Team teaching approaches: how to manage student learning in multi-campus settings

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Introduction

Higher education sectors are constantly being challenged to improve academic outcomes, seeking to provide student learning outcomes that satisfy industry demands. Additional challenges are that student numbers are shrinking and competitors are increasing. School leavers sometimes do not go away from their home town for their university training. Further, government funding for students is reducing (Groenwald, 2018). To increase student numbers and tackle the above challenges, proper technological solutions for communication in relation to distance teaching/multi-campus teaching are essential. Universities form satellite campuses at different regions in metropolitan and regional locations to satisfy university missions for engaging and connecting people. For instance, social innovation activities are focusing on engagement with the local community and building a bidirectional relationship. For driving student enrolments, the universities are developing scopes, access, and choices of a university campus that the students like. It evolves cultural diversity on one hand, ideas and innovation incorporating a broad network of people on the other hand.

In the context of a multi-campus setting, team teaching plays an important role for providing units. The concept of team teaching evolves when more than one teacher is working for the development and planning of a unit and its delivery (Murata., 2002, Change and Lee, 2010, Crow and Smith, 2005, Jang, 2008). The collaboration, delivery, and moderation of student works in team teaching are different when the team is in the same campus compared to a situation when team members are in different campuses. Challenges of multi-campus team teaching should be managed in a way to produce equal student experiences to the students in different campuses. The equal student experience is also linked to the students learning, including problem-solving skills, proper time management and research and presentation skills. Evaluation processes to mark student works should be based on certain assessment criteria and it could be moderated by team members in different campuses.

For multi-campus settings, team teaching (TT) is an integrated component for student learning and satisfaction. The success of the TT approach is based on effective communication between the coordinators and lecturers of various campuses and the relationship between the teaching team and students for student engagement to increase curiosity and motivation in learning. Proper coordination in the TT format, especially in project-based learning units, results in the following key attributes of student learning (Tsybulsky and Muchnik-Rozavoc, 2019):

- Problem-solving skills in context
- Good team-building with students of different cultural backgrounds
- Shape student-teacher professional identity
- Self-confidence and independent learners
- Leadership, time management, and research skills.

The TT influences student learning on one hand, and it has positive effects on the TT members on the other hand. It is evident that the TT yields valuable learning experience with diversity to new lecturers and other team members, focussing on personal and professional skill development. Working in a team, the TT members can see the delivery process from different perspectives and with a degree of pedagogical diversity. It can be a most rewarding experience for new lecturers for sharing a way of discovery (Wentworth and James, 2002). The

collaboration with other student-teacher interactions in the TT process is considered to be the most valuable strategy fieldwork study (Tsybulsky and Muchnik-Rozavoc, 2019).

Balancing the advantages of the TT, there are some issues with it. They are related to the additional workload, collaborative process planning, and reflection (Tsybulsky and Muchnik-Rozavoc, 2019). Other key issues are:

- Lack of congeniality in the TT members
- A habit of working alone
- Feeling confident teaching alone
- Unclear workload model, etc.

Mentors in the TT process play an important role. With the help of mentors, the TT approach can achieve more in student learning and experience compared to if they work alone (Gardiner, 2010). Lecturers in the TT with mentors can achieve higher levels of performance both for themselves and students while they receive help and support from the team members (Smith, 2004, Walsh and Elmsie, 2005, Gardiner and Robinson, 2009, Scantlebury et al., 2008). The key element in mentorship in TT is to develop good professional relationships in TT through the mentor's feedback on a group and individual levels of TT.

The main focus of the TT process relies on the fact that teachers learn through participating and engaging and collaborating in joint activities such as workshops, presentations of project outcomes, etc. Baeten and Simons (2014) articulated the main factor of the TT approach as its '*socio-constructive view*'. Main factors were elucidated in the TT approaches and they were reciprocating ideas in the teams, alternating perspectives, receiving and criticising advices to develop teaching knowledge for student learning (Gardiner, 2010, Wenger, 1998). Through a literature search, Baeten and Simons (2014) studied a few TT models focusing on some research questions on TT models, advantages and disadvantages of TT and conditions of successful implementation of TT approaches. By considering literature between 2000 – 2013, they observed many TT models such as:

- The observation model
- The coaching model
- The assistant teaching model
- The equal status model (sequential teaching, parallel teaching, station teaching, the teaming model.

