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*(Special Issue: InCULT 2014 Plenary Papers)*
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The Asian Centre for University Learning and Teaching (ACRULeT) located at the Faculty of Education in Universiti Teknologi MARA held its 7th International Conference on University Learning and Teaching (InCULT) on 2-3 December 2014 at Grand Blue Wave Hotel in Shah Alam, Selangor in Malaysia. The theme of the conference was *Educate to Innovate in the 21st Century*. InCULT 2014 was a collaborative project with our partners from the Centre of Teaching and Learning Academy (AKEPT, Ministry of Education) and Taylor’s University in Malaysia, University of Hertfordshire, UK, University of South Australia and University of Ohio, USA.

This special issue of Asian Journal of University Education (Vol.11 No.1) comprises the four main plenary papers presented at InCULT 2014. The first plenary paper by Joy Jarvis, entitled *Staff learning for educational practice in higher education: What are we doing?* explores the current socio-cultural context of university settings in relation to staff educational practices. She examines this issue in relation to marketization, teaching and research and initiatives designed to improve learning. She calls upon the need for universities to be more reflective and critical about their own educational practices. The second paper by Pradeep Kumar Nair focuses on *Holistic education: The next frontier in higher education effectiveness*. In his paper, he highlights the Taylor’s University SHINE Award programme. It is a holistic educational initiative taken by the university to help students develop future work skills, life skills and abilities required in the workplace. The third plenary paper by Lorna Jean Edmonds and Ji-Yeung Jang is on
Planning for the university leadership in the universal knowledge economy: Application of strategic framework in the context of Ohio University and its relationship with Malaysia. Their paper discusses a way for higher education institutions to build a global strategy using a framework to advance and lead in the context of a universal knowledge economy. The final paper by Mohan Chinnappan is on Reconceptualising professional development of mathematics teachers in SE Asia: Mapping the growth in the trajectory of teacher knowledge. His article is based on the assumption that teachers and teaching play a critical role in initiating and maintaining learning and learner engagement that can enhance the quality of mathematical learning outcomes. Therefore, he articulates the need for knowledge driven professional development programs for teachers.

It is hoped that this special issue will provide a platform for more discussion and insights on university teaching and learning. We would like to take this opportunity to thank all the authors for their commitment and contribution to the Asian Journal of University Education. Finally, we would like to express our gratitude to the editorial team for their diligence in producing this special issue.

Editors
Gurnam Kaur Sidhu
Lee Lai Fong
INTRODUCTION

The purpose of this discussion paper is to explore the current socio-cultural context of university settings in relation to staff learning about ‘educational practice’, a term used here as synonymous with ‘learning and teaching’. There has been an increased emphasis on ‘staff development’ in educational practice and a greater focus on the responsibility of academic staff for creating effective student learning experiences. What impact have these changes had on staff engagement with the teaching aspect of their work? How are universities enhancing staff learning to enable them to meet the challenges of teaching in higher education in the 21st century? As Krause (2014, p. 17) argues: ‘Just as we focus on preparing students for uncertain futures, so we need to prepare academic staff’.

This paper draws on a range of international literature but focuses mainly on practice in the UK and uses specific examples of practice from one English university in which the author has been engaged in working with staff in learning about educational practice.

The perspective taken in this paper is that individual learning takes place within a particular social and cultural context where staff members are learning within a group setting with the aim of achieving their own, and the organisation’s purposes. This learning is influenced by, and in turn influences, the systems, structure and culture of the organisation. Staff learning will be informal and formal, tacit and explicit. As Boreham and Morgan (2004, p. 308) note: ‘From the sociocultural perspective, learning is
perceived as embedded in social and cultural contexts and best understood as a form of participation in that context’. Rather than exploring individual aspects of learning such as identity, this paper focuses on ways staff learning will be influenced by local departmental and university cultures, by the wider national and international context of higher education as these affect the particular university and also how these relate to the career ambitions of individual members of staff. Staff learning will also be influenced by disciplinary contexts within which members of staff are working. As Lave and Wenger (1991, p. 35) suggest, ‘learning is not merely situated in practice...learning is an integral part of generative social practice in the lived-in world’. What impact have recent developments in relation to university education had on staff learning? How are socio-cultural factors influencing academic members of staff in relation to learning and teaching?

The context will be described briefly in relation to: marketisation, teaching and research, and initiatives designed to improve teaching.

THE CONTEXT

Marketisation and Performativity

The current higher education context of marketisation has been recognised and discussed extensively (Barnett, 2012; Molesworth, Scullion & Nixon, 2010). The market for students, funding and staff is embedded, as competition between institutions and indeed, between individual academics, becomes systemised. At the same time, national higher education systems have seen a rise in audit and quality assurance mechanisms and a resulting growth in expectations of university and staff compliance with external agendas. This, in turn, has led to an increase in managerialism. In relation to learning and teaching, this has resulted in leaders of ‘learning and teaching’ or ‘student experience’ at deputy or pro-vice chancellor level who develop institutional strategies to fit government priorities and these strategies are then implemented by staff developers, who may, or may not, influence strategy development.

An expanding higher education system, austerity measures and increased student fees have led to a positioning of students as consumers
and an emphasis on the role of the university in relation to employability and impact on national economic performance. An emphasis on performativity focusing on efficiency, outputs and accountability gives ‘paramount importance to standardised indicators which are effective and comparable…’ (Solbrekke & Sugrue, 2011, p. 19) and therefore, conformity could be seen as more important than professional responsibility which can involve challenge and being proactive (Englund & Solbrekke, 2011).

Teaching or Researching?

For many years, research and teaching have been identified as competitors for staff focus and time, generally to the detriment of teaching which, for some academics, occupies a lower status (Brew, 2006). In relation to the UK, a range of factors has contributed to the status of teaching, and the engagement of institutions in the UK with learning and teaching development, being stretched in opposing ways. Factors contributing to raising the importance of learning and teaching in higher education have included the need for universities to deal with an increasing number and diversity of students and the market environment which has led to competition between universities. In relation to student needs, more attention is being given to students as learners so that they can benefit from the teaching approaches; to transitions, particularly into year one, to improve retention; and to student engagement to encourage students to be proactive, independent learners. As part of the marketisation agenda, students’ feedback on their experience of education based on a National Student Survey (NSS) initiated in 2005 and subsequent league table compilation have heightened institutions’ responses to students’ satisfaction ratings in relation to their learning experience, and led to initiatives to improve league table positions (Gibbs, 2013). These factors have served to raise the profile of teaching within universities.

Pulling in the opposite direction has been the accentuation of status differences between research and teaching, privileging the former, a situation exaggerated by priorities around the Research Excellence Framework (REF) in the UK, in which institutions are rewarded in relation to the number and quality of research publications produced and given league table positions in comparison with other universities. Staff members not included in the REF may, in some institutions, be at risk of losing their jobs. Lower status
‘teaching-only’ contracts are used in a number of universities, further separating the two key roles of the university to the detriment of learning and teaching (Locke, 2014).

**Initiatives Designed to Improve Teaching**

The expansion of higher education has brought a number of national initiatives designed to improve teaching and its status and to fulfil government objectives. Since the 1990s and the Dearing Report (NCIHE, 1997) these have been included in the UK: funding for centres of excellence in teaching and learning; creation of the UK Higher Education Academy (HEA) with a focus on educational practice; accreditation of qualifications in teaching for lecturers in higher education and recognition through HEA fellowships of levels of knowledge and practice in teaching and supporting learning; the development of university units focused on academic development for learning and teaching and the role of ‘academic developer’ as part of most university staffing. Some universities are also initiating promotional opportunities for those specialising in teaching but a research profile is expected for promotion to senior positions.

Internationally, there has been a growth in excellence awards for teaching (Skelton, 2005) both at institutional and at national levels. These have tended to be awards for individuals and there has been some ambivalence for some staff in research intensive institutions as to the value of these in relation to their careers. There is no evidence to indicate that these awards have improved the quality or status of learning and teaching more generally or indeed in the home institutions of the award winners (Skelton, 2007).

The scholarship of teaching and learning has grown in popularity internationally during the past two decades, following the influential work of Boyer (1990). This has involved academics undertaking research into learning and teaching, funding streams for work in this area and journals and conferences for sharing learning in the field. However as Kreber, (2013, p. 5) notes, this activity has not “fulfilled its promise to raise the status of teaching in universities” partly because research into teaching a discipline is generally seen within universities to be of lower status than researching within the discipline itself (Locke, 2014). Resources may not be available for staff to engage in the area and reward and recognition are limited.
IMPACT ON EDUCATIONAL PRACTICE

The impact of the context described above on educational practice, on staff perceptions of the role and value of this practice, and on their engagement with it has been significant. Macfarlane (2011, pp. 72-3) draws on research that shows that in America and the UK, there has been a decreasing interest in teaching amongst academics with the division of staff into ‘haves’, those who mainly undertake research, and ‘have nots’ who mainly teach. ‘The declared policy commitments of universities to teaching are often viewed by academics and developers alike as little more than lip service. There is a well recognised ‘underlying game’ that teaching and research are likely to be in conflict with each other and that the highest aspiration of most managers is still to be in the premier league of research universities’ (Land et al., 2008, p. 139).

Teaching has also come to be seen as compliance with a central strategy, which may be seen as conflicting in some ways with individual or disciplinary priorities and can lead not only to conformity but also to tokenism (Crawford, 2010). Teaching requirements can be seen as being funnelled down via a prescriptive ‘conduit of shoulds’ (Connelly & Clandinin, 1995 p. 11) which specify how things should be done. While this metaphor was developed by researchers working in American schools in the 1990s looking at the implementation of school reforms, the analogy with university education today is striking. Accountability requirements also involve significant time which results in educational practice being equated with paper work rather than classroom practice. Action plans, reports, audits and evaluations can lead to learning and teaching being seen as about control and monitoring and take the place of proactive approaches to teaching. Professional development strategies such as initial courses for staff can be perceived as being more about institutions’ key performance indicators and for ‘public relations purposes’ (Locke, 2014, p. 26) than about meeting staff needs. Marketisation can also lead to a deficit approach to practice where initiatives are about rectifying perceived problems (for example in relation to the NSS).

