Sustainable international engagement using a partner co-hosted teaching model

Brian Gillespie
Technological University Dublin, brian.x.gillespie@tudublin.ie

Paul Doyle PhD
Technological University Dublin, paul.doyle@tudublin.ie

Zhiying Jiang PhD
Beijing University of Chemical Technology, jiangzy@mail.buct.edu.cn

Darryl Humble PhD
University of Northumbria at Newcastle, d.humble@northumbria.ac.uk

Sustainable international engagement using a partner co-hosted teaching model

B. Gillespie[1]
Lecturer, School of Computer Science
ASCNet Research Group, Technological University Dublin
Dublin, Ireland
Email: brian.x.gillespie@tudublin.ie

P Doyle
Assistant Head of School, School of Computer Science
ASCNet Research Group, Technological University Dublin
Dublin, Ireland
Email: paul.doyle@tudublin.ie

Jiang Z.
Lecturer, College of Information Science and Technology
Beijing University of Chemical Technology
Beijing, China
Email: jiangzy@mail.buct.edu.cn

D Humble
Senior Lecturer, Department of Social Sciences
University of Northumbria, United Kingdom
Email: d.humble@northumbria.ac.uk

Conference key areas: Internationalisation, Global Teaching & Collaboration

Keywords: Global Teaching, International Experience, Curriculum Design

INTRODUCTION

Internationalisation is a significant activity of Higher Education Institutions (HEIs) worldwide and is typically embedded within the aims, ambitions, vision, and strategy of the institution. It incorporates the policies and procedures required to facilitate participation within a global academic environment, [1] and is often considered to be a transformative process that impacts practices in teaching and learning, research, and administration. With formal protocols to establish partnerships, such as memoranda of understanding and articulation agreements, the business of formally creating international partnerships is well defined. However, the motivations, corresponding metrics and key performance indicators (KPIs) of successful partnerships are not as well defined. At the institute level, there are often KPIs to measure student mobility,

---

1   Corresponding Author
B. Gillespie
brian.x.gillespie@tudublin.ie

revenue generation, and funding. But internationalisation strategies also often include social, political and academic output and can be an important source of inspiration for wider innovation and entrepreneurial activity. In Ireland, for example, objective 2 of the *2018-2020 Higher Education System Performance Framework* [2] includes the strategic goals of increasing international student numbers, increasing the foreign language provision for Irish students, and increasing the number of academic publications with international peers.

The issue facing HEIs is not that international partnerships cannot be created, it is that many such partnerships do not evolve, often fail to develop into meaningful long-term relationships, and do not adequately contribute to the underlying strategic goals of participating partners. These failures are attributed to the fact that, while support exists at a higher institute level, there is often a lack of buy-in and support at the faculty level, including language barriers, a lack of ongoing post-agreement communication, and cultural issues creating inertia in the relationship [3]. While English is seen as the global language of science [4], it often puts at least one of the partners at a disadvantage if they are not natively proficient. Even when this barrier can be overcome, cultural differences can also contribute to unsustainable relationships [5]. While faculties, and individuals within them, are ultimately the engines that drive the KPI activities of university strategic goals, research has shown that it is frequently through the building of friendships and the discovery of common interests between staff that is the key to developing sustainable partnerships [6]. Brockington [7] calls for a clear vision which is embraced by all stakeholders including faculty, administration and senior institution management, and that appropriate financial and international support models must be put in place to help nurture productive international partnerships.

HEIs typically create significant numbers of partnerships with other international institutions. However, many of these simply fail to become active for the reasons already outlined. The hope would seem that simply increasing the quantity of partnerships will ultimately result in the desired level of activity. However, in this paper, we argue that a more nuanced understanding of the ecosystem is required to foster successful partnerships and to increase the productivity rate of these relationships. While there may not be a single model that addresses all issues given their dynamic nature and number of stakeholders required to make a partnership successful, a set of best practices and guidelines can be extracted based on examples of key partnerships that have been successful.