As many TT models have been developed focusing on observing, coaching and assisting, a TT model for collaborative teaching in a multi-campus setting is essential. This paper addresses the question of developing a good team teaching approach targeting teaching teams and students in different campuses. It addresses a goal of how to judge a good TT approach in multi-campus mode enhancing student learning and satisfaction. The following section illustrates a TT model useful for multi-campus delivery for student learning on project-based learning at Master level units of Fluid Power Engineering and Control (ENEM20002) and Thermofluids Engineering Applications (ENEM20003).

Methodology and TT Models

Formation of teaching teams is employed considering teachers, casual staff, laboratory staff, and students. One teacher has a central role in the teaching team as a unit coordinator, the leader of the team. A mentor can be included in the team for proper coaching along with guidance of the unit coordinator. There can be two TT models: one is for a single campus and the other one is for a multi-campus setting. Figures 1 and 2 illustrate both TT models, showing collaboration and communication channels. In Figure 2, a detailed communication channel is shown for a multi-campus setting. The communication link with the coordinator for one campus is shown. It is the same for other campuses. The unit coordinator is at the centre of the communication flow. The communication evolves among the coordinator, lecturers, laboratory Technician (Lab tech), students, mentors.
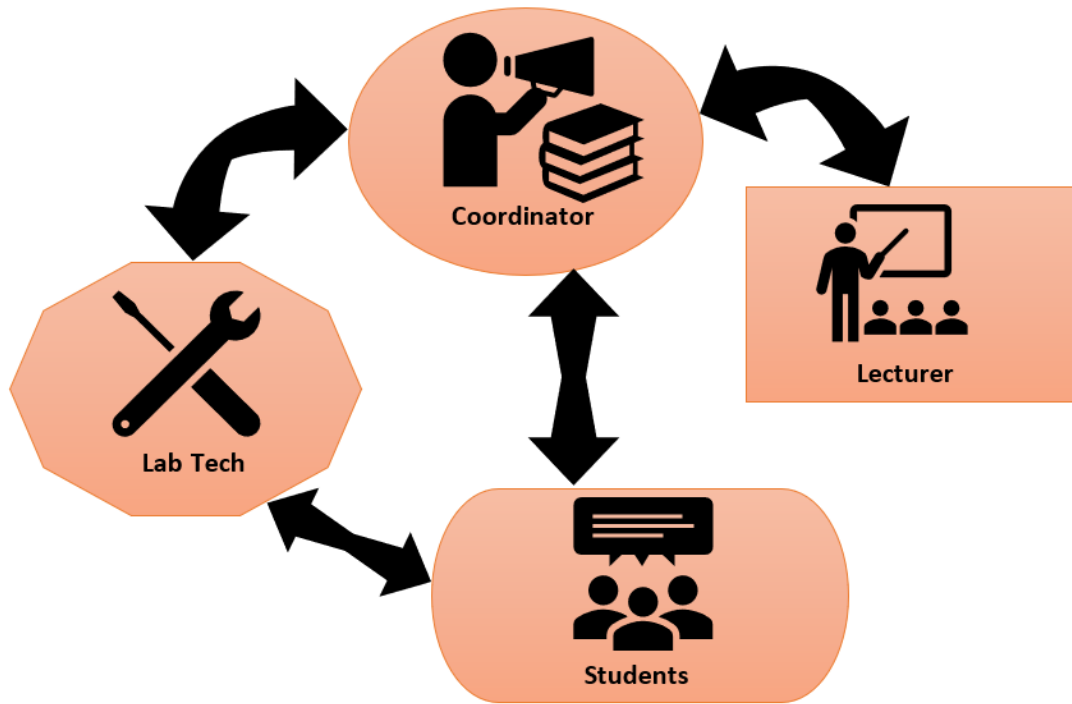
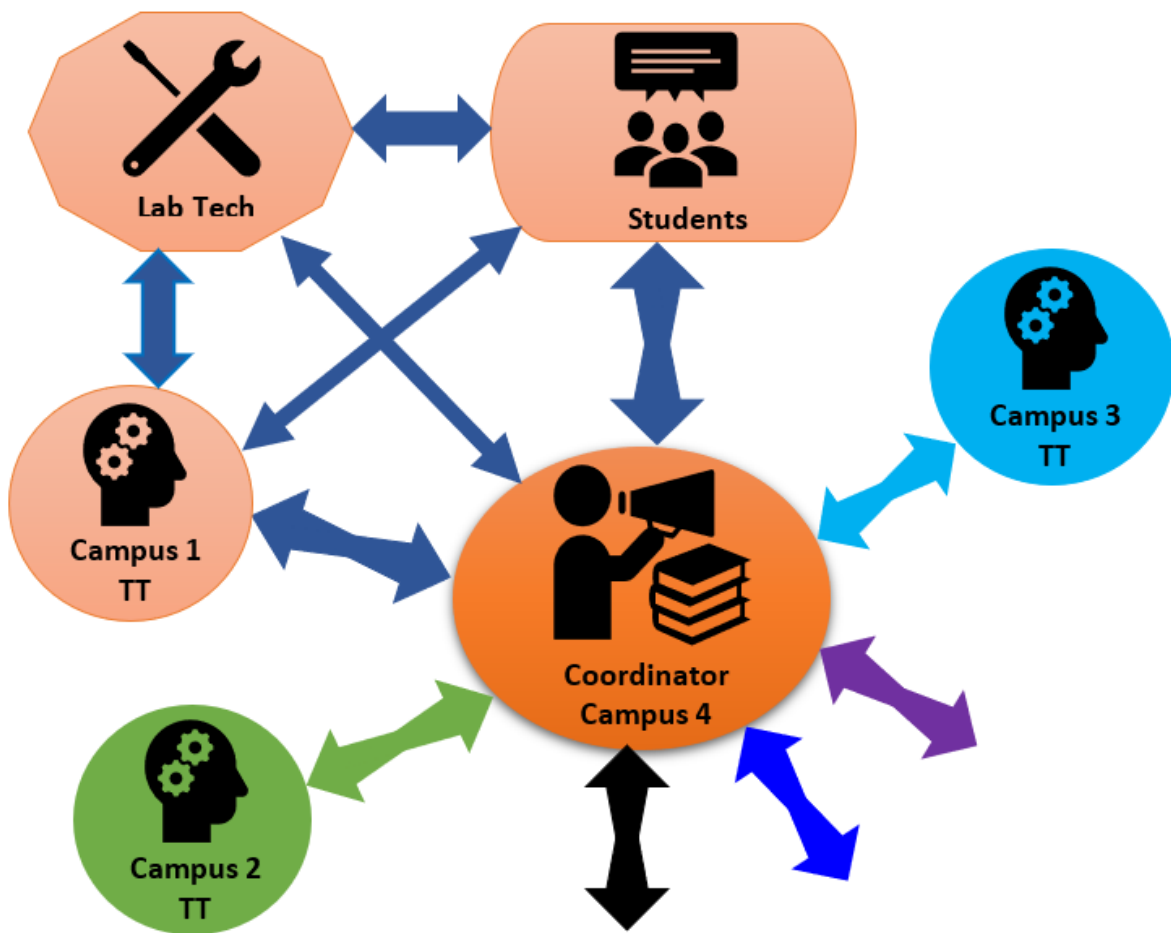**Figure 1: On-campus teaching team model**

