



The Second International Conference on Open and Flexible Education (ICOFE 2015)



PROGRAMME & ABSTRACTS OF PAPERS

16–17 July 2015

Jubilee College

The Open University of Hong Kong

Hong Kong SAR

Organizer:



香港公開大學

THE OPEN UNIVERSITY
OF HONG KONG

政府創辦 • 財政獨立 Government established • Financially independent

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The organizer reserves the right to amend the programme as and when necessary.

Message from the President, The Open University of Hong Kong



Prof. Yuk-Shan Wong
President
The Open University of Hong Kong

A warm welcome to the Open University of Hong Kong (OUHK)! We are delighted to be organizing the Second International Conference on Open and Flexible Education (ICOFE 2015). I am certain that this event will act as a powerful stimulus for promoting the goals of open and flexible education for the benefit of learners.

The OUHK began as a provider of distance learning for adults in Hong Kong, but has transformed itself into a multi-mode institution offering face-to-face, e-learning, and blended learning options in addition to distance learning. By expanding our modes of education in this way, we have been able to open up education opportunities to a more diverse group of learners. We will continue to strive for further breakthroughs and greater achievements in teaching, scholarship and research.

In contemporary education, the modes of learning and teaching are becoming more open and flexible in terms of time, space, curriculum contents, organization, pedagogical methods, infrastructure and requirements — and these changes are happening not only in open universities, but also in conventional institutions. The rapid development of massive open online courses (MOOCs) and the increasing use of mobile devices are examples of this global trend.

Delivering open and flexible learning is no straightforward task. Despite using technology constantly in their daily lives, many students still prefer face-to-face teaching, as do many teachers. In order to succeed, we need to offer a learning experience that is more appealing and effective than the traditional learning approach. This requires us to keep up-to-date with the latest technologies, and to apply them effectively, so that learners become engaged. We also need to consider which modes of education are most suitable in a given situation, as the most technologically advanced mode is not always the right choice.

ICOFE aims to serve as a platform for sharing research, practices and views relevant to open and flexible education, using the latest methods, tools and innovations. I am sure it will also promote networking and cross-institutional collaboration among researchers and educators in the field.

Last year, we received very positive feedback on ICOFE 2014, and we look forward to another fruitful conference for every participant. This conference is truly an international event — the authors of our papers come from 27 countries, and our world-renowned keynote speakers are from Canada, China, New Zealand and the United Kingdom.

I would like to thank the Organising Committee for their enthusiastic and efficient work.

I wish you a fruitful and productive Conference and a wonderful time exploring Hong Kong.

Message from the Chair, Conference Organizing Committee



Dr K C Li

Chair
Conference Organizing Committee
Director
University Research Centre
The Open University of Hong Kong

At the Open University of Hong Kong (OUHK), we see the International Conference on Open and Flexible Education (ICOFE) as a major event. It signifies our commitment to promoting and facilitating advancements in open and flexible education.

This year, our Conference theme, 'Making Learning Mobile and Ubiquitous', deals with the approaches and means for adopting the latest technologies and innovations to cater for the diverse needs of learning communities. Effective use of mobile devices for learning and teaching, and the extension of learning beyond class time and the classroom, are key developments that no educators can afford to ignore.

I am delighted that this two-day conference provides very rich content for you to look forward to. I am grateful to our four keynote speakers who have flown to Hong Kong to share with us their expertise and aspects of the latest developments in the field. They are Prof. Rory McGreal from Athabasca University in Canada; Prof. Agnes Kukulska-Hulme from the United Kingdom's Open University; Prof. Niki Davis from the University of Canterbury in New Zealand; and Prof. Xiaoqing Gu from East China Normal University in China.

Our paper presentations sessions feature international perspectives on a very broad range of topics, including pedagogy, the design of mobile learning tools, curriculum planning and institutional planning. There are also four workshops — two by two of our keynote speakers and two by staff of this University — which cover practical pedagogical approaches and skills on useful subjects.

To encourage quality work, we present a number of Excellent Paper Awards and one Best Paper Award to authors of the best contributions. The Conference also includes the Best Practices of Flexible Learning Award Competition which gives participants an opportunity to showcase their exemplary practices.

We hope that this conference will lead to the establishment of useful networks for ongoing sharing and professional collaboration, and this has been integrated into the design of the conference. For example, the seating at the venue for the plenary sessions has been arranged to create an environment convenient for interaction.

I would like to thank members of the Organising Committee and the Programme Committee for their months of professional inputs and diligent efforts. I am also much obliged to my OUHK colleagues in the Educational Technology and Publishing Unit and the University Research Centre for their painstaking work and support for this Conference.

