The Reconstruction of Higher Education Leadership in Cambodia: A Professional Development for Quality Teaching and Learning

[1]Dr. Teck Choon TEO, DBA

[1]*Assistant Professor in Business*
American University of Phnom Penh, Cambodia

Abstract

In this paper, the author traces the steps necessary to initiate reorganization in higher education. First, the introduction of the Cambodian education system from the lens of knowledge society and practice model of education currently adopted in developed ASEAN education systems. Next, the author suggests a framework for reconstruction of higher education leadership in Cambodia as the guiding measure of the "21st century learner" model in the higher education. Lastly, proposes recommendation for carrying out this strategy.

Keywords*: 21st century skills, learning sandbox, assessment models, future entrepreneurs, collective leadership*

I. INTRODUCTION

In higher education, research is a priority in most countries because of its power of transformation. Knowledge is indispensable and it promises a better life for not just for individuals, nations, and the world. How research is organized differs across the world. There are two dominant models vis the first, with a longer tradition, originated from Western Europe. The Fraunhofer Society is Europe's largest applied research institution which enables application-oriented research to commercial products and industrial processes. Each Fraunhofer institute specializes in a specific technology. Interestingly they gravitate towards innovation and enhancement of prevailing processes and products. Invariably this research institutions shapes the economy and the competitiveness of the economy. On the other hand, the American model, where research institutions were not state-funded and played a non-pivotal role in scientific research, contributing typically to agronomy and public health. Subsequently, the intercourse of university-led research and state funding brought about significant scientific and technological breakthroughs, for example the radar, penicillin, the computer, jet propulsion and then the atomic bomb, which won the war for the Allies and changed the course of history. Today, universities are viewed largely as a collegiate faculty who conducts research and teaches students.

The Cambodian education system before the Khmer Rouge regime mirrored the French system, following more of a westernised educational model. In 1998, the Ministry of Education (MOE) was created, and later restructured in 1998. The primary focus of the education system is on basic literacy, but over the years, legislation is put in place to better regulate a new education system. Although a budget is allocated to education by the Ministry of Economy and Finance, it is evident that more can be done so as to alleviate the problem. For Cambodia to play catch up with the more developed educational system within ASEAN (Association of Southeast Asian Nations) like Malaysia and Singapore. Cambodia must establish a good foundation in research and development. To sharpen the competitiveness of local industries, the leadership in higher education must establish a similar Fraunhofer model in which bridges the academia and industry in research and development.

There is a plethora of literature written over the last decade on what skillset students in the 21st century need to be successful, and how those transferable skills contrast with the ones promoted by previous generations. Job tasks that are routine or mundane in places of work are becoming more extraneous (Voogt and Roblin, 2012), gravitating towards a complex and critical thinking skills in commerce and industry. According to Voogt and Roblin, a 21st-century skill set needs to be "associated with higher order skills and behaviorus that represent the ability to cope with complex problems and unpredictable situations" (2012, p.300). In a digital economy, it is crucial for students to be comfortable in harnessing technology in work or social space, it is imperative for students to employ other skills like interpersonal and communication skills. What is ostensible for learners is the capacity to relate to each other vis from interpersonal to intellectual learners. The notion of relationships and respect being interconnected with academic and technical knowledge is enunciated in an increasingly globalized society and economy which was absent in the previous generations. The arena for our students today is far larger than it ever was. Today's students are an integral part of a "knowledge society" (Voogt and Roblin, 2012, p. 300). This leads to a question, what kind of knowledge must 21st century learners possess in order to survive and navigate this new world; but also know about how to relate to, understand, and communicate with people toward a successful end?

II. LITERATURE REVIEW

Extant literature has indicated that the 4-C's of 21st century skills namely critical thinking, communication, collaboration and creativity are inherently important in the development of a competent knowledge worker (Wilson, 2009; Davies et al., 2011; OECD, 2012; FYA, 2015). It is subsumed that the curricula and extra activities that are student centric have a positive impact on knowledge acquisition extend an active dimension to the pedagogy of student involvement. Allowing students to participate in student-motivated learning opens up avenues of meaningful lifelong skills and experiences. The P21 Partnership for 21st Century Learning (n.d.) articulated that the 4-C's are the essential skills for 21st century learnings. Kereluik, Mishra, Fahnoe, & Terry (2014) extended this definition further by conducting an analysis of 15 frameworks of 21st century learning. They were able to synthesize the frameworks by creating them into a single visual image, which brings the foundation and meta knowledge together. Mishra & Mehta (2016) reiterates that the building block of each model is not superior to the other, it must be cultivated in a student's learning journey simultaneously.