It is significant that despite the range of initiatives to improve the status and quality of educational practice, the cultural contexts within which these are set has meant that they have not been effective. Indeed Locke (2014,
p. 23) in his report on research into enhancing professionalism in teaching and supporting learning argues that ‘the more teaching in higher education is controlled and constrained and its status undermined, the less attractive it will become as a career for creative, intelligent people, even as part of a broader role, let alone as the sole focus of their professional endeavour’. He sees the lack of professional autonomy in relation to teaching as the biggest inhibitor to staff engagement.

**TEACHING**

Teaching can be seen as a simple task requiring skills in presenting information and clarity of explanation. This is a ‘surface’ understanding of teaching (Rowland, 2001). Alternatively, teaching can be understood as a complex process involving thought and action. Schulman (1987, p. 8) argued for the concept of ‘pedagogical content knowledge’, with the integration of subject content and pedagogy. Kreber (2011), taking a philosophy of education perspective, identifies the need for both techne; skills and theoretical understanding in teaching, and phronesis; the use of practical wisdom or good judgement to identify how to draw on the techne in a particular context. Part of the complexity of teaching is that it is always contextual and therefore ‘what worked’ in a particular situation will not necessarily be effective in another. A teacher’s practical wisdom will also relate to the values and beliefs held by the individual and the professional community about what is important in education and for students both generally and individually. Skelton (2009, p. 109) argues that for him excellent teaching ‘is about the enduring human struggle to “live out” educational values in practice.’

Alignment of a thoughtful and articulated set of values, of phronesis and techne can lead to the development of authentic practice. Interestingly, there is a rise in interest in the notion of authenticity in higher education (Kreber, 2013), perhaps because for some staff, the roles and actions they are expected to undertake do not connect with their values and beliefs, making them feel inauthentic. For practice to remain authentic, it needs to be enquired into. Boyer (1990) noted the importance of continually examining teaching. There is a need for ongoing critical reflection. A teacher cannot develop phronesis alone but needs a community within which to reflect.
Brookfield (1995) argues that this involves enquiry into practice from the perspective of the teacher, the teacher’s students and colleagues and from professional literature and research. Questioning underlying assumptions is a key aspect of enabling professional reflection to become critical. Reflection should be on the content, the process and the premise involved in the educational practice, suggests Kreber (2013), which should constitute a model for the scholarship of teaching.

Being scholarly and authentic as a teacher requires the questioning of assumptions and therefore cannot exist within a context of compliance. This is an issue for staff and for universities in relation to staff learning. ‘The danger is that in a culture of audit and surveillance, academic development is seen by academics in departments as yet another imposition’ (Rowland, 2001, p.163). It is an issue also for those tasked with leading academic development in the field of learning and teaching. They may, for example, be expected to implement strategies they do not agree with or to work in ways that conflict with their beliefs about good practice. Gibbs (2013, pp. 12-13) for example, talks about academic developers having to choose between ‘having high ideals but being pretty ineffective, or being highly influential but losing integrity’.

Some of the school teachers in Connelly and Clandinin’s (1995) study who were subjected to the ‘conduit of shoulds’ developed ‘secret’ stories of their own practice which conflicted with the ‘sacred’ story about what was happening in their school. This resulted in difficulties for teachers who struggled to be authentic in a context where values were not discussed. In relation to higher education, staff in disciplines can sometimes pay lip service to ideas they see as emanating from central university initiatives which they do not see as connecting to what they perceive is important in their own teaching (Krause, 2014). This is not to argue that central or local thinking are always in conflict or that one is always better than another, but rather the recognition of the importance of dialogue in developing practice.

Professional learning in educational practice requires a context for critical reflection. Research into teaching can be an aspect of this but as Kreber (2013) points out, just researching and publishing in the field does not mean that there is personal growth in relation to one’s own teaching. For this to happen, there needs to be ongoing critical reflection into personal
professional practice which is a challenging undertaking. As Nicholls (2005, p. 129) notes: ‘Interrogating one’s teaching as a means of critical enquiry is a difficult approach for academics to accept…as a form of learning [it] becomes a significant risk to the academic’. The context in which exploration of teaching takes place is therefore important.

Critical reflection is supported within a community where a level of trust can be developed which supports openness and challenge. Interestingly, Krause (2014, p. 16) found in her research into staff perceptions on professional development in four Australian universities that ‘unlike academics’ strong affinity with disciplinary research communities, responses about discipline-based teaching communities suggest that, for the most part, these are weak or non-existent in the universities represented in this sample’. While another study in two contrasting English universities found that ‘teaching networks were experienced as pragmatic, business and organisation-led, while research communities were considered to be collegiate and discursive’. If both teaching and research groups exist they may be very different; the former may be more about organisation and systems while the latter more about dialogue. Can we foster communities of enquiry into learning and teaching in today’s universities? The author has endeavoured to generate this form of working both in disciplinary and multi-disciplinary contexts. Some initiatives and key learning from them are discussed in the next section.

EXAMPLES OF PRACTICE

Staff Dialogue Groups

The purpose of staff dialogue groups led by this author is to encourage a critical reflection on learning and teaching. Some of these groups have been developed around a particular stimulus and for a specific duration, while others have been more open and led by the interests of group members. Groups have been voluntary and with fluid membership. Some have been within a discipline, while others have been multi-disciplinary. Participants in the groups were given initial stimuli by the author to reflect on which included articles, examples of practice, visits to other contexts or external visitors who participated in the discussions.
One example of a stimulus was within the School of Education where a book on being a teacher educator was bought for each member of the academic staff and discussed over several weeks in drop-in lunch time sessions with mind-maps of the discussion displayed in a corridor for annotation by those who had been unable to attend. This resulted in a ‘shared text’, some key ideas from which still resonate in the School eight years later. Ideas explored in the text are still discussed in planning meetings.

One aim of using a text was to encourage scholarship around teaching in higher education. A cross-School group with staff from four Schools shared a text on developing learning through enquiry and this involved visits from the authors and some of their students. This led to changes in practice in some programmes and a clearer understanding of issues involved in learning through enquiry that has been explored in a range of other groups of staff and students. There were not particular practice aims for this work, rather the aim was that through sharing ideas together around a common text, participants would identify a range of responses which could include making practice changes.

Knowledge and skills as well as phronesis are involved in the current cross-School dialogue group where a small group of staff from four Schools have been working for over a year at ‘noticing’ their practice. The stimulus was a chapter of Mason’s (2002) work on the discipline of noticing and this has led to participants ‘noticing aspects’ of their own practice to share with others in a context of mutual critique and development. This has led to the creation by the group of a range of materials and activities to support noticing and identifying personal and disciplinary ways of looking, to explore assumptions underlying practice and to identify new approaches that could be tried. These resources have been collected together and are being used by colleagues within the group to lead academic development sessions in their own Schools.

A small group working together enables trust to be built over time, which is essential if one is to open up one’s own practice to critique. The group can, however, become exclusive with impact only on members and close associates. An aim of the approach is to build academic leadership, so that colleagues will lead development work in their own contexts. This can be achieved by taking a relational approach to leadership (Cunliffe
& Eriksen, 2011) focusing on dialogue and lowering power dimensions. Currently, the group is studying the ‘host leadership’ approach through a shared text (McKergow & Bailey, 2014) prior to initiatives which each member will lead in their Schools. In this case, the aim is to build a small group of leaders who will, in turn, build new leaders of learning and teaching.

**Student-staff Enquiry Groups**

Another approach to raising the profile of learning and teaching and identifying it as an important area for investigation has been the development of student-staff enquiry projects. Partnership projects, involving students and staff undertaking joint enquiries, have become increasingly part of practice in the UK and other countries (Little, 2011). In this case, the purpose was to undertake pedagogical enquiries which could lead to practice development. Student-staff enquiry projects can be part of engaging students in learning and in supporting their development of skills and graduate attributes (Dickerson, Jarvis, & Stockwell, in review). It can also help staff engage with students’ perspectives and can lead to an approach to learning and teaching development based on both local knowledge through the enquiry process and on evidence from associated professional and research literature.

Both students and staff evidenced changes in understanding of higher education pedagogy as a result of these projects, in addition to shifts in perspective around their own identities and practice. One student, for example, who started working in a student-staff enquiry group in his first year as an undergraduate has, six years later, started his second year as an academic member of staff. To enable mutual trust and learning, the leadership of these groups needs to focus on issues of power and voice and on spending time in developing trust. As Brookfield (2013, p. xi) notes, ‘... democratic, participatory discussions do not happen by accident but must be planned for’ and as with staff only groups the focus needs to be on the process.

**Spaces for Thinking About Learning and Teaching**

It is difficult to create spaces for thinking and development work with the current pressures of academic life. In relation to learning and teaching, development it is not just about time, but about creating a context that is
not instrumentally focused, with expected outcomes related to a particular driver, such as responding to National Student Survey feedback. It is also about being able to pursue one’s own agenda in relation to discipline and setting, as one might do in one’s research context. A space outside these constraints can enable colleagues to work together to explore an issue that has significance for them and lead to initiatives that they can lead, rather than compliance approaches.

