



# INNOVATIONS IN KNOWLEDGE AND LEARNING FOR COMPETITIVE HIGHER EDUCATION IN ASIA AND THE PACIFIC

Jouko Sarvi • Hitendra Pillay

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# Abbreviations

AQF	Australian Qualifications Framework
DMC	developing member country
EFMD	European Foundation for Management Education
HEI	higher education institution
ICT	information and communication technology
LIC	lower income country
LMIC	lower middle income country
MOOC	mass open online course
UNESCO	United Nations Educational, Scientific and Cultural Organization
WIL	work-integrated learning

## Executive Summary

Competitive advantage in a knowledge economy is dependent on the ability to innovate and create new knowledge products and services, and to find innovative applications for them. Higher education institutions (HEIs), traditionally, have been considered key agents for human resource development and thus strongly influence countries' capacity to innovate and become competitive. However, HEIs in Asia and the Pacific, modelled on industrial age thinking that demands excellence in routinized capacities, lack the ability to innovate and create new knowledge enterprises. Consequently, appreciating innovations and creative enterprise requires new lenses; replicating more of the same capacities will not be enough. The transition to a knowledge economy has situated the higher education sector amid an increasingly rapid transformation in education, across dimensions of purpose, content, pedagogy, and methodologies. Technology, social change, increased demand, and the decades-long trend of ever-increasing costs and very supply-side planning have left us with multiple challenges and the need to be highly innovative in an educational culture that tends to be wary of change.

The traditional thinking that HEIs are the sole custodians of knowledge and have the prerogative to determine what constitutes competitive knowledge, innovation, and creative enterprise is being challenged by external nontraditional stakeholders. Increasingly, industry and field experts, among whom much of new knowledge innovation happens, are becoming significant players in the higher education landscape—comprising teaching, research, and community engagement. Therefore, there is pressure to involve professional bodies, industry experts, think tanks, research institutes, and other field experts/practitioners in not just planning program content and delivery processes to stimulate knowledge creation and application, but also as alternative providers of higher education services.

The constructs and typologies of different knowledge types need serious review in order to produce higher education graduates who can be creative and innovate rather than merely excelling in performing routine tasks. Recent research suggests various insights concerning knowledge architecture and classifications aligned with the aspiration for a knowledge economy. Irrespective of the knowledge classification, the common message is a need for convergence of different knowledge types. The traditional model of "artificial separation of knowledge vs. skills" or soft vs hard knowledge and skills may no longer be relevant. Convergence helps us appreciate the integrated nature of knowledge as it is applied in an everyday context and is central to creativity and innovativeness—one cannot think in silos and be productive in a knowledge economy. This presents challenges for structuring higher education programs when traditional faculty boundaries and "conventional wisdom" regarding appropriate content are still very much the norm. Furthermore, research and analytical thinking can no longer be left to postgraduate work. In most developed

economies these types of knowledge innovation capacities are initiated in undergraduate programs.

Increasingly, recognition of new types of knowledge such as lived experiences, contextual knowledge, and indigenous knowledge has been accompanied by the emergence of constructs such as work-integrated learning, which is permeating all professional disciplines. The separation between formal and informal learning is also becoming blurred due to the ubiquity of knowledge and learning. Increased use of “recognition of prior learning” is being adopted to improve the efficiency of human resource development to provide “job-ready” graduates. The emergence of new disciplines such as creative industries is challenging traditional HEI faculties. The hegemony of global knowledge is also being challenged by nontraditional sources such as developing country, rural, and indigenous knowledge. Inclusive development through increased knowledge sharing between the Anglophone world and others is expanding the scope of knowledge products, services, and applications and changing the expectations of graduates entering the knowledge economy workforce.

Increased access and the ubiquity of knowledge creation and learning confounded by innovations in information and communication technology are disrupting the role of HEIs. The exponential increase in the rate and volume of knowledge products and applications may disrupt traditional structures and timelines of higher education programs if they are to cover the scope and breadth of the knowledge and skills expected of graduates. Flexible modalities, involving external stakeholders and a mix of credit and professional enhancement programs, are gaining recognition as a key part of future higher education service provision. Related to this is the rapid obsolescence of knowledge, which has spawned the growth in continuous professional development (CPD) programs, most of which are modularized and are either delivered online or are site based. To cover the breadth of knowledge types expected by the knowledge workforce, many HEIs provide not-for-credit programs in entrepreneurship and knowledge innovation as value adding and to differentiate themselves from traditional institutions.

The challenge of aligning higher education services (programs) with evolving labor market changes, and responding to knowledge-based economy of respective developing countries, has been difficult for many traditional universities. The majority of universities in the region tend to focus on transferring existing knowledge to produce workers who can apply routinized knowledge in bureaucratic organizations and highly structured private sector work environments. This may be appropriate for some lower income countries and lower middle income countries, but such a workforce can only replicate and sustain current economic activities, not innovate and transform to become competitive knowledge-based economies. To avoid economic stagnation of middle income countries and transform to a knowledge economy, the higher education system needs to go beyond current practices.



# Background and Context

The global discourse on social development and economic growth in the developing world is guided by a vision about knowledge-based economies wherein knowledge workers play an increasingly important role, and the centrality of “knowledge” underpins competitiveness.<sup>1</sup> The ability to innovate and create knowledge—and to find innovative applications of the same—is strongly influenced by the capacity of higher education institutions (HEIs). However, traditional models of HEIs in Asia and the Pacific lack this capacity, which is problematic in a dynamic region with a rapidly increasing number of middle income countries.<sup>2</sup> This dynamic growth creates a strong demand for investment in strengthening innovation and development towards a knowledge-based economy.