According to Häakkinen et al, (2017) the skills unveiled in the 21st century student (4-C's) are not new to humanity. In particular it is the element of creativity that has enabled people to adapt and survive (Jerome, 2019). Precisely the 4C's are old skills but must be curated in different ways for issues in the 21st century (Voogt & Roblin, 2012). At the metaphorical curtain call, teachers should provide students with the necessary tools as delineated in the 4C's not only for personal satisfaction but in the advancement of humankind. Additionally, Students can also spark the joy of learning while doing it and feel proud of themselves. That is the beauty of the theatre classroom and a student-directed production.

Hamid, Alasmari, & Eldood, (2015) explain inclusion as an educational practice founded on a notion of social justice that advocates access to equal educational opportunities for all students regardless of the presence of a disability. Inclusion embraces students with disabilities learning with their peers in regular schools that adapt and change the way they work in order to meet the needs of all students. Further, Huskin, Mundy, and Kupczynski (2016) suggest that inclusion has become standard practice in classrooms around the world, and teachers must address the educational needs of students with a wide variety of learning styles and (dis)abilities. Success in meeting those needs be contingent on the degree to which that teacher has a positive attitude toward inclusive education (O'Toole, & Burke, 2013; Sari, Celikoz, & Secer, 2009).

In a different vein, students also learn intuitively because of the learning-teaching environment they are in (Richardson, 2014). Against the deep changes happening in universities, it is not surprising that the relationships between learning outcomes, learners' study behaviors, learners' perceptions of their learning environment and their demographic background have tremendous learning impact on students. The learning-teaching environment includes for example involvement in learning, cooperation and responsibility for learning. Additionally, learning outcomes are related to learner characteristics, such as attitudes towards learning and self-efficacy. Self-efficacy is a person's belief in one's ability to succeed in specific situations. Hence student's self-efficacy can play a major role in how they approach goals, tasks, and challenges. The learning and teaching environment also encroaches on learner's perception. In other word, classrooms and teachers determine how the learner learns and behaves. If learners are stimulated to apply what they have learned; if they are enthused to connect and engage with ideas; if they are inspired to ask questions that go beyond what is written in the curriculum. This then is called deep learning which is desirable. On the contrary, if learners are asked to memorize from the textbook; if they are expected to recite or regurgitate what teachers have told them, then this is known as surface learning. Most schools face the quandary of how to assess the learners. Does assessment evaluate deep learning or rather reinforce surface learning? Learners often behave according to what is expected and adapt their learning to the assessment. This could mean that learners engage in surface learning because that is the only way to gain marks.

III. RESEARCH QUESTIONS (RQs)

To guide this study, the following RQs were proposed.

1. What are the innovative and entrepreneurial skills needed in higher education for job creation?
2. What are the teaching strategies required for the acquisition of innovative and entrepreneurial skills in higher education?
3. What are the factors that pose challenges for the acquisition of entrepreneurial skills in higher education for job creation?

IV. METHODOLOGY AND DATA COLLECTION

After giving informed consent, 34 participants volunteered to take a survey to explore their attitudes toward higher education leadership in Cambodia with a view of developing capabilities in quality teaching and learning in the knowledge economy. They were assured their responses were anonymous but were asked for their mother's maiden name as a way to match up their pre and post data, since matched responses were required for the appropriate analysis. No demographic data were collected

The survey used was created and validated by Lambe and Bone (2006), the original survey contained 27 statements but was condensed for this study because the majority of the questions were designed to illicit responses related to Ireland's education culture's

reaction to a near complete restructuring of the Irish educational structure. The original survey used a three-point Likert scale: 1 = Agree, 2 = No opinion, and 3 = Disagree. However, the resulting 11-item survey instrument used in this study solicited responses on a forced-choice four-point Likert scale designed to eliminate a neutral midpoint response: 1 = Strongly Agree, 2 = Agree, 3 = Disagree, and 4 = Strongly Disagree. The questionnaires were placed on SurveyMonkey.com and made available for participants to access.