The ‘going-out’ project, as this approach has been called, is now used in two Schools and involves small groups of colleagues identifying a shared area of focus in learning and teaching and ‘going-out’ together off-campus for discussions. The aim is to find a setting away from the physical location of work in order to be less constrained in thinking and the development of ideas. End of year one project feedback from colleagues on this approach has included: ‘With no pressure to deliver anything, we actually delivered a lot. Rambling conversation, pooling ideas. I came away feeling excited – rare at the end of term’ (Colleague B), and ‘How beautiful to go out – how creative we were, more creative being out than being in. To go out and think with no pressure – academia should be like this but we don’t do it’ (Colleague E).

Disciplinary Focus

Much academic development work is generic, but for many academics their key focus is their discipline. Academic developers can support the enhancement of disciplinary work by facilitating colleagues to identify and articulate learning and teaching in their context and use this expertise to develop practice. One example of this type of work was the ‘Reading in Law’ project, whereby the author and a colleague with expertise in academic literacy worked with law colleagues to enable them to identify and articulate specialist reading approaches and to create resources for staff to use to help students with their reading strategies. The academic developer role in this case was to put themselves in the position of a learner in relation to reading in law and to come to understand how to do this through the work of the disciplinary expert. Ideas for collating and disseminating this knowledge were then shared and linked with texts in the field which were identified by both academic developers and disciplinary experts.
A similar approach is being taken by an ongoing ‘Learning in the Creative Arts’ project. In this context, the author has very limited understanding of the disciplines but can create contexts where staff can share their expertise, leading to increased understanding and development of learning and teaching approaches. One context was the use of a graphic facilitator to illustrate the ‘verbs of learning’ (such as making, failing, reflecting, gathering, connecting) generated by staff, which is now being explored in dialogue groups of staff and of students and staff. Connections across Arts disciplines, sharing issues, ways of working and reading and research in relation to these verbs is allowing learning and teaching ideas to develop from the staff themselves rather than from a top-down initiative.

This disciplinary focus on learning and teaching can be developed also by exploring threshold concepts; the concepts learners must understand if they are to cross the threshold into being a person with knowledge and understanding in a particular discipline (Land, Meyer & Smith, 2008). This is an area of increasing interest involving an increasing number of books, articles and conferences. Cousin (2010) has argued that focusing on threshold concepts can bring about an equality of power between academic developers and disciplinary staff, whereas previously, power in learning and teaching enhancement could be seen as being held by the former group. Using an approach that focuses on the discipline can engage staff who would be less inclined to become involved in work on more generic learning and teaching discussion.

LEARNING FROM THESE EXAMPLES OF PRACTICE

Key learning from these projects included the finding that many members of staff are passionate about their subject and about sharing this effectively with students. They are generally keen to bring students into their discipline or profession and to share with them their knowledge, understanding and skills. At the same time, they are generally reluctant to engage in learning and teaching sessions which they suspect are about compliance to institutional agendas. Locke (2014, p. 26), in his review of literature in the field of professionalism in teaching for the UK Higher Education Academy, also found a ‘dislike of managerially-driven or institutionally-driven staff development activity’.
We also learned from our practice that by paying attention to the dialogic process and supporting staff to lead development we could bring about greater understanding of scholarship and phronesis in participating staff. The extent of influence on staff and student learning and practice is however unclear. Some staff could identify their ongoing developing practice which they saw as authentic, while others identified new approaches to their practice. This is a process of long-term culture change and we found that at times, it was hard to keep this as a focus in the current context of the pressure of short-term action plans and outcomes that may be more realised on paper than in practice. The importance of taking a long term view of learning in relation to educational practice has been recognised by those in practice but as Clegg (2003, p. 803) notes, ‘There is considerable tension between time understood on the ground and the time-scales of central learning and teaching initiatives’.

It is also useful to have School-based academic developers who can work with colleagues on initiatives that arise from the discipline and are not seen as part of the institutional agenda. These developers also need to be able to work across disciplines in order that their work does not exist in a silo; so that they can encourage multi-disciplinary exchanges, and so that they can use a position of ‘not knowing’ to enable disciplinary experts to identify and articulate ways of working that are often held as tacit knowledge.

An interesting finding from our work was that while both male and female staff were engaged in disciplinary focused work into approaches to learning and teaching, the long term staff dialogue groups consisted of only female staff. This may be to do with the particular approach or may be happenstance, but there is a concern, suggested by the literature, that ‘women academics have been more able to progress in the learning and teaching field than in research’ (Clegg, 2003, p. 808). If this is the case then it would be reinforcing the lower status of teaching as ‘women’s work’. What may be important is to find a wide range of approaches to engaging all staff in learning in educational practice.
DISCUSSION

Universities can be remarkably unreflective and uncritical about their own practice. Despite the emphasis on research, few, if any, universities will have researched the impact of their initiatives on staff learning in the field of educational practice. It would appear from the evidence that is available that they have used approaches that have largely achieved the opposite of what was intended. Expecting staff to engage in thoughtful approaches to teaching and wider consideration of the purposes of education and using findings to inform practice and policy is unlikely in the current context.

Barnett (2010, p. 50) argues that there is not a necessary relationship between current ideology and pedagogy, and here we include the pedagogy of staff development, but potentially ‘it will be the pernicious elements of marketisation that come to dominate proceedings unless countervailing measures are taken’. What measures can we take?

Ironically, some of the measures could be located within audit and compliance procedures. For example, requiring all reviews and validations of teaching programmes to include in their reports the findings of enquiry undertaken on educational practice in the discipline, or a summary of literature on teaching in that context; or to require teaching approaches to be specified in module documentation.

If there is to be a change in how staff perceives teaching, there will be a need to be recognized and rewarded for researching in the field. Researching into teaching and learning in a discipline should be placed on the same level as researching in the discipline itself. An understanding by senior leaders of the role of communities of enquiry and how they can be fostered could lead to allocated time for learning in this way. Blackmore and Blackwell (2006, p. 381) argue for the importance of ‘supporting informal learning processes and bringing together socially distributed learning into explicit discussion at departmental level and below’. There needs to be a delicate balance between giving spaces for learning but not taking control, as the importance of facilitating staff autonomy and agency in this area is vital. Creating roles designed to support staff initiatives and to identify and grow areas of interest would seem essential as leadership, while necessary must not take a management role. The separation of management of the organisational aspects of teaching and facilitating professional learning would make this difference clear.
Universities need to take a principled approach to staff learning in relation to all aspects of their role and to identify and challenge negative impacts of the current education environment. They need to do this because staff learning can lead to improved learning for students. If we are to move beyond a compliance, audit-based, technical model of teaching focusing on narrow outcomes for students towards a richer, thoughtful, critical engagement with education and its role in society, then staff learning must be at the core of university practice. There is increasing evidence of the impact of staff learning on student learning (O’Donoghue & Clarke, 2010). As we move towards educating more of our population in universities, the impact of this education could have a significant effect on the development of society. This responsibility means that universities must act urgently to move towards focusing on staff learning for the sake of all our futures.

REFERENCES


INTRODUCTION

From Singapore to South Korea, Hong Kong to Malaysia, and elsewhere in the region, higher education hubs are emerging across Asia and the student enrollment has increased significantly in many Asian countries (Dessoff, 2012). This growth is attributed to the acceptance by governments that education, in all aspects of human capital and manpower planning models, is a crucial instrument for economic growth, as well as for political and social development (Chabbott, 2002). Hoque et al. (2013) stated that the government of Malaysia has linked the development of the higher education sector to the requirements of the country’s economic growth. In this regard, Yilmaz (2010) stated that between the years 2001-2006, higher education enrolment in Malaysia increased approximately by 6.7% annually. By 2012, Malaysia has reached a gross higher education enrolment rate of 48%. This represents a 70% increase in enrolment over the last decade to reach 1.2 million students in public and private higher learning institutions comprising public universities, polytechnics, community colleges, private universities, private university colleges, and private colleges. Between 1990 and 2010, there has been a six-fold increase in Bachelor degree enrolment and a ten-fold increase in Masters and PhD enrolment. The UNESCO Institute for Statistics (2014) argues that higher education systems have had to ‘expand out’ by constructing new universities, hiring new faculty members, and allowing and encouraging the entry of private higher education providers. With these changes in this sector, the “higher education to work” interface is at the epicentre of current debates about employability of graduates. In essence, the debate is about what employers want and what higher education institutions can do to enhance the employability of students (Harvey, 2003).
Despite the emphasis on higher education by governments, much of the focus in recent literature has been on the non-employability of graduates after completion of their qualifications. The Malaysian scenario is no different from that of other Asian countries. Jobstreet Malaysia (2013) reported that over 50% of the fresh graduates are not offered a job despite their academic qualifications and that there is a distinct gap between what the Malaysian education system produced and what employers were looking for. Other recruitment consultants, such as Nina Adlan, Director of Prospect Consulting Sdn Bhd, spoke of an obvious disconnect between what graduates put down on their curriculum vitae and what they are like in reality (Education system, 2012). She further stated that:

“When we hire, we consider the way graduates converse and portray themselves to be more important than what is in the CV. What’s the point in having good academic results when they can’t communicate, can’t conduct a proper conversation and have no confidence?”

Another article published in Borneo Post (Local Graduates, 5 March, 2012) quoted, “Graduates emerging from the Malaysian education system are failing to meet the expectations of prospective employers due to a lack of critical thinking skills and poor communication”. This has likely resulted in six out of ten graduates from Malaysian universities taking as much as six months to find a job. The other 40 percent may take even longer (Chapman, 2012).

