education providers registered with CRICOS (see endnote 6) can take no more than 25% of their courses (e.g., a degree programme) remotely (e.g., online or by distance education). This dilemma will undoubtedly affect the decision of CQU regarding its remote-learning strategy.

6. SUMMARY AND CONCLUSION

Adopting the multi-campus learning model is challenging, particularly under the situations where: (a) different campuses offer their own F2F classes, (b) a large teaching team is involved where teaching members reside at different campuses, and (c) a large cohort of on-campus (across different campuses) and off-campus students is involved. The key issues under this setting are: (i) fulfilling the "equity and equivalence" requirement, (ii) achieving the full benefits of remote learning, (iii) maintaining F2F class attendance and engagement, (iv) keeping off-campus students' interest in online classes, (v) well planning and execution of group projects, (vi) providing timely and useful learning feedback, and (vii) standardizing unit's teaching materials and assessment.

This paper shared our teaching experience of the SA&D postgraduate unit at CQU under the above setting. More specifically, we discussed the issues encountered and the measures implemented to alleviate these issues. We note one possible future study to be performed. It would be worthwhile to bring in real industrial software development projects as the group project of SA&D. This is one of the several forms of work-integrated learning (WIL) (Ferns et al., 2016). In this future study, the research question is: What is the best way to implement a real software project in a multi-campus learning approach?

7. ENDNOTES

1. In this paper, a *unit* is a syllabus item offered by a university (similar to a subject that students study at school).
2. At CQU, *tutorials* are small discussion groups (with 20 students or less) led by a tutor or the UC. Students are needed to attend one tutorial per week for each unit.
3. At CQU, remote learning is offered via synchronous Zoom meetings.
4. The undergraduate disciplines of study of some SA&D students are not ICT-related. Instead, their undergraduate disciplines can be something like engineering, accounting, finance, or business management.
5. One may suggest shortening the two-week window of grading and providing formative feedback to students to one week. This suggestion, however, is practically infeasible with respect to our teaching environment. SA&D is a postgraduate ICT core unit that has about 180–200 students each semester. Thus, one week is insufficient for: (a) finishing grading by each marker, (b) performing moderation of sample marked assignments by the UC, and (c) providing formative feedback to all submitted assignments.
6. The Commonwealth Register of Institutions and Courses for Overseas Students (CRICOS) is the official register of all Australian education providers that are permitted to offer courses to students studying in Australia on student visas.

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