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Editorial 27(8): Preface to the Special issue

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Editors, Special issue - ICT for accessible, effective and efficient higher education: Experiences of Southeast Asia

The 21st Century sees nations increasingly relying on technology to address growing concerns about diminishing resources and ensuring sustainable development. The economic crisis of 2008-2009 has highlighted the importance of having competent human resources especially for developing countries in Southeast Asia to assist the recovery of losses resulting from the crisis. Higher education institutions in the region as repositories of valuable human capital face great challenges in contributing to economic development of nations in times of such economic declines. Through having more accessible, effective and efficient higher education systems, governments in the region are counting on higher education institutions producing graduates who are competitive in creating wealth for their respective countries.

Furthermore, the rapid rate with which new technologies change and develop implies that education programs must keep pace with advancements in knowledge and skills and also the demands and requirements of employees to stay relevant. The kind of skills needed and how higher education institutions can help foster these skills are issues yet to be fully addressed. It is crucial that these institutions equip their students with appropriate knowledge, skills and aptitudes to be more competitive in a shrinking and increasing global and competitive labor market.

In addition, the trend towards a knowledge-based economy has emphasised the importance of higher education institutions being repositories of valuable human capital to help secure shares in the global market. The shift to high-technology and information technologies economies requires sustained human resource development and training. Thus, driven by globalisation and pressures to teach and train knowledgeable, skilled and competitive professionals, higher education institutions in Southeast Asia have a huge challenge to enhance access to higher education and also improve the quality of higher education against the reality of decreasing resources. These institutions need to be innovative and leverage on the rapid developments in information and communication technologies (ICT) and lead by example in using these cutting edge technologies to meet these expectations.

More and more higher education institutions are using ICT to develop course materials, deliver and share course content, lectures and presentations, facilitate communication among lecturers and students, encourage pedagogical innovation, increase cooperation and collaboration, conduct research, enhance professional development, and provide administrative and management services. However, information on how ICT has been and can be used to enhance the design, delivery and

management of higher education programs in the Southeast Asia region is not readily available.

Countries in Southeast Asia are at different stages of development in the use of ICT in education. Basically, countries in the region can be categorised into three types: those which are already integrating the use of ICT in the higher education system (e.g., Singapore), those which have started to apply and test various strategies (e.g., Thailand, Malaysia and Philippines), and those which have just begun and are more concerned with ICT infrastructure and connectivity installation (e.g., Myanmar, Laos, Vietnam and Cambodia). Thus, success stories, experiences and lessons learnt from the use of ICT in higher education will be of immense importance for educators and administrators at the forefront of integrating ICT for higher education in countries in the region.

This special issue brings together papers that identify opportunities, issues, challenges, and examples of good practices in the use of ICT in higher education settings in Southeast Asia. Areas of interest include the design, development and delivery of ICT based learning materials in higher education teaching and learning settings including blended learning and e-learning, pedagogic innovation in using ICT towards making higher education accessible, effective and efficient; ICT and online approaches for professional development in higher education; and description of ICT projects in higher education to increase the reach and quality of learning.

This special edition of the journal comprises eleven papers contributed by researchers from New Zealand, United States of America, Singapore, Thailand, Malaysia and Vietnam sharing their experiences on the use of ICT in higher education in the region. These papers reflect the increasing appeal and importance of using ICT in higher education in the region, underpinned by different national and pedagogical traditions.

The paper by Kwok-Wing Lai highlights the changes in the higher education landscape in economically advanced countries. The changes include diversification of student populations with a wide range of learning styles and learning needs which are different from the traditional elitist student populations. In addition, higher education institutions have to respond to the demands of globalisation and the knowledge economy such as the need to prepare students with 21st century skills and competencies for the labour markets. Thus, changes in the curriculum and teaching practices become inevitable. Higher education institutions also have to increase their efficiency, be more transparent and accountable and perform better in research and teaching. Digital technology is seen as an effective tool to manage these changes and for transforming teaching and learning. Lai's paper further discusses how the use of digital technologies creates a shift in the cultural practices in teaching and learning in response to present and future societal needs. This paper also details the changing needs of the learners and the impact of digital technologies on teaching and learning. The paper concludes with suggestions on how digital technology can transform the culture of teaching and learning and support personalised learning, flexibility in learning, and inclusive learning.