A number of studies were conducted to ascertain issues pertaining to employability of fresh graduates. The Chronicle of Higher Education (4 March 2013) in its landmark article entitled, The Employment Mismatch reported that only 3% of employers think that a university degree is somewhat important (Fischer, 2013). Digital News Asia (23 Sept 2013) published a survey conducted by Job Street stating the top five reasons for non-employment of fresh graduates. The survey reported that 67% of the fresh graduates asked for unrealistic salary and benefits, 60% of them have poor character, attitude or personality, 55% have poor communication and collaboration skills, 55% have poor command of the English language and 42% lack required skills needed for employment.
Employers’ general perception of fresh graduates leading to the non-employability of many has led governments, parents and students alike to adopt a broader outlook towards the purpose of tertiary level studies. Studies have also been undertaken to identify what top employers look for when recruiting fresh graduates into their organization. Arising from multiple surveys with employers, the Malaysian Graduate Employability Blueprint 2012 – 2017 describes the five Cs that employers need in fresh graduates - communication, collaboration, cultural adaptation, critical thinking and problem solving, and creativity and innovation. In 2014, Nielsen, a leading global information and measurement company conducted six focus group discussions with Malaysian out-of-school youth and two parent focus groups, on their expectations of university degree outcomes. Their findings revealed that education increasingly did not have the same meaning to many parents and students as before. An academic qualification alone does not guarantee success in life; rather, it should be supplemented with a global experience and exposure to a variety of life skills. The study indicated that many parents and students were becoming more aware of the significance of possessing other skills and abilities besides the academic knowledge and skills they get from formal higher education programmes. In 2014, Taylor’s University in Malaysia conducted a similar survey involving 683 undergraduate students to ascertain skills that they felt would give them the best chance of securing jobs in the future. Besides a formal qualification, students rated having a personal mission, a set of core values, interaction skills, understanding people, motivation, drive and pursuit of success, time management, stakeholder management and self-awareness highly in the survey. It therefore appears that there is already awareness among many students and their parents that one requires more than academic qualifications to succeed in the job market and in life.

HOLISTIC EDUCATION

The inability of many fresh graduates in Malaysia to secure the desired job upon graduation despite their academic qualification and awareness among parents and students today that a degree alone does not guarantee success in the job market has led many universities to review its curricula and educational process for more current and innovative approaches to education. The concept of a holistic education, whilst not being a new
Holistic education refers to a philosophy of education based on the premise that each person finds identity, meaning, and purpose in life through connections to the community, to the natural world, and to humanitarian values such as compassion and peace (Miller, 1991). Terminologically, holism is derived from the Greek concept of ‘holon’; a concept that draws the universe as integrated wholes, so interconnected that it cannot be fragmented (Nielson, 2008; Lee, 1997). The Greeks expanded this concept to learning and became proponents of holistic approach. Socrates was an advocate of this approach, as he encouraged individuals to reflect upon their own lives: “know thyself” (Smith & Knapp, 2011; Miller, 2007). The 1980s marked the re-emergence of the holistic paradigm as an intellectual movement with vibrancy and coherence. Hare (2010) stated that the aim of holistic education must be to prepare students for a fulfilling and productive life in which their skills and attributes are constantly challenged, developed and applied as part of their lifelong learning. It is an educational journey of personal discovery starting within formal education and then continuing throughout life. Miller (1991) discussed the following characteristics of holistic education.

1. Broad development of students and focus on intellectual, emotional, social, physical, creative or intuitive, aesthetic and spiritual potentials.

2. Emphasis on life experience and learning beyond the classroom and the formal educational environment towards education as a means for growth, discovery and broadening of horizons.

3. Forming of ‘partner relationships’ at all levels within a learning community in open and collaborative relationships.

4. An empowering learning process that challenges students to critically examine the socio-cultural, moral and political contexts of their lives.

**Teaching and Learning in the Context of Holistic Education**

The holistic education approach goes beyond the conventional reflection on learning and teaching to find out how instructors can improve their methods and build itself on the view that teaching is a social activity. The social activity, in essence, includes the roles played by both the learner
Holistic Education

and the lecturer (Warnich & Meyer, 2013). The holistic learner is viewed as the person who pursues awareness of knowledge at its highest aspect, and values its contribution to personal life. The holistic teacher/lecturer is viewed to pursue cultivation of the learner to become critical, confident and independent (McGuire, 2014; Fearon et al., 2012; Patel, 2003). This lecturer empowers the learner’s actions in real situations through conveying critical aptitudes. The teaching and learning process that occurs in holistic education is defined as the social process in which a critical learner is permitted to claim ownership of the knowledge domain, its epistemology and to be able to refute knowledge or make claims accordingly (Nilson, 2013). Lecturer’s interaction with the learner is a social act that is supposed to cover the personal, professional, social and human needs of the learner (Fernandez-Sainz et al., 2015; Maureen, 2013; Rutter, 2009). Holistic education promotes not just the need for knowledge, it also encourages the needs to be heard, praised and accepted in the learners’ community as well as other human needs.

Guiding Principles for a Holistic Education Programme at Taylor’s University

Figure 1 illustrates the six main principles guiding the development and administration of a holistic education programme at Taylor’s University, drawn from the review of literature. Given that a major part of holistic education, particularly the development of emotional wellbeing and life skills fall in the immeasurable and intangible domains, the programme must emphasize self-discovery and reflective learning approaches to promote emotional, social, physical, intuitive, aesthetic and spiritual potential of the individual. The programme must also promote self-directed learning and allow students to participate in the design of their learning journey, develop their own Personal Development Plan and maintain an e-portfolio to record their reflections.
A major part of the programme is designed to be experiential to enrich students' experience and learning beyond the classroom and the formal educational environment so students can grow, discover and broaden their horizons through personal encounters. The experiential opportunities include undertaking life skills courses, projects that impact society, encounters with personalities who have made a difference, voluntary work, networking, short term employment and travelling abroad. The programme also includes a series of interactive and disruptive workshops that challenge the students’ current paradigm or mind-set, and require them to adapt to a variety of contexts and life situations. The experiential activities and workshops must aim to enable students to experience connection, meaning, and relevance; in the process, undergo a process of self-transformation (socially & emotionally). Supporting students to build resilience requires the inclusion of activities that specifically address the inner life of students (Kessler, 1998).

As the primary objective of the pursuit of higher education remains as employment, the programme must be developed in conjunction with top companies. The involvement of senior management of these companies as
coaches, mentors, facilitators and assessors is a key success factor of the programme. Recognition of the 2nd transcript by these top companies ensures that the programme has currency and relevance to students’ and parents’ needs. Another guiding principle is to place students in cross-disciplinary settings throughout the programme, to ensure students are exposed to peers who have varied interests, networks and perspectives. The final principle is to recognise that each student is an individual who is unique and will develop differently and respond to different triggers. Hence, the programme structure must be partially flexible to enable students to become intentional learners, determining activities that are relevant to the pursuit of their personal mission and life goals, and the life skills they need to improve themselves.

**Holistic Education Framework at Taylor’s University**

Taylor’s University is one the biggest private universities in Malaysia. Holistic education at Taylor’s University is underpinned by Taylor’s core purpose, “To educate the youth of the world to take their productive place as leaders in the global community” (Figure 2). The core purpose of the institution envisions an education that sharpens students’ life-skills, broadens their mind, makes them self-aware, and develops an appreciation of our world, apart from earning academic credentials. The core purpose is realized through an educational focus on three pillars – Academic Excellence, Life Skills and Emotional Wellbeing. These pillars are traditionally integrated into the formal curriculum in varying degrees, within each course module, leading to the award of an academic transcript upon completion of a programme of study.

To promote a holistic education and to ensure students consciously develop their life skills and emotional wellbeing, a parallel programme, called the SHINE Award is offered to students, leading to the award of a 2nd Transcript. SHINE is an acronym that stands for Shaping Holistic Individuals & Nurturing Excellence. The SHINE Award Programme requires students to undertake four Learning Packages (LPs) in Personal Development, People and Leadership, Professional Development and Global Engagement. The programme provides a platform for students to develop future work skills, emotional well-being, proficiencies and abilities required across different jobs and work settings, that would make them employers’ top choice graduates. Upon successful completion, they receive a 2nd Transcript.
The academic transcript and the 2nd transcript provide a complete and holistic picture of the students’ university experience to become well-rounded graduates because students define their higher education journey not just by their academic programmes but by their educational experience inside and out of the classroom. Several universities in the UK such as University of Bath, Bournemouth University, University of Birmingham and University of Reading have started similar co-curricular awards as a way to help the students develop the skills that will help them to become employable and ease their transition from the university to the workplace. Thus far, over twenty corporations, including Shell, L’oreal, Microsoft, BMW and Mandarin Oriental Hotel have endorsed the 2nd transcript of Taylor’s University.

The Shine Award Programme

The SHINE Award Programme (Figure 3) requires a minimum of three years to complete and consists of four learning packages, namely:

LP1: Personal Development,
LP2: People and Leadership,
LP3: Professional Development, and
LP4: Global Engagement.
Each learning package is structured into an Empowerment Series – consisting workshops and seminars that allow students to learn from the experiences of experts; and the Experiential Opportunities Series consisting, among others, organization of projects that impact society, encounters with personalities who have made a difference, voluntary work, networking, short term employment and travelling abroad. The objectives of each learning packages are further explained below.

**Learning Package 1: Personal Development**

Learning Package 1 (LP1) helps students to obtain self-management skills and be value-driven and emotionally resilient learners. LP1 also empowers students to identify their own strengths and weaknesses, determine their core values and goals they seek in their lives. Moreover, by developing their emotional intelligence, this package helps students to survive and thrive in both academia and their personal lives. Students take approximately six months to complete this package.

The SHINE Discovery Session (SDS) kicks off LP1. SDS is geared to increase students’ self-awareness and self-direction after which students plan their SHINE journey and craft their own statements of purpose and articulate their personal goals. Students completing the SDS successfully are inducted into a small student support group called PODz. It is a simple concept, in which small groups of high achieving students meet to explore their own challenges and concerns in an atmosphere of confidentiality and trust. The groups will be made up of 6-10 students, plus a trained Taylor’s staff member, and will meet for four hours once a month. The PODz brings students through a series of exercises designed to inspire and guide them
through personal exploration and development while supporting others in theirs.

