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Professional development programmes at world-class universities

W James Jacob¹, Weiyan Xiong¹ and Huiyuan Ye¹

ABSTRACT Higher education professional development trends increasingly focus on areas of quality improvement, quality assurance and optimal technology delivery models to achieve academic excellence. World-class universities rely on their faculty professional development centres for an array of professional development programmes to support teaching, research and student learning. This article examines faculty development centres at eight world-class universities in Australia, China, the United Kingdom and the United States: Australian National University, London School of Economics and Political Science, Carnegie Mellon University, University of Hong Kong, University of Melbourne, University of Oxford, University of Pennsylvania and University of Pittsburgh. Findings from this study include the structural characteristics of each centre as well as a summary of best practices in terms of programme development and resource management. We provide suggestions and recommendations to assist higher education administrators interested in establishing or strengthening professional development programmes at their own institutions.

¹ Institute for International Studies in Education, University of Pittsburgh, Pittsburgh, PA, USA. Correspondence: (e-mail: wjacob@pitt.edu)

Introduction

Quality has emerged as one of the most common topics of debate and focus in virtually all higher education circles in the twenty-first century. It is a topic of paramount importance to senior higher education administrators, faculty members and students in most areas of decision making, course delivery and research. *Quality control*, *quality assurance* and *governance* are commonplace terms at the forefront of higher education strategic planning and change initiatives. Higher education change is driven by constant improvement, technology changes, measurement and evidence-based results—all areas that require either an overt or covert emphasis on quality improvement. This quality emphasis is recognized by the leading or world-class institutions as well as those that fit within vocational training and technical higher education institutions (HEIs).

Defining what constitutes a world-class university is highly controversial and is often a matter of debate. Leading scholars such as Altbach and Salmi (2011), Marginson (2011) and Douglas *et al.* (2009) recognize that there is no single agreement or definition of a world-class university. Similarly, there is a discrepancy among leading scholars and higher education administrators in what determines world-class quality, even among so-called world-class universities.

In the midst of this debate, we define world-class universities as those which are widely recognized by higher education administrators, scholars and policymakers as among the leading research universities in a global region. World-class universities are national and global leaders in teaching, research, innovation and in producing graduates who become leaders in public and private sectors. They are institutions recognized for their distinct reputations in research outputs and faculty prestige.

This article expands on a study of professional development programmes at world-class universities (Jacob *et al.*, 2014). We examine how higher education professional development programmes are crucial to develop academic excellence in higher education instruction and research at world-class universities. We begin by looking at the literature on higher education professional development programmes in Africa, Asia, Europe, Latin America, Oceania, the United States and Canada. This global review section highlights the ongoing role professional development programmes have had and continue to play in training, research and development processes in HEIs worldwide.

We choose a regional perspective for our global scan of higher education practices for teaching and research improvement. This perspective, which divides the earth into six geographical regions, allows us a broad overview of exemplary as well as problematic realities of faculty professional development in higher education contexts. Although few previous studies adopted this perspective, we believe it is merited in several ways compared with a themed perspective. First, contextual realities of each major geographic region bear noticeable resemblances that may be drawn as useful resources for faculty professional development. Second, a regional perspective allows us to scan not only systemic but also niche practices that are equally (if not more) important to faculty professional development. Third, as much as localization is concerned, a continental perspective widens our vision on exemplary as well as problematic practices concentrated in geographical contexts that existing literature and research protocols often neglect. We argue that lessons learned from these problematic practices are also instrumental to faculty professional development agendas in a given context.

The regional scan of the literature generates a number of key themes based on contextual realities. Some of these themes include the under-reflected influx and application of educational technology that has at least stunted—and in some cases jeopardized—the integrity of higher education teaching and

learning in most African higher education contexts. In Asia, under-qualified teaching staff because of higher education expansion constitutes a major barrier to regular participation in professional development programmes. In Europe, systemic integration of higher education creates opportunities as well as struggles between centralized and localized trends of teaching assessment. In Latin America, high student involvement in teaching assessment compensates for a general shortage in faculty members as well as low faculty literacy in educational technology. In Oceania, historical bonds with European countries enable unique partnerships on university teacher credentialing and competence buildup. Finally, in the United States and Canada, tailoring professional development needs for a diverse population of university faculty members proves to be a daunting challenge. The following section includes a review of literature from the six geographic regions that highlights trends, challenges and opportunities in higher education professional development programmes.

Africa. Due to the tremendous diverse situations of higher education in African countries, it is hard to reach a generalization which can serve as a common rule (Teferra and Altbach, 2004). The shortage of qualified faculty members is arguably the greatest challenge facing African HEIs today. This conundrum is only exacerbated with the constant rise in higher education enrolments (USAID, 2014). In 2007, approximately 58,000 new teachers needed to be trained to reach a teacher–student ratio of 1:22 by the year 2017. This number is more than twice as many as the actual number of teachers trained between 1970 and 2005 (Gioan, 2008). Moreover, USAID (2014) notes how vacancy rates of faculty positions in Ghana and Nigeria remain high.

A review of the literature indicates a number of factors contributing to the inadequacy of qualified academic staff (Hayward, 2010; Mugimu, 2010; Nabawanuka, 2011; Kotecha, 2012). The number of individuals in Africa pursuing postgraduate degree is limited due to low or insufficient salaries (USAID, 2014). Additionally, because compensation is often less attractive than careers outside of academe, or outside of the country, many highly qualified faculty members choose to seek employment opportunities elsewhere. This exodus of some of the top human resources within academe creates a brain drain that in many cases is irreversible.

In addition, the aging of higher education faculty members constitutes another challenge facing many African countries. Tetty (2006) reported that around 43% of the faculty members at the University of Nairobi and 50% at the University of Ghana were over 50 years of age and nearing retirement. This insufficient teaching capacity, along with inadequate teaching facilities and socioeconomically irrelevant curricula, points to a typical obstacle developing countries face in their quest to achieve optimal higher education teaching.

The AIDS epidemic has ravaged Sub-Saharan Africa for decades and the global epicentre of the epidemic is currently in the southern region of the continent. The AIDS epidemic has had a severe impact on higher education staff and faculty members, to the extent that in several country contexts the professional development of faculty members in HEIs is closely health-related (Kelly, 2001; Jacob, 2009; Nsubuga and Bonnet, 2009). In South Africa the mean prevalence of HIV among academic staff was about 1.5% in 2009 (HEAIDS, 2010). The high level of sickness and death have made faculty members' professional development much more complicated because besides professional capacity building, they also need to learn about HIV prevention, care, treatment and support. This often requires HEIs to address and deal with the inevitable burden the AIDS epidemic plays on professional development, teaching, finances and administration.

African HEIs have proactively taken actions to respond to these HIV-related caused (ADEA, 2006).

One of the emerging challenges to effective teaching in African HEIs is that information and communication technologies (ICTs) are applied without educational scrutiny (Jaffer *et al.*, 2007). In some cases and particularly in South Africa, ICT intervention is leading the quest of teacher transformations without addressing needs from both teachers and students (Wagner, 2001; Kirkup and Kirkwood, 2005), which highlights the risk of investing in educational technologies at the cost of overall higher education quality. A lesson learned from the African context in terms of ICT application is that, rather than posing as a threat to teachers and students, educational technologies should help close the gaps preventing effective teaching such as inadequate and low-quality content delivery, insufficient teacher monitoring of student learning, and the lack of custom and innovative approach to teaching. Despite these challenges, the rise of ICTs represents a legitimate attempt to balance traditional and non-traditional avenues for effective teaching in higher education, particularly concerning the critical shortage of teaching faculty and research scholars in the African HEIs (Yizengaw, 2008).

In conclusion, Africa represents a unique context to frame effective and consistent national standards of higher education teaching and the professional development of students, faculty and staff members. It is generally agreed that in Africa the quest for excellent higher education teaching is often hindered by misplaced governmental agendas (De Clercq, 2002; Kistan, 2002) and the severely under-preparedness of prospective college students (Paras, 2001). Faced with an academic staffing crisis, African HEIs must make professional development a priority among strategic planning and capacity development initiatives. Despite the many challenges that exist within the African higher education context—such as a racially divided education system, academic under-preparedness, multilingualism and so on—a few African countries (for example, Egypt, Kenya, Uganda, South Africa and Zambia) are beginning to realize the importance of higher education quality as a key focus.

Asia. The massification movement of higher education across much of Asia is creating a challenge for government planners and higher education administrators in being able to offer high-quality instruction with an under-prepared faculty workforce. In many country contexts, faculty qualifications prevent them from being able to keep pace with the rising demands of higher education students (see Lee and Healy, 2006; UNESCO, 2014). Increasing enrolments in most Asian contexts causes many HEIs to be preoccupied in meeting minimum academic provisions rather than being able to focus on the improvement of high-quality instruction and learning. Varying faculty member academic qualifications—such as inadequate English language-speaking abilities and practical expertise—are key issues among many that prevent them from reaching higher academic standards (Altbach, 2003; Asian Development Bank, 2010).

In an effort to address these quality gaps, many Asian HEIs began to emphasize accountability and quality assurance procedures, with a special focus placed on teaching performance and research output (Hallinger, 2010). Rote learning has been increasingly recognized as inadequate and university faculty members are expected to play a larger role in inspiring reflective and innovative learning.

In many HEIs, professional development programmes were established to help support various initiatives that promote effective teaching and research. These programmes are still being conceptualized across many top Asian HEIs with varying degrees of success. Research findings suggest a number of barriers that

these professional development programmes are trying to overcome (Asian Development Bank, 2011).

First, the massification process of higher education often overloads faculty members with substantially more teaching responsibilities. The trend where faculty members are required to teach more classes continues, as does the requirement to become involved in many non-academic matters that concern student campus life and/or developmental issues. As a result, professional development programmes are often viewed by many faculty members as a luxury; most faculty already have little to no “extra” time available for such personal skills development.

Second, salary structures in many Asian universities are based on the number of teaching hours faculty members complete each semester/term/quarter. From a monetary perspective, this often puts professional development programme initiatives in direct competition with actual teaching activities. The lack of a general incentives or rewards structure further exacerbates the situation, making it even more difficult to motivate participation in professional development initiatives.

Third, faculty professional development programmes in Asia are underfunded and operate on lean discretionary budgets. Faculty members seeking academic/professional self-enrichment domestically or overseas have to resort to self-funding in many cases, which is another disincentive for participation in professional development programmes in Asian HEIs.

Educational technology is an important aspect of professional development initiatives in Asian HEIs, with a special emphasis placed on research and instruction with multi-media support (Asian Development Bank, 2011; UNESCO, 2011; Azhar and Shahid, 2014). However, educational technology literacy among faculty—particularly embedding it into innovative curriculum design as well as transformative pedagogical practices—remains discouragingly at a low level and suffers inadequate attention from higher education administrators and government policymakers. Some faculty members, especially senior professors, remain educational technology adverse, and are often antagonistic to its strategic deployment at the institutional level (World Bank, 2009). Neither the reported high cost-effectiveness (Salmi, 2002) nor the rapid growth of online/distance learning (UNESCO, 2008) seems convincing enough for many faculty members of Asian HEIs to proactively experiment and learn new educational technology skills. This situation is further exacerbated by the limitations of non- or limited-access to the internet, which is a particular challenge still in rural and remote regions of the largest continent (Altbach, 2003; Kapur and Crowley, 2008).

Geo-political and geo-economical diversities in Asia often make it difficult for professional development programmes to establish unified standards and optimal training opportunities for all administrators, faculty and staff members, and students. The most robust professional development programmes tend to exist within the top Asian universities, compared with lower-ranked institutions where professional development activities happen on a more *ad-hoc* and as-needs basis. Asian universities with the most salient faculty professional development programmes have both centralized and decentralized measures adapted to best meet the needs of faculty research, teaching and learning.

Interestingly, there is a noticeable lack of rewards structures for innovative research, teaching and learning (Chapman, 2009). Incorporating professional development to faculty teaching and learning as a long-term strategy rather than a short-term resort has been a typical challenge in this region.

Europe. The professional development of faculty in European higher education presents some valuable lessons for audiences around the world (European University Association, 2008).

However, the overall trend of faculty professional development in European HEIs is uneven. Even though European higher education leaders have realized that promoting student-centred teaching and improving teaching quality are critical for the future, and some countries such as Belgium, Finland, Ireland, the Netherlands, Norway, Sweden and the United Kingdom have taken actions to proactively support high-quality, student-centred instruction, most European countries still rely on a more traditional teacher-centred approach (Pleschová *et al.*, 2012).

Teaching assessments are viewed as a means of quality control throughout most European HEIs. Other than the traditional criteria of teaching effectiveness accompanying performance indicators and questionnaires on students' opinions (Shao *et al.*, 2007), teaching effectiveness has also been advanced through teaching profiles, portfolios (Darling-Hammond, 2006) and peer teacher evaluations. A joint analysis approach to teaching effectiveness is student portfolios through which teachers and students share feedback and offer suggestions for improvement on teaching practices (Saravia, 2004). A lesson learned from these efforts is that linking teaching quality and learning outcomes not only provides a dimension of students' input to teaching effectiveness but also fosters a research-informed mindset of effectiveness, as it was exemplified in Conrad *et al.* (2007) teaching-for-learning model.

The Bologna Process, Erasmus Programme and more recently the Erasmus+ Programme have helped forge an integrated and regionalized higher education system throughout Europe and other participating countries, which requires comparable high-quality classroom instruction to facilitate sufficient mobility of students (European Commission, 2014). However, it is noteworthy that despite the ongoing systemic integration under the Bologna Process, higher education systems in Europe can still be vastly different across the continent. Generally, European countries located in different regions have different areas of emphasis when considering professional development, student-centred policies and targeting employability skills (Pleschová and Simon, 2009). For example, the focus Irish and UK HEIs place on professional development programmes are largely based on long customer-oriented and student-centred traditions in higher education. In Nordic and the Low Countries, professional development in higher education often stems from an increased attention to higher education as a driver for economic and societal development (Pleschová *et al.*, 2012).

Political agendas can sometimes complicate consistencies and unified higher education standards in Europe, as various issues are more relevant in some national contexts than in others. The ongoing quality assurance for higher education teaching in Germany is meeting a political hurdle where the 16 federal states, the *lander*, have been delegating quality assurance authorities to individual HEIs without allocating sufficient resources (Witte, 2008), which increased the financial burden on institutions without necessarily guaranteeing improved quality, including teaching. The German context also suggested a conflict between regional integration agendas and active mechanisms of individual HEIs, for instance, some of the effective teaching, research and management practices within the federal states were disregarded or discontinued due to the ongoing Bologna Process.

The extensive context of the United Kingdom in terms of higher education teaching contributes a notable perspective regarding the advanced roles of higher education faculty compared with their counterparts in elementary and secondary education (Lisewski, 2005). In some cases, university professors in the United Kingdom were described as exposed to less-than-positive department cultures (Gibbs and Coffey, 2004) that occasionally run against the cultures of centralized training programmes, especially after 2004 when every UK university had

preparatory training of university educators (Eaton, 2004). The lesson suggests that, rather than learning the technical skills of effective teaching, university professors are performing increasing obligatory activities in non-traditional areas such as role adaptation across different collegiate cultures. The discourse of *community of practice* needs more exploration in terms of professional development of higher education faculty by means of formative taxonomy such as illustrated by Lisewski (2005: 16).

Generally, the term *quality* is perhaps approached with more subtlety in the European context of higher education than in other regions of the world. Codina and Jiménez's (2008) study notes how there are often discrepancies between faculty member qualifications and their ability to provide quality instruction in Spanish HEIs. HEI administrators in Ireland emphasize the need for quality teaching and learning in their higher education system, however, "students have almost no formal input into monitoring or evaluating the quality of teaching and learning in Irish universities" (Rami and Lalor, 2008: 24). According to Machado and Taylor (2010), strategic planning is often neglected in most Portuguese HEIs, which may be a potential threat to the quality improvement of teaching and learning.