In this paper we describe a successful and ongoing partnership between TU Dublin School of Computer Science and the Beijing University of Chemical Technology (BUCT) College of Information Science and Technology. The model presented in this paper, Partner Co-hosted Model (PCM), evolved over many years and is based on a mutual desire to build meaningful and sustainable joint academic activity between the two institutions. This model has continued to evolve to sustain an ongoing cooperation and meaningful partnership and has demonstrated both its resilience and utility during the COVID-19 pandemic. In the following section, we review the context and background to the development of this model. In section three, we introduce the model and describe in detail its core features. Section four offers a summary of our conclusions and considers the possibility for further development of models of international partnerships as well as likely future research opportunities.

This paper draws on the experiences and reflections of the programme team, including TU Dublin and BUCT staff members. As this programme has undergone a real time

process of change and development, the lead authors have been able to reflect on (a) the changing nature of the programme, (b) the value of the programme to individual and institutional stakeholders, (c) the strengths and limitations of the model as it has involved and (d) and the experiences of dealing with the day-today challenges of international working. What is core to this discussion, is a recognition that running international programmes and partnership is only possible through clear, direct and ongoing dialogue (as this paper will address) but also a recognition that processes and experiences are inherently nonlinear and at times, as all authors here attest, challenging and 'messy'. All authors recognise that the development of this programme has required the involvement of a range of colleagues, both at TU Dublin and BUCT, from departments including finance, teaching excellence, marketing, international and technology learning specialists.

1 CONTEXT AND BACKGROUND

In January 2019, the Dublin Institute of Technology (DIT) School of Computing became the Technological University of Dublin's School of Computer Science, as part of the formation of Ireland's first technological university. The school has a long history of academic cooperation with Chinese universities, most notably the establishment of the project in 2003 with Harbin Institute of Technology (HIT) [8]. The project was supported by the EU-ASIA Link Programme which was since been replaced by Erasmus Mundus. The aim of the project was to design, implement and evaluate an industry-oriented curriculum at HIT [9].

Following on from the project, HIT and DIT continued the exchange of academic staff between both departments with Chinese staff coming to Dublin to observe teaching, and Irish staff travelling to China to deliver computer science courses. The model provided enhanced research capability for Ireland, and enhanced industry-oriented teaching for China. The model also saw significant mobility of students from Harbin to Dublin of about thirty students over four years, impacting positively both on the international culture of the school, but also on the KPIs of the institution. With the cessation of this exchange in 2013, the model proved difficult to replicate in other parts of the institution. While exchange agreements continued to be developed and approved, only limited student mobility continued to occur. Specifically, mobility had moved from undergraduate to primarily postgraduate courses. The requirements of academic institutes in China had clearly evolved and, while the issue of mutual benefit remained an essential component in establishing sustainable partnerships, identifying how to create such arrangements remained problematic. To attempt to address these issues, the Partner Co-hosted Model (PCM) was proposed and led to a working pilot course being developed and field-tested in late 2017. The PCM follows a bottom-up strategy, where the activity between the partners is driven by the faculty staff, rather than just as a direct result of institute-level policy or direction.

This model was developed in a wider context of change within the Chinese higher education sector underpinned by proactive government policies that sought to emphasise the internationalisation of HEIs. Some of the key activities that support this included enabling more Chinese students to study abroad, the integration of an international dimension within the HEI teaching and learning activities and the establishment of mutually beneficial overseas partnerships that would lead to organisational learning for both partners [10]. These aims were supported in the Education Reform and Development Outline of China (1993) proposals which emphasised the importance of increasing and enhancing bi-lateral agreements with overseas institutions.

A core driver of this agenda was a recognition that the growth of the Chinese Economy, in recent years, required HEIs to develop graduates with the knowledge and ability to enter the workforce as skilled professionals within a diverse range of sectors. To support this, China continued a policy of recruitment of international students to increase the quality of HEIs [11] and through the creation of international programmes such as the industry-oriented curriculum of the EMERSION programme [9] with the then DIT School of Computing, and through investment in international education. Through these activities, Chinese HEIs were able to develop and benefit from their international collaborations. Examples of benefits include: strengthening the growth of international students through scholarship schemes with substantial increases in student mobility in China [12], establishing China as the third most popular destination for students with a target of hosting 500,000 overseas students set just before the recent pandemic. Frezghi [13] argues that the "emphasis of the Chinese government on enhancing the quality of education has placed internationalisation of higher education in the forefront of the country's priorities".