All over the world, labor market changes, urbanization, and demography have fuelled the boom. The migration of the middle classes into the cities has provided increased access to higher education, despite which rising numbers of young people are facing unemployment and—especially in Arab countries—combustible politics increase the need to offer opportunities to disillusioned youths. Increased access to traditional higher education and increased gross domestic product<sup>3</sup> growth do not directly translate to job creation or to increased employment and productivity. Therefore, with the ability to be innovative and create new jobs, knowledge-based industries will be able to provide a competitive advantage to HEIs.

The “knowledge economy” has increased the demand for workers with well-furnished minds who are able not only to apply existing knowledge, but also to innovate and create knowledge that stimulates new enterprises. We are in the midst of an increasingly rapid transformation in education, across dimensions of purpose, content, pedagogy, and methodologies. Technology, social change, increased demand, and the decades-long trend of ever-increasing costs and very supply-side planning have left us with multiple challenges and the need to be highly innovative in an educational culture that tends to be wary of change.

The challenge in higher education is stimulated by the need to focus more on increasing access to higher education, on student learning, and on opportunities to accelerate and improve learning in line with the needs of countries. The human resource capacity needs of countries cannot be determined by using knowledge lenses derived from the industrial

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<sup>1</sup> ADB. 2014. *Innovative Asia: Advancing the Knowledge-Based Economy—The Next Policy Agenda*. Manila

<sup>2</sup> Recent projections confirm that by 2020 only two countries in Asia and the Pacific are expected to remain low income countries (ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of Transforming Asia and the Pacific*. Manila).

<sup>3</sup> World Bank. 2012. *Special Focus: Creating Jobs*, Edition No. 7, December.

revolution or the information age. Therefore, any comprehensive analysis of access to student learning should also include revisiting the issues of how demand for knowledge and learning processes is changing and the ways HEIs can improve their organization and function to respond to the changing demands.<sup>4</sup>

In this context, the issues of knowledge can be summarized under three key understandings, discussed in the next section. These have implications across all the three key functions of contemporary HEIs: teaching and learning (knowledge construction and acquisition), research (knowledge creation and application), and community engagement (knowledge applications and value adding).

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<sup>4</sup> Higher education leaders in Asia increasingly express the need to focus on innovation in knowledge and learning. This was evident at the 2015 Asia Higher Education Leaders Summit, which the Asian Development Bank (ADB) organized in partnership with the University of Hong Kong. ADB presented issues of this paper in the summit. The paper incorporates feedback from summit participants. The analytical work and summit are activities of Regional Technical Assistance (TA-8303 REG): Partnership for Innovation in Education in Asia and the Pacific, financed by ADB.

# Innovation, Creativity, Inventiveness, and Entrepreneurship

Contemporary discussions around innovations in higher education tend to focus on developing graduates with attributes that allow them to be more innovative and entrepreneurial in order to deal with continuously evolving employment and business opportunities. Appreciating innovation and creative enterprise requires a new lens—replicating more of the same will not be enough. The supply-side model, wherein professors and universities serve as the sole authorities of knowledge and determine what should be the nature of competitive knowledge and what constitutes knowledge innovation and innovative applications, requires broader engagement of knowledge stakeholders. Increased participation by external stakeholders is necessary to inform what types of knowledge may be necessary in current and future higher education programs for them to be nationally, regionally, and globally competitive. Furthermore, questions are being raised such as, “Are these expected attributes and knowledge teachable or are they acquired as part of professional practice/lived experience?” To appreciate the challenges faced by HEIs, fundamental issues about what constitutes knowledge in a knowledge-based economy should be addressed, namely how such knowledge may be better conceptualized, created, acquired, and applied; what is the relevance of such knowledge; and what is the social life of such knowledge?

## Nature and Types of Knowledge

The traditional model of “artificial separation of knowledge vs. skills” may no longer be relevant. Instead, perhaps the nature of knowledge<sup>5</sup> should be described as conceptual (what: theory and principles), procedural (how to do things: skills and steps, social interactions), and conditional (when: knowing when to use what and how) knowledge, with each having equal importance. Such descriptions tend to conceive knowledge as a mix of theory, skills, and ability to optimize innovation and application at appropriate times and places.

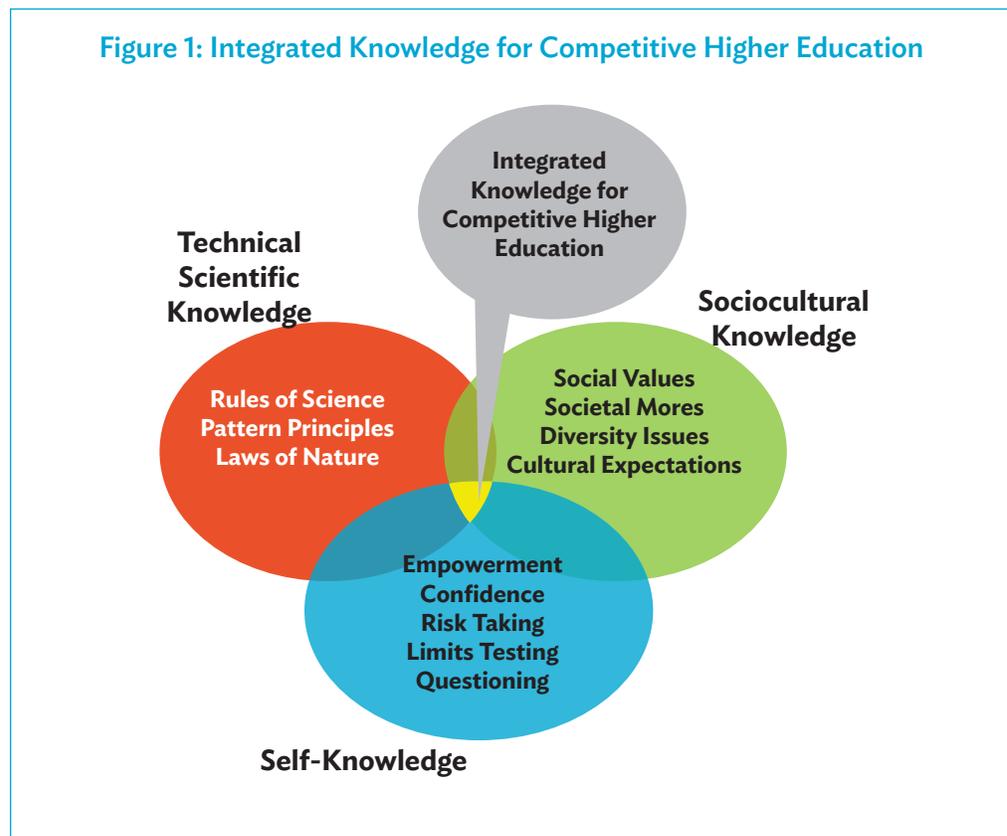
While the above classification is drawn from human cognition and learning theories, there are various other knowledge classifications in the knowledge literature that are informed by their respective theoretical paradigms. Irrespective of the classification, the common message is the need for convergence of different knowledge types. Convergence<sup>6</sup> helps us appreciate the integrated nature of knowledge as it is applied in everyday context,