Latin America. Enrolments in Latin American higher education have more than doubled (with 3.9 million more students) since the 1970s (UNESCO, 2009). This expansion trend in various Latin American countries such as Argentina, Brazil, Chile, Colombia and Peru is ongoing (Sami, 2012; Suárez, 2012; Balán, 2014). Educational technology poses another significant challenge to faculty members working in many Latin American contexts. Despite the physical presence of educational technology, the awareness of incorporating hardware to the elevation of teaching and research performance is less than robust. As a result, faculty members keep operating on old curricula and teaching materials without sufficient consideration of real-time teaching and learning environment. The relatively low literacy of educational technology is also becoming an urgent concern as is demanded by teaching of particular science and engineering disciplines.

Though there needs to be a more thorough understanding of information technology literacy as a crucial academic ingredient, emerging initiatives such as the New Media Consortium (NMC) provide university faculty with promising opportunities to help close existing technology gaps (Johnson *et al.*, 2013). NMC was established in many Latin American countries with a mission to promote educational technology skills development as well as to educate academic leaders about transformative teaching and learning activities with the help of technology.

The internationalization of higher education is another trend that brings challenges as well as opportunities to Latin American HEIs. On the one hand, cross-region collaborations provide additional resources to enhance existing teaching, research and other academic activities (Miranda, 2008). On the other hand, internationalization initiatives challenge HEIs to think of alternative professional development programmes that best match their regional circumstances and needs (Organization for Economic Co-Operation Development (OECD), 2012).

Landinelli (2008) argues that in an effort to improve the quality of faculty teaching in Latin American HEIs, significant resources have been committed to building teaching competencies in complex and diverse educational environments. But many obstacles remain. In addition to presenting standardized teaching materials in a traditional classroom setting, faculty members generally lack the ability to align academic resources or to incorporate innovative methods for better teaching and learning outcomes.

To address these problems, many Latin American universities began to realize the importance of developing long-term strategies

to support and invigorate faculty teaching. For one, student opinions and active participation in teaching evaluations are encouraged as a key component of many professional development initiatives. Students can provide crucial “customer feedback” on how to help faculty members identify the strengths and weaknesses of their teaching (OECD, 2012: 26).

At the national level, some countries (for example, Brazil, Colombia, Guatemala, Mexico and Peru) have established teaching awards to promote and encourage excellence in teaching, research and other academic activities (Vaillant and Rossel, 2012). These programmes provide talented scholars with opportunities and monetary incentives to hone their skills of content design and delivery that often lead to substantial teaching and learning improvements (Holm-Nielsen *et al.*, 2005). There is also a shift in professional development initiatives to focus more on supporting new faculty hires and emerging scholars and administrators. This capacity building outlook enables Latin American HEIs to focus on the future through targeted training initiatives.

Oceania. Effectiveness of teaching practices in higher education is receiving increasing attention in major countries in Oceania, where educators and policymakers are responding to calls for salient teaching standards proposed for many OECD countries (Department for Education and Skills, 2003; Higher Education Academy (HEA), 2005). Three descriptors are emerging and undergoing various empirical experimentations in the systems in this region: class teaching, unit coordination and programme leadership (Brown *et al.*, 2009). In addition to across-the-board standards for teaching, discipline-specific standards are also being experimented with and established (Webster *et al.*, 2005; Healey, 2009). Cox (2004) strategized four domains for effective discipline-specific teaching practices: curriculum design, teaching process management, teaching theory literacy and interaction with students. In 2008, 70% of 31 Australian universities were asked to have their teaching staff participate in recognition and reward programmes as a strategy for teaching excellence (Goody, 2007). Generally, Australian universities adopt the British teaching standards framework overseeing three primary pedagogical domains: core knowledge, area of activities and core values (HEA, 2006). These domains are then defined into contextualized indicators of effective teaching, particularly in the rigour of consultation with international leaders of effective higher education teaching, for instance, the United Kingdom (HEA, 2005, 2006). Once the contextualized indicators are identified, they are correlated with each other in a national meta-framework assessing the qualities of class teaching, unit coordination and programme leadership in correspondence with core knowledge and values literacy, and professional activities (Brown *et al.*, 2009).

Applying research-informed strategies to effective teaching in higher education is a theme that is gaining increasing attention. In his *Taking University Teaching Seriously*, Norton (2013b) studied the effect of research on teaching and found that students in high-research departments are very similar to those in low-research departments in terms of the teaching practices they experience. However, the study denounced the possibility of removing research components to maintain teaching-only universities. An alternative strategy, as suggested by the study, is hiring and training teaching-focused staff, which requires “a modest but important role” (1) in regulatory and financial support from the government. The lesson learned here is that, rather than undervalue research components in higher education, it is important to strike a balance between research and teaching by shifting university cultures more towards teaching.

The changing demographics of higher education worldwide pose a main challenge to the Australian context. Similar to the

systems in many developing countries, Australian higher education is experiencing a transition from elite to mass provision. Norton (2013a) reported that the percentage of higher education enrolment in the 17–19 age bracket more than doubled from 12% in 1982 to 26% by 2010 (23). Non-traditional students also contributed to the expansion, overloading the university teaching staff as well as calling for higher quality of teaching (Norton, 2013b). To tackle this increasing demand, Pleschová *et al.* (2012) characterized the nature of excellent teaching as a trial-and-error learning process as opposed to a natural gift. However, a 2010 survey applied to 20 Australian institutions suggested that nearly 40% of academic staff had never received any form of teacher training (Bexley *et al.*, 2011). Chalmers’ (2007) major literature review on teaching in Australian higher education suggests that availability of teacher professional learning opportunities is a strong indicator of teacher quality as well as salient teacher professional development frameworks (Norton, 2013b). Since formal teaching qualifications in Australia are limited to the degree that they generally do not reflect real qualities of teaching, collaborating with and referencing leading international assessment frameworks is a sound strategy to establish and improve the national qualifications framework. As an example, the Australian National University (ANU) has recently joined the UK HEA teaching standards system (ANU, 2013).

The increasing recruitment of adjunct faculty to undergraduate teaching poses another threat to professional development for higher education professors. The situation in the United States is similar with the context of Australia where over half of undergraduate teaching is performed by casual teaching staff (Percy *et al.*, 2008) that comprise over 60% of all academic staff (May, 2011). May’s (2011) research described this rampant trend around the world and offered a socioeconomic explanation. Hugo and Morriss (2010) warned that limited information on the quality of these teachers might severely hamper the overall quality control of undergraduate teaching as well as the morale of professional development in the teaching department.

Against this background, visibility of highly accomplished educators is important to exemplify excellent teaching practices towards pre-service and in-service professors (New South Wales Government, 2013) as well as adjunct faculty. The importance of evaluating higher education educators through appropriately matched credentialing mechanisms calls for reformed credential structures to the effect that stratified standards can be established to evaluate professors with varying teaching capacities. Many external professional learning providers also surround higher education in Australia, and so it is recommended that research evidence be weighed upon the accreditation or registration decisions made for these services to enlist the best possible external support of professional learning of teachers.

Teaching for non-traditional students is a rising challenge exemplary tackled by the University of Adelaide through its strategic innovative approach for the year 2014. The university allocated substantial resources for continuing and professional students in the form of professional student hub services where communities are being forged for these traditionally come-and-go students. An innovative approach to help meet this need is demonstrated in the university’s degree structuring, reflected by its double degrees in bachelors of teaching with a supporting content field such as economics (The University of Adelaide, 2014). This experiment highlights the ongoing successful trials in curriculum with an aim to expose higher education professors to more concrete teaching scenarios and potential challenges.

As a close neighbour to Australia in terms of both geographic and higher education contingencies, New Zealand’s effort to foster effective higher education teaching highlights the significance of applying evidence-based indicators to credentialing and

accreditation (Timperley, 2010). With this goal, a particular mindset is called for which is characterized by continuously making decisions of effective teaching according to rigorous research evidences (Earl and Katz, 2006; Kaser and Halbert, 2009). Timperley's (2010) original evidence-informed conversation diagram provides particular guidance to how such evidences can be applied to reflect real needs of student learning (3).

The United States and Canada. Facilitating faculty professional development and improving teaching practices has been discussed for a long time in the US higher education (Ward and Selvester, 2012). In the current environment with growing attention to accountability and decreased budget, instructional development for faculty has become a challenge (Stes *et al.*, 2013). There exists a prevailing voice among the public that higher education has failed its mission to educate undergraduate students as a skilled workforce (Binder *et al.*, 2012) and there are doubts about the effectiveness and efficiency of instructional development for the faculty (Brew, 2007). Moreover, it is highly controversial to introduce professional development programmes for higher education faculty as well as professional certification and registration (Utschig and Schaefer, 2008), even though most of the faculty want to improve their teaching (Ward and Selvester, 2012).

The external environment of higher education is dramatically shifting, which has become a challenge for the US HEIs, and it is necessary for professors to improve their teaching quality to face the new challenges (OECD, 2012; Herman, 2013; McKee and Tew, 2013). The rapid changes in technology are shifting the traditional teaching in higher education. ICTs have been introduced into the classroom and online learning and teaching are now part of mainstream higher education (Allen and Seaman, 2009). These trends have posed more demands on the faculty and it makes necessary to develop professional development programmes before professors begin to teach online (Chen *et al.*, 2006). Eighty percent of US HEIs provide the faculty with professional training on online teaching (Allen and Seaman, 2009). However, according to a report of the American Association of State Colleges and Universities (2006), faculty's ability to teach online courses cannot meet the needs of the expansion of the new technology.

The more diverse classroom is another challenge for higher education teaching. Evidenced in language, race, ethnicity, socio-economic status, gender and special physical conditions like disability, diversity in the classroom requires that faculty members improve or change their teaching to meet the diverse students' needs (Ward and Selvester, 2012). Especially in the global era, there will be an increasing number of international students in the American classrooms and some faculty will have opportunities to teach abroad, which is also a challenge for teaching (Hamza, 2010).

Facing decreasing funding in the current economic context, US HEIs have to cut costs to survive. Employing part-time/adjunct faculty members is an optional solution, and part-time/adjunct faculty account for up to 47% of all faculty members teaching in US public colleges and universities. A professional development programme to improve part-time/adjunct faculty teaching is essential to guarantee the quality in US higher education (American Federation of Teachers, 2010).

Research by Bouwma-Gearhart (2012) about improving US postsecondary education, especially improving science, technology, engineering and mathematics (STEM) instruction, shows the reasons why the professors want to engage in teaching professional development programmes. These reasons include: (1) to interact with others interested in improving their teaching,

(2) to increase their teaching competence and (3) to increase their autonomy with respect to their teaching and teaching identities. In a study by Schieb and Karabenick (2011), faculty motivations also play a significant role in their engagement to teaching professional development.

To improve instruction, there are faculty members forming faculty learning communities (FLC), which are collaborative collegial groups of professors and other teaching staff who are interested in and committed to improving teaching to accommodate a diverse student population through group discourse, reflection and goal setting (Ward and Selvester, 2012). Institutions and faculty members praise FLCs because of its interdisciplinary composition, which serves to enhance faculty teaching and learning (Wade, 2004). Several types of rewards promote faculty teaching development (Utschig and Schaefer, 2008), including achieving promotion and tenure (Crosby and Morris, 2007), scholarship of teaching and learning (Weimer, 2006), and course, curriculum and laboratory improvement grants (Utschig and Schaefer, 2008).

In Canada, professional development programmes are provided to faculty, mostly focusing on the improvement of teaching, mainly of new instructors (Miles and Polovina-Cukovic, 2012). Many programmes also target specific core competencies and the use of technology in teaching and learning (Steinert, 2011). However, there is not enough research to evaluate the effectiveness of these teaching professional development programmes (Brew and Ginns, 2008). On the basis of the faculty self-reports, a faculty development programme has a positive impact on faculty teaching. There are positive changes in faculty attitudes to teaching and knowledge about education principles and teaching behaviours (Steinert *et al.*, 2006). A professional development programme also increases faculty personal interest and enthusiasm, and improves their self-confidence, sense of belonging to a community, and educational leadership and innovation (Brew and Ginns, 2008; Steinert, 2011).

Case studies from eight world-class universities

In this section we provide case study examples from eight world-class universities in terms of their approaches to strengthening the quality of the teaching and research in their respective institutions. We provide a detailed analysis of how each professional development centre operates and how they are managed and staffed. We also provide an overview of each centre's strategic focus, organizational structure, technology strengths and cultural circumstances. Following these eight case study introductions, we provide an analysis of the professional development centres, including highlighting some of their strengths and weaknesses.

Each of the eight case universities in this study merit inclusion among the leading world-class universities according to the most prominent global university ranking systems—Shanghai Jiao Tong University Academic Ranking of World Universities (ARWU), *Times Higher Education (THE)* and Quacquarelli Symonds (QS) (see Table 1). The leading global ranking systems often rely on several criteria, such as reputation, citations per faculty, number of Nobel laureate recipients, research funding, faculty-to-student ratios, and international diversity of the student body and faculty. How beneficial global rankings systems are is a controversial debate (Marginson and van der Wende, 2007). Students often make decisions on which HEI to attend based on national and international rankings. Faculty members likewise are cognizant of the prestige of which university they choose to call home. Many employers and funding agencies also pay attention to rankings when it comes to decisions on who to hire and which projects to fund.

Since these rankings first emerged on the global scene in 2003 and 2004, Oxford University has consistently ranked among the

Table 1 | Global ranking status of case universities (2003–2013)

| University | 2003/2004 Rankings | | 2008 Ranking | | 2013 Ranking | | |
|--|--------------------|---------------|--------------|--------|--------------|-----|-----|
| | ARWU (2003) | THE/QS (2004) | ARWU | THE/QS | ARWU | THE | QS |
| Australian National University | 50 | 16 | 59 | 16 | 66 | 48 | 27 |
| Carnegie Mellon University | 61 | 38 | 62 | 21 | 52 | 24 | 57 |
| London School of Economics and Political Science | 451-500 | 11 | 201-302 | 66 | 101-150 | 32 | 68 |
| University of Hong Kong | 251-300 | 39 | 201-302 | 26 | 201-300 | 43 | 26 |
| University of Melbourne | 92 | 22 | 73 | 38 | 54 | 34 | 31 |
| University of Oxford | 9 | 5 | 10 | 4 | 10 | 2 | 6 |
| University of Pennsylvania | 18 | 28 | 15 | 11 | 15 | 16 | 13 |
| University of Pittsburgh | 53 | Not ranked* | 52 | 97 | 61 | 78 | 106 |

*The University of Pittsburgh was not listed among the top 200 universities in the first *THE/QS* World University Rankings in 2004.
 Sources: ARWU (2003, 2008, 2013); *THE* and QS (2004, 2008); *THE* (2013); and QS (2013).
 Note: *THE* partnered with QS from 2004–2010 in their rankings. Afterwards, the two organizations split and now retain their own global university ranking systems. Since 2010, *THE* has collaborated with Thomson Reuters to produce their World University Rankings, and QS has partnered with *U.S. News and World Report* to publish its annual rankings. Currently the ARWU, *THE* and QS World University Rankings are highly regarded as the three most influential global rankings of HEIs.

top ten universities worldwide. Carnegie Mellon University (CMU) has ranged from 61st to 24th, ANU from 66th to 16th and University of Pittsburgh from not being recognized by *THE* in 2004 to 52nd, depending on the ranking system.

The eight case study universities represent some of the top-ranked HEIs in Asia, Europe, Oceania and the United States. Compared with the other regions, Africa and Latin America have no representation among the top 100 universities on the three global rankings systems. Latin America is at significant language disadvantage when it comes to scoring high on academic publications, one of the key indicators of each of the main global ranking systems (Delgado and Weidman, 2012).