While Lai's paper focuses on economically advanced countries, Kian-Sam Hong and Peter Songan's paper looks at the possible impacts of ICT on higher education in Southeast Asia. It starts by discussing the changing landscape of higher education in Southeast Asia brought about by political, economic, and social changes in the region coupled with the force of globalisation and the global economic crisis. Although the countries in the region have different social, economic and political backgrounds, there appear to be common issues and trends brought about by these challenges and opportunities. Some of the common threads are the need to enhance access and provision of affordable higher education whilst at the same time improving the quality of higher education learning experiences. Furthermore, ICT is becoming increasingly ubiquitous in the lives of the people in the region and progressively being used in higher education systems in the region. It is posited that the use of ICT to address the common challenges faced by higher education in the region can include revisiting what and how students learn, when and where students learn, who the new faces of students and lecturers are, and the ways to reduce the cost of higher education. Furthermore, in view of the commonalities of the issues that these countries face, there are opportunities for them to learn from each other in using ICT in higher education systems.

The next nine papers are case studies of how ICT can be effectively integrated in higher education learning environments in four countries in the region, namely, Singapore, Thailand, Malaysia and Vietnam.

The first three papers document how ICT has been used in higher education systems in Singapore. The paper by Kumar Laxman reports the students' perceptions regarding a university wide initiative on the adoption of a new technology of audience response system ('clickers') within its learning environments. It describes the clickers system and posits that the use of clickers could enhance the quality of learning students experienced. The findings indicate that the use of clickers promotes peer interactions and interaction with lecturers. It also enhances opportunities for checking students' understanding of the content taught in lectures, through provision of immediate feedback. Students also feel motivated to learn and are more engaged in their learning experiences. Although the study is exploratory in nature, its findings may kindle interest in wider use of clickers in higher education in the region, as well as stimulating more studies on its use. We believe more studies on the theoretical and pedagogical underpinings for the implementation of clickers within a learner-centred environment to enhance students' cognitive processing will be needed.

The paper by Shanti Divaharan, Wei-Ying Lim and Seng-Chee Tan shares with the readers the National Institute of Education's (NIE) experiences of integrating ICT in its teaching and learning environment, and also in encouraging Singapore's future teachers to effectively use ICT in schools. The paper reports the development of a course on the use of ICT for teaching and learning in a teacher education program at NIE. This course aims to develop student teachers' ability to use ICT for teaching and learning in schools. The paper describes how the course has undergone various changes in tandem with Singapore's three ICT master plans. The paper further reports that the course has changed focus, from technological skills to pedagogical

and knowledge creation. In addition, the paper details how the course provides opportunities for student teachers to experience technological tools as learners themselves, thereby helping to equip them with the necessary skills, knowledge and experiences to design and integrate ICT in their classroom lessons. In addition, this paper also provides the lecturers' reflections upon their pedagogical practices in using ICT in the course, both for the benefits of the students and the lecturers themselves.

In the last paper of this group, Wing Sum Cheung and Khe Foon Hew's paper share their experiences and lessons learned in using two blended learning approaches at the NIE. The authors have used these two approaches in the last twelve years in various courses at NIE ranging from diploma to graduate programs. While the first blended learning approach integrated one asynchronous communication tool with face to face tutorials, classroom discussions, and a reflection session, the second blended learning approach integrated two asynchronous tools with face to face tutorials. This paper discusses the theoretical foundations of the two blended learning approaches and provides insights based on the authors' own reflections, as well as on data gathered from students. This paper also discusses lessons learned from the study which could be useful in designing future instructional strategies for implementing blended learning in higher education settings.

The next two papers highlight Thailand's experiences in integrating ICT in higher education settings. The paper by Vasa Buraphadeja and Jirang Kumnuanta chronicles the successes and failures of Thailand's ICT national plans from the initial IT2000 to the present IT2020 plan especially in terms of the use of ICT in education. The ICT2020 plan stresses the importance of smart learning using ICT to decrease social and economic in equality. Current practice and literature, however, suggest that formal education in Thailand generally emphasises rote learning, is teacher-directed, and students are passive participants in the process. Vasa Buraphadeja and Jirang Kumnuanta's paper reports the findings of a study involving lecturers facilitating a large undergraduate class using a variety of ICT tools such as *Moodle*, video clips, and *PowerPoints*. Web assignments and discussions involving self-pacing and peer tutoring, based on social constructivist's theory, are included in the course. It was found that these tools could enhance undergraduate students' sense of community, motivation and active learning. However, the authors caution that the use of ICT in higher education depends on a host of factors including lecturers' beliefs and pedagogical approaches, institutional support and appropriate policies.

Timothy Teo, Su Luan Wong, Thapanee Thammetar, and Wisa Chattiwat's paper points out that while the use of e-learning is on the rise in higher education institutions in Thailand, not much is known about the attitudes of the students in adopting and using technology for learning. This paper reports the findings of a study in assessing e-learning acceptance by university students, involving students at three public universities in Thailand. The study indicates that to ensure accessibility and equity in using e-learning in higher education in the region for the new breed of learners, it is necessary for the institutions to consider that differences in technology competence and experience exist between students of different age groups.