V. ANALYSIS AND DISCUSSION

We live in the age of rapid change. Some drivers of this change include the pace of technological changes, the decay of knowledge, the ever-changing demand of skillsets in the workforce, the democratization of learning etc. Given this backdrop, it is crucial to re-examine the Cambodian higher education system and assess the need to adjust the system.

This paper summarizes four discussion points from the data collected:

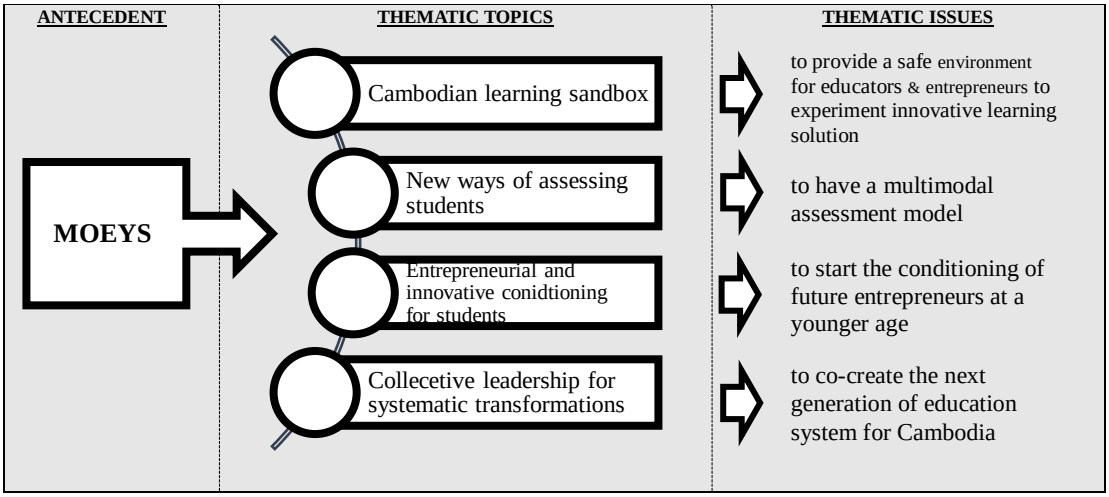

Fig 1: Thematic topic and issues

A. Cambodian Learning Sandbox

We live in turbulent times and learning process in the twenty-first century is now experiencing a rapid shift from teacher-centered learning into a student-centered learning characterized by flipped learning (Bishop & Verleger, 2013, O'Flaherty & Phillips, 2015). Given the flipped learning concept, it is conceivable that learners can migrate from class learning space to personal learning space in the form of structured activity resulting in the class space that is transformed into a dynamic, interactive learning environment where instructor facilitate student's learning via classroom engagement activities and meaningful conversation with instructor (Prodoehl, 2015). An important implementation of the flip nevertheless, is to engage students in lesson topic even before they come to class (Bergmann and Sams 2014), this is typically watching a lecture or an online video and engaging with peers and instructors online before class.

Online learning is inclined towards becoming a drill center where it is auto self-learning process rather than interactive learning process. Despite wider and easier access to abundant learning resources in online learning, lack of face-to-face (f2f) communication with peers or instructors and no supervision from instructors in online delivery certainly inhibit learner's motivation (Fryer et al, 2014). Hence, if online learning was meant to minimize contact time between instructor and student, then it would not be surprising that students might value f2f instruction over online learning. Online learners have complained about lack of immediate feedback and technical support in online learning, which tend to impede learners' interests in learning. While students with positive motivational profiles may succeed in learning even though they are isolated in their studies online, students with less interest in learning will have more difficulty sustaining the effort necessary to meaningfully engage with their studies (Fryer et al, 2014).