I hope you find this Conference interesting and helpful, and have an enjoyable stay in this dynamic city.

Committees

Organizing Committee

Chair:	Dr K C LI	The Open University of Hong Kong
Vice-chair:	Dr K S YUEN	The Open University of Hong Kong
Members:	Dr Eva Y M TSANG	The Open University of Hong Kong
	Mr Alex J W WONG	The Open University of Hong Kong
	Dr Franklin S S LAM	The Open University of Hong Kong
	Dr Robin R W YANG	The Open University of Hong Kong
	Dr Andrew K F LUI	The Open University of Hong Kong
	Dr Linda Y K LEE	The Open University of Hong Kong
	Dr C W TAM	The Open University of Hong Kong
	Dr William K W TANG	The Open University of Hong Kong
	Dr Anna W B TSO	The Open University of Hong Kong
	Dr Samuel P M CHOI	The Open University of Hong Kong

Programme Committee

Chair:	Dr K C LI	The Open University of Hong Kong, China
Vice-chair:	Dr K S YUEN	The Open University of Hong Kong, China
Members:	Dr Zahid MAJEED	Allama Iqbal Open University, Pakistan
	Prof. Mohamed ALLY	Athabasca University, Canada
	Prof. Reggie KWAN	Caritas Institute of Higher Education, China
	Dr Philips WANG	Caritas Institute of Higher Education, China
	Prof. Wolfgang HALANG	FernUniversität in Hagen, Germany
	Dr Bowon KIM	Korea National Open University, South Korea
	Mr Kin Chew LIM	SIM University, Singapore
	Prof. Bebo WHITE	Stanford University, USA
	Dr Giuliana DETTORI	The Istituto per le Tecnologie Didattiche, Italy
	Dr Samuel P M CHOI	The Open University of Hong Kong, China
	Ms Baljit KAUR	The Open University of Hong Kong, China
	Dr Franklin S S LAM	The Open University of Hong Kong, China
	Dr Sylvia Siu Yin LAM	The Open University of Hong Kong, China
	Dr Winnie Wing Yee LAM	The Open University of Hong Kong, China
	Dr Linda Y K LEE	The Open University of Hong Kong, China
	Dr Mei Kuen LI	The Open University of Hong Kong, China
	Dr Andrew K F LUI	The Open University of Hong Kong, China
	Dr Chun Wai TAM	The Open University of Hong Kong, China
	Dr William Ko Wai TANG	The Open University of Hong Kong, China
	Dr Eva Y M TSANG	The Open University of Hong Kong, China
	Dr Anna W B TSO	The Open University of Hong Kong, China
	Dr Billy Tak Ming WONG	The Open University of Hong Kong, China
	Ms Wendy Wing Chi WONG	The Open University of Hong Kong, China
	Dr Yosuke MORIMOTO	The Open University of Japan, Japan
	Dr Daryono DARYONO	Universitas Terbuka, Indonesia
	Dr Melinda BANDALARIA	University of the Philippines Open University, the Philippines
	Dr Juvy Lizette GERVACIO	University of the Philippines Open University, the Philippines
	Dr Jean SALUDADEZ	University of the Philippines Open University, the Philippines
	Dr Ishan Sudeera ABEYWARDENA	Wawasan Open University, Malaysia
	Prof. Phalachandra BHANDIGADI	Wawasan Open University, Malaysia

Theme of the Conference — Making Learning Mobile and Ubiquitous


The theme for the Second International Conference on Open and Flexible Education is 'Making Learning Mobile and Ubiquitous', highlighting the approaches and means to adopt latest technologies and innovations to cater for the diverse needs of different learning communities. It will lay stress particularly on mobile technologies, which facilitate learning anytime and anywhere, in a flexible and personalized mode of education.

Subthemes of the conference include the following:

- 1 mobile learning and open/flexible education modes;
- 2 ubiquitous learning and open/flexible education modes;
- 3 use of technologies to enhance ubiquitous teaching and learning;
- 4 innovations in open/flexible curriculum development and pedagogy;
- 5 social media and ubiquitous learning; and
- 6 open educational resources and ubiquitous learning.