**Learning Package 2: People and Leadership**

Learning Package 2 (LP2) assists students to discover their own potential, get inspired and learn to become responsible future leaders. Through this package, students apply project management, leadership and teamwork principles in student organizations, community projects and signature events at national and international level. LP2 extends for up to one year.

A leadership conference entitled iLead aims to provide an opportunity for students to be empowered by listening to real-life community and corporate leaders and innovators share their expertise and success stories. Joining bi-annual iLead Conference is strongly recommended because students can dialogue and network with other student leaders and kick-start their journey to become influential and effective leaders.

**Learning Package 3: Professional Development**

Learning Package 3 (LP3) aims to complement students’ academic qualifications with employability skills. These include work-related certifications that prepare students to successfully transition into their future work environment. LP3 Empowerment Series modules include effective cover letters and resumes, interview skills, internship preparation, professional image and executive presence, and ethics and etiquette at work. The Experiential Opportunities include toast mastering, employer information sessions, employer networking events and two separate work experiences.

**Learning Package 4: Global Engagement**

Learning Package 4 (LP4) exposes students to the way of life and practices in countries around the world by creating opportunities that help them to be engaged with the global community. Workshops in the Empowerment Series include international awareness, diversity and integration and careers in a global world, while experiential opportunities, in the form of round table dinners, international exchange, global study trips, international conferences help students equip themselves with an ability to adapt and perform in diverse settings.
For each activity undertaken in the SHINE Award programme, students earn points for each SHINE empowerment series and SHINE experiential opportunities they participate in and based on the total points earned over the four learning packages, an e-portfolio and an interview, students are awarded the SHINE Silver, Gold or Platinum Awards. Skills audit tests taken at the beginning, in the mid and at the end of the program also help students track the improvements they have made against their peers across various skill sets and key competency areas. Taylor’s University started the 2nd transcript program in September 2014 with 376 students and would have enrolled up to 1,500 students into this program by the end of 2015.

CONCLUSION

Today, in a highly competitive work environment, getting a job has become quite challenging as it requires a set of life skills, in addition to job-related qualifications. The ever-changing fabric of workplaces in modern economies has prompted adaptability and superior non-technical skills to rise to the top of the list of employees’ qualifications that employers look for in prospective employees (Brewer, 2013; Maxwell, 2010). Academic success will not guarantee job opportunities for students once they graduate. They need to be equipped with a set of skills that are not academic. The general consensus indicates that employability covers a vast range of skills and competencies, which fresh graduates must obtain in order to maintain positions in the professional world. These attributes include communication skills; personality, confidence, and integrity; problem solving skills that are both analytical and logical; adaptability and flexibility; innovation and creativity; and possessing a team spirit.

Holistic education aims for students to first find identity, meaning, and purpose in life, and through various experiential activities develop their intellectual, emotional, social, intuitive, aesthetic and spiritual potentials. Learning in this approach is a process of self-improvement in which self and social context of teaching and learning are understood and the individual needs of the students are also taken into consideration. The premise of holistic education emphasizes the significance of social context of interactions, moving forward on this foundation that interactions in this social environment constitutes the basis for educating critical learners,
thus leading to the quality improvement of teaching circumstances and success levels of learners through experiential knowledge of both sides. This paper addresses a model for holistic education in a higher education institution, with a focus on the approach and strategy taken by Taylor’s University, through the SHINE Award Programme and the 2nd Transcript. The main objective of the Shine Award Program is to produce self-aware and self-directed leaders and professionals who can add value to the global community.

Currently, this holistic education programme attempts to co-exist with the formal curriculum based education. The ideal situation will be one where both these systems can fuse together to transform into one system. But the point to ponder is if it is really possible? Can the formal curriculum based education be transformed into a more holistic education system that is inspired from a classical education system that existed centuries ago? If employers and other key stakeholders persist in their demands, perhaps, we will soon return to our roots, where education of the head, the heart and the hand form the core of why institutions of learning exist.

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Holistic Education


INTRODUCTION

The history of highly successful organizations teaches us that their success is almost invariably tied to three elements: their vision, the will of leadership to implement transformative measures that tap personnel strengths, and above all, strategic planning. Higher education institutions, with scholarly tradition and their educational mandate, however, stand as curious exceptions to this rule. Yet the realization is setting in among academic leaders worldwide that to remain current and be “the best of breed in all aspects of their business”, planning must become a central preoccupation (Destin, 2012).

There is a competitive dimension to global higher education today. It is a market. But more importantly, universities have a key responsibility: to produce graduates with the foundation to become global leaders, innovators and citizens for our world to sustain universal growth and development. This is no small order. The question is who will ultimately lead in this challenge to be “best in class” and how will these leading institutions adapt critical strategic planning principles to ensure they fulfill their mandate.

Cultivating leadership and sustainability in a globally rich and competitive environment requires a coherent planning model. The plan must be fluid, highly adaptable, integrated and inclusive of knowledge-based strategies. These strategies must be directed at addressing current
imperatives in an ever-changing world through targeted areas of intensity, excellence, competitiveness and impact.

The purpose of the paper is to discuss a way for higher education institutions to build a global strategy using a framework to advance and lead as the world shifts from a global to a universal knowledge economy. In a universal knowledge economy, the lens of the world is within the context of the universe and cooperation supersedes conflict. The paper showcases how a strategic framework can be used as a critical tool to guide the strategic planning process and discover critical institutional assets and opportunities for success. Two case examples are introduced: Ohio University and its partnership with the Ministry of Education in Malaysia.

**THE HORIZON OF A UNIVERSAL KNOWLEDGE ECONOMY**

Driven by the forces of globalization, the world has become more interdependent and interconnected. Issues and events such as health, wealth, poverty, financial stability and climate change have become both domestic and international issues, demanding the world’s collective attention. The 21st century has also experienced transformational technologies resulting in the global advancement of social, cultural, and economic development. These breakthroughs have led to new discoveries of possibilities and challenges in many areas, including the growing importance of outer space and its implications for the sustainability and security of Earth.

Edmonds and Hewitt (in press) present the view that the current era of globalization is being shifted to universalization whereby the focus of this century will be on solving problems and securing global sustainability through a lens of the world within the universe. The term, “universalization” is defined as “an increasingly pervasive, abiding and singular focus not only on global issues per se but on social, economic and cultural opportunities extending into our solar system, our galaxy, and well beyond where cooperation supersedes conflict negotiation” (Universalization, 2014). The emerging universal paradigm shifts our focus away from inward-centered nation-building to a new path of ‘world building’ as the approach for adequately addressing the challenges and opportunities that the planet faces.
In the current global knowledge economy, countries and sectors are intimately connected, but largely acting as separate entities pursuing their own agenda. In the new model of a universal knowledge economy; however, citizens and their nations can no longer think and act separately without taking into consideration the implications of their decisions and the consequences of their actions on others and more importantly, on Earth. Accordingly, this new era requires citizens to see the world as one entity within the universe. The new perspective will demand that they be well prepared to stay abreast of, and cope with the pace of change while leading the world’s universal growth and development cooperatively. Furthermore, the new era needs people to remain optimistic, engaged, and confident as they find a role and make a difference in their field of endeavor, even when the challenges appear daunting.

Higher education institutions must take a leadership role in the emerging universal knowledge economy and produce graduates who are ready to take on these challenges. The imperative for universities is to offer the skills, knowledge and network along with a creative and entrepreneurial environment to enable their faculty and students to confront the opportunities and challenges of universalization.

**HIGHER EDUCATION IN A UNIVERSAL KNOWLEDGE ECONOMY**

Higher education is a major player grappling with the pace of change and structural shifts taking place. The trends include the explosion of new models of scholarship and learning within and external to the traditional higher education settings. Higher education is now regarded as a private and public good in the market and the student is a consumer with options - domestically, internationally and virtually. There is greater capacity to offer quality education programs and campuses around the world and even without leaving one’s home. International and domestic students as well as faculty and staff are exercising their array of options. In this landscape, all universities around the globe compete for the best, brightest and boldest students, faculty and staff.
The competitive nature of higher education and student mobility has led to the phenomenon of global rankings, which influence the choices students and parents make for advancing their educational goals. Further, the globalization of higher education and the emergence of world ranking schemes for institutions are changing the unit of analysis from domestic to global frames of reference. Universities are not only competing against peer institutions locally and nationally but also globally. It is a new environment for recruiting talent. Notwithstanding, what matters the most is whether higher education offers the scholarly and experiential learning environment to foster citizens, thinkers, leaders and innovators with the knowledge, experience and connections they are seeking to engage, with confidence, in the universal knowledge economy.

With the increasing competition for talent and the global imperative, many institutions have specified the goal of preparing “globally competent graduates” in their mission and vision statement. However, few have clearly articulated what that means or how they will know when they have achieved this goal. There is no clear consensus on what the preparation should entail in terms of curriculum content or on the learning outcomes that such “globally competent graduates” should achieve. In many cases, institutions attempt to accomplish this ill-defined goal by doing more of what they already do in the name of international education. These activities include sending more students abroad, introducing more or new courses with an international or global focus, or increasing the number of international students on campus. While all of these efforts are important for higher education, they do not necessarily ensure that all students will be globally competent or prepared when they graduate (Olson, Green, & Hill, 2006).