It is this policy context that, we argue here, underpins the kind of partnership that this paper explores. Indeed, partnerships between HEIs must operate with a joint understanding of the context and intent of the institutions with regards to funding and strategy. As shown with China, and indeed Ireland, government policy has a substantial role to play in directing institutes through funding. However, what we, as programme developers and facilitators, argue is that funding is only the start of a partnership and serves the purpose of getting a partnership off the ground. What makes a partnership successful is the space for it to evolve through practice which is shaped by the actions and interactions of both students and faculty staff.

2 UNDERSTANDING THE PARTNER CO-HOSTED MODEL (PCM)

The PCM model sees course content primarily developed by one partner institution being delivered to students located at another partner institution using teaching staff allocated from both partners. This section focuses on the PCM developed between the School of Computer Science at TU Dublin and the College of Information Science and Technology at BUCT. This partnership focused on the development of undergraduate, second- and third-year computer science courses developed by staff at TU Dublin and delivered through virtual and in-person delivery by TU Dublin and BUCT staff in Beijing. The initial pilot course was developed for delivery in 2017 and has now expanded to four iterations per year in 2021. A typical course runs for approximately ten weeks within the Autumn or Spring semesters to align with the teaching cycles for both institutions.

Each course design under the PCM is guided by several key objectives and operating constraints. The primary design objectives were to (a) create an authentic immersive learning experience for students in a technical discipline through a foreign language with native speakers, (b) expose the students to a foreign cultural learning and assessment experience, (c) deliver these courses at relatively low cost, (d) utilise increasingly available low-cost multi-media and communications technologies as a primary delivery vehicle, (e) validate each PCM course for award at the student's home institution and, (f) further strengthen the partner relationship through the experiences of the joint venture and associated continuous improvement activities.

In this case, the PCM model emerged from a bottom-up design process undertaken by the respective teaching staff and leadership teams seeking to explore innovative opportunities for cooperation. It was believed that a co-hosted, joint teaching venture

would be of mutual benefit to both institutions and so a design team was formed with the task of working within resources and time constraints to develop a course proposal.

The final model is the result of two main phases of development. In the first phase, the team relied on educated intuition and experience to scaffold out a basic model which was turned into a pilot course. In the second phase, and based on the experiences delivering the pilot course, the design would be further fine-tuned using that initial experience from the TU Dublin staff and incorporating the feedback from BUCT student and teaching staff.

As the course was mandated to be taught in English, it would be primarily developed by TU Dublin teaching staff, be representative of a standard Irish university computer science curriculum and would replicate 'standard' teaching and assessment activity. At the same time, the course content would meet the requirements and learning outcomes of the target BUCT programmes so that students could take the PCM courses for local credit. The developed content would be delivered via three key mechanisms, through: (1) synchronous streamed weekly video conferences led by TU Dublin staff located in Dublin, delivered in English; (2) asynchronous weekly pre-recorded theory and tutorial-style video lessons, prepared in English and (3) additional supporting resources, including: video transcripts, video subtitles in English, lesson slides, and summative assessment material.

The decision to utilise video streaming and recording technologies was informed by the cost management and at-distance delivery aims of the project and the, then, ubiquitous availability of low-cost, consumer grade technologies in both locations, with the capability to create and deliver courses with strong production values.

As previously noted, it was not feasible to fund the relocation of either Irish teaching staff in Beijing or Chinese students in Dublin, so a remote teaching model would be the adopted compromise to realise the project. The one provided-for exception to the remote teaching norm was that an Irish teacher would travel to BUCT at least once during the course delivery to meet students face-to-face, help conduct student assessments, take direct course feedback and meet with BUCT counterparts to review progress, address issues and plan future developments.