<sup>5</sup> Polanyi, M. 1958. *Personal Knowledge*. London: Routledge; McCormick, R. and C. Paechter, eds. 1999. *Learning and Knowledge*, London: Sage.

<sup>6</sup> Currently, knowledge systems are presented as dichotomies, exclusive of one another, instead of seeking synergies to develop holistic understandings.

despite adding a dimension of complexity—one cannot think in silos and be productive in a knowledge economy. The level of convergence of knowledge currently seen in knowledge acquisition, creation, and application systems is very limited. The deterrent, unfortunately, is a consequence of the high diversification of labor (human resource capacity) during the industrial era. As we move away from the industrial era to a competitive, knowledge-based society, the traditional knowledge typologies, classifications, and boundaries need to be challenged to innovate and help HEIs to become competitive knowledge service providers. Figure 1 illustrates convergence of knowledge types derived from a critical theory<sup>7</sup> perspective. Technical and scientific knowledge noted in Figure 1 is often also referred to as “hard knowledge and skills,” and sociocultural knowledge and self-knowledge are referred to as “soft knowledge and skills.” There is an increasing call to balance the mix of these knowledge types, particularly in Asia and the Pacific higher education systems (Dobbs et al. 2012). The convergence portion of the three knowledge types is desired for a knowledge-based economy, but, as illustrated, this currently forms a very small part of higher education programs.

The convergence argument is perhaps best illustrated in the skills development literature. The traditional discourse of skills vs knowledge may no longer be useful. This distinction



<sup>7</sup> Modern critical theory has additionally been influenced by György Lukács and Antonio Gramsci, as well as by the second generation of Frankfurt School scholars, notably Jürgen Habermas. In Habermas’s work, critical theory transcended its theoretical roots in German idealism and progressed closer to American pragmatism.

reflected the nature of industrial (mechanical) jobs, which are being transformed to hi-tech, computerized jobs.<sup>8</sup> Labor-intensive small-scale farming is being transformed to highly mechanized, automated, large-scale cooperative farms; the manufacturing sector, which traditionally provided huge skilled employment opportunities, is being automated; the travel and leisure industry is becoming more self-service on the back of innovations in information and communication technology (ICT) and online business; even health services are changing, with more complex diagnoses being done by sophisticated equipment. These changes have reduced—and will continue to reduce—the demand for routinized skill-based human resources. Despite the above transformations, in majority of current higher education systems, complex knowledge innovation experiences are left to advanced postgraduate programs, with undergraduate programs limited to acquisition and routinized application of existing knowledge.

Knowledge typologies, such as the Australian Qualifications Framework<sup>9</sup> (AQF), acknowledge the complementarity of knowledge, skills, and application and recognize that this integrated capacity is necessary at all levels of any national qualification framework. The AQF starts at level 1 (basic vocational program certificate) and proceeds to level 7 (bachelor's level), with level 10 (PhD-level program) being the highest in the Framework. The Framework recognizes that a proficient medical surgeon requires both knowledge and skills just as much as an automobile mechanic, given that contemporary cars are highly computerized and have complex technologies; auto mechanics are the “new knowledge workers on the factory floor.”<sup>10</sup> Even in the sporting and entertainment professions, developing optimum human performance requires sophisticated knowledge, such as of human anatomy and physiology, to enhance sports skills and performance. Thus, the separation of knowledge and skills may no longer be a useful framework to conceptualize and support human capacity development in a knowledge-based society; it should center on the complexity of integrated knowledge types.

Another classification of knowledge that supports the development of a competitive higher education system is the transition of novice to expert knowledge competencies: undergraduate to postgraduate and postdoctoral students' capacities. This involves not only developing complex knowledge in a single domain, but also the ability to transfer knowledge across tasks, domains, and contexts. The expert-novice literature (e.g., Dreyfus and Dreyfus 1980) and the learning organization research literature (e.g., Sveiby 2001, Nonaka and Von Krogh 2009) recognize the importance of tacit and abstract theoretical knowledge as complementary and that all knowledge types are integral to developing human capacity to be creative and innovate. Furthermore, the above-noted paradigms acknowledge that all knowledge cannot be externalized and reduced to overt skills, thus posing a challenge for teaching and learning such knowledge. Abstract knowledge may be acquired and nurtured through institution-based, complex intellectual analytical works, whereas tacit knowledge is best acquired and nurtured through “lived experiences.”

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<sup>8</sup> ADB. 2014. *Innovative Asia: Advancing the Knowledge-Based Economy: Country Case Studies for the Peoples' Republic of China, India, Indonesia, and Kazakhstan*. Manila.