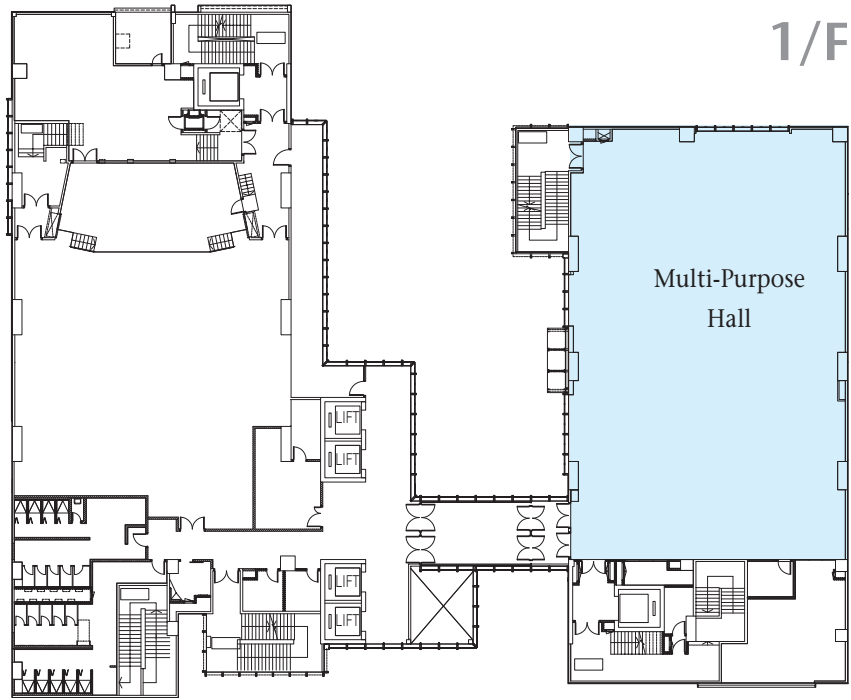
Jubilee College, The Open University of Hong Kong



 Wi-Fi Internet access is available throughout the OUHK campus.
Wi-Fi Username: ICOFE2015 Password: OUHK2015

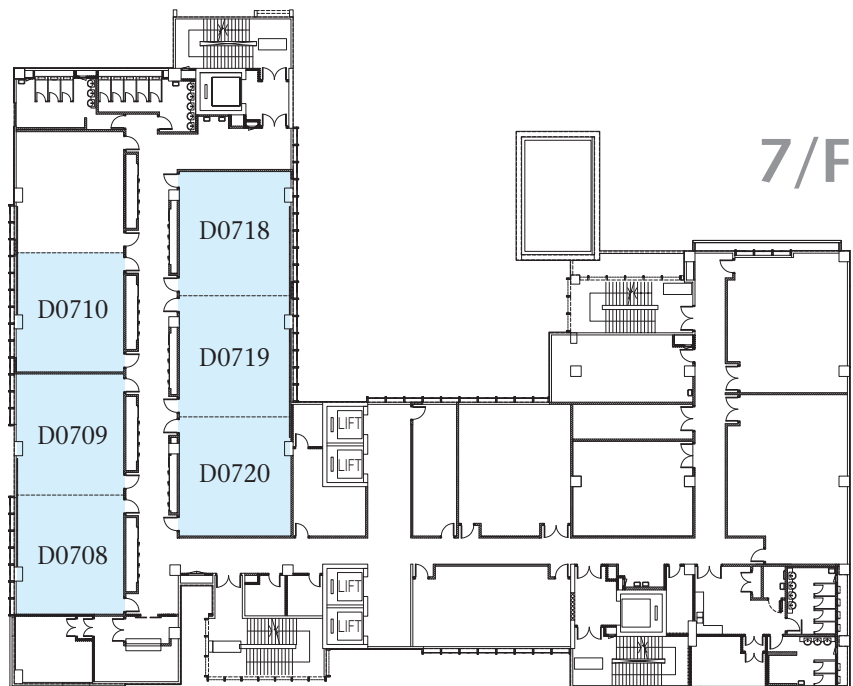
Multi-Purpose Hall

- Registration
- Opening Ceremony
- Keynote Sessions
- Coffee Breaks
- Conference Lunches
- Conference Dinner
- Closing Ceremony

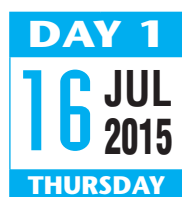


D0708, D0709, D0710, D0718, D0719, D0720 (7/F)

- Best Paper Award Competition
- Parallel Paper Presentations
- Best Practices of Flexible Learning Award Competition
- Conference Workshops