This study followed a strict ethical process that obtained institutional review board approval through the University of Pittsburgh. Interviewees were given the opportunity to voluntarily participate and could withdraw from participation at any time during the interview process. In-depth oral interviews were conducted with senior administrators at each of the participating professional development centres.

Qualitative data were digitally recorded and afterwards transcribed, cleaned, coded and analysed using qualitative analysis software. The following procedure was followed to decode responses from the participants: (1) participant codes are designated by a three-digit code (for example, A03, which indicates that the participant was the third person to be interviewed for this study); and (2) section codes are designated by the question number (for example, the “7” of A05-7 represents this was a response for the seventh question of the interview).

Australian National University. The ANU was selected as one of our case study universities based on several criteria. First, ANU represents the state-of-the-art public universities in the Australian higher education system, a system that has a far-flung impact on higher education in the context of Oceania. Second, *THE* World University Rankings 2013–2014 ranked ANU 48th and QS World University Rankings ranked ANU 27th in 2013. The University was also ranked the second and first best university in the Oceania region by the three ranking systems. Third, HEIs in Oceania traditionally share a close bond with their counterparts in certain European countries that used to colonize the region (that is, the United Kingdom). We believe that examining this bond will be particularly important in understanding the strategies of professional development of higher education teaching in this geographical region. ANU has recently signed up to the UK HEA’s teaching standards system (ANU, 2013), which provides a scope of research too revealing to ignore.

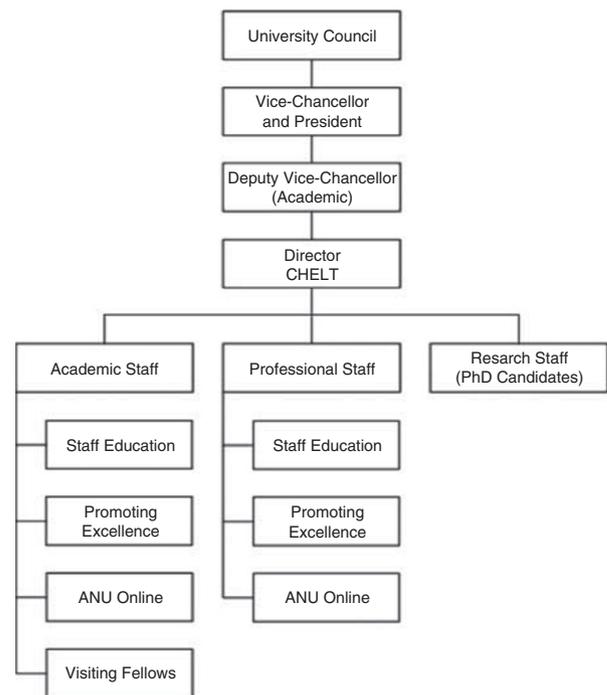


Figure 1 | CHELT organizational chart.

The Center for Higher Education, Learning and Teaching (CHELT) is the central organization overseeing professional development of university staff at ANU. Despite a relatively small staff capacity, the CHELT represents a centralized model of professional development in higher education.

Figure 1 depicts the organizational structure of the CHELT staffed by people with three profiles, that is, academic staff (9 persons), professional staff (5) and research candidates (12). Unlike the professional staff, the majority of the academic staff (six) holds a doctorate and among them, three hold a professorship at ANU. That professional development should be research-informed and involve student participation is highlighted by the significant number of research staff that comprise 12 PhD candidates responsible for doctoral supervision and projects related to academic and professional practices, a nearly half of the whole CHELT staff. Operationally, the academic and the professional staff join efforts in supervising two primary dimensions of professional development at ANU. First, *staff education*

(four persons), supported by themed sets of teaching and learning modules, seminars and fellowship schemes with reputable international accreditation organizations such as HEA from the United Kingdom, and second, *promoting excellence* (three), which is a university-wide grants and awards management initiative with an aim of improving teaching and learning. A representative of the ANU Online, a technology supported initiative from the office of the Deputy Vice-Chancellor (Academic), is deployed within both the academic and the professional ranks of the CHELT staff to supervise online programme and course delivery. A unique case of the CHELT is that the academic staff maintain more than half of their ranks with visiting scholars (five) assisting its mission during their stay at ANU.

An interview conducted with the Director of the CHELT in February of 2014 reveals that supporting faculty members in pursuing competitive governmental grants and international teaching awards is an effective avenue for faculty outreach as well as task-based professional development at ANU. It is uncommon for the CHELT to consistently host large-scale workshops and events to reinforce such initiatives, given its “small size”. Alternatively, the Center relies on a mixed strategy of fostering peer-to-peer faculty mentoring and evaluation programmes.

Often the best training and development around teaching and learning are among those people who practice in the disciplines. So [if] you want to [promote professional development programs for engineering professors], it often helps if you can find people who teach engineering to assist you in doing that. So [we should be] playing a role of coordinator with sourcing expertise rather than thinking of oneself as the only expert who can deliver. (A03-2)

On the other hand, the Center delegates a few professional development capacities to accredited domestic (Norton, 2013b) and foreign agencies, such as the HEA in the United Kingdom (ANU, 2013).

The reliance on peer-to-peer mechanisms of teaching improvement is by no means relinquishing any of the Center’s commitments. Rather, it is a keen combination of effective teaching methods with a robust institutional culture at ANU. The Center harnesses approaches of evidenced quality and especially “letting-faculty-members-justify-their-own-teaching” as opposed to numerical indicators such as the number of courses taught in a semester. These approaches are best implemented in peer-to-peer settings such as mentoring and teaching evaluation, and are especially effective when applied in conjunction with a supportive institutional culture. The Director of the CHELT characterized the institutional culture at ANU as a high affinity to “critical thinking of pedagogy”. In elaboration, an engineering professor through professional development should be able to recognize himself/herself as more than just an engineer, but also an educator capable of engaging the intellectual and emotional aspects of students in addition to merely imparting knowledge of engineering. To achieve that, the CHELT translates this institutional culture into a leadership style in its professional development workshops where the directions of teaching improvement are thoroughly communicated in an atmosphere more of “sharing” than “structuring”.

Besides the success stories, there are a few areas worthy of further explorations. For one, technology is playing an increasing part in professional development at ANU. However, it is not solely about providing optimal IT on campus, but rather institutionalizing it to support faculty professional development initiatives. To accomplish this, ANU emphasizes the importance of its learning management system that supports faculty professional development through data collection and analysis.

Through ANU Online, CHELT is able to share academic transcripts and other valuable information between the registrar’s office and the respective colleges. In addition, access to student information enables the processing of data via “analytics, which allows you to mine through that huge amount of data that is collected at the university. And that can help us make strategic decisions”. (A03-9)

Having a clear idea of how to manage educational technology at the campus-wide level is essential to any professional development centre that includes an online/distance learning component. ANU divides its expertise into two primary groups to supervise different aspects of educational technology for professional development programmes:

We have a slightly more technical group [ANU Online], but then there is the group of people who are trying to think from an educational conceptual perspective rather than just how do you make it work. These two groups are quite prominent on our campus, for which a centre like mine wants to work closely with. (A03-9)

The University has also started offering courses via massive online open courses (MOOCs) and has laid down structural foundation in the department of ANU Online to support the campaign. However, the CHELT holds a reserved opinion towards further expansion, evidenced by the Director’s concern that vigilance and scrutiny should hang on to the “learning space opened up by the digital realm”. On the other hand, it is unknown whether a two-decade economic recession in Australia is in itself a robust rationale for entrusting traditional teaching and learning experiences to cheaper but often unchecked providers. Another area concerns a tangible evaluation mechanism of professional development at ANU. CHELT implements a four-level evaluation model, starting from basic to advanced, with (1) opinion questionnaires, (2) anecdotal evidences, (3) systemic in-class practices and (4) student outcomes. It is towards the most advanced level (that is, student outcomes) that concerns have been expressed, particularly regarding a lack of legitimate indicators and its gap with the other three levels of evaluation. Professional development programmes should be able to measure teaching and learning outcomes in addition to attendance.

If you’ve got people who enjoy your professional development programs that is evidenced by the sorts of reflections they make in class, and their ability to be able to recall and discuss key educational ideas, and that it is manifesting itself in practice in the classroom, because they are able to write up case studies when asked to demonstrate the quality of their programs. They are able to talk about how these concepts have been influential in a way that they developed their programs. And you are seeing over time an increase in the performance and the abilities of your graduates, then I’d be quite confident to say you have good professional development programs. (A03-7)

Overall, the case study on ANU culminates a very important lesson, as per the Director of the CHELT: “Make professional development part [of the university mission], rather than something extra that you do” (A03-11). To that effect, maintaining a regular and rigorous professional development framework (for example, luncheon meetings or workshops) for university-wide faculty members is essential to communicating problems and negotiating solution strategies related to teaching improvement. In that regard, the CHELT’s monthly meeting with university-wide faculty members is a fine example to start with.

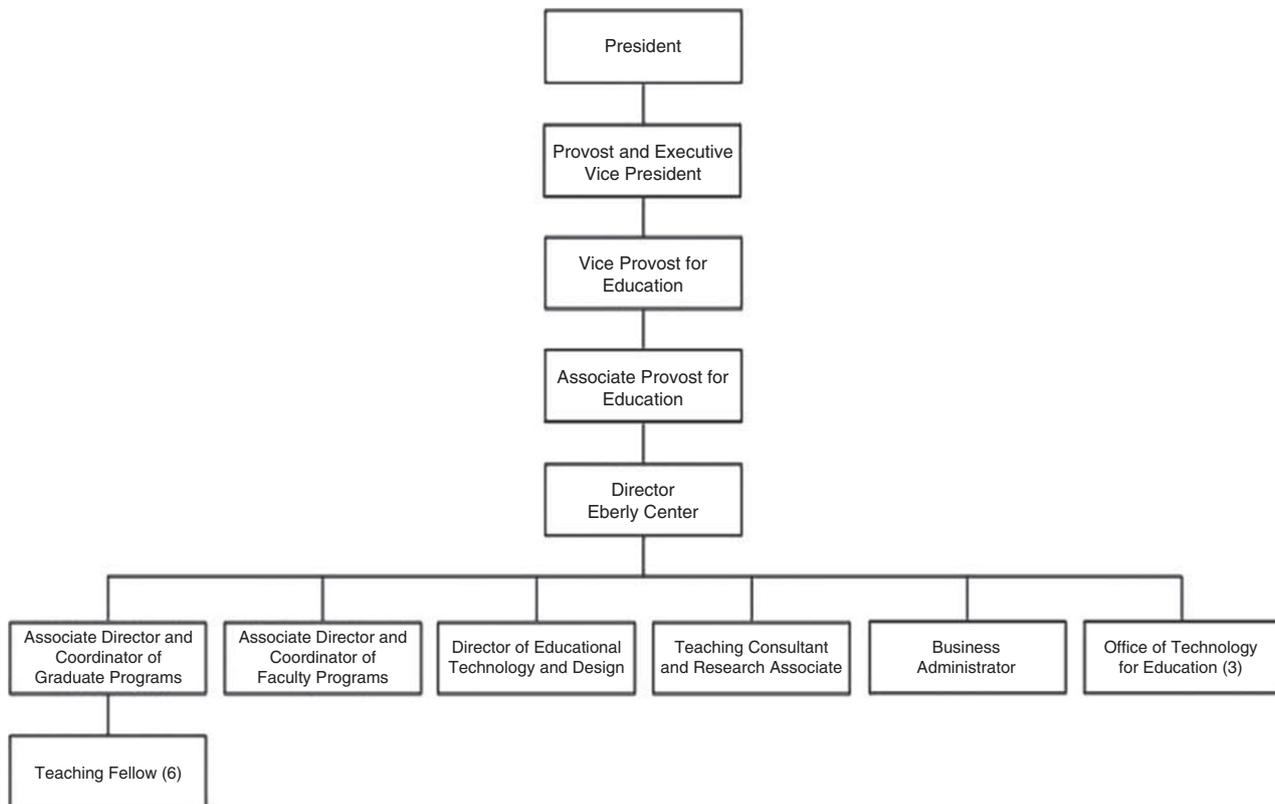


Figure 2 | Eberly Center organizational chart.

Carnegie Mellon University. CMU is a private research university with a globally recognized reputation. In 2013, *THE* of London ranked CMU 24th in the world, and 17th among US universities.

The Eberly Center for Teaching Excellence and Educational Innovation (hereinafter referred to as Eberly Center) founded in 1982 is the organization in CMU to bring pedagogical and technological issues together, and translate researches on teaching and learning to teaching practices, aiming to improve faculty's teaching and students' learning. The serving objects include CMU's faculty members, postdocs and graduate students who have workloads of teaching. Their participation in Eberly Center's services and activities is voluntary, and the participants' personal information is strictly confidential.

The Eberly Center has a staff of 15 people among whom there are 9 full-time staff and 6 student staff. The Director under the supervision of the Associate Provost for Education leads the Center. The rest of the full-time staff reports their work to the Director. Two Associate Directors are in charge of coordinating the work in the Graduate Program and the Faculty Program. Three staff members work as a Teaching Consultant and Research Associate, Director of Educational Technology and Design, and Business Administrator, respectively. In March 2013, the Eberly Center merged into CMU's Office of Technology for Education, where three full-time staff members are responsible for the coordination work. Six student staff members serve as Teaching Fellows who are selected from a talented pool of CMU graduate students. They participate in the Future Faculty Program, which is designed for training promising faculty members for the university. Teaching Fellows are under the supervision of the Associate Director for Graduate Programs (see Fig. 2).

When asked to describe her leadership strategy and style, the Director of the Eberly Center emphasized the importance of

making the Center's mission clear, communication among teams and a needs-based philosophy:

What I try to do is make our mission very clear, so the individual members of the team know what they're working for and what they're working toward, and we can be coordinated in our efforts. Communication among the team is also important, and ... our work is needs-based. We're always working, making sure what we're doing is helping to serve the needs of students learning ... or to promote new opportunities for teaching and learning. (A02-2)

From an organizational perspective, the Eberly Center plays a linkage role between institutional expectations of teaching excellence and faculty members' teaching practices. The Eberly Center is one part of the infrastructure to support programmes such as incoming faculty orientation and working with faculty members who want to improve their teaching and their students' learning outcomes. From a decentralized organizational structure standpoint, the faculty's professional development on teaching takes place in a peer-to-peer collegial form. For example, the Eberly Center provides a platform for faculty members to meet together to share about their teaching experiences.

The Simon Initiative is an important ongoing project of CMU that focuses on leveraging science research to improve instruction and student learning outcomes. As a part of the Simon Initiative, the Eberly Center serves as a hub for CMU faculty in providing programme-level and technology-enhanced teaching and learning initiatives. The Eberly Center has a clear approach to improving faculty teaching:

- *Learner-centred*, where student learning is positioned at the centre of the teaching process.
- *Educational*: The Center does more than simply providing suggested teaching tips. It helps faculty members gain a deeper

understanding of effective teaching methods, approaches and styles.

- *Collaborative*: The Center works closely with faculty members to identify their strengths and weaknesses, and help devise strategies for improvement.
- *Constructive*, by maintaining a supporting role to provide constructive and practical feedback to the faculty.
- *Data-driven*: The Center helps faculty members identify and address the sources of their teaching problems by collecting regular information on their teaching practices.
- *Research-based*: The Center distils, synthesizes and applies research to help faculty members in their teaching and individual research initiatives.