<sup>9</sup> Australian Qualifications Framework. <http://www.aqf.edu.au/aqf/in-detail/aqf-levels/>

<sup>10</sup> ADB. 2014. *Innovative Asia: Advancing the Knowledge-Based Economy—The Next Policy Agenda*. Manila

Related to the above is yet another classification: work-integrated learning (WIL). Contextual knowledge proponents argue that such knowledge is better learned in the workplace, where the knowledge is applied. As a consequence there has been an increase in WIL being mainstreamed in HEIs as a response to demand for "job-ready" graduates.<sup>11</sup> To appreciate workplace, contextual and applied knowledge, professional bodies are increasingly becoming an essential feature of university, faculty advisory boards. Professional organizations such as the Institute of Chartered Accountants, the Institute of Engineers, teacher registration boards, etc. directly advise faculties on appropriate content (discipline and professional) knowledge to be included in respective programs.

The increased interest in WIL has not been aimed at simply replacing formal methods (although this is often the result), but at better exploiting the limited time and budgets available to organizations so they can realize increased performance, greater employee development opportunities, and improved flexibility in the provision of learning opportunities to the workforce. Recent interest in WIL has followed the publication of research and survey data over the past 10 years indicating that workplace and informal learning offer an effective and efficient set of alternative options to improve workplace performance. This is confirmed by "situated knowledge" research, which shows that people learn most of what they need to know and do to perform well in their jobs through experience, not through off-the-job classroom-based learning.

## Applications of Types of Knowledge

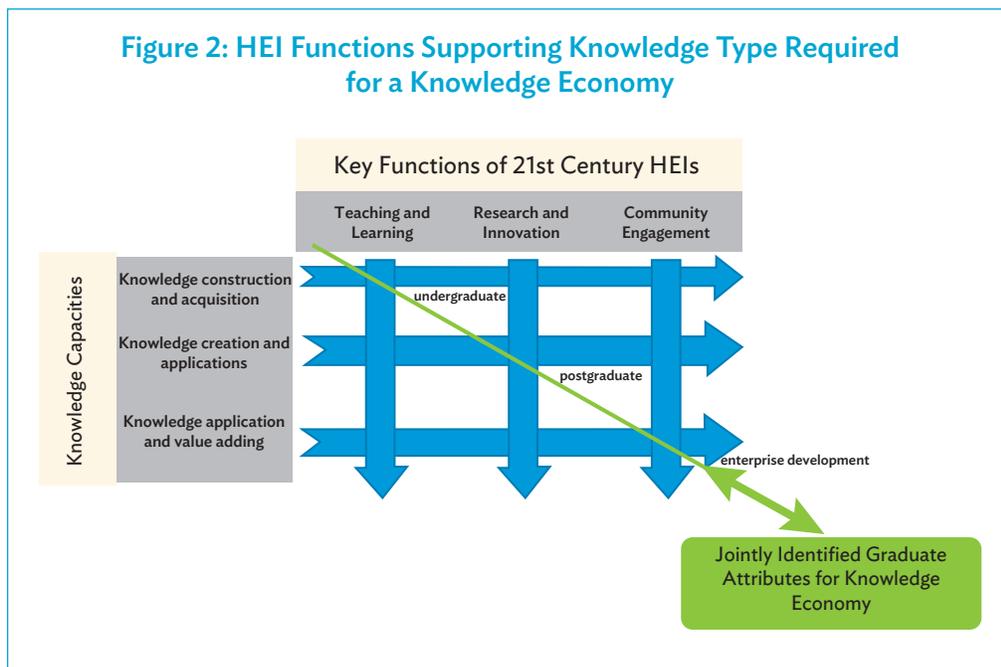
These knowledge classifications have significance for HEIs in helping them to be responsive in preparing human resources for a competitive knowledge-based society. The current teaching and learning process focuses on merely transferring and replicating existing knowledge to undergraduate students, but preparing the mass population for routinized work may not prepare the bulk of HEI graduates to become knowledge workers with innovative and creative minds. The challenge of aligning HEI services with evolving labor market changes and responding to the economic development of respective developing member countries (DMCs) has been difficult for many traditional universities.<sup>12</sup> The majority of universities in the region tend to focus on transferring existing knowledge to produce workers who can apply routinized knowledge in bureaucratic organizations and highly structured private sector work environments. This may be appropriate for some lower income countries (LICs) and lower middle income countries (LMICs), but such a workforce can only replicate and sustain current economic activities, not innovate and transform to become competitive knowledge-based economies. To avoid the "middle income trap" and transform to a knowledge economy, the higher education system needs to go beyond current practices.

<sup>11</sup> A European Union-commissioned study noted that a wide range of terms are used interchangeably for the concept of WIL, which leads to some confusion associated with what WIL means in certain contexts and the form that WIL should take to achieve its learning outcomes. A narrow interpretation of WIL relates to learning in the workplace that is driven by employer interests, whereas a broader perspective emphasizes learning that relates to work and is driven by individual and societal needs. Retrieved 26/7/15 from [http://ec.europa.eu/education/opportunities/higher-education/business\\_en.htm](http://ec.europa.eu/education/opportunities/higher-education/business_en.htm)

<sup>12</sup> ADB. 2011. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to Mongolia for the Higher Education Reform Project*. Manila (L2766-MON) The paper notes that one of the main problems with the higher education sector is the mismatch between its programs and labor market demands.

Figure 2 illustrates the current three key functions of contemporary higher education and how those functions contribute to three knowledge capacities: construction and acquisition, creation and applications, and application and value adding. These knowledge capacities are typically aligned with particular functions of HEIs and assume discrete provision and a stepwise linear progression model for the development of human resource capacity. As illustrated, the graduate attribute indicators push back, driven largely by potential employers' pressure for urgent reform of higher education systems. HEIs are increasingly being asked by public and private sector financiers and regulators to benchmark their curricula and syllabi against employer standards (e.g., those established by employers' associations or professional bodies) to improve employability and to meet employer needs (Bennett and Kane 2009).