To help to overcome potential language barriers for Chinese learners, the teaching would also be supported by an assigned English language speaking teacher and teaching assistant in BUCT. The local BUCT teachers would also be core design team members who would lead the delivery on the ground, including the recruitment of suitable candidate students, the scheduling of classes and the provision of learning resources for participating students. The local staff would also take responsibility for conducting and grading weekly summative assessments and for monitoring general student progress over the course delivery including assessing attendance and engagement. Critically, the local teaching staff would also be able to provide feedback in real time to help inform the content and pace of the overall course design.

By the end of the 2017 pilot course delivery, the detailed requirements of a successful design had been surfaced and were worked into the design and delivery of subsequent courses developing upon the success of the pilot under the same PCM structure. The pilot was based on 25 students taking a course in mobile software application development. The course was delivered over ten weeks and was developed and adapted in real time to respond to and incorporate facilitator and student feedback regarding content and pace.

The structure that emerged and was found to be most optimal in terms of time investment and student feedback saw the main course content being segmented into stand-alone weekly topics and associated themes and delivered as a set of 5 to 20-minute theory explainer videos and an accompanying set of 10 to 20-minute practical demonstration videos all subtitled in English and comprising up to 10 videos per week per course. Each video also included an English language transcription and supporting resources such as courseware slides and program source code. For the duration of each course, students and teachers were all enrolled onto a dedicated chat group where course logistics and content could be disseminated and discussed.

The summative assessment model adopted comprised three elements (a) a weekly quiz largely based on theory content, (b) weekly practical laboratory exercises and problem-solving challenges and, (c) an end-of-semester capstone team-based project. The weekly assessments were conducted and graded by the local teaching staff and the capstone project was jointly assessed by both remote and local teachers at the conclusion of the course delivery. The final student grade was calculated as a weighted average of all summative assessment modes.

During the scheduled semester classes, a weekly two-hour online video call was held between the Dublin-based teacher and the BUCT students which always included the local BUCT teaching staff. In the initial design phase, it was speculated that this online class component would be of critical value to the programme by affording direct contact time between the students and the overseas teacher, but it was initially unclear how this would be of benefit. The actual function and format emerged more organically over the course of the pilot, based on the teaching experience and the feedback provided by BUCT staff and students.

In the typical online class format, the teaching time is now divided into three segments approximately lasting the given percentage of overall class time, (a) a review presentation by the remote teacher (40%), (b) a quiz question review with the students (30%) and, (c) student presentations, questions or feedback (30%). The remote teacher presentation is an opportunity to re-state the week's learning objectives in a more informal way as compared to the video content. This is also an opportunity to introduce new content, not covered in the videos, and to make more general observations about the content, course conduct and wider technology context. When necessary, this English presentation is translated or summarised in Chinese by the local teacher during the class to deal with challenging technical or cultural content. The quiz question review section is an opportunity for students to practice their oral English language skills and is an encouragement to keep up with their study. In this format, the student answers quiz questions taken from the previous week and the answers are discussed and explored openly in class. In the final section, student volunteers may present their own perspectives on their learning and progress, may ask technical or logistical questions, or may discuss their ideas for their team's capstone project brief.

The online communications capable of being conducted over several video conferencing platforms commonly available in China provided that video, audio and screen sharing features are supported for class sizes of about fifty participants to allow for distributed locations.

Having demonstrated a successful pilot delivery of the pilot PCM course in 2017, the BUCT partners began to seek wider support and stakeholder inclusion within the university community to validate the model and to secure funding for future deliveries. As a result, some 300 BUCT students have successfully passed one or more of three courses developed under the PCM since 2017. This has been made possible through

the support of TU Dublin, BUCT and the Beijing government. Since the 2020 COVID-19 pandemic outbreak, all face-to-face Beijing meetings have been suspended, but the courses have continued to run largely unimpeded with all previous face-to-face meetings moving to online meetings to continue ongoing evaluation and future planning activities.