Since 2010, the educational systems of developed ASEAN countries like Singapore and Malaysia have moved into the digital and online learning options, becoming more common and widely pervasive in public schools, although many schools have been unhurried or hesitant in embracing new technologies. This can be attributed to overt reasons such as inadequate funding, technologies that are ahead of their time to be deployed meaningfully, general organizational recalcitrance and resistance to change. In many cases, blended learning (BL) is one component of a larger reform initiative in schools (Abbott, 2014). According to Halverson et al, (2014) blended learning has emerged as one of the most popular pedagogical concepts in higher education at the beginning of 2000. The attractiveness of blended

learning in schools has several rewards as well as pitfalls as it is largely dependent on the quality and design of the learning outcomes. In keeping trend of the learning needs of millennia students, it offers benefits of the online learning and face-to-face delivery. For example, students can work independently and at their own pace online, but still have access to the personal attention of a teacher and all the assistance, knowledge, and resources that comes with classroom teaching (Garrison and Kanuka, 2004; Collopy & Arnold, 2009; Castle & McGuire, 2010; Farley, Jain, & Thomson, 2011). Interestingly, on blended learning preference, Smyth, Houghton, Cooney & Casey (2012) in their qualitative study revealed that some of the drawbacks like late feedback and poor internet connection, the study also discovered that participants were generally positive about blended learning.

B. New Ways of Assessing Students

We know learning must be lifelong now, because businesses are operating in the knowledge economy. But as people learn for life, what does it mean to have a degree, given that the graduate will need to constantly update and upgrade his knowledge and skills throughout their lives? What should be the body of knowledge and skills that should make up a degree? What kind of breadth, and what kind of depth? These are fundamental questions for university education. A degree and its definition are undergoing a major rethinking.

Central to the Cambodian's education system, has been the curated examination and rote learning approach which has provided an effective assessment tool hitherto. It also undoubtedly produced competent high ranking officials. However, in revisiting the central issue of current method of assessment, it opens up a series of enquiries, for example, is it too narrow, why do we have assessment in the first place? Firstly, it is to measure the progress of the learner and provide appropriate support, so that they can learn at their own pace and secondly, deciding on the future assessment criteria which must be industry specific and relevance. "Assessment" is a difficut proposition. Is it fair to say that for some students exams may not be the best form of assessment? Can other form of assesments be explored or or potentially be better suited to wider range of students? (Nagel 2013).

The majority of Cambodian students including parents pay particular attention on grades, and it can be said that it is an important form of assessment. The current way of assessing students (predominately through examinations) has served the nation well. It is good at assessing student's ability to retain, understand and analyse information. However, it is not a good precursory for cultivating skills like resourcefulness, teamwork, creativity, presentation skills etc. This is especially critical in the knowledge economy. Hence harnessing technology and the democratisation of information and learning may want to shift the way we assess our students. Educators understands and parents can appreciate the demand for creativity and creative thinking for graduating cohorts, where thet are expected to solve complex problems and to drive future economies. Against this backdrop, the new ways of assesment for learning therefore can and should reduce the tendency for a controlled environment assessment. This will mark a significant shift in the Cambodian's educational approach. In a diffferent vein, we should not impede new forms of assessment e.g. multimodal to the conventional ones, an example of an innovation would be using new technologies like virtual reality/augmented reality (VR/AR) to enable some assessments. For example, an assessment of a student in math could be using trigonometry to determine the height of a building. With VR actually visualising the building could enhance learning and engage the student; web-based tools (e.g., blogs, online forums, wikis, podcasts, etc.) supporting student learning in creative and innovative ways.Learning space (or network learning space) can meet the needs of personalized learning through learning interface, function, recording, reminder, etc. Additionally, learners can create their individual custom settings. In order to create independent, authentic, immersive learning environment, learning space allow for comprehensive, personalised services for learners. These services include online learning, flexible testing, interactive and collaborative learning, resource recommendation, etc. (Teo and Low 2018).

C. Entrepreneurial and Innovative Conditioning for Students

The usage of the outmoded procedures and technologies that are irrelevant or extraneous to the need of businesses is one of the most urgent problem of modern education. Hence, it is unsurprising that the national innovative systems in education of most of the developed countries logically correspond to the speed of the progress in science and technology. It is the contention of Al-Husseini & Elbeltagi, (2018); Billig & Waterman, (2014) and Lundvall, (2010) that when business relationship becomes important due to the influence of globalization on economy and education, then it will fundamentally shift national education system to become more relevant to the needs of industry at-large. As for innovation in schools, the educators are not asking every student to learn coding or AI to facilitate this change, but the need to understand that the education system is evolving all the time and students must be active participants of this evolution. Education systems develop in phases. We need to know where we are, and what kind of innovation we need, then we embark on the next phase of innovation. We began with the survival phase, where we put resources, infrastructure, facilities, teachers and teaching materials together, to set up a national education system. That was a tremendous entrepreneurial effort. Many of these shifts and changes to educational system should be driven top down through national policies and centrally coordinated programs. But there is no ready manual, SOPs or algorithm to emulate and adapt. Therefore, the need to harness the expertise, commitment and creativity of our educators, encourage and enable