The disruptive approach, triggered by the knowledge economy, necessitates accelerating exposure to the second and third knowledge capacities in Figure 2, which are currently left mostly to postgraduate and postdoctoral work. In many Organisation for Economic Co-operation and Development countries, this recognition for convergence of knowledge is increasingly changing undergraduate programs to include research and analytics, integrated as early as possible in the program. The rethinking of undergraduate programs is partly a consequence of employers seeking graduates with not just existing scientific and technical knowledge of disciplines, but also with creative minds that can innovate. The need for early exposure to complex reasoning and analytical capacities is being introduced, not merely at the undergraduate level, but is also being extended into upper secondary and other postsecondary programs, such as technical and vocational education and training programs, which are the supply channels for HEIs.



This demand triggered the emergence of programs in entrepreneurship,<sup>13</sup> innovation, creative thinking, and leadership being considered central to postgraduate university programs, but these need to be extended down into undergraduate programs or as optional programs that offer value-adding experience to differentiate from the standard traditional universities. Special research pathways are provided to students much earlier, such as project-based innovation experiences that develop capacities in making inferences, applying inductive and deductive reasoning, research logic and understanding causality relationships, and self-directed and lifelong learning capacities.

The reconceptualizing of knowledge systems has also seen innovations in program design, such as the unbundling of traditional university programs and qualifications to provide more flexibility. Increasingly, modularization of programs allows people to choose parts of a program or modules to suit particular demands—to test out modules or to accelerate through the program, etc. Modularizing also helps to share the teaching with external stakeholders and industry partners, and this flexibility fits well with the WIL<sup>14</sup> modality. Organizations are exploring new approaches for employee development that are not tied to the formal structured methods around the classes-courses-curricula model. In part, this interest has been driven by economic considerations. Pressure to lower training costs and reduce budgets for travel and off-work time has been a major factor. But the focus on WIL is also being driven by the realization that the majority of adult learning occurs not through formal learning but through experience, practice, conversations, and reflection in the workplace. As noted earlier, people learn better through a mix of doing and knowing experiences. Added to this is an emerging appreciation of the important role that context and aspirations play in any learning.

Modularization also allows changing selected parts of a course quickly to respond to specific labor market demands without having to go through the extended course revision process typically adopted by universities. HEIs need to realize that they are service providers, so, while ensuring that quality is maintained, they also have to be responsive. Modularization also fits well with corporate programs and continuous professional development programs, which have no academic credit but are necessary for maintaining the currency of professional knowledge—which is evolving all the time. Considering the rate of knowledge innovation, updating professional knowledge through continuous professional development (as opposed to postgraduate programs) is increasingly becoming a significant part of university business.

The convergence of sociocultural and self-development knowledge, noted in Figure 1, has implications for how the different types of knowledge are structured in higher education courses to improve and prioritize pedagogical approaches and to help students learn to apply the different types of knowledge. For example, the practice of medical doctors is increasingly expected to include the doctor's role and contribution as a health educator.

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<sup>13</sup> The Asian Development Bank (ADB) and Hong Kong University (HKU) jointly hosted the Higher Education Summit in 2015 and presented the new voluntary programs provided by HKU. Such programs attract cross-discipline participants, and the experience increases the employment opportunities of graduates (see <http://www.up.co/communities/china/hong-kong/startup-weekend/5320>). Similar initiatives can also be seen in developed countries such as Australia (see <http://www.egradschool.edu.au/>).

<sup>14</sup> [http://ec.europa.eu/education/tools/university-business\\_en.htm](http://ec.europa.eu/education/tools/university-business_en.htm)

Thus, in medical practice programs, doctors need soft knowledge and soft skills, e.g., to support preventive health and reduce public health expenditure.

Similarly, professional competencies that often shape university programs are being reconceptualized to achieve an optimum mix of knowledge types, such as a combination of discipline knowledge and professional knowledge.<sup>15</sup> In teacher education, the mix of discipline knowledge (such as mathematics) and professional knowledge (pedagogical practice) needs to be reassessed. Currently, most teacher professional standards do not consider discipline knowledge and only focus on pedagogical practice.

## Relevance of Knowledge to Current and Future Needs

Access to knowledge has reached levels unprecedented in human history. Consequently, the volume of knowledge required of workers increases, which, in turn, speeds up the pace of developments that can impact careers. This increased volume of knowledge is not just quantitative, but also qualitative, hence the need for convergence of knowledge types to develop complex, connected understandings to allow adaptation to new career/professional specializations as demand changes. Packaging this increased knowledge in existing time-bound university programs<sup>16</sup> requires innovative thinking to ensure that essential core knowledge is not diluted, yet new knowledge types are fully accommodated within programs. Perhaps we should increase the time required for undergraduate degrees, or review and prioritize the types and capacities of knowledge that should be included in an undergraduate program to prepare graduates with high innovation and creative capabilities. We should also consider the knowledge that may be packaged as continuous professional development as supplementary yet necessary to retain license to continue providing professional services. Also, mechanisms for crediting knowledge acquired through non-traditional institutions, such as recognition of prior learning, should be considered to avoid unproductive repetition and increasing costs for the learner. The continuous increase in knowledge makes time a premium and a challenge for HEIs to accommodate this growth in knowledge.

Simultaneous with increased access, the rate of knowledge innovation is increasing exponentially, which requires universities to constantly adjust their programs. The traditional university governance model, with its protracted process of course development and approval, is increasingly being seen as a hindrance by HEIs that want to be responsive and competitive. For example, in gene research, the rate of discovery based on research into gene variants for common diseases is increasing rapidly, with one or two discovered in a year beginning in 2000, whereas thousands were discovered in 2007. This knowledge reorients the entire medical system from one where patients are treated once they are sick to one where patients are treated for what they are likely to develop as a result of their genetic makeup. This shift to preventive medicine including health education and

<sup>15</sup> ADB. 2014. *Creative Productivity Index: Analyzing Creativity and Innovation in Asia*. Manila.