At the conclusion of each course delivery, the teaching team conducts an anonymous student survey to elicit feedback and suggestions for improvements in content and delivery style. This feedback is then combined with the teaching team's overall assessment and, typically, changes are proposed for inclusion for a forthcoming delivery. These proposals may only relate the course in question or may also be appropriate to apply to more courses in the PCM suite. In some cases, the changes may also require additional funding to develop, such as the update or addition of new topic content and associated video production.

3. LEARNING FROM THE PARTNER CO-HOSTED MODEL

In considering the learning from the PCM, we recognise that we are, in effect, reflecting on our own work and this, inevitably is shaped by our own commitments to the partnership and the course as well as our own biases.

As a bottom-up model design, the development of the first pilot course was largely informed by prior academic experience and early feedback from initial meetings between partner faculty members. A key concern at the outset was to overcome potential barriers for Chinese learners taking a technical science course in English with a foreign teaching style. It was understood that much of the theoretical learning content was already somewhat familiar to the students in Chinese so that the principal challenges would be in adapting to a foreign language and to a different cultural mode of teaching.

An example of adaptation that emerged in the development programme was the response to cases of plagiarism in the early years of the programme. Once the marking teams had identified cases of plagiarism an opportunity emerged for staff at both partners to work together to ensure that marking, the identification of plagiarism and processes for dealing with students who were implicated was developed and rolled out across the programme. An example of this nature demonstrates the strength of partnership and the willingness to check, challenge and develop new ways of working for both institutions.

It was decided that all learning material would be extensively documented and be supported by an English language translation teaching assistant in the Chinese university setting. The documentation would include all video transcripts, English subtitles and written lesson content. In addition, synchronous online classes would include direct English language dialogue between students and teachers and that all online communication would be conducted though English where practical. It was also suggested that practice-based learning would enable an easier pathway to engagement, so a summative assessment model was adopted to include weekly theory quizzes and laboratory exercises.

A core strength of the programmes was the role of the bilingual teacher who was essential in (a) feeding back on levels of student engagement and understanding and (b) making suggestions for improvements. Through strong partnerships and direct conversations, the staff at TU Dublin and BUCT were able to work together to shape the ongoing development and successes of the model.

Over the course of the development and delivery of the PCM courses since 2017, it has become clear that those early design plans were accurate but in reality, limited. In particular, the design team underestimated the general language proficiency of the students and misjudged and overemphasised the level of theoretical course content required.

A key learning point for the team was to address the different cultural norms between China and Ireland regarding the teacher student relationship to emphasise greater informality and direct dialogue between the students and the foreign teachers. One simple innovation, which facilitated this communication, was to use online weekly quiz reviews to scaffold interactions with the students. This had the dual purpose of encouraging more verbal English language use and to break down any perceived formalities in the classroom setting. Another normative departure for the Chinese students was the requirement that they work in teams for their capstone projects. This experience increased the challenges but also the rewards from successful completion and, based on their direct feedback, strongly and positively differentiated their learning experience. Separate, parallel research, not addressed in this paper, was carried out to assess students' views and experiences of the teaching model. Although this feedback has been informally incorporated into the design and operations of PCM, a more formal analysis of this research is requireed.

From an operational perspective, the course deliveries were scheduled to cater for semester timetable and time zones differences and included periodic face-to-face meetings and in-class teaching and assessments with the TU Dublin teachers at BUCT. The meetings afforded the partners the opportunity to conduct detailed programme reviews and to plan future funding and new course development. The funding context has been complicated by the often-changing strategic goals and funding models being adopted by BUCT and the Beijing government since the partnership commencement. However, the team have been able to successfully revalidate the PCM courses by continuing to meet these goals, including that the course continued uninterrupted during the COVID-19 emergency through the flexibility afforded by the model architecture and shown by the participating partners.

Furthermore, technology has played a vital role the creation and sustainability of the PCM in the enabling of the concept, in keeping control over costs, in maintaining high quality communications between the partners and in the ability to seamlessly react to the COVID-19 emergency in 2020/21.