In the Eberly Center, the specific supporting activities and high-value services to improve the faculty's teaching include one-on-one teaching consultations; workshops and seminars for faculty and graduate students; Blackboard help and support; guidance in solving teaching problems; incoming faculty orientation and skills development; and teaching observations, focus groups and course evaluations. Effectiveness and efficiency are two major foci in the Center's service delivery:

We focus on helping faculty be more effective in their teaching and [in their ability to] help their students be more effective in learning And the other thing that we really emphasize and help faculty with is efficiency. Something we're always keeping in mind is that faculty members are very busy. Graduate students ... are [also] very busy. (A02-11)

To evaluate the quality of its services, every 2–3 years a survey is conducted on faculty members interacting with the Eberly Center. The questions in the survey include “What was the value?” “How did your interaction affect your teaching practice and your students' learning?” “Have you come back to the Eberly Center?” and “Have you recommended the Eberly Center to your colleagues?” and so on. Besides the survey, at the end of each workshop or seminar, questionnaires are distributed to the participants to collect feedback, which is used to adjust these activities from time to time.

A current challenge for the Eberly Center is that the faculty's demand to improve teaching is increasing but the resources are limited. To address this challenge, the Eberly Center tries to identify the common pattern of need and develop reusable resources. For example, it is time-consuming to solve problem one-on-one, then the Eberly Center convinces the faculty who are interested in one innovative teaching method or technology to form a special interest group, and they can get group support consultation. It is beneficial because the faculty members don't only learn from the training, but also learn from each other.

As a Research I university, CMU is interested in effective teaching. Over the past several decades, the expectation of teaching excellence has continued. CMU established a dual focus on quality teaching and student learning: “I think Carnegie Mellon is a place where for a long time there's been interest in effective teaching, even at a university that focuses [primarily] on research There's always a focus on education, and I think in the past 10 to 20 years, the expectations around teaching and teaching excellence have continued to grow” (A02-5). In such a higher education atmosphere, the professional development on teaching has become a significant part of CMU's overall organizational development.

Technology plays an important role in improving faculty members' teaching at CMU. The Eberly Center strives to identify opportunities to apply technology to help supplement teaching and learning, and to improve their outcomes. Specifically, the

Center aims to help faculty members find a tool or set of tools that aligns with their teaching goals, and provides them with support on an as-needs basis as they select and integrate solutions effectively into their teaching:

What we are always trying to do is to find an opportunity where technology can help solve our teaching and learning problems, or where technology can open a new opportunity to improve something that might not already be going on. So we really look for technology [opportunities] ... in order to improve teaching and learning. (A02-9)

The Eberly Center website is a good example of technology use that contains very specific, organized and informative guidelines, which cover all the aspects of the faculty's professional development on teaching. The Eberly Center also serves as a central hub for various learning aids and software training needs, such as providing online tools for evaluating written work, information visualization tools, course management tools and so on. In addition, some parts of the contents of the Center's website is based on the results and participant feedback of workshops and seminars that are relevant to the needs of the faculty on teaching.

London School of Economics and Political Science (LSE). We selected the LSE for a case study due to its world-class academic renown as well as being a specialist university focusing on social science subjects. According to *THE* and QS World University Rankings in 2013, LSE was ranked 32nd/68th, respectively, worldwide, 6th/23rd in Europe and 5th/12th in the United Kingdom. In terms of academic strength in the social sciences, the university was ranked 13th worldwide and 3rd both in Europe and the United Kingdom by the *THE* rankings. Although the QS rankings do not rank academic strength in the social sciences as a whole, 10 of the 12 ranked individual disciplines at LSE were among the world's best 22 in 2014. We envision that unique practices of professional development are playing an important role in supporting the excellence of a specialist university such as LSE. As a specialized university, LSE has a relatively homogeneous faculty body, which in many ways legitimizes a centralized professional development organization as well as further penetrative efforts at the depart level.

There is a degree of sense of having a single central provision. Having said that, we do try to tailor our work to the needs of the different disciplines within the School. We do this in a variety of ways, but in particular, we make a clear distinction between the teaching of our more quantitative disciplines—such as economics, finance, accounting, mathematics, statistics—and the teaching of the social sciences—political science, international relations, sociology, politics, history, etc. So when we are undertaking staff development activities and professional development activities centrally, we tend to focus on strengthen some aspect of disciplinary consideration. (A06-4)

The Teaching and Learning Centre (TLC) is LSE's professional development centre. TLC has a division of Educational Development which, under the Head of Educational Development, has three full-time educational developers, one educational development administrator, one advisor to doctoral and postdoctoral researchers, one communications and publishing adviser and one general administrator. What's peculiar about the Center's overall structure is its combination of professional development and student support services. The Educational Development division works closely with two sprawling divisions—the Student Counselling and Disability and Well-Being divisions.

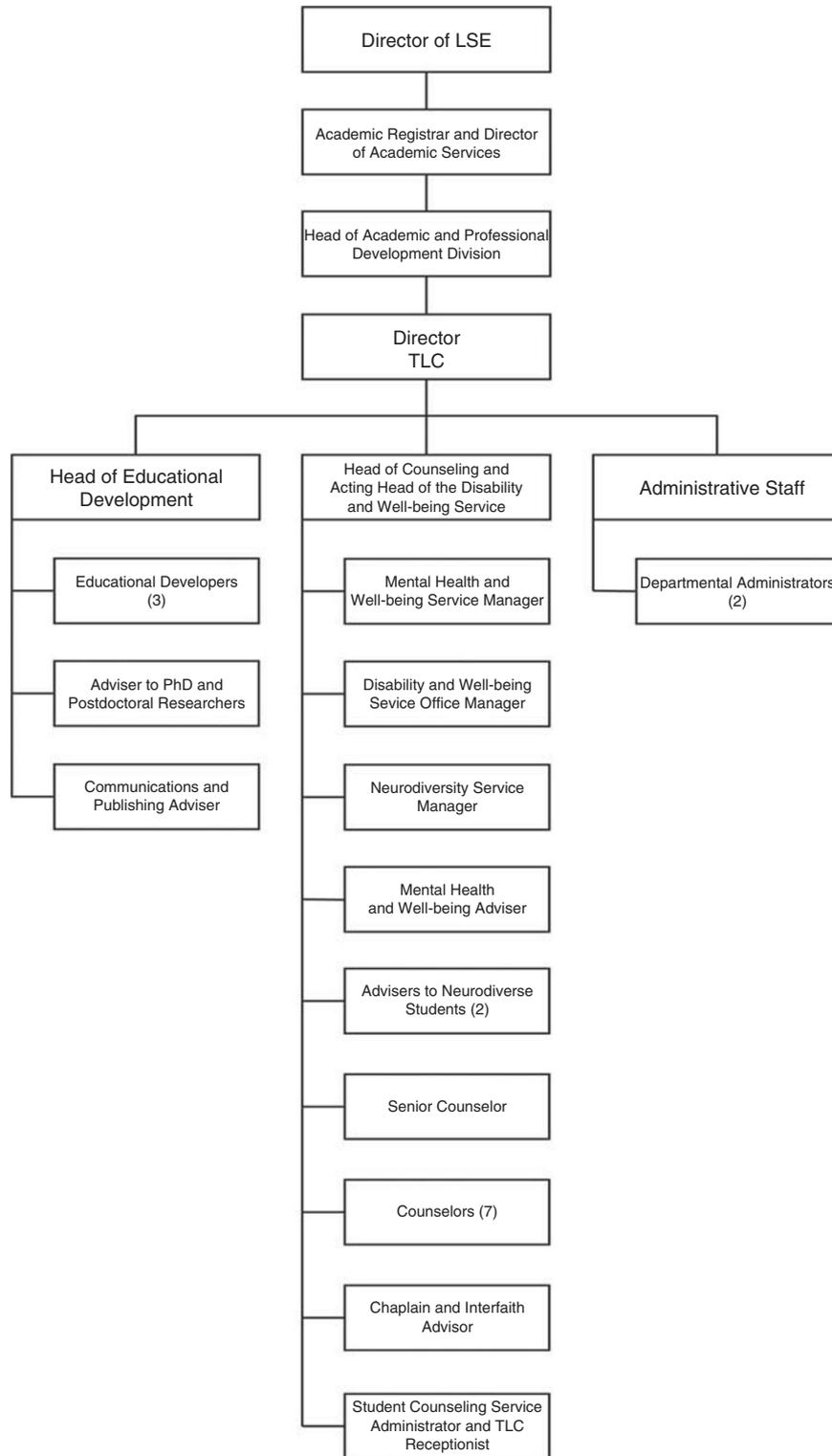


Figure 3 | TLC organizational chart.

This collaboration between TLC divisions helps ensure that student development is considered in the implementation of LSE’s faculty professional development programmes (see Fig. 3).

The relatively single faculty body also means that the centralized TLC can afford to identify diverse professional development needs according to the various functions of faculty members, rather than their disciplinary backgrounds. In other words, the professional development needs of a faculty member

serving as a doctoral advisor as opposed to a departmental head can be as nuanced as those between a sociology professor and a biology professor. For example, the Centre tailors its faculty professional development programmes to faculty’s simultaneous roles being played at the centre, departmental and institutional level. “Academic Managers” is a distinctive category for which professional development opportunities are offered to those holding leadership positions in addition to teaching and research

obligations (for example, department heads and research centre directors). Faculty members with related needs can mark their calendars for themed events on key aspects of academic management and leadership as well as consult an external coach for continuous support in requested managerial areas such as strategic planning, people management and change management. When the faculty function turns from academic leadership to facilitating student learning, there is the category of departmental tutors and academic advisors as well as the more nuanced doctoral supervisors for whom proposed good practices in terms of faculty–student interaction and effective student advising are demonstrated. These good practices are demonstrated through annually updated handbooks, consultation with the designated one of the three LSE educational developers and referral to the year-round “learning and personal development events” designed for students.

Research, as a core faculty function, is also being approached with a concern for individual-tailored needs. From a faculty member training perspective, the Centre recognizes the many different roles research personnel play as well as the call for a greater sense of research community. For the former, professional development programmes are tailored differently for principal investigators and research assistants; for the latter, the LSE Research Staff Association was established in 2012 to represent university-wide research personnel from research assistants up to professorial research fellows. From a career aspiration perspective, the Centre allocates resources from the LSE Careers Service Office to provide career development advising for doctoral students and research staff seeking future employment as researchers.

Thanks to the relatively homogenous faculty body, there are certainly many more details and nuanced provisions available from TLC than is described above. However, TLC demonstrates how a vertical professional development outreach centre can be organized when there is a clear limitation (or rather leeway) horizontally. Are there fewer professional development opportunities if yours is a smaller university with fewer academic departments? Not necessarily, if you strategize your programmes so that they are “just in time, well-tailored, specific to purpose, one-to-one, and very human”, as was emphasized by the TLC Director (A06-8).

The TLC Director explained how the very nature of social sciences makes application of educational technology less significant at LSE than at a more comprehensive university.

Because of the nature of the disciplines we teach, there is no inherent drive to keep at the forefront of technology. We don't have computer scientists in the institution who will can introduce people to the latest gizmos. We have to introduce the latest gizmos and encourage people to think about how they may or may not improve the quality of their interaction with students. (A06-7)

And TLC “does” it in a way to further discover nuanced professional development needs, for instance, video capture of class teaching for review purposes, instead of dabbling in massive distance education programmes which is contrary to the philosophy of “human” education at LSE. “Technology for all its benefits still fails to keep up with the ingenuity of human beings and their learning processes. So I'd say technology is necessarily there, but we do what we can with it” (A06-7). The culture of “less technology will do just fine” on the one hand enables TLC to further concentrate its professional development resources and nurtures a synergistic collegiate climate. On the other hand, however, it remains to be seen whether being kept from the very forefront of educational technology may have a

lasting negative impact on situations where technologies are the proven best gap-fillers.

University of Hong Kong (HKU). Established in 1911, the HKU is a regionally and internationally recognized public research university. In 2013, HKU ranked 43rd among *THE* universities and 26th in the QS World University Rankings.

The Centre for the Enhancement of Teaching and Learning (CETL) functions as a service-oriented and research-led centre dedicated to facilitate university-wide teaching and learning activities. CETL's mission and vision are closely related to HKU's strategic priority on enhancement of the quality of teaching and learning. HKU administrators and faculty realized their students need to develop new knowledge and twenty-first century skills that best enable them for success in their future career paths. HKU faculty members need to teach students in the most appropriate ways.

The University's strategy is to ensure that the learning experience of students is a [good and relevant] fit in a world that has changed beyond all recognition over the past 20 years. In this new world, students need to develop new knowledge, skills, and attributes which [prepare] them for this new world. This means they need to be taught in ways that are different from those traditionally associated with University education. (A04-3)

CETL consists of 29 full-time professoriate and non-professoriate staff who are comprised into three groups: academic staff (10), research staff (11) and supporting staff (8). Particularly, to respond to HKU's strategic eLearning objective, an eLearning Pedagogical Support Unit (EPSU) was established within CETL, and all six EPSU team members come from CETL. The Director—who is also the Acting Director of EPSU and reports to the Pro-Vice Chancellor for Teaching and Learning—leads CETL. CETL staff report directly to the Director (see Fig. 4). During the interview, the Director defined his leadership style as “engaged, collaborative and facilitative”, which he advocates as “essential in relation to enhancing teaching and learning, since some staff members still perceive teaching and learning [on a much lower scale] in comparison with research” (A04-2).

CETL is a centralized organization serving all faculty members within HKU. Keeping the student-centred perception in the HKU's teaching agenda, CETL focuses on improving teaching methodology to keep pace with the rapid developments in technology, and meeting students' needs and expectations. On the one hand, CETL facilitates the development of faculty members' teaching ability through high-quality professional learning programmes. On the other hand, CETL engages in promoting scholarship and conducts original research studies—such as those that focus on optimal approaches to teaching and learning, curriculum design and assessment, and eLearning and evaluation—to support university-wide teaching and learning developments. At any one time, CETL has approximately 40 ongoing teaching and learning development grant projects. The findings of research studies are shared through voluntary workshops for staff members across campus, and integrated into professional development programmes for new academic staff members and graduate students.

Specifically, CETL provides faculty members with a holistic framework of programmes, professional learning opportunities and other services to best meet their diverse needs at various stages of their careers. Currently, four categories of professional development programmes and services are offered by CETL, which are described below.

1. *Required programmes:* The required programmes consist of three sub-programmes, which are mandatory for new

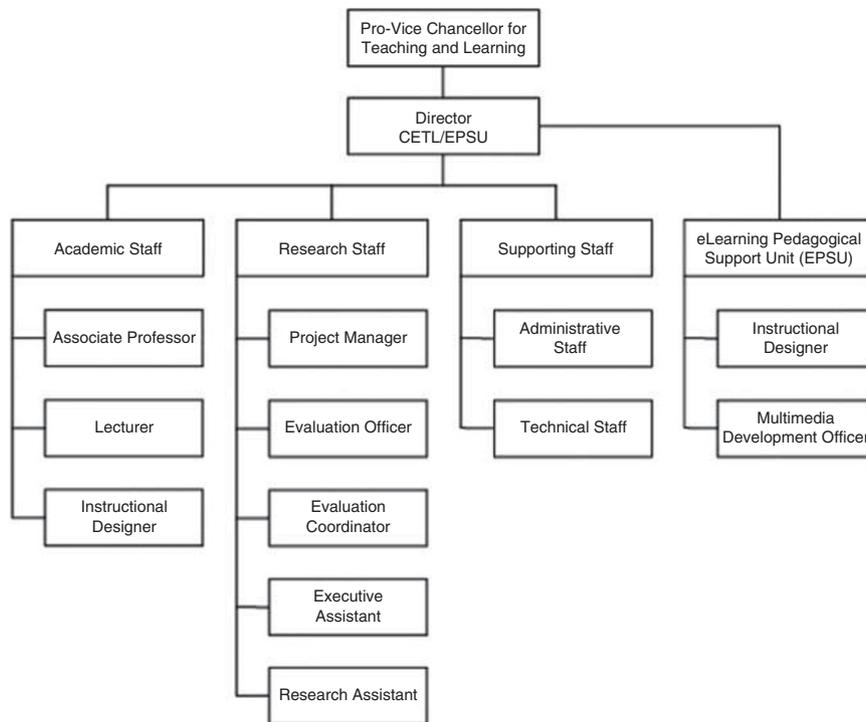


Figure 4 | CETL organizational chart.