<sup>16</sup> Council of Europe. 1997. Convention on the Recognition of Qualifications Concerning Higher Education in the European Region. Lisbon on 11 April. (see <http://conventions.coe.int/Treaty/EN/Treaties/Html/165.htm>). Also known as the Lisbon Recognition Convention.

counselling can save millions of dollars in health budgets and also encourage a healthy and more productive lifestyle. The reverse of this rapid rate of knowledge innovation is knowledge obsolescence—the other side of the same coin. This phenomenon is particularly important for HEIs in LICs and LMICs, where continuously transitioning to new knowledge systems can be expensive and thus slows down the development of necessary human resource capacity.

Parallel with changes in society, the rapid growth of the service sector is predicted to continue exponentially. This has encouraged universities to establish new areas of studies in higher education such as a faculty for creative industries. Kings College, London<sup>17</sup> and others now have such special programs. Creative industry is a convergence of traditional performing arts, drawing, and graphics with ICT and digital entertainment such as game design that has changed the perception of the traditional subjects in this area while creating a separate industry that contributes to national economic growth (see Potts 2011).

The relevance of current western hegemony over global knowledge and professional practices is being challenged. This is particularly important, given the shift in geopolitics and global economics and the rapid economic growth in many emerging economies. Concomitant with the above is increased access to knowledge products emerging from non-Anglophone sources. For example, Chinese<sup>18</sup> and Indian traditional medicine practices are increasingly gaining recognition in the West and are gradually being included in formal academic medical programs. Related to the above is the recognition of lived experiences of indigenous people as legitimate knowledge. Indigenous knowledge, and knowledge from developing economies, were discredited in the past but is now increasingly seen as an important type of knowledge that is helpful in particular fields. Inclusive development warrants consideration of indigenous knowledge as part of the knowledge mix,<sup>19</sup> as indigenous knowledge now informs options for sustainable living and environmental management (Merriam and Kim 2005).<sup>20</sup> This has implications for developing countries seeking to emulate progress based on culturally, and economically, different benchmarks.

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<sup>17</sup> <http://www.kcl.ac.uk/artshums/depts/cmci/index.aspx>

<sup>18</sup> Center for Behavioural Health (see [http://cbh.hku.hk/about\\_people.html](http://cbh.hku.hk/about_people.html)). During the ADB/HKU jointly sponsored Higher Education Summit, Prof. Chan discussed how traditional Chinese medicine and wellbeing practices are used to support palliative care in Hong Kong, China.

<sup>19</sup> ADB. 2014. *Creative Productivity Index: Analyzing Creativity and Innovation in Asia*. A study report prepared by the Economic Intelligence Unit for ADB. Manila.

<sup>20</sup> Merriam and Kim argue that, historically, “we have labelled cultures as retrograde for having a larger cosmology embedded in mythic structures” and, in so doing, have “established western scientific thinking as superior to the thinking of other existing cultures.” Only recently have we witnessed a growing interest in learning as embodied, spiritual, or as something structured by a wholly different worldview. The notion that knowledge itself is fundamentally different in Western and non-Western systems leads to a difference in how knowledge is constructed, how people learn, and the best way to instruct, i.e., how to enable people to learn what they need to know.

# Innovation in Leveraging the Ubiquity of Knowledge and Learning

Knowledge creation, sharing, and application may no longer be the privilege of HEIs due to an exponential increase of new and nontraditional stakeholders involved in the knowledge enterprise. The ubiquity of knowledge creation and learning disrupts the role and function of traditional higher education systems. This disruption is fuelled by the fact that the majority of cutting edge knowledge innovations increasingly occur outside HEIs, and it usually takes some time before the new knowledge is integrated into higher education teaching. This disconnect between HEIs and non-higher education knowledge enterprises has also contributed to dissatisfaction expressed by employers regarding the quality of graduates produced by HEIs. The ubiquity of knowledge has given legitimacy to knowledge derived from lived experiences or practitioner knowledge. Lived experience provides new knowledge and capacities to developing competitive solutions to enhance the socioeconomic growth and development of countries. Therefore, there is increasing pressure to involve professional bodies, industry experts, think tanks, research institutes, and other field experts/practitioners in knowledge creation and application.

Engagement with external partners to support knowledge creation may be achieved through knowledge incubators,<sup>21</sup> WIL, and the role of field experts.<sup>22</sup> Working with "real world" people through partnerships helps to build experience and apply knowledge meaningfully to benefit humankind, e.g., through situated learning, authentic projects, problem-based learning, and cross-discipline development activities. The Europe 2020 strategy puts the quality and relevance of education and training systems at the heart of European Union efforts to improve competitiveness and achieve smart, sustainable, and inclusive growth. The development of partnerships between HEIs and employers is seen as a critical factor in identifying learning requirements, improving the relevance of education, and facilitating access to education and learning.

Nontraditional institutions such as the United Nations Educational, Scientific and Cultural Organization (UNESCO)<sup>23</sup> now offer master's level academic programs ranging from environment and water management to education management. The legitimacy of UNESCO to provide formal degree programs is perhaps its long involvement in global education. These programs are accredited by the Accreditation Organisation of the Netherlands and

<sup>21</sup> Traditionally, incubators were attached to HEIs, but recognition of the importance of intellectual capital and knowledge innovations has led to a shift to industry, and HEIs have to establish partnerships to use industry facilities.

<sup>22</sup> Joonghae, S. and D.H.C. Chen, eds. 2007. *Korea as a Knowledge Economy: Evolutionary Process and Lessons Learned*. Korean Development Institute and the World Bank Institute, August.

<sup>23</sup> <https://www.unesco-ihe.org/msc-programmes>. UNESCO currently offers four accredited master of science programs with 17 specializations.