Two papers in this special issue provide examples of how ICT is used in Malaysian higher education institutions. The paper by Rasimah Che Mohd Yusoff, Halimah Badioze Zaman and Azlina Ahmad describes the use of mixed realty technology, which involves the combination of real and virtual objects in interactive real time environment. This paper discusses the design and development of a mixed reality system named *Mixed Reality Regenerative Concept* (MRRC) for learning regenerative concept and tissue engineering in Biomedical Science. MRRC is based on social constructivist theory, in particular, using a situated learning approach. Rasimah et al.'s paper posits that technology acceptance is a key factor in determining students' acceptance and use of MMRC for their learning. A study using samples consisting of biomedical students at two public universities in Malaysia was carried out to investigate the factors impacting on students' intention to use the mixed reality technology system. When students found the system easy to use, they perceived it as useful for their study and enjoyed using the system. Furthermore, if they found the system useful, they wanted to use the same technology in the future. Regression analysis suggested that perceived usefulness is the most important factor affecting users' intention to use mixed reality technology application in the future.

Nantha Kumar Subramaniam and Maheswari Kandasamy are attached to the Open University of Malaysia (OUM), an open and distance learning institution in Malaysia which also operates programs in countries such as Yemen, Bahrain, Maldives, Ghana and Sri Lanka. Their paper discusses the use of OUM's virtual classroom to enhance the learning experiences of its students. The paper describes the design and characteristics of the various features of the virtual classroom. It also reports the results of a survey carried out with a convenience sample of students based in the central region of Malaysia regarding their perceptions of the impact of the virtual classroom on students' learning and self-managed learning. This paper also shows that students preferred the virtual classroom environment as compared to face to face learning. However, the findings also indicate that the virtual classroom needs further improvements to ensure that it is appealing and useful to students.

Vietnam's experiences of integrating ICT in higher education are reported in two papers. The paper by Long V Ngyuyen examines the use of ICT among undergraduate students of a Vietnam university. His paper looks at the use of collaborative computer-mediated communication (CMCL) among teacher trainees in a Teaching English as a Foreign Language program. The study reported in the paper examines undergraduates' view of CMCL, synchronous chat and asynchronous wikis. Using a small sample of undergraduates enrolled in a 12 weeks American Culture course, the undergraduates were divided into group of threes to complete a task requiring them to use CMCL and concluded with peer reviews of the completed task. Data was collected using survey questionnaires and informal interviews. The results show support for the use of CMCL and students feel that both the asynchronous and synchronous components of CMCL complement each other. The CMCL is seen as positively affecting undergraduates' confidence and motivation toward the collaborative learning process. The study concludes that the effective use of CMCL depends on the students and instructors' level of technology-related expertise, the appropriateness of the tasks, support provided and how well classes were prepared, as well as how well the use of CMCL fits into the existing university infrastructure.

Another paper on Vietnam's use of ICT in higher education is contributed by Michael W. Churton, who reports on a collaborative project between the Government of the Netherlands and a consortium of eight Vietnamese medical universities. The project aims to strengthen the capacity of Vietnamese medical programs, personnel, and students in developing technical and pragmatic knowledge in several key medical and scientific categories that are currently directed by international consultants. Ultimately, the project intends to empower Vietnam's medical community to be self-reliant in the delivery of medical training and services to address the significant health needs of the country. The project involves setting up Centres of Excellence (COEs) encompassing five core constructs of health management, medical education, economic evaluation, medical research, and e-learning. Churton's paper addresses the design and development of two centers of excellence in e-learning.

From the eleven papers included in this special edition, we can have a glimpse of how ICT has been integrated in higher education in the region. It is obvious that there are common concerns and issues facing higher education systems in the region. By sharing experiences and lessons learned from educational practices and research, educators in the region can gain insights into how ICT can be used to increase accessibility, efficiency, and effectiveness of teaching and learning. It is noteworthy that although countries in the region are at different levels of economic development and use of ICT in higher education, the emphasis for integrating ICT in teaching and learning has progressed beyond providing infra- and info-structures, to emphasising the need to attend to pedagogical and instructional approaches. ICT has also been

used to encourage higher education collaborations across national boundaries in the region and also with collaborators in developed countries. The use of ICT by higher education institutions in the region to enhance human resource development and ensure more accessible education opportunities have produces some tangible results. It is hoped that this collection of papers would provide higher education educators with insights on the status of ICT integration in higher education in the region, as well as signposting future directions. It is also hoped that this special edition will provide an impetus for future sharing of experiences and lessons learned in integrating ICT in tertiary teaching and learning, to enable higher education systems in the region to strive better for accessible, effective and efficient higher education to the people in the region.

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