Figure 2: Multi-campus teaching team model

The TT model (Figure 2) was employed to deliver the Master of Engineering units of Fluid Power Engineering and Control (ENEM20002) and Thermofluids Engineering Applications (ENEM20003). These units are delivered under CQU's multi-campus format considering CQU Rockhampton, CQU Melbourne, and CQU Perth campuses. The coordinator can be in CQU Rockhampton or in another campus. The coordinator follows communication modes (Figure 2) to start conversations with the TT at different campuses to propose a plan to deliver the unit. The key tasks of the coordinator at the start are:

- Development of unit profile
- Scoping out of projects for feedback from the TT
- Writing assessment criteria for a project marking and getting feedback from the TT to improve it
- Updating laboratory sheets and the unit assessment criteria, etc.

The coordinator also demonstrates the way the unit can be run in different student sessions such as weekly lectures, tutorials, workshops, and laboratories. The weekly workshops are being administered by lecturers of the TT on each campus. Laboratory sessions are managed by the Lab Tech assisted by the campus lecturers. The coordinator puts more information to the TT on how the markings of team projects and laboratory reports can be done. This also includes students' individual learning from teamwork in projects and laboratory studies. To achieve these outcomes, a team charter approach is considered (Mandal, 2018).

Results and discussion

The effectiveness of the proposed TT models and related processes should be clearly evaluated to ensure that they are working correctly. Assessing the impact of this TT framework for multi-campus settings is evaluated through the students' reactions obtained from different sources including the online evaluations through CQU's Student Experience Survey. The coordinator puts some recommendations based on this evaluation through an Annual Unit Enhancement Report to the program committee of the school with a view to implementing improvements in the next offerings. Two aspects of student reaction are considered: student satisfaction and their response rate. Figure 3 shows student satisfaction and response rates of the units ENEM20002 and ENEM20003 from 2017 when the units were included in the Master Program. It is shown that the units are performing well from 2017 on a 5-point Likert scale. For ENEM20002, student satisfaction was 4.1 in 2017 and gradually improved to 4.6 in 2019 which is benchmarked against the corporate target of student satisfaction of 4.0 out of 5.0. For ENEM20003, on the other hand, student satisfaction was 3.4 in 2017 and sharply improved to 4.7 in 2019. It is evident from these data, along with other influential factors for improving student satisfaction, that a good TT can enhance better student satisfaction and student experience for lifelong learning.

If the student number of a unit is ten or more and the student response rate is 50% or more, then it is suitable for statistical calculations of the data (Mandal, 2018a). For these units, the student number and student response rate are more than 10 and 50% respectively (Figure 3). Therefore, student performance data are statistically sound.

There are many factors that contribute to student satisfaction. Of them, the TT approach and proper communication within the team and with students are important. It is hard to quantify the individual contribution of the TT model towards student satisfaction. This is the area where some research should be conducted to quantify the influence of each parameter of student engagement such as TT, assignment tasks, feedback to students on their work, etc. to influence student satisfaction. Other factors that contribute to student satisfaction and reaction (Figure 4) are assessment task, assessment return, Moodle navigation, assessment feedback, assessment requirement, learning resources (Mandal, 2018). To quantify clearly the actual influence of a good TT approach on student satisfaction, reaction, and learning, a thorough student survey incorporating some clear questions relating to the TT approach should be carried. Without these student data, it is worth to include the reaction of the members of

teaching team to show a context of importance good teaching teams in multi-campus setting for student satisfaction.

The formation of a good TT approach is based on proper communication between the unit coordinator and the members of TT at different campuses. The unit coordinator takes proper communication aspects of delivery processes at the start of the term through video conferencing (Zoom) meetings to make a clear expectation of the unit in terms of lectures, tutorials, workshops, scoping of student projects, marking and moderation of student works. The students benefit in their learning and satisfaction from this equal learning environment at all campuses. If any dis-similar activities happen because of lack of proper communication in the TT, students become confused and their satisfaction falls. As a result, their feedback would be negative and satisfaction scores would be low. No doubt, the coordinated TT approach results in higher student satisfaction scores.
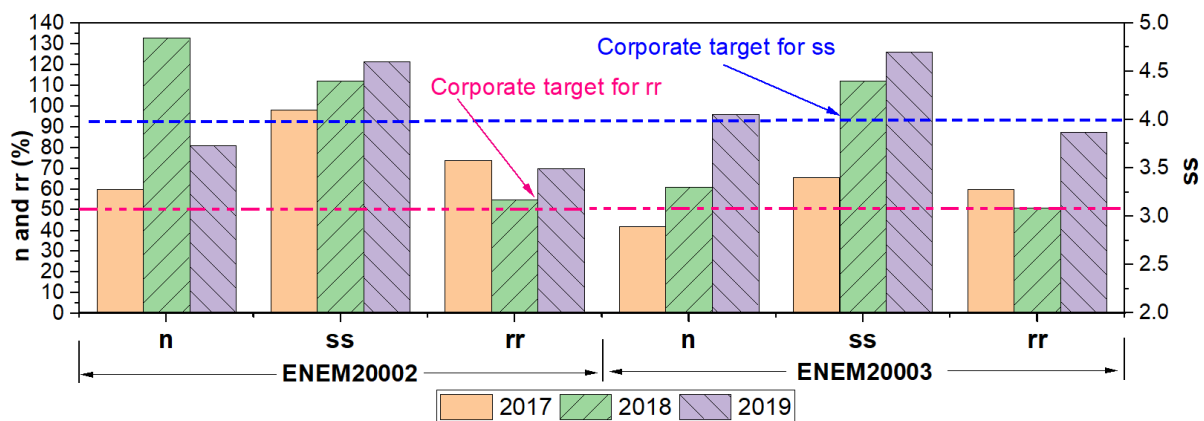