ground up innovation, while retaining the strengths of a centralized system. It requires a certain leap of faith, and Cambodian education system should take this path. For example, applied learning programs and reduction of examination load. This is consistent with the skills identified by Igbo and Hisrich in Umunadi (2014). Both agreed strongly that the entrepreneurial skills for recognizing and using tools and materials for production and collaborative skills (associative partnership) are required for linking corporatives; aptitude to organize and build a network; personal entrepreneurship traits; dexterity to persistently push to find relevant information. Moemeke (2013) also stated that the entrepreneurial aspects of science education should include courses in business innovation, job creation, management of small and medium scale enterprises, accessing of funds/finance sourcing, and introduction to financial accounting.

If we truly seek to become a change agent in educational system, educators need to rethink the teaching and learning strategies through multiple lens and reconstruct a richer and more balanced view about the essence of education. Being successful in life does not necessarily mean to have an entrepreneurial spirit to achieve a developed personal attribute but rather endeavor for a heightened awareness that induces flexibility, energy, and vividness. Conversely, it is not difficult to draw a distinction between an innovative teacher and an instrumental teacher. Innovative teachers attempt to shift from a teacher centered to a learning-centered approach. They have changed their teaching style by transforming lessons in accordance with the advantages technology can offer. On the other hand, instrumental teachers use technology as a "physical book". The distinction between the two groups has consequences for both the way lessons are delivered and how students experience them (Montrieuxet al 2015). It is through a responsible, thoughtful attitude toward teaching that will yield meaningful connections with students, drive impetus in learning and transcend traditional disciplinary boundaries of the school curriculum. Cambodian teachers and students need inspiration and Cambodia like other developed countries needs creative teachers and students while also providing direction for future improvements in education.

D. Collective Leadership for Systemic Transformation

There is a need to evolve universities and its validations. What should be the body of knowledge and skills that should make up a degree? What kind of breadth, and what kind of depth? These are fundamental questions for university education. A degree and its definition are experiencing a major rethinking. There is a realization that lifelong learning will change the rhythm and mix of education. There is less pressure for universities to front load knowledge during formal years of undergraduate studies, and more effort is required to make university education experiential. This can be achieved through collective leadership in schools. Cambodian students should and must embark on overseas exchanges for cultural exposure and entrepreneurial stints, immerse themselves in community and social work, continue to go on internships, work on research projects regionally, germinate business ideas and spin off start-ups. In fact, they now populate the incubators in universities across the world, creating a never-seen-before buzz and a can-do spirit on campuses. This way, Cambodian students can drive the growth of entire industries.

With researchers pushing the frontiers of knowledge, and students embrace the can-do attitude and motivation, universities are changing the character of cities. If a city is vibrant and dynamic and has transformed its economic make-up from old to new industries, there is a good chance that a university is an underlying driving force of that change.

VI. RECOMMENDATIONS

We often hear how innovative solutions are limited by the need to comply with policy, structures and rules. To a degree, such a view could be perceptual and not entirely accurate, especially in the light of the changes that MOEYS has implemented over the years. However, the rate at which these changes are applied across the local education landscape might not be fast enough in a world that is facing significant disruptions at an exponential rate. A reconsideration is required for the innovation process – how many changes can be implemented, tested and improved upon, at a faster rate?

While the findings revealed that the participants agreed strongly that to build an innovation ecosystem in education that continues to rejuvenate itself. There is already innovation in higher education institutions in place, the author posits that by providing further space, freedom and support, i.e. "safe environment" for schools, teachers and entrepreneurs to conduct experiments will be important. This will further unleash bottom-up innovations – from the schools, teachers or entrepreneurs – to collectively tackle this complex challenge.