In the context of the universal knowledge economy, higher education must be able to adapt and offer its students 1) the opportunity to develop a sound understanding of world trends and global issues and identify where their interests and capacities align with serving society, 2) the leadership skills for working in interdisciplinary, cross-cultural and international settings, and 3) a global network that enables them to work cooperatively as they attempt to solve problems for the benefit of all. These three core dimensions will foster the optimism, enthusiasm and confidence to lead in this complex and fast-paced world.
With the exponential growth in higher education options worldwide and the mounting competition to produce talent, scholarship and innovation of value to the emerging universal knowledge economy, universities must be strategically savvy. Knowing the capacities and interests as well as defining the niche contribution of one’s university must be a central preoccupation of institutional development. Universities must find a path to lead them in the ‘right’ direction and they need a map to go about it.

BUILDING A STRATEGY

In the past, universities have tended to guide strategy development with a narrow vision of their roles internationally. As a result, international strategies and activities were only tangentially important to advancing institutional vision. Increasingly, however, the extent to which the internationalization of the university is embedded in its core institutional strategy will be driving the university’s ability to achieve its vision and objectives. Internationalization needs to be aligned with the university’s areas of excellence and distinctiveness so that it becomes a truly global and impactful institution. Today, the university strategy should be its global strategy and vice versa.

The primary question is what aids universities to move their agenda and be competitive as they strive to achieve their strategic goals. They need a standard framework that guides them to develop a plan that maps out their history and current practice. On this foundation universities can then identify their core capacities to safeguard the areas to keep, to determine the areas to discontinue, and to develop new initiatives to implement.

A sound global strategy has a number of characteristics and elements. The strategy needs to help the university tells its story: where it is today and where it wants to go in the future. Further, it needs to define its competitive advantages and interests for achieving distinction, excellence and internationalization. Stories unite the community, celebrate the accomplishments, and identify its future aspirations. Data and metrics are an important part of the strategy. They weave the essential threads from the past to support planning for the future, to tell the story and to make evidence-based decisions.
A key step in the strategy development process is to produce a report. The strategy report serves as a means to profile and present in concrete terms the directions ahead. However, one should be reminded that the final goal is not just producing the report. Witnessing engagement and experiencing the shift towards a truly global institution, which is the priority today, is what showcases the success of the strategy. When the strategy is deeply permeated in the development of the students, the faculty and the institution, in essence, one no longer would need to use ‘global’ in the dialogue because globalization will be at the heart of the university’s thinking and practice – where it is distinct, excellent and international.

The first step in strategy development is to create a framework that provides the university with a structure to articulate its core international outcomes and how they align with the university’s global mission which supports its vision. A key function of the framework is that it provides a common structure and focus for continued and meaningful consultation across the campuses and within and among the constituent groups. It is an enabler of new ideas and approaches to internationalization that links activities directly to the global mission and university vision. The framework then shapes the story – past, present and future. It also allows the university to benchmark current practices from which it can identify possible performance metrics to measure progress and impact. See the following template as an example.
The framework is comprised of the university vision, a global mission, an output, a set of outcomes and supporting priorities. The university’s vision is measured by the institution’s ability to achieve its mission for globalization by addressing the international questions of priority. The outcomes serve to identify the university’s capacity and vulnerabilities for offering its students a defined path for building their global knowledge, experience, network and confidence to engage cooperatively in the emerging universal knowledge economy. Each outcome lays out the questions, activities to be implemented and the results to be achieved and measured in their sphere of influence. The supporting priorities are the core infrastructure required to support the university’s ability to achieve its mission and outcomes.

The following section reviews the strategic framework that Ohio University (OHIO) has developed to build its strategy for globalization and also to profile its relationship with Malaysia. Although still in its development phase, the process has been instrumental in guiding the institution’s decisions regarding where to invest in internationalization that will support and leverage OHIO’s areas of excellence and distinctiveness. Moreover, the framework has informed the areas of opportunities for future development and global partnerships by putting OHIO in the context of “the world within the universe”.

Chart 1: Strategic Framework Template
Case Example 1: Ohio University

“Ohio University will be the nation’s best transformative learning community where students realize their promise, faculty advance knowledge, staff achieve excellence, and alumni become global leaders.”

(OHIO University Vision Statement)

Established in 1804, OHIO is one of the four oldest public universities in the United States. Presently enrolling more than 38,000 students on the Athens campus, five regional campuses, three satellite centers as well as the e-Learning programs, OHIO offers more than 250 undergraduate majors through 13 academic colleges and units. Classified as a Research University (high research activity) by the Carnegie Classification of Institutions of Higher Education, OHIO is ranked first in the nation for overall student satisfaction, based on the myplan.com survey ranking more than 600 colleges and universities in the United States. OHIO is well known for its success in technology transfer innovation programs. The university is ranked fourth in the nation for research Return on Investment (ROI), based on licensing revenue.

Like many other universities, OHIO offers a number of international programs on and off campus including globally-focused academic programs, centers, and institutes; language training; education and internships abroad; global leadership training, consulting, and research abroad; international recruitment of students, faculty, and staff; support for diversity of campus life; global exchanges and partnerships; and global events and awards. Over 1,800 international students enrolled in 2013 from more than 114 countries of which over 40% are graduate students. OHIO has maintained vibrant partnerships with more than 60 institutions and government ministries around the world. Among them, OHIO has historic relations in Asia that are manifested in various forms including: long standing partnerships in Japan, Malaysia, Indonesia, and China, Bachelor’s and Master’s degree in Asian Studies, The Tun Abdul Razak Chair in Southeast Asian Studies, The Fuller Visiting Professorship in Southeast Asian Studies, The Gawande Chair in Indian Religion and Philosophy, and over 5,000 alumni residing in Asia.
Most of the activities above have been offered at OHIO for many years without an integrated strategic plan. Fortunately, OHIO’s vision fully embraces globalization, which places the university in a solid position to move forward with a global strategy that articulates how its vision will be realized through investments in international activities. Backed by the senior leadership initiative, a strategic framework was developed to give meaning and focus to what OHIO intends to accomplish as a global university and to guide the process for developing the internationalization plan and activities. See the chart below for OHIO’s strategic framework for globalization.

In this strategic framework, the vision plays a central role to guide the rest of the strategic components such as mission, output, outcomes, and supporting priorities. OHIO aims to be the nation’s best transformative learning community, creating and supporting alumni to be global leaders (University Vision). Hence, the global strategy is the university strategy and vice versa. In this way, OHIO’s global strategy supports the overall advancement of the entire university in a systematic and synergistic way. In order to achieve that vision, OHIO aspires to lead globally for good (Global Mission). Ultimately, OHIO expects to produce graduates with the potential for global leadership (Global Output).
OHIO has identified the four strategic outcomes that it aims to achieve: 1) global education, research, and creativity; 2) global mobility of knowledge and experience; 3) global diversity of campus life; and 4) global relations and profile. Global education, research and creativity are to ensure that all students at OHIO have access to education, research, and creative activities on campus. The goal is to engage them to build knowledge and skills in critical inquiry and intellectual development generally and more specifically of world issues and events in the past, present, and into the future. Global mobility of knowledge and experience are to offer mobility opportunities that develop academic, service, technological, and professional experiences which advance innovation both domestically and globally on and off the OHIO campuses. Global diversity of campus life is to bring the world (i.e., people, knowledge, tools, network, etc.) to our campuses to foster campus communities that contribute to the ideals of citizenship. Finally, global relations and profile are to create opportunities to build a network to share experiences, qualities and creativity in education, research, and innovation that is impactful for OHIO to achieve its vision and service to build a strong global brand.

Chart 3: Definitions of OHIO's Global Strategic Outcomes

- **Global Education, Research, and Creativity**: Accessing education, research and innovation that engage in critical inquiry, creativity and intellectual development and includes the study of world trends, issues and events: past, present and into the future.

- **Global Mobility of Knowledge and Experience**: Mobilizing global opportunities that develop academic, service, technological, and professional experiences and advance innovation on and off OHIO campuses.

- **Global Diversity of Campus Life**: Brings the world (i.e., people, knowledge, tools, network, etc.) to OHIO to foster campus communities that contribute to the ideals of citizenship.

- **Global Relations and Profile**: Creating opportunities to build a network to share experiences, qualities and creativity in education, research and innovation that is impactful.
Five supporting priorities have been identified as 1) governance, management, and infrastructure; 2) plan, data, and metrics; 3) people, partners, and network; 4) communications; and 5) finance, administration, and revenue models. These priorities are managed to support the units, programs, and initiatives that will help achieve the strategic outcomes, mission, and vision. Moreover, the variety of priority areas ensures that the key people, units, and ideas across the campus are integrated throughout the process so that the strategy is implemented with a well-balanced and highly engaged support system.

The framework was used to organize the existing global activities. The vast array of activities and programs found their home in one of the four outcomes and OHIO was able to see the depth and breadth of the international activities and more importantly, the impact that they were set to make individually and collectively (see Chart 4). The framework showed the areas that OHIO has capacity as well as the areas for further improvement or consideration for discontinuation. It also provided a foundation for starting the conversation regarding future directions of the university and how they align with world trends. In short, the simplicity of the framework provided greater clarity when showcasing the complicated nature of the university’s global programs.
The overview of the global programming based on the strategic framework guided OHIO to ask key questions related to the experiences to date and aspirations for the future (see Chart 5 for the select questions). This process encouraged the entire university community to participate in the dialogue from their own unique position and perspectives. Several colleges at OHIO have adopted the strategic framework to analyze their own international programs using the same set of outcomes. The university now has a common tool and language to discuss the strategic priorities of globalization and opportunities for internal collaboration that would result in greater impact.
Among many other things, one theme emerged very clearly from the process of building a strategic framework: global partnerships are a critical resource for advancing all four strategic outcomes. Having a better understanding of their current contribution and future potential is strategically important to the university. Partnerships bring value but require attention and investment in order to gain the most from the relationship. For example, Malaysia plays a distinctive and prominent role at OHIO in all four strategic outcomes. OHIO utilized the framework to share the story and find ways to leverage the existing resources and explore new ways to collaborate. The following section illustrates how the framework was used to showcase the intricate relationship between OHIO and the Ministry of Education in Malaysia.