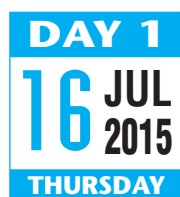


Programme



8:00–9:00	Registration	Multi-purpose Hall, 1/F
9:00–9:30	<p>Opening Ceremony</p> <p>Welcoming Remarks Prof. Danny S N Wong Vice President (Academic) The Open University of Hong Kong</p> <p>Opening Address Dr K C Li Chair, Organizing Committee</p>	Multi-purpose Hall, 1/F
9:30–10:30	<p>Keynote Session I</p> <p>Co-evolving ecologies of education and technology — increasing ubiquity and equity?</p> <p>Chairperson Dr K S Yuen Vice-chair, Organizing Committee</p> <p>Keynote Speaker Prof. Niki Davis Distinguished Professor of e-Learning, School of Educational Studies and Leadership Director of the College of Education e-Learning Lab University of Canterbury <i>Please refer to p.16 for details.</i></p>	Multi-purpose Hall, 1/F
10:30–11:00	Coffee Break	Multi-purpose Hall, 1/F
11:00–12:30	<p>Best Paper Award Competition <i>Please refer to p.22 for details.</i></p> <p>Parallel Paper Presentations <i>Please refer to p.12 for details.</i></p>	D0720, 7/F D0709, D0710, 7/F
12:30–14:00	Conference Lunch	Multi-purpose Hall, 1/F
14:00–15:30	<p>Best Practices of Flexible Learning Award Competition <i>Please refer to p.22 for details.</i></p> <p>Parallel Paper Presentations <i>Please refer to pp.12–13 for details.</i></p> <p>Conference Workshop I</p> <p>Implementing effective e-Learning in Hong Kong schools through the adoption of Open Textbooks Dr K S Yuen Director, Educational Technology and Publishing The Open University of Hong Kong <i>Please refer to p.20 for details.</i></p>	D0720, 7/F D0709, D0710, 7/F D0708, 7/F

Programme



15:30–16:00 Coffee Break Multi-purpose Hall, 1/F

16:00–17:00 Keynote Session II Multi-purpose Hall, 1/F

Why OER are essential in mobile and ubiquitous learning

Chairperson

Dr Franklin S S Lam The Open University of Hong Kong

Keynote Speaker

Prof. Rory McGreal

UNESCO / Commonwealth of Learning /

International Council for Open and Distance Education

Chair in OER

Professor, Centre for Distance Education

Athabasca University

Please refer to p.17 for details.

17:00–18:30 Parallel Paper Presentations D0709, D0710, 7/F
Please refer to p.13 for details.

Conference Workshop II D0708, 7/F

Where are you in the global arena of change with digital technologies in education?

Prof. Niki Davis

Distinguished Professor of e-Learning,

School of Educational Studies and Leadership

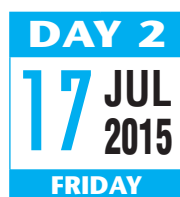
Director of the College of Education e-Learning Lab

University of Canterbury

Please refer to p.20 for details.

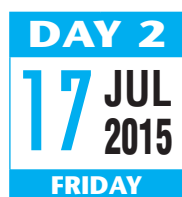
18:30–20:00 Conference Dinner Multi-purpose Hall, 1/F

Programme



8:00–9:00	Registration	Multi-purpose Hall, 1/F
9:00–10:00	Keynote Session III Transferring lessons from informal to formal learning settings Chairperson Dr K C Li Chair, Organizing Committee Keynote Speaker Prof. Xiaoqing Gu Head of Department of Educational Information Technology East China Normal University <i>Please refer to p.18 for details.</i>	Multi-purpose Hall, 1/F
10:00–10:30	Coffee Break	Multi-purpose Hall, 1/F
10:30–12:00	Parallel Paper Presentations <i>Please refer to p.14 for details.</i>	D0709, D0710, 7/F
	Conference Workshop III Mobile pedagogy for English language teachers Prof. Agnes Kukulska-Hulme Professor of Learning Technology and Communication Institute of Educational Technology The Open University <i>Please refer to p.21 for details.</i>	D0708, 7/F
12:00–14:00	Conference Lunch	Multi-purpose Hall, 1/F
14:00–15:30	Parallel Paper Presentations <i>Please refer to p.15 for details.</i>	D0709, D0710, 7/F
	Conference Workshop IV Utilization of free resources for teaching Dr K C Li Director, University Research Centre The Open University of Hong Kong <i>Please refer to p.21 for details.</i>	D0708, 7/F
15:30–16:00	Coffee Break	Multi-purpose Hall, 1/F

Programme



16:00–17:00 Keynote Session IV Multi-purpose Hall, 1/F

**Beyond the classroom language assistance
is a two-way street**

Chairperson

Dr Linda Lee The Open University of Hong Kong

Keynote Speaker

Prof. Agnes Kukulska-Hulme

Professor of Learning Technology and Communication

Institute of Educational Technology

The Open University

Please refer to p.19 for details.