- academic staff members at HKU. These three sub-programmes include (1) an Introduction to Teaching and Learning at HKU, (2) Advance Teaching and Learning at HKU and (3) a Certificate of Teaching and Learning in Higher Education.
2. *Professional learning:* CETL offers professional learning opportunities to faculty members through workshops and seminars, covering multiple teaching and learning topics to help improve teaching.
 3. *Consultancy:* CETL provides customized consultation services to individual faculty members, as well as department and programme teams. Individual faculty members can obtain personal support in areas such as writing teaching development grants, teaching awards, peer review of teaching materials and peer review of teaching practices.
 4. *Special events:* CETL collaborates with scholars and practitioners within HKU and internationally, through holding seminars of visiting speakers, symposia, workshops and showcasing best practices, to facilitate open dialogue and sharing of innovative practices in teaching and learning.

A sound evaluation and feedback structure is an important part in CETL’s work. In reference to faculty evaluations, all first year and final year students are required to complete Student Evaluation of Teaching and Learning (SETL) questionnaires to evaluate their learning experiences at HKU. In addition, students evaluate every course in terms of teacher and course effectiveness through SETL questionnaires.

HKU treats eLearning as a strategic priority, because administrators realize that the higher educational process must be learning-led and technology-enabled. In practice, HKU focuses on student learning outcomes and applies technology only when it can improve the learning process. On the basis of this philosophy, the CETL Director views technology as an integral part of HKU’s professional development processes:

Technology is an integral part of the professional development activities provided by my Centre. We have a number of

dedicated staff working at our E-learning and Pedagogical Support Unit (EPSU), whose responsibility is to provide support for teaching and learning initiatives involving new technologies. They work on teaching and learning scholarship projects and run seminars and courses for academic staff members across campus. (A04-6)

With a high focus on research performance, teaching and learning are often perceived to be secondary in importance to research. For example, promotion and evaluation processes still tend to value research performance higher than instructional performance in the classroom. This research-oriented tradition is an obstacle to faculty professional development on teaching and learning. The CELT Director recognizes that one of his greatest challenges is to help lead the change in faculty members’ perceptions on the importance of teaching and learning within a predominantly research-oriented context. Another concern of the Director is to keep pace with the changing world and maintain a student-centred perspective:

First, the world is changing, and our teaching methodology needs to keep pace, especially when it comes to technology use. Second, our students are changing, and we need to be constantly aware of their changing needs and expectations. My experience of higher education in Hong Kong suggests that students are still not perceived as genuine stakeholders in their education. (A04-13)

University of Melbourne. Widely regarded as highest ranked HEI in Australia, the University of Melbourne represents the top standards of teaching, research and professional development in the country. According to the *THE* and *QS World University Rankings* in 2013, the university was ranked 36th/31st, respectively, worldwide and 1st/2nd in Oceania. We selected the University of Melbourne as a case study because of its historically long-standing Centre for the Study of Higher Education (CSHE)

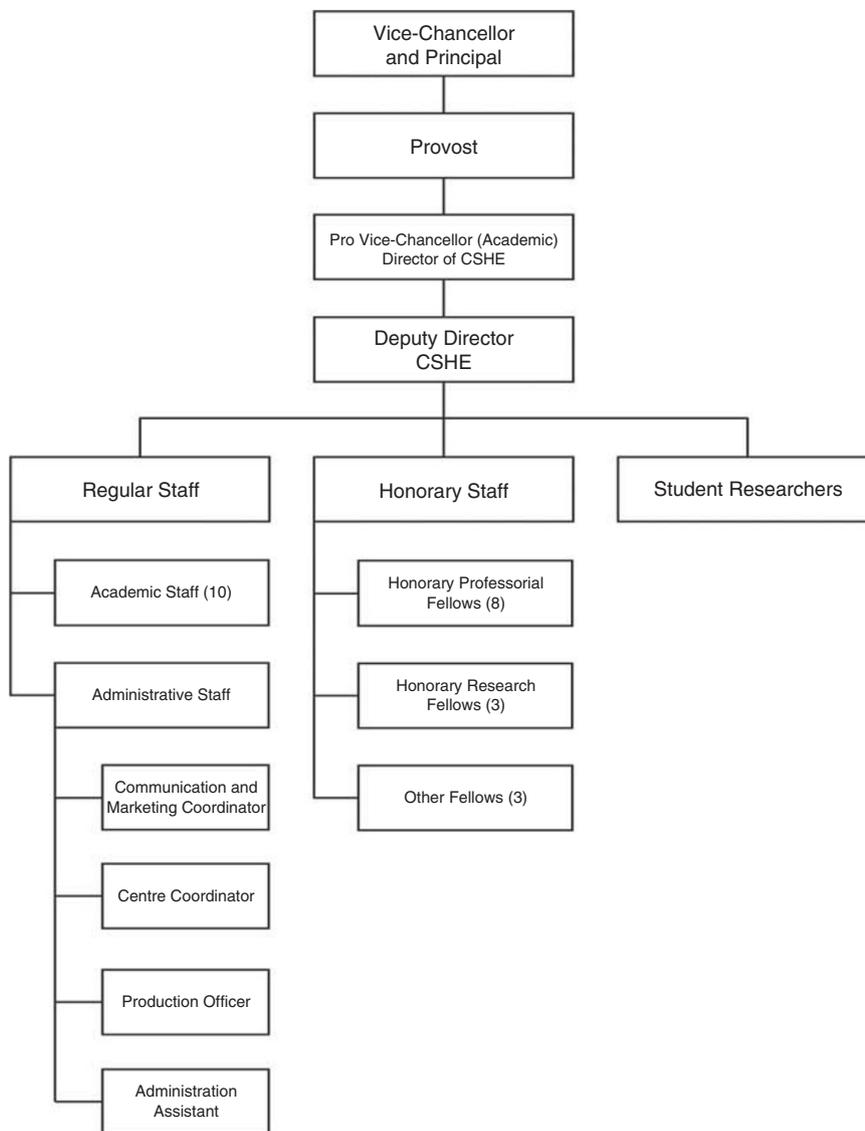


Figure 5 | CSHE organizational chart.

which, dating back to 1968, represents one of the more comprehensive approaches to institutional professional development.

CSHE currently maintains 15 full-time and 1 part-time staff members. Aside from the Director and the Deputy Director, there is an academic staff cohort including two professors, two senior lecturers, five lecturers and one research fellow in addition to four administrators including one Communication and Marketing Coordinator, one Centre Coordinator, one Production Officer and one Administration Assistant. CSHE relies on a cohort of Honorary Professorial Fellows who are retired eminent scholars and serve on a *pro bono* basis. Eight of the Honorary Professorial Fellows are currently contributing to academic affairs such as sitting on academic panels, advising doctoral students, giving presentations, analysing higher education policies and so on. An interview with the Deputy Director reveals that these Honorary Professorial Fellows, being not regular CSHE staff, are crucial volunteers for satisfying two distinctive needs of the Centre (see Fig. 5).

The first distinctive need is to strike a balance between horizontal and vertical institutional outreach, considering CSHE extends its mission well beyond professional development to another two major areas of excellence in research and teaching.

Regarding professional development, resources are utilized for faculty members and administrative and junior-level academic staff members (for example, administrators of the university at all levels, sessional teaching staff and so on). Ambitious as these horizontal outreach efforts may seem, CSHE counters the obstacles by decentralizing professional development programmes for certain academic units and best utilizing volunteerism to achieve optimal vertical outreach. For one, CSHE builds upon its natural linkage with the Melbourne Graduate School of Education to share resources on its commitments for other academic units. Additionally, CSHE provides support services for stand-alone professional development units in the faculties of engineering, architecture building and planning, and economics and business by co-designing and advertising their programmes. Moreover, cohorts of retired professorial fellows as well as doctoral researchers are utilized on a voluntary basis to provide technical expertise for professional development programmes aimed at certain academic units.

The second distinctive need is to utilize research findings for improvement efforts on teaching, research and professional development activities. The interview suggests that CSHE does not consider itself an all-out professional development organization.

While not considering itself “professional development focused”, CSHE attributes its primary organizational strength to disseminating and utilizing research findings for activities that are relevant to faculty members’ professional development needs.

We think of ourselves very much as a research centre in higher education. So we are the only centre of this kind in Australia ... rather than being professional development focused, professional development is part of what we do. But our research underpins all our activity, and we engage in international research and national research that influences the higher education sector here in Australia, as well as research that’s relevant and important to our university. And our professional development activities come from our understanding of our research. (A08-4)

Professional development programmes designed for faculty members are centred on three teaching certificate programmes and boast of greater variety than those designed for other university staff categories. Other than the teaching certificate programmes, CSHE also offers two seminars, two event-based forums and one workshop utilizing iPads for academic staff members. Despite the variety and utilization of new platform technologies, most of the programmes are cohort-based and advocate traditional face-to-face communication and delivery. For example, the Melbourne Teaching Certificate (MTC) programme emphasized that since this is a “cohort-based programme it is important that members of a group move through the programme together [in one semester]”, suggesting that asymmetrical learning via technology has yet to take a firm root in the professional development programmes at CSHE, at least not for the academic staff category. However, structural characteristics of CSHE ensure that the dynamics of professional development can be found elsewhere. For one, non-academic staff members can also participate in the three teaching certificate programmes as long as they hold teaching responsibilities. Although adjunct teachers and student advisors are classified as non-academic staff by CSHE, their participation nonetheless provides great diversity as well as generic continuity to the programmes from a teaching perspective. Additionally, CSHE emphasizes early professional development by tailoring the Specialist Certificate in Teaching for Graduate Researchers (SCTGR) programme for first-year (and, in rare cases, second-year) doctoral students aspiring to one day hold a teaching career. Moreover, the three teaching certificate programmes as a whole are balanced between competitiveness, involvement and flexibility. A faculty member may choose the more time-consuming Graduate Certificate in University Teaching (GCUT) programme or the more relaxed MTC programme, while a second-year doctoral student with teaching responsibilities will have the option of participating in the MTC programme should he/she be rejected by the more competitive SCTGR programme. The GCUT programme is an award course that is considered “one of the most effective things” in terms of faculty teaching and learning.

It has really taught a lot of people how to be a leader in teaching and learning, and it’s really focused on giving those people the skills to be able to go into their departments and talk to faculty about how they can enhance and develop their teaching skills. (A08-8)

Certificate participants include both faculty members and doctoral students, who are both in need of teaching improvement. In summary, a clear merit of CSHE’s teaching certificate programmes is that they complement competence building with

affordability and convenience, the latter of which emerging as major components of teaching realities in higher education.

CSHE works in collaboration with a separate university division to ensure faculty members have necessary access and competencies to harness the power of educational technology. The Centre frames the contingency of professional development through programmes that preclude extensive training activities:

We do not work with students. We only work with faculty members. And we are not a training centre. We actually don’t see ourselves as a training centre at all. So we do not offer hands-on, how-to-do online teaching or any of that sort of thing. That’s offered through a separate arm of the university called the Learning Environment Centre. So they do that. But we do of course use online teaching in our award courses, but we don’t offer any training as such. It is not part of what we do. We don’t see that as part of professional development [of faculty members]. (A08-6)

What pairs up with this vision is the abundance of e-learning resource availability to faculty members who are ready to make good use of them to enhance their teaching and research. “We have a number of scholars who are working on e-learning, using online technologies, and researching with online technologies. Our particular strength is around research in this area” (A08-7). The way forward is clear in terms of how CSHE will put educational technology to better use for faculty professional development. Increasing programme visibility is a future goal of the Centre. In this regard, CSHE will continue to utilize online platforms to extend and enhance its provisions.

What we are trying [accomplish] is to have a [greater] online presence for some of our professional development activities, so that people, can access them if they are unable to actually attend a PD [activity], and we are slowly working towards developing that. I think that would be the main focus of what we do with technology. (A08-6)

The Deputy Director repeatedly emphasized the need for establishing and meeting “expectations”, which highlights a cultural dimension of professional development from both inside and outside the University of Melbourne. It echoes the dilemma faced by other world-class universities (for example, University of Oxford), where prestige and the resulting exemption from certain external assessment bodies could mean either greater autonomy or disorientation. The ability to remain “creative and refreshed” is important defining characteristics of the effective leadership reflected at CSHE. This leadership perspective emphasizes the need for long-term results rather than short-term improvements that cannot be incorporated into a more sustainable future towards teaching excellence.

University of Oxford. The University of Oxford boasts an almost millennium-long history of excellent teaching and research, and still enjoys today a reputation that is beyond credentialing. Oxford was ranked 2nd and 6th worldwide, respectively, by the *THE* and *QS World University Rankings* in 2013, and 1st and 4th in Europe (and the United Kingdom), respectively, by the same ranking systems.

Nowadays, the majority of the academic and professional development commitments fall on the Oxford Learning Institute, an organization comprising 22 staff members (as per the *Oxford Learning Institute: Annual Report for 2012–13*) supporting a range of professional development services such as course programme advising, research activity counselling and e-learning administration.

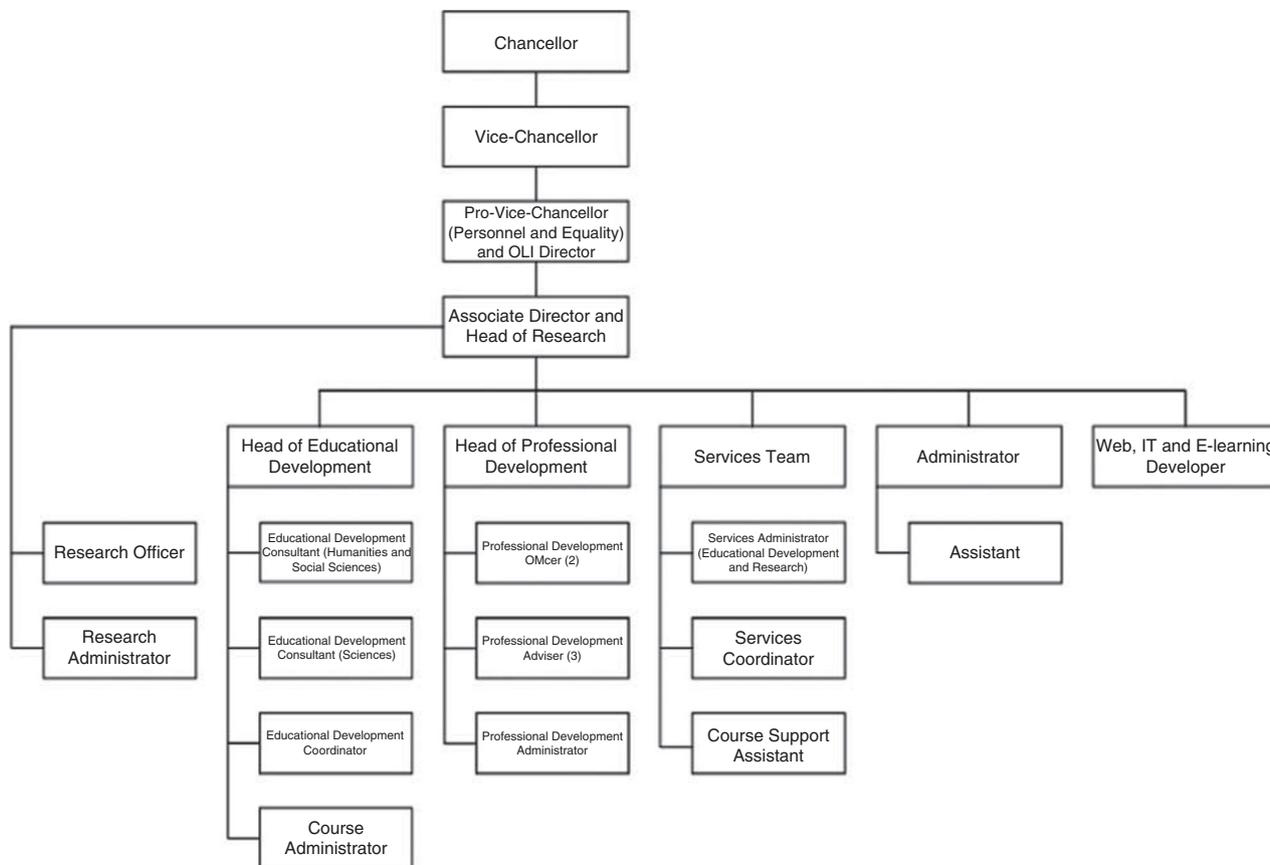


Figure 6 | OLI organizational chart.