**Case Example 2: OHIO and Malaysia**

OHIO and Malaysia’s long-standing relationship started in 1968 with the establishment of a Business and Commerce program at Institut Teknologi Mara (now UiTM). OHIO’s College of Business started the Bachelor of Business Administration (BBA) and Master of Business Administration (MBA) programs at ITM. OHIO also offered MBA programs in Sarawak through ITM Sarawak campus and started the Executive MBA program with
Tenaga National Berhad, the largest electric utility company in Malaysia. These programs produced the largest number of OHIO alumni outside the United States. Named in honor of the second Prime Minister of Malaysia, the Tun Abdul Razak Chair (TARC) was established in 1980 in cooperation with the Malaysian government and the American private sector. Since its inception, TARC has made important contributions to Malaysian-American understanding. It helped countless Americans acquire expertise on Malaysia and Southeast Asia, developed new partnerships, and built the finest library collection on Malaysia in the Americas.

With nearly 50 years of mutually successful history between OHIO and Malaysia, OHIO wishes to explore the potential for a more ambitious vision for the future in Malaysia and Southeast Asia. The goal was to identify where its existing partnerships and activities can be leveraged to better support OHIO’s four outcomes. Hence, the strategic framework was used to showcase the depth and breadth of the current relationship between OHIO and Malaysia. As seen in Chart 6, Malaysia has a strong presence at OHIO in all four outcomes areas through academic programs, resources, student and faculty mobility, research programs, and events. OHIO celebrated the outstanding achievements and contributions that the partnerships with the Malaysian government and UiTM have supported throughout several decades during its inaugural International Education Week (IEW) in 2013. Malaysia’s Deputy Prime Minister and the Minister of Education Tan Sri Muhyiddin Mohd Yassin visited the Athens campus to open IEW and reaffirm the importance of continued collaboration and cooperation.

Based on the profile of activities, OHIO, in collaboration with the Ministry of Education in Malaysia, prepared a draft outline of potential areas for future development (see the dotted boxes in Chart 6). One idea that emerged from this review was the opportunity to look at Malaysia and the partnership activities with a lens of “the world within the universe”. The idea turned into a new initiative of using the ARC program to expand opportunities for collaboration with other Malaysian scholars and students in North America. This will serve to create a network of scholars across the country and raise the profile of Malaysia, TARC, and OHIO with the goal of increasing opportunities for cooperation through innovation, scholarship, student mobility and diversifying the campus with a greater Malaysian presence. This is an exciting adventure. The framework was a valuable
tool kit for OHIO to showcase a very important element of its history and capacity, and to work collaboratively with the Ministry of Education in Malaysia to plan for the future.

Chart 6: Current Activities between Malaysia and OHIO
(Dotted boxes denote future activities)
CONCLUSION

The world is constantly evolving requiring new knowledge and innovation to foster an ability to keep pace. Higher education, as a leading provider of knowledge and talent, needs to stay abreast of world trends to be relevant and impactful. The emerging paradigm of the universal knowledge economy could be yet another imperative for universities to embrace as they continue to serve the interests to produce talent and knowledge. Hence, higher education institutions must evolve to provide opportunities for faculty, students and staff to cultivate collaborative and cooperative approaches for achieving the institutional vision. In order to be successful, higher education institutions need a sound strategy and an engaged community of stakeholders throughout the process. A strategic framework provides a mechanism to guide the process.

The current paper reviewed the strategic framework for globalization that Ohio University has developed as part of its global strategy development process. The framework presented in the paper offers a number of key factors that can lead to the development of a successful strategy for any higher education institution. First, the framework helps higher education institutions clearly know and be in a position to articulate institutional distinctiveness and contributions to the world’s growth, development and sustainability. Second, given the multifaceted nature of higher education and its environment, the framework provides a mechanism for integrating research, education, and service along with recruitment of talent and the institution’s vision into one strategic agenda. Third, the framework empowers the institution, its colleges and faculty members to be focused and aligned with a clear purpose that fosters inspiration, inquiry, discovery and impact. Finally, the simplicity of the framework makes it adaptable to any changes that occur internally and externally. It is timeless, molded to fit the current priorities, and provides the optimal solutions.

A well-integrated strategic framework makes innumerable impacts. Most importantly, it helps the university adapt to a constantly changing world environment and produce the plans and activities to achieve its vision. It assists institutions to move quickly to take full advantage of their critical assets and opportunities that lie before them and define its niche contribution in this highly competitive environment. The rewards are self-
evident; graduating citizens and leaders with the enthusiasm, knowledge, skills, and network sets to enrich livelihoods and contribute to sustainability of the world.

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Reconceptualising Professional Development of Mathematics Teachers in Southeast Asia: Mapping the Growth in the Trajectory of Teacher Knowledge

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INTRODUCTION

In recent debates about teaching and learning, arguments about the need to better understand students’ engagement with mathematics and lifting their performance is gaining increasing currency among mathematics teachers, educators and policy makers. The issue has received a high level of visibility in light of two major developments. First, the quality of our teaching is being judged on the basis of students’ performance in international tests such as PISA and TIMSS. There are concerns about the use of such test results in order to draw conclusions about the quality of our teaching in mathematics and the resulting ranking of schools and countries. Nevertheless, a number of national educational policy statements, including Malaysia are increasingly supportive of this international program and are keen for their students to move up the performance ladder on the basis of mean test scores.

The growing interest in and the role of international tests in global benchmarking is also indicative of an implicit acknowledgement that such tests do provide a reliable window into the quality of students’ learning outcomes and by extension, the quality of mathematics instruction. Despite the reservation from some segments of the teaching profession about using test results to judge teaching quality, this perceived relationship has been given greater weight by the need to produce a workforce that is quantitatively literate and scientifically talented in order to meet the demands of a knowledge-based economy. Such a view is based on the assumption that a rich pool of scientific talent is a prerequisite for driving and sustaining an advanced economic system which calls, in turn, for citizens to work both
independently and in collaboration during the search for solution of complex problems of the day such as climate change.

The scenario that I have sketched above places a premium on learning quality and evidence of such learning in mathematics. But what are the critical variables that warrant our attention in this equation about learning quality and learning outcome? In this paper, my arguments are driven by the assumption that teaching and teachers play a significant role in initiating and maintaining learning and learner engagement, and ultimately the quality of mathematical learning outcomes that are required to fulfil the demands of the two aforementioned developments.

The relationship between teaching, teachers and the quality of mathematics learning is a complex one and multidimensional. One useful way to untangle this network of relationship is to examine the question of what is the nature of mathematical understanding and what is it about teaching that could make a significant impact on students’ experiences with and understanding of mathematics. I suggest that analysis of the former is critical to developing arguments about the latter. Several reasons could be advanced to explain this nexus but I suggest we commence our analysis from the vantage point of organisation of mathematical knowledge that girds students’ learning and teachers’ knowledge that drive their classroom practice. Classroom practices could include a number of elements including the quality of conceptual representations provided for learners, examination of alternative solution strategies, questions posed and pondered on during instruction, the quality of problems that students are challenged with and the quality of general discourse that is generated in mathematics classrooms.

**LEARNING MATHEMATICS AND QUALITY OF STUDENT UNDERSTANDING**

A recurring theme in Australian and international literature on mathematics education is the quality of learning in mathematics that we would like our students to develop. However, the notion of quality of learning has been interpreted differently. Our characterization of this important construct is aligned with the perspective of knowledge development, access and use. That is, we make the assumption that the analysis of knowledge and its
application during problem solving episodes will provide a reliable indicator of students’ quality of learning in mathematics.

Knowledge for mathematical learning can broadly be classified into two components: concepts and processes. Studies of mathematical thinking and learning have tended to examine concepts that students learn and subsequently use in the solution of problems. Such a position is based on the premise that concepts and processes are different entities and that processes are called upon to act on concepts during problem solving. We, however, adopt an alternative assumption in capturing the richness of students’ algebra and geometry conceptual knowledge. The development of concepts must be examined in the context of its use, that is the co-development of mathematical concepts and problem-solving processes. Lesh (2007) suggested that this approach would provide a situated understanding of mathematical concepts which are fundamental to modelling complex problems. The embedded nature of concepts and meaning-making suggest the need for frameworks that emphasise connectedness in characterising the quality of mathematical learning.

SCHEMATISED KNOWLEDGE

Schemas are knowledge structure or chunks of meaningful mathematical information. Cognitive psychologists and mathematics educators in describing knowledge acquisition and utilization have adopted the framework of schemas. For example, Mayer (1992) advocated the identification of schema during mathematical learning. It is suggested that learning involves the acquisition and automation of disparate information into schemas. As the schemas become automated, accessing and using these schemas impose less cognitive load (Chinnappan, 2010). Knowledge that is organized into schemas has been shown to be easier to access than those that are not because in processing the connected knowledge, less of the limited working memory capacity is used; thus, freeing up mental resources to analyse the more difficult parts of problems. Sweller (1989) suggested that the study of schema or schematised mathematical knowledge would provide useful insights into students’ algebraic and geometric knowledge. Chinnappan (1998) used schemas to analyse Year 10 students’ understanding of properties of 2 and 3-dimensional figures and theorems
that capture relations among angles and sides of such figures. Invariably, connectedness forms an important facet of a schema-based examination and analyse of quality of mathematical knowledge. We are currently measuring connectedness by considering type of relations between two or more units of knowledge and the number of such relations.