17:00–17:30 Closing Ceremony and Award Presentations Multi-purpose Hall, 1/F

Closing Remarks

Prof. Yuk-Shan Wong

President, The Open University of Hong Kong

Closing Address

Dr K S Yuen

Vice-chair, Organizing Committee

Parallel Paper Presentations		11:00–12:30
D0709		D0710
Open educational resources and ubiquitous learning		Use of technologies to enhance ubiquitous teaching and learning
<p>Digital game-based learning: A case study of a digital educational game in Hong Kong Anna Wing-bo Tso and Janet Man-ying Lau The Open University of Hong Kong Hong Kong SAR, China</p> <p>p.24</p>		<p>A study of the relationship between instant messaging communication and student assessment results Francis Yue City University of Hong Kong Hong Kong SAR, China</p> <p>p.29</p>
<p>A comparative study of the teaching effect in a 'flipped' MOOC class and a traditional class Xiaolu Chen and Helan Wu Tongji University Shanghai, China</p> <p>p.24</p>		<p>The impact of mobile technology on the learning of management science, and the development of problem-solving skills Sheila Cheng and Heng Loke Siow Asia e University Kuala Lumpur, Malaysia</p> <p>p.29</p>
<p>Education for empowerment: The Arab Open University and Arab society Mohammad Abu-Qudais and Jihad Al-Sadi Arab Open University Jordan</p> <p>p.25</p>		<p>Game on, science: How game technology may help physics to tackle visualization challenges Lu Men, Tian-gang Wu and Zu-Yuan Wang Tongji University Shanghai, China</p> <p>p.30</p>
<p>Organizing open educational resources for teaching and learning: A review of existing learning object repositories Jennifer S Belen, Primo G Garcia, Luisa Gelisan and Tomas Cabagay, Jr. University of the Philippines Open University Los Baños, the Philippines</p> <p>p.25</p>		<p>New opportunities and challenges of e-learning in English language training Irina Malinina National Research University Higher School of Economics Moscow, Russia</p> <p>p.30</p>
<p>Social media policy training in health professional education Ching-ye Lam The Open University of Hong Kong, HKSAR Agnes Fung-ye Tiwari The University of Hong Kong, HKSAR Kendall Ho and Wendy Davis University of British Columbia, Canada Jason Last and Hilary Hughes University College Dublin, Ireland Damien Walmsley and Baljeet Nandra University of Birmingham, UK Claire Anderson and Emily Cutts University of Nottingham, UK Louisa Remedios and Phil Goebel The University of Melbourne, Australia Martin Hernandez and Estefanía Terrazas Tecnológico de Monterrey, Mexico Lu Ye and Runyu Zou Fudan University, China</p> <p>p.26</p>		<p>The effects of controlling learning environments and instructor intervention on learners' social presence and critical thinking Jamie Costley Kongju National University Gongju, South Korea</p> <p>p.31</p>
<p>Creating OERs for Philippine biodiversity Consuelo D I Habito, Roberto Figueroa and Reinald Pugoy University of the Philippines Open University Los Baños, the Philippines</p> <p>p.26</p>		<p>Accomplishing open and flexible education in higher education through digital media Jean A Saludadez University of the Philippines Open University Los Baños, the Philippines</p> <p>p.31</p>

Parallel Paper Presentations	
D0709	
Innovations in open/flexible curriculum development and pedagogy	
<p>Information management requirements for precision education Nabil Kamel Arab Open University, Egypt Branch Cairo, Egypt</p> <p>p.38</p>	
<p>Learner interviews for flexible education in a Japanese tertiary curriculum Yoko Hirata and Yoshihiro Hirata Hokkai-Gakuen University Sapporo, Japan</p> <p>p.38</p>	
<p>Teacher design teams: Building capacity for flexible and learner-centred course development Linglingay McDermott University of the Philippines Open University Manila, the Philippines</p> <p>p.39</p>	
<p>A case study of the development, use and impact of an online module for teaching financial literacy Patrick K P Chan SIM University Singapore</p> <p>p.39</p>	