Figure 6 depicts the organizational structure of the OLI overseeing four primary divisions, that is, educational development (five staff members), professional development (seven), research (three) and services team (three). These divisions are under the directorship of a pro-vice-chancellor (Personnel & Equality) and supported by one administrator and one Web, IT and E-learning Developer. Out of the 22 staff members in total, 9 hold a doctorate, including three out of the four division heads (except services team). That professional development should be research-informed is highlighted by the Head of Research assuming the associate director position and being meanwhile a professor of higher education development. The division of educational development is charged with the mission of improving teaching, for which a stratified approach is adopted where individual-, group- and institution-level support are readily available in the forms of individual counselling, peer-to-peer review and large-scale bespoke workshops. Under the Head of Educational Development, the division is currently staffed by two programme-specific consultants (one supervising *humanities and social sciences* and the other *sciences*), one educational development coordinator and one course administrator. Both programme-specific consultants hold a doctorate, which, together with the Head, comprise more than half of the total division staff. The division draws rich resources for the services in personal management, e-learning and course development from the divisions of professional development, IT support and services team.

The Institute currently offers as many as 72 professional development courses to whoever is holding a teaching position at the University. These courses go beyond just learning and teaching and cover the areas such as leadership and management (for example, risk management), personal development (for example,

stress management in the workplace) and communication skills (for example, running effective meetings). An exemplary practice at the OLI is recognizing the demographics of the teaching staff by designing corresponding professional development programmes. For example, the Institute designed the *Springboard: Women's Development Program* to enhance governance roles of female teaching staff based on the research finding that female participation in senior university governance tends to drop.

The OLI relies its growth upon rigorous data collection and research findings. Recent statistics suggest that the OLI is having some robust impact upon the improvement of teaching quality at the University. The Institute's latest *Annual Report for 2012–2013* highlights 39% and 77% increases of participation, respectively, in the Institute's overall development courses and non-tutored online courses, compared with the year of 2011–2012 (2). One in five university staff participated in the Institute's courses, and of 1365 participants completing feedback 95% said they would recommend their course to others (2). In the realm of educational development where teaching and learning issues are specially addressed, the number of university staff taking courses in 2012–2013 represents a 67% rise over the previous year (2).

These are some excellent statistics especially considering the fact that the OLI is a small organization housed within a huge and highly autonomous university system such as at Oxford. In absence of a tangible organizational chart, the University of Oxford is running in calculated efficiency with four academic divisions interacting with some 38 colleges. Working with such a sprawling and complex system is a daunting task to the Head of Educational Development of the OLI, a skilled professional with more than 20 years of experience in educational development as well as extensive learning experiences in the United States and Australia. An interview with the Head of Education Development

suggests that, despite a dedicated organization for professional development at Oxford, OLI can hardly adopt a centralized approach to its mission. The Institute needs to recognize the peculiar forms of interaction between administrative divisions and academic colleges, as well as 38 unique academic cultures. What adds to this challenge is the fact that the University is exempt from a host of national and regional quality assurance standards, meaning that the OLI must work more proactively with the university's divisions and colleges to ensure that university-wide buy-in is attainable to certain criteria and standards. OLI staff members view themselves much more like their faculty counterparts that as merely support staff for the university. In this way, OLI has a unique perspective of what it means to get involved with research and teaching side-by-side with faculty members. "We all have PhDs", said that Head of Education Development, "and have teaching and research backgrounds" (A05-11).

Although our appointments are not strictly academic appointments, we certainly take a scholarly approach to what we are doing. And I encourage and support active engagement in research on teaching and learning amongst staff of our unit. I think that is an important element in ensuring our programs are research informed, lively, responsive to our local needs, and allow us great credibility with our participants who would expect academic-type people to be teaching them. I felt that was an important point to mention that we do not think of ourselves merely as managers or bureaucrats. We think of ourselves as academics. (A05-11)

One strategy of involving teaching staff across different academic units is providing entry-level educational development programmes for first-time teachers. The OLI is currently collaborating with the four administrative divisions in offering preparatory courses of which the completion in the form of a portfolio will lead to Associate Fellowship of the Higher Education Academy, an esteemed UK national organization championing excellent learning and teaching in higher education. This strategy provides necessary guidance and an incentive for starting teachers whose number in completing the course and gaining the Fellowship saw a steady growth from 35 in 2011 to 67 in 2013 (Oxford Learning Institute, 2014: 7). For the more established faculty members of different academic units, the OLI adopts a strategy that blends individual counselling with group advising in a workshop setting. The philosophy of blending alternative approaches is also manifested in blended courses alternating with tutored and non-tutored online instructions.

Throughout the interview with the Head of Educational Development, a clear concern was felt about how to manage limited resources to reach out to the most teaching staff possible. There are two dimensions of this limitation. First, despite 22 staff members within the OLI, the division that predominantly oversees teaching and learning, that is, educational development, commands only five staff members (Oxford Learning Institute, 2014: 13). Second, the Head of Educational Development expressed an un-tantalized opinion about mass online approach in terms of teaching improvement in higher education, especially given the traditions embraced for centuries at Oxford.

Because of the residential nature of our educational environment, technology has not been as important as it would be in other settings. Regarding students, we have very small class sizes compared to most other universities. We simply don't have as much need for a lot of intervening technology. You may walk down the hall to go to lunch and you might bump

into your students. It's a very much more personalized, face-to-face teaching environment. (A05-8)

Therefore, it is safe to say that technology, especially online technologies, is having a sizable impact on the development of teaching staff at Oxford, but not yet predominant if it will ever be.

We haven't relied as heavily on technology as other places might. And we don't incorporate a great deal of IT training in our office. There is a separate unit that [oversees] learning technologies, and does all the training on WebLearn, and various other technologies that people might want to use like clickers and so on. We focus on good educational principles and recognize that there are variety of different tools that academics might want to use in order to fulfill those principles without particularly emphasizing e-learning or another technology-mediated learning approach. (A05-8)

Moreover, the annual report lacks a scope of correlating overall course participation with online-only participation, which is a crucial dimension for exploring optimal blending percentages between traditional and online approaches to teaching improvement in higher education.

Overall, this case study reflects that typical university settings, such as at Oxford where academic autonomy is so tangibly manifested in a loosely bound university structure, will have a tremendous impact on the professional development practices in improving faculty teaching. In plus, university eminence at the price of exemption from external scrutiny may further the burden on its professional development organization. The OLI demonstrates an array of successful practices which all come down to a strong cultural awareness as well as keen application of *blending* strategies, two very important lessons for tackling professional development issues at similar university settings.

University of Pennsylvania. The University of Pennsylvania has consistently ranked among the elite universities in the world. In 2013–2014, the University of Pennsylvania ranked 16th by the *THE*, 13th in QS World University Rankings and 15th in the *Shanghai Jiao Tong University ARWU*.

The University of Pennsylvania has a high expectation on the quality of faculty teaching and student learning. The Center for Teaching and Learning (CTL) is dedicated to promoting teaching excellence at the University of Pennsylvania. It expanded from a one-person office in 2007 to a more comprehensive teaching centre able to serve the entire university since 2008. As a service-oriented centre, CTL aims to help faculty members excel in their teaching, to create and enhance a culture of teaching and finally increase the education quality of the University of Pennsylvania.

CTL has six full-time staff members, led by its Executive Director and four Associate Directors—two of whom are Senior Associate Directors—with respective assignments for programmes for graduate student, programmes for health and professional schools, STEM teaching and assessment. An Administrative Coordinator helps deal with the administrative affairs of the Center. The Executive Director reports to the Vice-Provost for Education (see Fig. 7).

Thirteen Graduate Fellows are doctoral students with different academic backgrounds. Graduate Fellows are from the Graduate Fellowship for Teaching Excellence Program that is dedicated to fostering future teachers. Graduate Fellows work part-time with an Associate Director to help design and improve graduate student programmes through organizing and facilitating teaching workshops, observing graduate students teaching, offering feedback and holding fellow group meetings to discuss teaching practices.

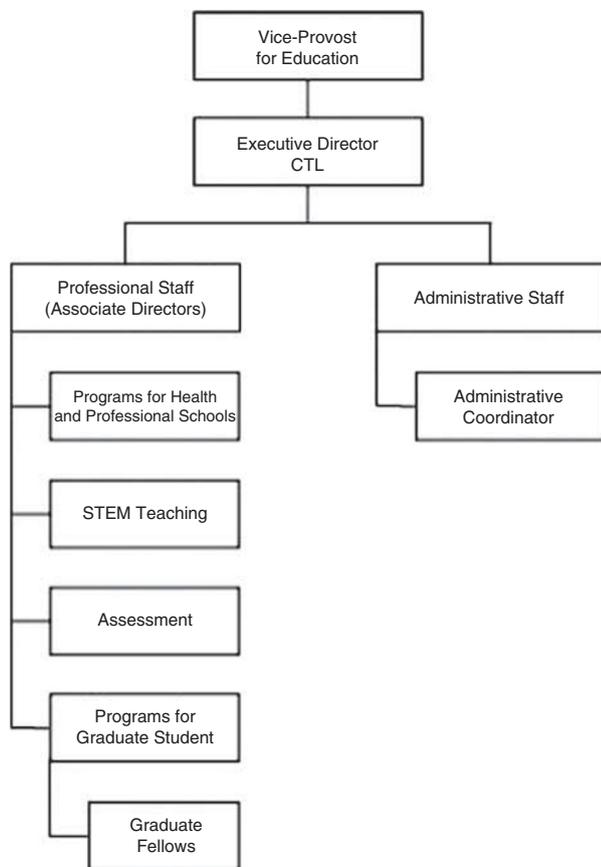


Figure 7 | CTL organizational chart.

CTL serves the entire university with a focus on helping faculty members and graduate students improve their overall teaching quality. Its central purpose is to provide various services including consultations and observations, faculty training programmes, graduate training programmes and open online teaching programmes. CTL also functions in a decentralized way. Many of the teaching programmes are designed and developed based on the interests of particular schools. An individual school may request specific training programmes from CTL to help their faculty members improve teaching quality.

By working collaboratively with faculty members, CTL strives to provide assistance and a variety of services to solve teaching problems and improve teaching quality. Among the various service options include individual and group consultations, teaching observations and feedback, and teaching workshops and seminars. CTL also focuses on identifying good teaching practices and disseminating them among faculty members. Faculty members may also apply for research funds if they are interested in conducting research studies on the improvement of teaching and learning. In turn, these faculty members also serve by providing current findings on how to help CTL improve its quality of services.

The Executive Director was proud of their practices to encourage instructors to reflect on their own teaching, and to engage with and gain insights from each other. Through identifying the “hot teaching topics” among faculty members, and providing platforms such as faculty-to-faculty lunches, CTL brings instructors together for collegial conversations. Faculty members themselves lead most of the conversations.

The other point I will mention here is that quite frequently the programming we do is set as a headline by faculty, so we are

identifying a topic towards conversation, then in the [training] workshop or presentation ... faculty lead the discussion. And that really is a discussion. I think faculty appreciate the opportunity to come together not only to be told how to teach but also to share ideas with their colleagues. They really appreciate that space to talk about what they are doing and in other [areas of] focus they are doing. (A07-8)

To obtain feedback and improve service quality, CTL administers regular surveys among faculty members and graduate students. Informally, CTL staff members hold regular meetings with faculty members and graduate students to collect feedback about the programmes and services in which they have participated. Attendance and completion of training programmes are other significant indicators of the service quality for CTL.

In terms of the technology use in faculty professional development programmes at the University of Pennsylvania, the university library plays a central role in promoting technologies in teaching and learning, while each school has their own technology support services:

The kinds of instructional technology support we offer are complicated here because every school has its own instructional technology office. So we have to coordinate with the instructional technology units, which are located in the schools we’re working with. Much of the instructional technology is in the library, and that’s central. So we don’t have somebody with specialty in instructional technology, and what we do instead is to coordinate with instructional technology in the different schools or in the library to provide the [necessary] teaching expertise. We don’t tell people the ways or technical how to use teaching technology, but we discuss how it might be used, not from the technical side, but from the pedagogical side. (A07-6)

Within this context, CTL plays a coordinating role to identify most appropriate technology strategies in teaching and learning, and leveraging library and school technology office resources to solve problems. CTL places a priority on technology development: “The clear strength is that we are very good about thinking about the use of technology for the teaching end, and not getting caught up by thinking technology is an end unto itself. I think that’s a real positive. So we’re able to help faculty and graduate students really think about what they are trying to accomplish in their teaching and how to use technology to do that” (A07-7). To hire university-wide technology specialists and establish a technology division is a next step of the Center’s development. To train faculty members on how to best integrate technology in the classroom, CTL focuses on applicable technologies for the teaching ends, rather than just introducing what the technology is and for what it might be used. CTL provides scenario-based training seminars on the optimal use of technology, with an especial attention on problem solving in practical settings.

The Executive Director shared an institutional vision that the CTL can and should be seen as a unit dedicated to creating an institutional culture in which teaching is valued by faculty members, students and senior administrators: “I think the single biggest challenge is competing for faculty members’ time. Faculty have a lot of demands on their time. And it’s hard to ask them to give up that time” (A07-12). He continued by saying that one of the best ways to engage faculty members is through being able to measure instructional effectiveness:

One obvious measure of a successful teaching center is “Are students learning more?” That’s an incredibly hard measure to gauge. Another appropriate measure is “Are the faculty

enjoying their teaching more?" I think if they are enjoying their teaching they will put more energy into it. And so that's another way of convincing them this time is valuable. (A07-12)

An institutional cultural shift needs to take place within the teaching process, such that teaching can be viewed in a positive light and is an enjoyable experience for faculty members and students alike. To meet this vision, CTL personnel are committed to offering services and programmes worthwhile for faculty members, especially since they are increasingly busy due to their heavy research and teaching workloads.

University of Pittsburgh. The University of Pittsburgh has a centralized professional development unit called the Center for Instructional Development and Distance Education (CIDDE). With a mission to "promote excellence and innovation in teaching, learning and scholarly activities" university wide, CIDDE provides direct and support services to departments, schools and the university. While several University of Pittsburgh schools (for example, the Katz Graduate School of Business, School of Engineering and the School of Medicine) provide regular professional development training and support programme offerings to their faculty members and students, the central structure for accomplishing this throughout the university is CIDDE.

CIDDE is comprised of 63 personnel who staff five primary divisions: Center Operations, Instructional Services, Classroom and Media Services, Online Programmes, and Office of Measurement and Evaluation of Teaching (see Fig. 8). Senior administrators hold doctoral degrees and generally have substantial experience in higher education professional development, including in areas of information technology, distance education, and measurement and evaluation. The CIDDE Center Operations is comprised of administrative support staff who provide oversight for finances, budgeting and operations management.