A shift in including alternative forms of assessments is for two key reasons. First it stands to place less emphasis on examinations, and it would cultivate and celebrate different skills. This can be seen as an opportunity to reinvent education such that students, parents, and the workforce may view it in a more palatable lens. Second having multiple assessments would allow MOEYS to be more agile today's rapidly changing world. For example, if an assessment or skillset is deemed outdated or irrelevant due to a breakthrough in technology, MOEYS is better positioned to swap out that assessment for another. To enable this shift, the author suggests for MOEYS to first decide the sorts of skills the ministry want to cultivate in students based on the 21st Century Competencies. Secondly, design or adopt assessments to test those skills. And finally, Ministry needs to assess implementation challenges by paying attention to the

standardization challenges. These steps would enable MOEYS to assess the feasibility of such a change.

If one of the MOEYS's key desired outcomes of education is "be innovative and enterprising" at "the end higher education". While this is highly desirable, it might be doing too little and starting too late. A child entering Primary 1 today would likely have a working life from 2030-2100, assuming a 110/120 years old life and 70 years career. During this long period, the future professional would have to invent her career repeatedly in interval of years or even manage multiple careers at the same time. That is assuming he/she is not made obsolete by advancing technologies such as artificial intelligence and smart blockchains. In the face of this highly disruptive future, it is not only beneficial, but essential for students to develop entrepreneurial conditioning and innovative mindsets earlier rather than later in their schooling years.

The writer advocates local schools to integrate entrepreneurial conditioning into the mainstream primary and secondary curriculum. Entrepreneurial conditioning is a package of useful life, mental and work skills that will benefit students no matter which profession they choose in the future. This includes the ability to sell ideas, imagination to conceive possibilities, keen eye for opportunities, leadership to execute plans, empathy to appreciate human needs, resourcefulness to find necessary means and resilience to ride over tough challenges. Students of tomorrow must not only be challenged by their ability to acquire knowledge but also to synthesize, improvise and apply it to solve real world problems or serve business needs. Such conditioning is difficult to be taught by theory but better acquired by doing.

To facilitate innovators of the future, opportunities should be given to students in solving real world challenges or business problems, instead of theoretical classroom tests. These would develop the innovative mindsets of entrepreneurism, ingenuity and creativity and practical applications of questioning, communication, critical thinking, problem definition, solution development and idea selling. Hence it is plausible to create a national problem-solving platform for all types of organisations to post real challenges for students to solve with the following tentative format:

- Any organization, including government agencies, educational institutions, established companies, non-profit organizations and small businesses can post challenges.
- Each challenge come with monetary rewards (MOEYS or related agency can provide a matching fund) and recognition for winning team/s that commensurate with the difficulty and effort of the challenge.
- Age-appropriate students from local schools will be assigned by the platform to coordinate the project and scope the necessary "Problem Statement" for the challenge. After defining the problem and preparing necessary material (such as videos or specifications of the situation), they will post it on the digital platform with a submission deadline. Each challenge will be graded accordingly to difficulty, effort required and recommended award.
- Teams will be voluntarily and spontaneously organized at schools to compete at these challenges. They submit their solutions, complete with video presentations, solution designs, research results, basic prototypes, process flows. Volunteers, especially from experienced retired seniors in the community can be harnessed to advise and mentor these teams.

While this initiative is clearly designed to nurture mindsets and skillsets of innovators and entrepreneurs in students, there are broader benefits:

- Cultivates the spirit of sharing (proceeds shared between school, beneficial charity and participants) and lending a helping hand to those in need (non-profits, small businesses);
- Promotes the whole-of-nation psyche and movement of innovation;
- Creatively taps on the 'renewable and almost free' human resources and cognitive surplus (students and seniors) to contribute to positive economic, educational and social activities within the constraints of tight labor market;
- Brings the classroom into the real world and the real world to the classroom;
- Fosters collaborative spirit and cycle of goodwill between government, students, schools, community and business;
- Encourages local organizations to exploit the trend of open innovation and crowdsourcing to seek for ideas and solutions from outside their organisations.

Finally, there is an existing social paradigm that expects MOEYS to be the sole leader in term of educational transformation, without recognizing the collective contribution to this systemic problem. Applaudable efforts from MOEYS may not be able to catch up with the speed of change due to the complexity of multi-stakeholder driven system. Hence, there is an urgent need for collective leadership from multi-stakeholders to co-create the transformation together with MOEYS for a future-ready Cambodia.

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