14:00–15:30	
D0710	
Social media and ubiquitous learning	
<p>Factors affecting the media literacy of young students</p> <p>He Xuan Peking University Beijing, China</p> <p>p.45</p>	
<p>A study of instruction in college physics experiments in the context of big data</p> <p>Jun Lv, Ning-sheng Ma, Kai Fang and Xian-chao Ma Tongji University Shanghai, China</p> <p>p.45</p>	
<p>Learners without borders: Utilizing social media as a self-directed learning tool</p> <p>Bob Barrett American Public University USA</p> <p>p.46</p>	
<p>Reaching out to the young: A case study on teachers' initiatives in using social media in the classroom</p> <p>Ana Katrina T Marcial University of the Philippines Open University Los Baños, the Philippines</p> <p>p.46</p>	
<p>Bridging the distance in guidance and counselling education: Web-based video-sharing platforms as a tool for accessing and creating information</p> <p>Rameses De Jesus University of the Philippines Open University Los Baños, the Philippines</p> <p>p.47</p>	

Parallel Paper Presentations		17:00–18:30
D0709	D0710	
Mobile learning and open/flexible education modes	Ubiquitous learning and open/flexible education modes	
<p>The evaluation of the quality of mobile applications in Al-Quds Open University</p> <p>Naji Shukri Alzaza University of Palestine Al-Zahra, Gaza, Palestine Zakaria K D Al Kayyali Al-Quds Open University Palestine</p> <p>p.48</p>	<p>Revisiting flexible learning: Definitions, implementation and potential</p> <p>Kam-cheong Li, Jingjing Hu and Beryl Yuen-ye Wong The Open University of Hong Kong Hong Kong SAR, China</p> <p>p.54</p>	
<p>Creating awareness of food safety and climate change through mobile learning</p> <p>Vijayakumar, P, Venkatramanan, V and Salooja, M K Indira Gandhi National Open University Delhi, India</p> <p>p.48</p>	<p>The flipped classroom in professional nursing education: Where are we now?</p> <p>Ching-ye Lam and Linda Yin-king Lee The Open University of Hong Kong Hong Kong SAR, China</p> <p>p.54</p>	
<p>Using mobile-based interactive e-books in K-12 Chinese as a second language classroom: Opportunities and challenges</p> <p>Tianchong Wang The Chinese University of Hong Kong Hong Kong SAR, China Shuting Liu German Swiss International School Hong Kong SAR, China Yu Gao Vocational Training Council Hong Kong SAR, China</p> <p>p.49</p>	<p>Transforming content development in the era of distance and e-learning in the University of the Philippines Open University</p> <p>Carmelita A Orias University of the Philippines Open University Los Baños, the Philippines</p> <p>p.55</p>	
<p>Mobile learning in an open and distance e-learning (ODEL) institution</p> <p>Alvie Simonette Q Alip University of the Philippines Open University Los Baños, the Philippines</p> <p>p.49</p>	<p>Developing chemistry laboratory experiments for distance education using the context-led framework</p> <p>Charisse T Reyes University of the Philippines Open University Los Baños, the Philippines</p> <p>p.55</p>	
<p>Crowd-sourcing as a tool for content analysis of asynchronous course conversations in the mobile social networking system and Web environments</p> <p>Gibran Alejandro Mendoza Garcia International Christian University Tokyo, Japan Teo Hui Thian Open University Malaysia Kuala Lumpur, Malaysia Roberto Bacani Figueroa Jr University of the Philippines Open University Los Baños, the Philippines</p> <p>p.50</p>	<p>Mobile learning and open/flexible education modes</p> <p>Mobile learning in nursing education: Preference and readiness of nursing students</p> <p>Kam-cheong Li, Linda Yin-king Lee, Suet-lai Wong, Ivy Sui-yu Yau, and Billy Tak-ming Wong The Open University of Hong Kong Hong Kong SAR, China</p> <p>p.51</p>	
<p>Usability analysis of a block-based programming interface for teaching and learning programming in mobile devices</p> <p>Roberto Bacani Figueroa Jr. and Emely Amolozza University of the Philippines Open University Los Baños, the Philippines</p> <p>p.50</p>	<p>Mobile learning support to distance learners: A study on the usage pattern</p> <p>Harvinder Kaur Dharam Singh, Tai Kwan Woo, Tick Meng Lim and Mansor Fadzil Open University Malaysia Kuala Lumpur, Malaysia</p> <p>p.51</p>	