Faculty members, students and administrators are able to walk in any day of the week during business hours and access computers that are equipped with sophisticated design and evaluation software that can assist them in their instruction, teaching and research. It is often too expensive for a single faculty member to pay for all of the hardware and/or software necessary to produce professional online instructional materials. CIDDE allows individuals to use the Center's hardware and software if they are available. Services such as video recordings of instructors' classes, segments of classes, can also be paid for on an individual basis, but generally have to be scheduled as there is currently a backlog of campus-wide faculty member video recording projects. Various hardware options are also available to rent on a regular basis. Computers, digital video and audio recording equipment, and even trained staff members are all part of the many CIDDE services that can be scheduled on a one-time, course-based or department-supported basis. One-on-one training can be in a confidential setting by appointment, or organized by group to best meet the various teaching, research and other professional development needs of the University of Pittsburgh's 5,263 faculty members (4,450 fulltime and 813 part-time) and 7,082 staff members (6,710 fulltime and 372 part-time) (Office of Institutional Research, 2014: 56).

"A lot of the professional development of faculty members at the University of Pittsburgh is driven by technology", said Joseph Horne (personal interview, 12 February 2014), Director of Instructional Services at CIDDE. Individual faculty members and even groups of faculty members (for example, on a department or school-wide basis) will often need some guidance on a new instructional technology option. For instance, many faculty

members right now are seeking to find optimal ways to integrate their tablets (for example, iPads, Surface and so on) into the classroom setting. Students are increasingly relying on tablets as their textbooks, where texts are increasingly transitioning from traditional, hard-copy books to e-books and a variety of online course materials. CIDDE is structured in a way that can help facilitate the constantly changing technology training needs for the University of Pittsburgh.

Horne also mentioned that the effectiveness of CIDDE's ability to respond to faculty member needs across campus depends a lot on their ability to establish successful relationships with individual faculty members and university leaders. When faculty members have this type of a relationship established, they will be more inclined to come to CIDDE to seek out guidance and suggestions on how to better integrate technology and different instructional delivery options in their own instructional settings. Relationships are also essential in helping CIDDE to be able to provide training sessions with individual faculty members on software that can be integrated into their research as well as their teaching.

Regular professional development workshops and training programmes that CIDDE offers include technology workshops, pedagogy workshops and teaching assistant services workshops. Training seminars and workshops are registered for online. One-day workshops that help develop practical teaching skills include Developing a Teaching Philosophy Statement, Developing a Teaching Portfolio, Syllabus Construction, Teaching a Six-Week Course and the Role of Teaching Assistants.

Annual training programmes are available on a recurring basis, including the New Faculty Orientation, Summer Instructional Development Institute and the Faculty Diversity Seminar. The New Faculty Orientation is held each year in late August, a week or two before the beginning of the academic year. During this training, new faculty members are introduced to key instructional resources across the university, meet with senior administrators and listen to several seminar presentations about instructional services, including the University Libraries, Office of Measurement and Evaluation of Teaching, Computer Services and Systems Development, and all of the services offered by CIDDE. The trainings usually include a luncheon for new faculty, deans and department chairs.

The Summer Instructional Development Institute is a CIDDE programme that helps faculty members improve their teaching by offering training on multiple presentation methods and delivery models, including hybrid, synchronous and non-synchronous options of delivering effective teaching messages. The Institute generally has several different trainings throughout the summer months, where key note speakers and expert practitioners provide guidance on various professional development areas in teaching, research and community engagement.

Each year, the University of Pittsburgh Provost's Office collaborates with CIDDE to offer a 2-week Faculty Diversity Seminar to ten faculty members. This seminar provides professional guidance and mentoring on how to help the faculty members redesign their courses to be more inclusive in terms of race and gender. The result of this intensive 2-week process guides each participating faculty member to help enhance their respective course curriculum so that it not only meets the rigour and standards of the relevant field of study, but also addresses key aspects of diversity in both classroom content and course pedagogy.

CIDDE also offers two types of peer review for interested faculty members. The first type of faculty peer review is a summative review that helps faculty members in making personal decisions in relation to their promotion, tenure and regarding their finances. The second is a formative peer review, with a

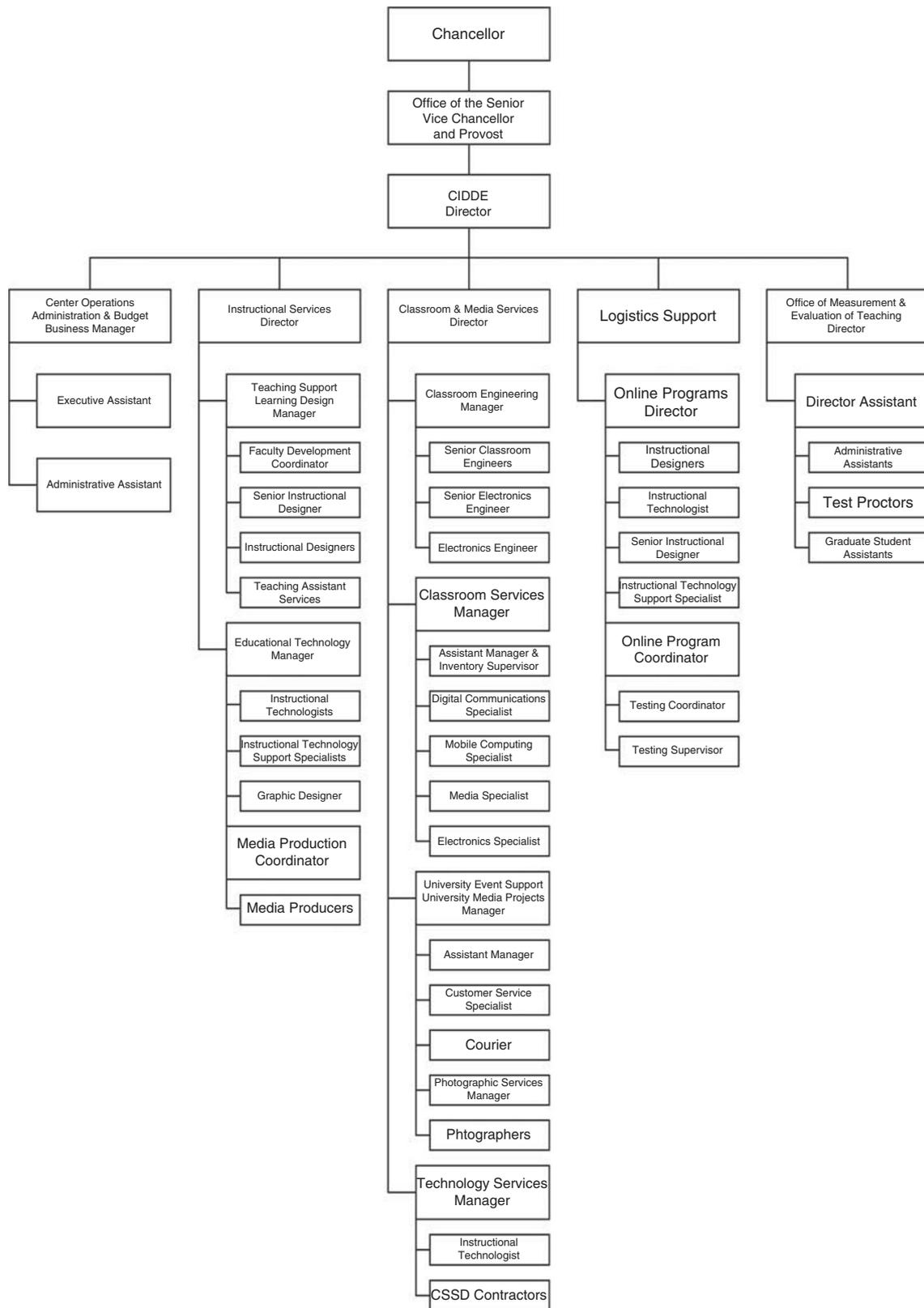


Figure 8 | CIDDE organizational chart.

purpose to improve an instructor’s teaching efforts and ultimately student learning.

The benefit of a peer review for an instructor is the feedback it provides and the collegial support it can create, both of which

are necessary components to improve and enhance teaching skills. Also, a formative review can allow instructors to enhance their teaching skills before undergoing a critical evaluation that may affect their career. A reviewer can gain recognition for having a role as a leader in teaching as well as

enhance their own teaching style with techniques learned during the peer review process. (CIDDE, 2014a)

Peer review of teaching often includes a series of consultations with faculty members who CIDDE selects as master teachers, and thereby can offer guidance, mentorship and specific feedback to help the participating faculty members being reviewed. The main purpose of a peer review consultation is to assist the instructor in identifying strengths and weaknesses, as well as developing ways to enhance future instruction.

CIDDE also assists all faculty members in developing teaching portfolios. Teaching portfolios are records “that document your work as a teacher” (CIDDE, 2014b). Faculty members are given examples of exemplary teaching portfolios and instructions on how to compile portfolios to use for tenure and promotion reviews. Some of the most basic professional development areas that are covered in this one-on-one training include ensuring that portfolios are complete and evidence-based, and demonstrate areas of teaching excellence.

CIDDE administers the Provost’s Advisory Council on Innovative Excellence (ACIE) Innovation in Education Awards Programme, which provides funding to help strengthen the role of teaching at the University of Pittsburgh. The goal of the programme is to enhance teaching at the university and “foster new instructional approaches that represent advances over existing methods” (ACIE, 2014). Each year faculty members submit proposals to CIDDE with ideas on how to help improve their classroom instruction that meet one or more of the following criteria: (1) be adaptable in other instructional settings; (2) foster collaboration among faculty from different departments, units and campuses on the development of innovative approaches to teaching; (3) develop new course materials; and (4) create significant curricular improvements. Successful proposals generally are those that focus on technology-enhanced learning, especially in large-enrolment classes. Faculty members are encouraged to explore innovative approaches that utilize proven or emerging technologies, including incorporating online games, simulations and virtual worlds; using rich media technologies to flip the classroom; implementing mobile technologies to explore learning environments outside the classroom; and integrating social and collaborative technologies to expand and enhance the learning experience.

Perhaps the most effective professional development model at the University of Pittsburgh is where there are embedded fulltime staff members of a school (for example, the School of Engineering) who are able to help faculty members on a regular basis on-site within their respective schools. The most qualified professional, fulltime staff members located within schools are generally qualified with multiple degrees (for example, say with a bachelor’s degree in engineering and then a master’s or a doctoral degree in education). “What we have found is that when there is an embedded group within a particular school”, Horne advocates, “we are much more effective when we are able to partner with them and figure out how to leverage the resources they already have in place and then [CIDDE] fills in the gaps where needed”.

Analysis of professional development programme centres

Employing a regional perspective to the study of faculty professional development centres has seldom been attempted before. Previous research tended to adopt longitudinal single-case or regional multiple-case approaches in an effort to control a number of variables. The eight case study universities are drawn from four of the six major geographic regions introduced in this article. On the basis of the leading global higher education

ranking systems, the eight universities include some of the leading HEIs in Asia, Europe, Oceania and the United States. The rationale for covering territorial and contextual boundaries is that we believe successful faculty professional development centres rely on both systemic and niche practices, of which the latter are vastly excluded by the existing literature.

By *niche practices*, we refer to those practices that are innovative, contextually bound or improvisational (for example, involving visiting scholars in the management of ANU’s CHELT and the ACIE Innovation in Education Awards Programme at the University of Pittsburgh CIDDE). These niche practices, though less often systemic or replicable, are vital gap-fillers to regular centre operations, and various niche practices can be found at each of the eight professional development centres highlighted in this study.

But how do we deduce meaningful patterns from stacked systemic and niche practices with this global perspective? We found that after subtracting the majority of niche practices from the eight centres, their core managerial functions look, at varying degrees, all contingent upon intricacies of how they engage faculty members, staff members and students, and how they utilize their educational technology. Each of the case study professional development centres have adopted several best practice approaches in strengthening faculty instruction, research and in offering guidance on how to incorporate technology better in the classroom. Contextually friendly and less normative in practice, educational technology as a perspective proves a powerful leverage to digesting the literature and specifically to our systemic centre analyses without necessarily taxing our vision upon inspirational niche practices. Effective management and utilization of educational technology, more than just the application thereof, is becoming a universal concern for faculty professional development centres and is a primary medium/tool that often helps support the observed systemic and niche practices.

A parallel overview of the eight case studies suggests that the teaching and research element of professional development tends to be surrounded by a broadening scope of supporting services, particularly of a technological nature. While both research and teaching improvement is increasingly reinforced as a central mission at the centres, their implementation processes take on an increasingly decentralized fashion at each location. Compared with the more simplistic organizational structures of University of Pennsylvania CTL and CMU’s Eberly Center, other case study centres, especially the University of Pittsburgh CIDDE, are characterized by complex multi-level management structures. Nevertheless, traces are evident that these substructures are far from stand-alone units and coordinate with other inter-centre departments to effectively meet the respective universities’ professional development needs. For example, CIDDE distributes its instructional technology staff resources across three divisions (Instructional Services, Classroom and Media Services and Online Programmes), while ANU centres its university-wide teaching focus within two programmes—Staff Education and Promoting Excellence—which are located within CHELT’s Academic Staff and Professional Staff divisions.

It is important to highlight that organizational structural complexity (or simplicity) is not the sole indicator of a centre’s capability to provide exceptional professional development programmes. Range and especially depth of the programmes are determined by the respective centres according to their strategic focus, institutional characteristics and their organizational structure. For example, TLC focuses on the depth of its programmes by developing a complex substructure around student counselling that supports faculty development initiatives at LSE. Such additional resources are made available by TLC to

help facilitate a university-wide rationale that student learning is a mirror process to effective faculty development.

Management of technology applications and services—though salient across the eight centres—takes on noticeably contrasting differences. The case studies primarily yield three distinctive approaches. The first approach is what we label a *sponsorship* approach. The centre does not maintain salient divisions responsible for technology application but instead works in sponsorship with a university entity to support online and distance education programmes. This approach is adopted by CHELT and CSHE. At CHELT, both the academic and the professional staff divisions are staffed with one representative from ANU Online (a university-wide organization responsible for developing online and distance education programmes). Similarly, the University of Melbourne CSHE maintains its core strength in research and leaves e-learning development to the care of a separate university-wide entity. The second approach is one of *delegation*. One particular individual or office within the centre is assigned to the task of developing and maintaining programmes to support teaching improvement across the university. CETL, the Eberly Center and OLI adopt this approach, with the former delegating the responsibility to an individual titled the Web, IT and E-learning Developer, and the latter to two designated offices. The third approach is what we label a *permeation* approach. With this approach, the centre maintains designated offices and individuals responsible for technology application but distributes the individuals and individual “segments” among different substructures. CIDDE and TLC employ this approach, but in slightly different ways. CIDDE deploys a large number of technology-savvy professionals across three divisions (that is, Instructional Services, Classroom and Media Services, and Online Programs). The CIDDE organizational chart suggests no migration of those staff persons from one of the three divisions to another, based on the fact that no name of an individual staff person appears twice on the chart. However, we recognize that often professional staff members within each of the eight centres have expertise that can be drawn on from time-to-time to help strengthen and support the capacity building and professional development training needs of other divisions within the respective centres. At TLC however, instructional technology support is provided to fill niche gaps of classroom teaching, but not in an aggressive way due to LSE’s emphasis on the human aspect of education given its predominant academic focus on the social sciences. Maximizing the potential of available technology to best support human interaction, teaching and learning is a very unique application of this approach.

Noticeably, professional development centres at the case study world-class universities in this article are not required to adhere to one single approach, but can also blend approaches or transition from one approach to another based on organizational and institutional changes and needs. For example, both permeation and delegation approaches are used by CTL as the Center seeks to integrate human resources of university-wide technology specialists and establish a technology division as part of the Center.