Flanders.<sup>24</sup> Similarly, the European Foundation for Management Education (EFMD)<sup>25</sup> is a membership-based umbrella organization with more than 800 member organizations from academia, business, public service, and consultancy in 81 countries. Affiliated members may deliver programs approved by the Foundation, which also acts as an international accreditation agency for management degree programs. The Audencia Foundation began as a commercial enterprise, was granted HEI status, and now operates as a business school, delivering programs accredited by EFMD.

More recently, multinational development companies have registered as training organizations and offer professional development programs in development studies.<sup>26</sup> Their credibility to provide this service lies in decades of knowledge and experience acquired by working in the development area. Some traditional HEIs are partnering with these companies to enhance the employability of their graduates.

HEIs are also being challenged as premier sites for knowledge creation and innovation. Not-for-profit organizations like the Arbor Research Collaborative for Health, situated at Michigan State University, Ann Arbor, Michigan, USA, improve clinical practices, patient outcomes, and health-related public policy through national and international research projects. The Arbor Research Collaborative has multidisciplinary teams of clinicians, biostatisticians, policy analysts, data and project managers, programmers, and other professionals who share a passion for high-quality, evidence-based research and take pride in collective achievement. In Singapore, the Singapore Government established the Agency for Science, Technology and Research—functionally outside its national higher education system—to help pursue training of personnel to transition to the growing biomedical knowledge-based economy.<sup>27</sup>

This ubiquity has also led to the blurring of boundaries between formal and informal knowledge, particularly in continuous professional development programs, creating a new approach called “learning while working.”<sup>28</sup> Already we are seeing many traditional HEIs faced with two simultaneous trends—declining enrollment and price deflation—driven by the availability of alternative paths to education. Those institutions that are not prepared for this, that are not willing to be at the forefront of innovative practices, will find themselves in very difficult circumstances. In light of the above, the usefulness of institutional structures in higher education in the 21st century, for example the university grants commission model (a remnant of the British colonial era), needs to be reconsidered for appropriateness. In recent years, national quality assurance agencies have been formed to monitor the quality of higher education services including student learning outcomes and the quality of programs. The traditional higher education structure also inhibits knowledge innovation by retaining the silo structures of traditional faculties and an overcompliance and risk-averse culture—the latter is the antithesis of innovation.

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<sup>24</sup> [http://nvaio.com/about\\_nvaio](http://nvaio.com/about_nvaio)

<sup>25</sup> <https://www.efmd.org/>

<sup>26</sup> [http://www.grminternational.com/files/documents/GRM\\_Training\\_Courses\\_April\\_-\\_June\\_2015.pdf](http://www.grminternational.com/files/documents/GRM_Training_Courses_April_-_June_2015.pdf)

<sup>27</sup> ADB. 2014. *Innovative Asia: Advancing the Knowledge-Based Economy—The Next Policy Agenda*. Manila

<sup>28</sup> Pillay, H. and A. Ninan. 2014. *India's Vocational Education Capacity to Support the Anticipated Economic Growth*. Report commissioned by BHP Billiton Ltd, Singapore. [http://www.eprints.qut.edu.au/view/person/Pillay,\\_Hitendra.html](http://www.eprints.qut.edu.au/view/person/Pillay,_Hitendra.html). The study covers several Asian countries and presents a comparative analysis of the changing demand for continuous professional development to keep pace with new knowledge and its applications.

Finally, the current debate regarding massive open online courses (MOOCs) is interesting in a number of ways. Massachusetts Institute of Technology data show that the majority of users are seeking knowledge and not formal credit. The escalating cost of university education is encouraging students to take advantage of free or low-cost opportunities and to seek credit transfers later. The analogy of iTunes is often used to illustrate the changing habits of higher education consumers. People prefer to purchase individual songs (at lower cost) to suit their tastes, rather than purchasing whole albums. Similarly, more customized knowledge acquisition, innovation, and application facilitated by ICT innovations seem to be the future of HEIs.

Typically the custodians of knowledge have been the HEIs, hence the debate about who will accredit MOOCs and open courseware programs and how they will be certificated. As noted above, foundations like EFMD, which are independent of any HEI but can access advice from international experts, have demonstrated that it is the program, not the institution, that is accredited for quality. This approach is not new; the emergence of such independent bodies resembles the situation that led to the establishment of the professional guilds in England during the Industrial Revolution.

# ICT-Stimulated Knowledge Innovation Options for Strengthening Capacity and Competitiveness of HEIs

Continuous and significant innovation in information technology (i.e., access to devices; connectivity designs; delivery modalities; knowledge storage options such as the web, global clouds, local clouds, and special repositories; and other capacities of information technology applications) is disrupting the traditional way of providing higher education services. These technology-based innovations are creating increasingly attractive alternatives to existing systems of education, and stakeholders are gradually learning how to take advantage of them. Currently, some aspects of higher education participation are driven by habit—by the simple inertia that causes us to behave the way we have always behaved—but the many technology-led innovations that are developing around us are changing stakeholder habits.

ICT has privileged society to access vaster amounts of information and knowledge than ever before (e.g., through open education resources, open access journals, and other open access and proprietary repositories). Apart from providing access to these knowledge products from different locations, the technology has also privileged knowledge workers to access aggregated repositories to accelerate knowledge innovation work and reduce inefficient and protracted surfing on the Internet. These knowledge repositories are increasingly becoming a central part of all knowledge enterprise. Google and other ICT innovators are developing and refining language translation tools to facilitate knowledge sharing to help increase the bidirectional flow of knowledge between developed and developing economies. Such opportunities, coupled with the increasing acknowledgment of indigenous and developing country knowledge, can help Asia and the Pacific HEIs leapfrog innovations and increase their competitiveness.