**MATHEMATICAL UNDERSTANDING**

While schema analysis is expected to generate data that can be used to make judgments about quality of concepts, we aim to provide a second learning platform for students to exhibit the sophistication of their concepts. Developments in cognitive psychology have given currency to the view that understanding of a mathematical concept is reflected by the representation of that concept in problems (Anderson, 2009). Thus, one useful way to examine students’ understanding of geometry and algebra concepts would be to analyse the nature of problem representations that they are able to construct with these concepts. Accordingly, students will be expected to develop multiple representations for a given set of problems and articulate differences and similarities among the representations. In doing so, students are expected to reveal shades of meaning that they may have developed with algebraic and geometric concepts but could not exhibit them in schema-based activities. The representational notion of concepts can be seen as an extension of connected learning. The quality of reasoning that students could produce in their justification of links among the representations constitutes mathematical understanding (Barmby et al., 2009). The generation and discovery of links among representations are referred to as representational fluency (Lesh, 2007).

In a review of research on mathematical problem solving, Lesh (2007) argued the need to reconceptualise problem solving as representational fluency in ways that would reflect students having to function in high-performance work environments such as engineering and design. He argued for research that provides students with opportunities to reveal their thoughts via model-eliciting activities are needed in order to better examine the quality of mathematics concepts students have acquired. Such problems are often open-ended and somewhat ill-structured. It would also seem that the reduction in cognitive load that is involved in the activation and use
of schematized mathematical knowledge also could catalyse the ease with which students could move across representations.

Students develop deep understanding when they grasp the relatively complex relationships between the central concepts that anchor a particular problem representation. Thus, instead of being able to recite only fragmented pieces of information, they understand a concept in a relatively integrated way. Students with better understanding can be expected to discover relationships, solve problems, construct explanations and draw conclusions. Students have only shallow understanding when they do not or cannot use knowledge to make clear distinctions, present arguments, solve problems or develop more complex understanding of other related phenomena. We propose to capture these different levels of understanding by drawing on Barnby et al.’s (2009) model.

TEACHER KNOWLEDGE AND MATHEMATICS TEACHING

A significant number of research studies (e.g., Even & Tirosh, 1995; Huang & Kulm, 2012; Imre & Akkoc, 2012) have attempted to examine the quality of mathematics teaching by considering the knowledge base that teachers need, activate and exploit during the course of their practice. It would seem reasonable that teachers with rich and sophisticated mathematical and pedagogical knowledge would have positive effect on the learning gains of their students (Fennema & Franke, 1992). Interest in mathematics teacher knowledge that supports better learning has generated several productive lines of inquiry. There is now a great deal of excitement and focus on the clarification of the nature of this knowledge, ways to measure this knowledge and, the use of that information to support the on-going professional development of mathematics teachers (Tajudin & Chinnappan, 2015).

The pioneering work of Shulman (1976) opened the field into the analysis of teaching quality and provided the impetus for the investigation of teacher knowledge underlying teaching. He identified two major dimensions of that knowledge that is fundamental to his work: Subject-Matter Knowledge (SMK) and Pedagogical Content Knowledge (PCK). SMK is about the content knowledge of mathematics that teachers need to
perform their work. Included in the teachers’ repertoires of subject-matter knowledge are: (1) substantive mathematical knowledge such as facts, ideas, theorems, mathematical explanations, concepts, processes (and connections between these elements), (2) understanding of knowledge about the nature and discourse of mathematics, (3) knowledge about mathematics in culture and society, and (4) conventions that are used by the mathematics community in communicating information. The strand of knowledge that is referred to as PCK consists of a number of sub-strands including knowledge about the learner and knowledge about teaching mathematics.

This pioneering work led to a stream of studies in SMK and PCK. For example, Ma’s (2010) inquiry provided empirical support for the claim that subject-matter knowledge is critical in the development of pedagogical content knowledge. In a similar vein, Chinnappan and Lawson (2005) demonstrated that within the domain of plane geometry, competent high school teachers tend to have built and accessed richer and better-connected strands of both these knowledge dimensions. The field was further extended by Deborah Ball and her colleagues at the University of Michigan with the conceptualisation of SMK and PCK into sub-dimensions. For example, SMK was unpacked in terms of Common Content Knowledge and Specialised Content Knowledge in generating a model of teacher knowledge -Mathematical Knowledge for Teaching (MKT) (Ball, Hill & Bass, 2005; Ball, Thames & Phelps, 2008).

MATHEMATICS TEACHER KNOWLEDGE AND PROFESSIONAL DEVELOPMENT: NEED FOR A PARADIGM SHIFT

Professional development (PD) of mathematics teachers or staff development as it is commonly known has been defined in multiple ways but the common theme in most definitions refer to activities or programs that are designed to enhance and support teacher learning such that it will have a positive effect on the learning of their students. Equally, these programs are aimed at encouraging teachers to become reflective learners within a community of professionals. However, in general, organisers of PD programs are less forthcoming about the kind of learning that teachers need in order to improve their classroom practice.
While most programs of PD focus on scaffolding teachers as learners, less is known about the substance of this learning and its role in fostering learning among students. My arguments are premised on the assumption that if PD programs are to provide effective learning experiences for mathematics teachers, it is essential that we are clear about the nature of this learning, outcomes of these learning experiences and strategies to measure these outcomes. This position calls for a paradigm shift in our characterisation of teacher learning, in general, and teacher learning in the context of PD programs that target mathematics pedagogy. In this new paradigm, teacher educators and professional development programmers need to bring teacher knowledge and its development to the centre of their programs and planning. My earlier analysis of the body of knowledge that mathematics teachers need to function effectively as practitioners provides us with a powerful theoretical lens that can be used to guide the design and assessment of teacher learning activities that are completed during PD programs.

A knowledge-based analysis goes beyond providing guideline for the PD requirements for teachers of mathematics. Currently, there are debates about lifting the professional status of teachers in general and, mathematics teachers in particular. While formal qualifications have traditionally been used to accredit teachers to the profession, this strategy has proven to be somewhat limited in identifying teachers who can provide high quality teaching and prepare to learn while in practice. The analysis of teacher knowledge that underpins exemplary practice, I would suggest, not only provides a more reliable index of teacher quality but is also useful in identifying individual learning areas for continuous professional development.

KNOWLEDGE-DRIVEN PD PROGRAMS FOR MATHEMATICS TEACHERS IN THE MALAYSIAN AND SOUTH EAST ASIAN CONTEXT

The Knowledge-based models for PD programs that I am proposing here are relevant to current debates about mathematics teaching in Malaysia and South East Asian countries. The National Education Blueprint for educational reform in Malaysia has identified a number of priority areas including making teaching a profession of choice and having high-performing
school leaders. Through this priority statement, the Government of Malaysia acknowledges that teachers are key stakeholders and instrumental in enhancing the quality of education that is provided by the system. In doing so, the status of teaching is being elevated and school leaders will be entrusted with responsibility to attract and retain student teachers of high calibre into the teaching profession. The implication for mathematics teacher and teaching is that the Ministry of Education and teacher education institutions ought to be developing strategies to recruit prospective teachers who are dedicated to their profession by demonstrating a commitment to continuous development. In this sense, one way to measure their dedication and commitment is to map the trajectory of their knowledge growth along the model of Mathematical Knowledge for Teaching as proposed by Ball.

The SEAMEO Regional Centre for Science and Mathematics Education (SEAMEO RECSAM) has recently engaged in an exercise that resulted in proposing a framework for developing mathematics teaching standards for South East Asian countries. One of the key dimensions of this framework is professional knowledge which attempts to unpack strands of knowledge that mathematics teachers need to better engage students from diverse socio-economic and cultural backgrounds. We could commence such an exercise by reconceptualising the constructs of SMK and PCK for ASEAN countries such that the framework is culturally sensitive and pliable for policy generation. The above initiative by international centres of excellence is timely and provides further evidence of the unpacking knowledge that girds mathematics teachers and aids in developing guidelines for recognition of the profession.

More generally, the quality of mathematics teaching, professional development and the support structures to enhance teacher knowledge should be evaluated against the background of steps that are afoot to increase the profile of mathematics teachers in Southeast Asia. Given that STEM workers are going to form a significant proportion of future workforce in knowledge-driven economies such as that of Malaysia, it is imperative that policy frameworks are put in place in order that the mathematics teaching profession is better resourced and rewards teachers who strive to build deep and sophisticated content and pedagogical knowledge. In this regard, teacher education institutions can be expected to play a leading role in researching and assisting the wider community to better understand this
body of knowledge. Major employers of mathematics teachers including the Ministry of Education Malaysia would be beneficiaries of results of Research and Development programmes that are initiated and sustained by teacher education institutions (IPGs) and public universities such as UiTM.

A further implication is the need for government and private-sector support for engaging the international community about cutting-edge research projects and findings in the teacher knowledge space. Our community works in a borderless world and there are multiple opportunities and resources to access and contribute to. The second half of the 21st Century is arguably an exciting period for mathematics educators in the Asia-Pacific rim countries to come together and explore useful paths for identifying mathematics talent and to better support our mathematics teachers of the future.

CONCLUSION

In this plenary, I have argued that current models of PD programs for mathematics teachers could be made to be more effective by directing our resources to attract high quality applicants for teaching positions, programs that target teacher learning and tasks that foster the development of a robust body of knowledge base. While there are several models of such knowledge, I suggest that the MKT model provides a powerful framework for conceptualising and assessing teacher learning in the context of providing more effective PD experiences. Future work in this space could aim to generate and analyse MKT sensitive activities for PD programs and their efficacy. Equally, mathematics teachers should be invited to engage in action research about the viability of this approach to better support their continuous growth as professionals. Towards this end, public universities such as UiTM, could assume a more central role in setting the agenda for policy making and generate innovative programs for future mathematics teachers.
REFERENCES


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