Figure 3: Student satisfaction and response rate of the units ENEM20002 and ENEM20003 where n is the number of students, ss is student satisfaction and rr is response rate.
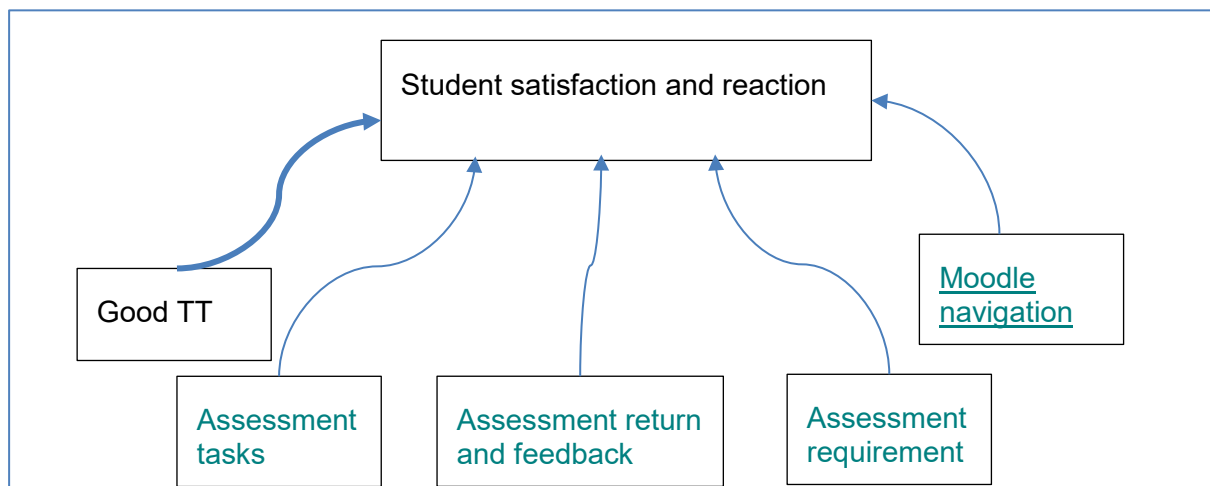

Figure 4: Influencing factors for student satisfaction and reaction

The implication of the new TT approach puts some challenges. There are many lecturers of different mindsets and cultures, and they are situated in different campuses and at different time zones. Therefore, proper and regular communication and updates in TT meetings should be available. Any miscommunication results in low student satisfaction scores. The novelty of this approach can be quantified based on critical reflection of the TT members rather than comparing strategies stated in Figure 2 to that of Figure 1. It relates to the fact that a properly coordinated TT approach works better compared to campus wise individual lecturer/lab tech

communication with students. The approach in Figure 1 can produce a lot of non-uniform teaching deliveries. In this respect, the new integrated TT approach works well over campus-wise model.

Conclusions and recommendations

In a multi-campus setting, communication between the TT and students is very important. The concept of this teaching approach was implemented in ENEM20002 and ENEM20003 units from 2017 and the following conclusions are made:

- Intercampus communication though the TT approach works well to improve student satisfaction
- An upswing of student satisfaction is noticeable – 4.1 in 2017, 4.4 in 2018 and 4.6 in 2019 for ENEM20002, and 3.4 in 2017, 4.4 in 2018 and 4.7 in 2019 for ENEM20003
- Student numbers and response rates are suitable to justify the student evaluation data statistically
- The study recommends further study on how to improve team communication effectively among the TT and student project team members
- This study also recommends developing a model to rank the influencing parameters contributing to student satisfaction.

Acknowledgements

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