Parallel Paper Presentations		10:30–12:00
D0709	D0710	
Open educational resources and ubiquitous learning	Use of technologies to enhance ubiquitous teaching and learning	
<p>Towards a generic education pattern of software design courses: An empirical study Jitong Zhao, Yan Liu, Xiaowen Yang, Yangyang Xu and Zunhe Liu Tongji University Shanghai, China</p> <p style="text-align: right;">p.27</p>	<p>Optimizing the learning of the analytics process using a reinforcement learning framework Samuel P M Choi and S S Lam The Open University of Hong Kong Hong Kong SAR, China</p> <p style="text-align: right;">p.32</p>	
<p>Employing open educational resources (OER) to facilitate sustainable online 'communities of practice' for vocational education and training (VET) Ricky Yuk-kwan Ng and Annie Winnie Cheng Vocational Training Council Hong Kong SAR, China</p> <p style="text-align: right;">p.27</p>	<p>Tools and techniques for creating compelling mobile learning content Tan Eik Chor Christopher Singapore Polytechnic Singapore</p> <p style="text-align: right;">p.32</p>	
<p>How to incorporate open educational resources (OER) into the infrastructure and pedagogy for promoting ubiquitous learning Kamalika Banerjee Indira Gandhi National Open University Delhi, India</p> <p style="text-align: right;">p.28</p>	<p>User acceptance of 'Bring your own device' (BYOD) for language learning: Why and why not? Gwendoline Guan and Juliana Chau The Hong Kong Polytechnic University Hong Kong SAR, China Gary Cheng The Hong Kong Institute of Education Hong Kong SAR, China</p> <p style="text-align: right;">p.33</p>	
<p>Formative evaluation of Hong Kong's first open textbooks K S Yuen and K C Li The Open University of Hong Kong Hong Kong SAR, China</p> <p style="text-align: right;">p.28</p>	<p>The design and development of a 3D model of physics based on WebGL Bo He and Zu-yuan Wang Tongji University Shanghai, China</p> <p style="text-align: right;">p.33</p>	
<p>Mobile learning and open/flexible education modes</p>	<p>Distant teacher-student collaboration Frolova Natalia National Research University Higher School of Economics Nizhny Novgorod, Russia</p> <p style="text-align: right;">p.34</p>	
<p>Mobile learning in the lecture theatre: The use of Google forms for teaching Chinese linguistics Ken S K Cheng The Hong Kong Polytechnic University Hong Kong SAR, China</p> <p style="text-align: right;">p.52</p>		
<p>What makes learners use portable educational applications on the smartphones in their pockets? Sahoan Kim Hankuk University of Foreign Studies Seoul, Korea</p> <p style="text-align: right;">p.52</p>		

Parallel Paper Presentations		14:00–15:30
D0709	D0710	
Innovations in open/flexible curriculum development and pedagogy	Use of technologies to enhance ubiquitous teaching and learning	
<p>Assessing academics' needs for research support: The experience of the Open University of Hong Kong Billy T M Wong, Hoyee Au-Yeung and Beryl Yuen-yee Wong The Open University of Hong Kong Hong Kong SAR, China</p> <p>p.40</p>	<p>A study of high school students doing physics experiments with Arduino and other data logging devices Wing-Kwong Wong, Bo-Sing Guo and Tsung-Kai Chao National Yunlin University of Science and Technology Douliu City, Taiwan Chao-Jung Wu National Taiwan University Taipei, Taiwan Yunn-Wen Lien National Taiwan Normal University Taipei, Taiwan</p> <p>p.34</p>	
<p>Teaching practice in college physics based on the SPOC teaching model Xiao-feng Xu, Zu-yuan Wang and Rui Zhang Tongji University Shanghai, China</p> <p>p.40</p>	<p>Assessing students' ability to use computing tools within the framework of statistical thinking Ken W Li Hong Kong Institute of Vocational Education Hong Kong SAR, China</p> <p>p.35</p>	
<p>Issues and implications of involving stakeholders in budgetary planning in a self-financing university providing open and flexible education Linda Yin-king Lee The Open University of Hong Kong Hong Kong SAR, China</p> <p>p.41</p>	<p>The impact of the 'Internet of Things' on engineering education Vladimir Vujović and Mirjana Maksimović University of East Sarajevo Lukavica, Bosnia and Herzegovina</p> <p>p.35</p>	
<p>Flipped classrooms in Japan Yoshihiro Hirata and Yoko Hirata Hokkai-Gakuen University Sapporo, Japan</p> <p>p.41</p>	<p>Designing smart apps to enhance the learners' engagement with online learning Xiangyang Zhang The Open University of Jiangsu Nanjing, China, Shu-chiu Hung Mingchuan University Taoyuan City, Taiwan</p> <p>p.36</p>	
<p>From MOOCs to mainstream: Educational and enterprise design thinking Mark King and Bob Fox University of New South Wales Sydney, Australia</p> <p>p.42</p>	<p>Guidelines for utilizing technology to enhance art learning in art museums and galleries in Thailand. Ampai Tiranasar, Intira Phrompan and Patumma Bumpentan Chulalongkorn University Bangkok, Thailand.</p> <p>p.36</p>	