The previous section noted that ICT has not only increased access to knowledge products but has also influenced the underlying higher education pedagogy. It has progressed pedagogy beyond just learner-centered and face-to-face paradigms.<sup>29</sup> Both previous models are externally (teacher or instructor) driven, but having increased access to knowledge products has significantly encouraged, and made possible, self-directed learning and lifelong learning, the new learning paradigms. While technological innovations and innovative delivery models have also helped reach the masses, 21st century students have different expectations and seek more customized opportunities for individual study needs and for specific purposes. This may redefine how functions of HEIs are expected to evolve from the increasingly outdated model of an educated workforce that was established for mass production after the Industrial Revolution. Early recognition of the advantages of ICT

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<sup>29</sup> *Future of the University*, October 7, 2014. Financial Times.

and of embracing the new pedagogical paradigm will provide the advantage to become innovative and competitive. Also, as noted earlier, a lot of knowledge innovation does not happen in classrooms, so the capacity for self-directed learning can help knowledge innovation occur anytime as long as one is connected to some knowledge database.

Innovations in higher education need to understand and utilize these new opportunities made available due to technological advancement, and to move beyond the rather narrow vision that aims to increase the use of ICT for online delivery of teaching only (which is important, but can inadvertently limit other aspects of ICT for knowledge creation). ICT has the potential for knowledge innovation at two levels: First is the potential for developing new capacities of the technology (new devices as well as new software), and second is how these may be used to help create new knowledge in other disciplines such as tele-medicine. Leveraging ICT to gain a competitive advantage in higher education should adopt an integrated approach<sup>30</sup> that enables institutions to maximize benefits to all three core functions of HEIs: teaching, research, and community engagement. ICT has made traditional knowledge networks and knowledge forums, such as conferences, more effective and visible through ICT inventions. A knowledge network is more than a repository of knowledge products; it is active and alive and is supported by intelligent analytics with the capacity to engage and stimulate knowledge innovations and conversations. These knowledge networks may be closed- or open access depending on the stakeholder perceptions of collaborators and competitors. Forming mutually beneficial alliances and partners (particularly nontraditional partners) is essential to becoming, and remaining, competitive.

Initially, ICT innovation helped western universities<sup>31</sup> to delivery higher education services to students in Asia and the Pacific. However, with growing recognition of eastern knowledge, there is an increasing flow of students from the West and other parts of world, such as the Middle East, seeking knowledge and experience in HEIs in Asia and the Pacific. Bhandari and Lefébure (2015) edited a book that recognizes both the potential and the challenges created by a shift in the center of gravity in higher education to Asia, where more than half of the world's population live. ICT, through capacities such as language translation and online access, has developed awareness and stimulated interest in mainstreaming indigenous and non-Western knowledge, which has partly contributed to the reverse flow of HEI students. The student flows for study abroad occurring from Asia and the Pacific to universities in Western countries are reversing, and a "counterflow" trend is developing: The number of students from outside Asia seeking to undertake their degree study (or part of it) in Asia is steadily increasing.

Furthermore, tier-1 universities in DMCs, by exploiting technology capabilities, have also increased knowledge sharing within their countries, albeit very slowly; plus rural knowledge and practices are being supplemented with contemporary global knowledge to enhance the competitiveness of tier-2 and tier-3 HEIs. Despite the promotion of inclusive development,

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<sup>30</sup> ADB. 2015. *Integrated ICT Strategies for Competitive Higher Education in Asia and the Pacific*. Manila.

<sup>31</sup> MOOCs are typically university-based initiatives and are intended to provide internationally recognized higher education services to students who have access to ICT—which in developing countries is mostly in urban centers. This also requires conducting a global talent search and inviting the best and brightest to on-campus programs—identifying and recruiting global knowledge innovators.

these ICT-supported partnerships often have an upward trajectory—they look to more progressive national and international HEIs as knowledge innovation partners.

Finally, ICT tools such as "cloud" computing and "big data" research provide HEIs with a competitive advantage in knowledge enterprises. They also allow HEIs from LMICs to leverage industry tools and intellectual property as partners, which otherwise would not be possible on their own.

## Final Remarks

The changing hegemony of global knowledge, and the significance of the ability to continuously create knowledge to remain competitive, require a new set of lenses to review the higher education subsector. These include structural arrangements like external partnerships to provide optimum opportunities to innovate and apply knowledge; scope, types, and mix of knowledge included as program content to ensure that graduates have the right mix of technical, sociocultural, and self-development knowledge types; options for delivery modalities to encourage, not just knowledge acquisition, but also knowledge innovation; and teaching staff to have a mix of scientific knowledge and knowledge derived from lived experiences. Studies and projections increasingly see Asia becoming the global leader in higher education development and delivery in the future (see Bhandari and Lefebure 2015). This adds pressure for Asian HEIs to be innovative and to continuously evolve to meet local, regional, and global demands.

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## **Innovations in Knowledge and Learning for Competitive Higher Education in Asia and the Pacific**

Higher education institutions in Asia and the Pacific are modeled on industrial age thinking that promotes routinized capacities and lacks the ability to innovate and create new knowledge enterprises. The transition to a knowledge economy is affecting the purpose, content, pedagogy, and methodologies of higher education. Nontraditional stakeholders such as professional bodies, industry experts, think tanks, research institutes, and field experts/practitioners are now involved not only in planning but in providing higher education services. The traditional model of “knowledge versus skills” is no longer relevant. Higher education programs must consider lived experiences, contextual knowledge, and indigenous knowledge.

### **About the Asian Development Bank**

ADB's vision is an Asia and Pacific region free of poverty. Its mission is to help its developing member countries reduce poverty and improve the quality of life of their people. Despite the region's many successes, it remains home to the majority of the world's poor. ADB is committed to reducing poverty through inclusive economic growth, environmentally sustainable growth, and regional integration.

Based in Manila, ADB is owned by 67 members, including 48 from the region. Its main instruments for helping its developing member countries are policy dialogue, loans, equity investments, guarantees, grants, and technical assistance.