4 CONCLUSIONS

In summary, the successes of the PCM lies in its continued delivery and the ways in which the delivery team, both at TU Dublin and BUCT, have worked together to develop and deliver a programme that seeks to meet all the objectives outlined in section two above. What is core is the importance of developing a course that is underpinned by clear ways of working and ongoing dialogue between TU Dublin and BUCT partners. As this paper attests, both staff teams prioritised the programme for the value that it offered to (a) the students in their higher education learning journeys, (b) both institutions who have their own internationalisation agendas, and operational parameters, (c) the wider higher education policy context, linked to central and regional government initiatives and (d) the continual professional development of the teaching staff at both TU Dublin and BUCT. The outcome is a way of working that enables BUCT to develop and deliver English language teaching through existing core courses.

Whilst this paper focuses on sharing the PCM model further work is underway to explore, in more qualitative depth, the strengths and limitations of the programme as well as its value to key stakeholders. Core themes that have emerged out of this case study for further development include the importance of cooperation in learning rather than individualistic approaches to learning and assessment, introducing competition in a learning environment and the importance of visual and creative work in a traditionally scientific learning context.

Whilst a core partnership underpins this work, it is expected that this model will continue to be delivered in this context. The authors, however, are exploring ways of testing this model in other contexts and, potentially, through a reversal of the relationship in which partners elsewhere in the world can deliver similar models for the benefit of TU Dublin students studying in Dublin.

5 ACKNOLEDGMENTS

REFERENCES

[1] P. G. Altbach and J. Knight, "The internationalization of higher education: Motivations and realities," *Journal of studies in international education,* vol. 11, no. 3-4, pp. 390-- 305, 2007.

[2] HEA, Govt. Ireland, "Higher Education System Performance Framework 2018-2020," 2010. [Online]. Available: https://hea.ie/assets/uploads/2018/01/higher-education-system-performance-framework-2018-2020.pdf. [Accessed 2 4 2021].

[3] S. Almansour, "The challenges of international collaboration: Perspectives from Princess Nourah Bint Abdulrahman University," *Cogent Education,* vol. 2, no. 1, 2015.

[4] P. G. Altbach and J. Salmi, The road to academic excellence: The making of world-class research universities, The World Bank, 2011.

[5] K. Kraus and R. G. Sultana, "Problematising 'cross-cultural' collaboration: critical incidents in higher education settings," *Cross-cultural Lifelong Learning,* 2010.

[6] J. Buxton and F. Macaulay, "Journal of Peace, Conflict & Development: Practioners' Perspectives," 12 2012. [Online]. Available: https://www.bradford.ac.uk/library/find-materials/journal-of-peace-conflict-and-development/Iss-19-Art-F-Practitioners.pdf. [Accessed 12 5 2021].

[7] J. Brockington, "Moving from international vision to institutional reality: Administrative and financial models for education abroad at liberal arts colleges," *Journal of Studies in International Education,* vol. 6, no. 3, pp. 283-291, 2002.

[8] C. O'Leary, D. Lawless, D. Gordon, L. Haifeng and K. Bechkoum, "Developing a software engineering curriculum for the emerging software industry in China," in *19th Conference on Software Engineering Education \& Training (CSEET'06)*, 2006.

[9] B. Wu and X. Xu, "EMERSION: Education to meet the requirements of software industry and beyond-establishing, implementing and evaluating an industry-oriented education model in China," in *Software Industry-Oriented Education Practices and Curriculum Development: Experiences and Lessons*, 2011, pp. 249-263.

[10] M. Clarke, L. H. Yang, D. Harmon and others, "The internationalisation of Irish higher education," *Higher Education Authority,* 2018.

[11] S.-Y. Pan, "China's approach to the international market for higher education students: Strategies and implications," *Journal of Higher Education Policy and Management,* vol. 35, no. 3, pp. 248-263, 2013.

[12] L. Nolan, 19 9 2016. [Online]. Available: https://www.student.com/articles/Chinas-rapid-rise-academic-destination. [Accessed 2 4 2021].

[13] T. G. Frezghi and S. M. Tsegay, "Internationalisation of Higher Education in China: A Critical Analysis," *Social Change,* vol. 49, no. 4, pp. 643-658, 2019.