From a management point of view, which approach is best suited for installing educational technology in a university setting? At this point, it is difficult to determine the correlation between structural characteristics and technology application effectiveness due to a lack of measurable indicators. However, the case studies do generate some rich insights about where to begin. The sponsorship approach will be reasonably less feasible at ANU if the University does not already have a large educational technology programme pre-installed in the form of ANU Online. Meanwhile, the delegation approach is perhaps best fitted within a university setting where there is generally a high level of

management autonomy and if the average fulltime employees (administrators, faculty members and staff members) have a relatively high level of IT IQ that enables them to learn and stay on top of leading IT trends in teaching and research—which is a trademark of CMU that specializes in cutting edge science and engineering advancements. Lastly, if the university has a thorough implementation plan which includes not only what technologies to use but also in what manner and with what necessary support they are implemented in teaching and research, then it may as well adopt the permeation approach that sees many managerial details covered under the guidance of a thorough staffing plan. This approach is similar to what we see at CIDDE.

It would be impossible for us to deny the rationale for leaner professional development centres that exist at other case study universities, when comparing them to the University of Pittsburgh CIDDE in terms of staffing sophistication solely based on their organizational structure. However, the highly sophisticated organizational structure of CIDDE does reveal one thing that earns it full merit: it lays out a clearer picture of how the University of Pittsburgh conceptualizes the application of educational technologies by specifying different dimensions of how to staff technology personnel in support of professional development research and teaching needs. The Classroom Engineering unit, under CIDDE’s Classroom and Media Services, includes a structure that is able to meet both supplying needs of technological equipment to also providing scheduling and arranging appropriate classrooms for optimal teaching environments. This highlights the importance of maintaining a well-staffed and adaptable organizational structure for any professional development centre that can effectively meet the various needs of world-class research universities. The professional development centre’s organizational structure is an essential characteristic of effectively being able to implement an organization’s strategy and leveraging technology across a loosely coupled organization like an entire university.

While management of educational technology at the eight centres utilizes both systemic and niche approaches, efforts to boost university-wide involvement with the centres demonstrate a prominent reliance upon niche practices. It is a daunting challenge for any faculty professional development centre to reach out to so many diverse university populations, subgroups and individuals, as was uniformly displayed by our in-depth qualitative interviews with administrators from the eight case study centres. Each case study centre revealed some dynamic developments in how world-class universities cope with this issue. All of the eight centres are currently staffed with a mixed number of full-time, part-time and student personnel, but they are varied in niche practices and areas of focus and expertise. CHELT demonstrated a unique strategy by involving visiting scholars to their academic staff division, benefiting the Centre as well as the visiting scholars who were less often exposed to managerial traditions and practices during their tenure at the Centre. In a similar vein, CHELT provides research positions for PhD candidate stage students who may be otherwise less bound to campus given the phase of their degree studies. The Eberly Center employs teaching fellows to help organize and improve teaching activities of CMU’s graduate programmes. CIDDE maintains a Teaching Assistant Services unit as part of its Instructional Services division to help train the large teaching assistant population across the university whose performance has a sizable impact on the faculty members they assist in teaching. CSHE demonstrates flexible strategies on centralization/decentralization by strengthening its natural synergy with the University of Melbourne Graduate School of Education while playing more of a supporting role to the stand-alone PD entities at certain academic units. TLC keeps identifying and meeting nuanced professional

development needs despite serving a university with a small faculty body. Overall, each of the eight centres are aware of the unique added value of including these external, non-fulltime staff members (for example, visiting scholars, PhD candidates, teaching fellows, teaching assistants, retired professorial fellows and so on) as an important factor in helping them to achieve their full outreach potential. While using different recruitment and training strategies for each of these unique staffing models, each professional development centre is better able to involve them in a number of centre activities that enhance the visibility of the respective centres on campus and on the world stage.

The proportional utilization of full-time/part-time staff members as well as personnel serving niche purposes need to adapt to the unique and often changing missions of professional development faculty centres. Our research findings recognize primarily two orientations of the case study professional development centre missions. CETL, CSHE and the Eberly Center are all driven by a mission focusing on both service and research. Particularly, CSHE utilizes over 30 doctoral researchers on a regular basis to contribute academic findings to the development of the Centre as well as to the research topic in general. We find that the centres with a service and research focus tend to maintain lower percentages of full-time staff members in exchange for higher percentages of diverse personnel providing specialized research services. Comparatively, service-oriented centres like CTL and TLC are likely to maintain higher percentages of full-time staff members and have a tendency to become more centralized. The findings also suggest that a trend in the transition from a predominantly service to research orientation is more likely to occur at world-class university professional development centres. Balancing the professional development needs of teaching and research at world-class universities is difficult and requires further research on resource management and allocation of funding. As an example of how world-class research universities are addressing this challenge, most of the case study professional development centres are committed to influencing the institutional culture where the faculty members, students and administrators regard teaching as highly as research.

In one or two case study universities, we also find some very unique conceptions and practices of professional development that are not found in others. For example, while the professional development centres generally recognize themselves as part of university administration, staff members of the University of Oxford OLI attach more values to their own academic profiles, evidenced staff members who hold PhD degrees as well as have significant teaching and research backgrounds. According to the Head of Educational Development, a scholarly approach to professional development is more effective than a managerial or even a bureaucratic approach, especially at a university with a long tradition of academic autonomy. The credibility of a professional development programme is believed to depend heavily on how it is viewed by eminent university professors who are more likely to prefer technical assistance and skills training by another academic rather than by a staff member or an administrator. And that perhaps explains why a more homogeneous community of academics, such as exists at the University of Oxford, would consider educational technology “intervening” and prefer a more personalized, face-to-face delivery of professional development programmes.

On the other hand, the University of Melbourne CSHE makes it clear that their professional development programme only concerns faculty members rather than students. All other participating universities offered some degree of student and staff professional development training, along with faculty professional development opportunities. While student involvement has been increasingly considered a key strategy for measuring the

outcomes of most world-class university professional development programmes, CSHE prioritizes a host of research initiatives to encourage collaboration between faculty members regardless of their disciplinary backgrounds. In the context of academic autonomy, this *laissez-faire* approach is perhaps more attractive to faculty members than mandatory student evaluations and/or trainings that CSHE has been trying to avoid.

In spite of the findings, one question is emerging: How effectively can professional development centres measure and keep improving their outcomes against the trends of structural decentralization and increased utilization of part-time personnel? OLI’s annual report provides some positive results of increased faculty participation in professional development programmes. CIDDE also houses the university’s Office of Measurement and Evaluation of Teaching, which highlights the need to link student assessment of teaching effectiveness to professional development continual improvement. But do these assessments necessarily translate into teaching improvement? These questions will continue to knock on our doors as we witness inspirational progresses of faculty professional development experimentation in world-class universities (including the eight we sampled in this study) well into the future.

Organizational structures and development programmes provide the same skeletal and substantial strength to a university professional development centre as bones and muscles do to a human body. While this study deals thoroughly with the structural perspective, it is noteworthy that from our in-depth interviews centre managers are increasingly concerned about correlating “bones” with “flesh” and “flexing muscles”. In other words, they are looking for the *right* structure for their programmes. The presence of niche practices should be regarded with due vigilance, as while it may echo with improvisational ingenuity, it can also be the outcome of structural unfitness or a lack of structure at all. Future research should be directed towards structure–programme correlation studies and longitudinal studies on programme effectiveness.

Conclusion and recommendations

Improving university instruction and research quality is an area of growing concern for government policymakers and planners, higher education administrators, faculty members, students and the community at large. In this article we examined the global literature on this topic, with a specific focus on the professional development of teaching and research within universities. Case studies were included in this article to help learn from the university-wide professional development centres at eight world-class university settings. While many ideas can be learned from the eight case universities in this study, we highlight nine recommendations that higher education administrators should consider when establishing or strengthening university-based professional development centres. We also note that each of these recommendations are broad enough to apply to each country context as well as institutional type—regardless of whether the university is private or public.

First and foremost, effective professional development centres require top-level administrative support from the university’s central administration (for example, a vice-chancellor, provost and so on). This legitimizes the standing of the centre and is also often accompanied by institutional and financial support needed to help ensure the centre is fully functional and able to outreach to the various schools, colleges and departments across large campuses that are often loosely coupled and in many cases partitioned off from the rest of the university. Regardless whether the institution is considered public or private, top-level administrative support is essential for long-term sustainable change and

in ensuring that professional development is considered central to the university's mission, rather than an outlier unit/department within the institution. We have found that without top-level administrative support, universities often consider professional development programmes as secondary to the central research and instructional focus of world-class universities. A senior university administrator in charge of academic affairs (for example, a vice chancellor, vice provost, vice president and so on) is an ideal person to lead the centre. This person/director should be supported by one or more associate directors in charge of supportive centre responsibilities (for example, one could oversee teaching improvement and another research).

Another important recommendation is that successful professional development efforts are based on relationships. Those managing the professional development centres must have leadership style characteristics that are consultative and collaborative. Professional development centre administrators need to be able to adapt to the many unique challenges that faculty members and departments from many different backgrounds face, and also know how to work collaboratively with faculty members. On the one hand, directors of professional development centres are most effective when they are able to establish an atmosphere across campus that is viewed as the centre being able to respond to real needs and technology challenges of the faculty and the university. On the other hand, professional development centres could provide faculty members with greater financial and resource support to conduct research studies in practical instructional contexts, and apply the findings to improve the quality of professional development services and programmes. Thus, a relationship of trust and collaborative foundation is paramount in building rapport and in establishing legitimacy across disciplines and personalities. In addition, professional development centre directors need to be guided by core values of integrity, honesty and dependability.

Third, professional development centres need to be able to reach out and meet the needs of individual faculty members. This one-on-one faculty mentoring and guidance model is crucial and often the most sustainable. Faculty members instructional and research needs are often so unique that they cannot be grouped into entire department or school-wide training seminars. Professional development centres need to be able to encourage and respond to walk-in requests, questions by phone and/or through an online chat technical support team. The centres need to be set up to be able to mentor faculty members—where centre staff are qualified to serve as the instructional design, technologist mentor to the faculty across campus. Finding ways to best meet the various and disparate needs of so many faculty members is a constant challenge for professional development centres, but it is nonetheless essential for long-term success. Our findings suggest that utilizing synergistic strengths of certain academic units (for example, School of Education, School of Business, School of Information Systems and so on) can help enhance resource management as well as faculty outreach. Meanwhile, being flexible in roles and providing support to existing professional development units is an alternative way to serve STEM schools and departments.

Fourth, in many cases small communities of practice—where two-to-five faculty members with the same instructional and/or research needs exist—are optimal training scenarios for faculty members. In these settings, the participating faculty members are able to create a type of synergy effect through interaction with others who have their same (or similar) professional development needs. This synergy effect includes constant reflection and continual improvement in faculty members' teaching and research practices. Being able to help faculty members form professional development communities of practice is one of the

recommendations we would argue professional development centres should excel at regardless of the discipline or technology needs of their university. We note that professional development communities of practice in research and instructional delivery were practiced at different levels at each of the eight case study universities. Many of these communities of practice formed naturally on their own, even without the assistance of the eight professional development centres. However, we also note that, where possible, professional development centres that are able to help facilitate linkages and networks of similar-interest communities of excellence in research and teaching practice are ones that are able to help support and facilitate optimal practices through the respective centres' support structures. In this sense, the organizational structure of professional development centres should be evaluated on a regular basis to consider their organizational fit within the greater university in terms of institutional strategy, relevancy, and instructional and research needs.

Fifth, it is important to have a link between university libraries and the professional development centres. This is a common practice for many universities in the United States and across the world and was central to each of the eight professional development centres examined in this study. The technology delivery capacity of universities is often centred within or, at the very least, linked to libraries. Linking the training capacity of professional development centres and instructional delivery technologies that often accompany university libraries is a means of best reaching out to individuals and the masses at the same time. In recent years, libraries also offer professional development services online through LibGuides that are open source and in the public domain. Professional development centres that can help train faculty members and students in how to best use a bring your own device (BYOD) outreach in research and instruction are those which are best able to meet the current and changing needs of an increasingly diverse and interconnected student body and faculty member workforce.

Sixth, data-based decision making is key to achieving short- and long-term teaching and research improvements. This data-based focus is essential to helping professional development centres learn about their university faculty and how best they can respond to their individual and collective needs. Instructional feedback is an essential part of teaching improvement for any faculty member and should occur on a regular basis (each time a course is taught) from students and on a periodic basis (at least once every 3 years or more) from peer faculty members and/or administrators. Professional development centres can get involved with this instructional feedback process. While it is optimal to be able to house the university-wide office of measurement of teaching effectiveness within a professional development centre, such as is the case at the University of Pittsburgh CIDDE, it is essential for professional development centres to be able to access this important data, so that they can continually monitor and evaluate the instructional needs of their university.

Seventh, it is more effective to have multiple professional development offerings rather than a single option. Multiple professional development approaches to improving teaching and research include individual counselling and mentoring services; online training seminars, podcasts and links to white papers on latest technology trends; peer reviews; courses on optimal use of research and instructional best practices; access to the latest hardware and research and instructional software; and university-wide training workshops. Additionally, professional development centres should be dedicated to ensuring the high quality of their services and programmes to attract faculty members, students and administrators. With the trend towards increasing teaching and research work loads of tenure-stream faculty members, it is

especially important that professional development centres are able to more effectively and efficiently reach out, communicate, respond, and provide solutions, guidance and technical assistance. Professional development centres can help support all university personnel in ways unheard of in previous generations.

Eighth, technology should be used in optimal and appropriate ways to support and enhance university instruction. HEIs should apply technology for the teaching and learning ends, rather than just for its own sake, and there is no single technology option that meets the unique needs of each student, faculty member, department and university. HEIs should contextualize the use of technology based on their own circumstances and needs, and realize that its ultimate value is to supplement, enhance and provide alternative delivery media of faculty members' instruction. While technology is crucial in being able to meet various instructional delivery needs of students and faculty members within large universities, it is not the only solution to all instructional and research needs. Some higher education curriculum is best offered in either a face-to-face or blended delivery format rather than relying entirely on an online-only delivery mode. Other subject matter can be taught to vast numbers of students entirely online. Being able to help faculty members determine the best medium(s) of instruction is a key role that optimal professional development centres play.

Ninth, it is crucial for professional development centres to be central hubs of the latest technology offerings in higher education. They need to lead when it comes to keeping up with technology shifts, trends and best practices. We recognize that each of the eight professional development centres in this study demonstrated up-to-date mastery of the latest instructional technology in research and teaching, or at least a willingness to adapt to current technology and pedagogical practices. Being flexible enough to meet and keep up with BYOD trends and technology changes is a key factor of professional development centres ability to remain current. Otherwise, the centres become out-of-date (or even obsolete) and will in many ways hinder instructional and research development within a university.

Finally, a relevant rewards structure should be established to help empower professional development centres to attract administrator, faculty, staff and student participants who otherwise have little to no incentives to invest their already limited discretionary time in such endeavours. Increased participation is an important indicator of successful professional development programmes, regardless of the location. But to inspire proactive participation and substantial research, teaching, and learning outcomes, incentives must first be identified from those who are involved with the design and implementation of professional development programmes. Whether they are monetary rewards or other forms of incentives, professional development centres should work closely with university administrators at all levels to establish positive implementation policies and rewards guidelines. Perhaps most crucial is to ensure that each professional development initiative is a positive and meaningful experience regardless of the participant group. There needs to be a perceived and realized value-added experience to the professional development process in order for positive feedback and word-of-mouth advertising to take root within highly cultured universities. Perhaps it is best summed up by the following administrator, "professional development centres should not pretend to be the single place of all-out experts, but rather act as coordination points where people can gather, communicate, and find solutions to their common and/or niched problems on their own". In this sense, strengthening the outreach capacity of professional development centres is likely to offer greater if not the optimal incentives for all stakeholders.

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