Keynote Session I



Prof. Niki Davis

Distinguished Professor of e-Learning,
School of Educational Studies
and Leadership
Director of the College of Education
e-Learning Lab
University of Canterbury

Prof. Niki Davis is Distinguished Professor of e-Learning in the University of Canterbury, New Zealand. She is recognized internationally as a leading expert in ICT in teacher education. Sought by UNESCO, international agencies, and institutions for her expertise; she has over 200 publications and is Editor in Chief of the Journal of Open Flexible and Distance Learning (JOFDL). Prestigious awards include an European Commission Marie Curie Fellowship with Trinity College, Ireland; Oxford Internet Institute and Canterbury Fellowships, the international Society of Information Technology in Teacher Education (SITE) award for Outstanding Service to Digital Equity. Collaborative work includes culturally sensitive e-learning with success for indigenous peoples. Prof. Davis is currently working on a book and associated postgraduate course on change with digital technologies in education and training.

Keynote address

Co-evolving ecologies of education and technology — increasing ubiquity and equity?

Now that learning can occur anywhere anytime, educational leaders face new challenges to engage learners in quality assured outcomes. Niki Davis' *Arena of Change with Digital Technologies in Education and Training* recognises multi-layered systems in which both educational practices and digital technologies evolve separately and together, both locally and globally. Prof. Davis will illustrate her Arena framework with leading edge research, which includes MOOC and mobile augmented reality. Applied in this way Davis' Arena will provide guidance to leaders of change with digital technologies in education including university teachers, their leaders and learners. Her critique calls for designers to aim for equity alongside ubiquity and for leaders to support that quest.

Keynote Session II



Prof. Rory McGreal
UNESCO /
Commonwealth of Learning /
International Council for Open and
Distance Education
Chair in OER
Professor,
Centre for Distance Education
Athabasca University

Prof. Rory McGreal is the Chairholder in Open Educational Resources (OER) of the United Nations Educational, Scientific and Cultural Organization (UNESCO), Commonwealth of Learning (COL) and International Council for Open and Distance Education. He is a Professor in the Centre for Distance Education at Athabasca University (Canada's Open University based in Alberta, Canada), and the Director of the Technology Enhanced Knowledge Research Institute. Formerly, he was the Associate Vice President, Research. Previously, he was the executive director of TeleEducation New Brunswick, a province-wide bilingual (French/English) distributed distance learning network. Before that, he was responsible for the expansion of Contact North (a distance education network in Northern Ontario) into the high schools of the region. His Ph.D. degree (1999) in Computer Technology in Education at Nova Southeastern University's School for Computer and Information Science was taken at a distance using the Internet.

Keynote address

Why OER are essential in mobile and ubiquitous learning

The free sharing of open educational resources (OER) can be seen as essential for promoting the creation of content usable in mobile learning. OER on mobile devices can be effective in reducing the knowledge divide that separates and partitions societies. Educators worldwide continue to face significant challenges related to providing increased access to high quality learning, while containing or reducing costs. New developments in information technology, especially with tablets, phablets and other mobile devices, highlight the shortcomings and challenges for the traditional education community, as well as those of more flexible providers, such as open universities. Such developments have the potential to increase access and flexibility in education by rendering it ubiquitous.

When using commercial content, Digital Rights Management (DRM) imposes technological restrictions on both students and instructors, including limitations on editing, reusing, and making effective use of the content on different devices. These restrictions are supported by comprehensive click-on licences that limit the use of the content and provide onerous legal penalties on students and instructors who make use of the content in way prohibited by the licence. As a result, education for all using the new devices continues to be a goal that challenges — and will continue to challenge educators. The increased use of Open Educational Resources, when combined with mobile learning, can be used to overcome many of the obstacles faced by both learners and educators.

Keynote Session III



Prof. Xiaoqing Gu

Head of Department of Educational
Information Technology
East China Normal University

Prof. Xiaoqing Gu is the Head of the Department of Educational Information Technology, East China Normal University. She teaches courses on instructional design for ICT-supported learning, ICT-integrated pedagogy and Introduction to Research on e-learning. Her research has focused primarily on ICT in education, including learning design, ICT-supported content design and development, ICT-integrated pedagogical innovation, computer-supported collaborative learning, and learning analytics to inform pedagogical design. She has been involved in plenty of funded research projects as the principal investigator or a co-investigator. The most relevant projects have been “*Innovative design for learning with a mobile device: resources, services and best cases*”, supported by the Ministry of Education, and “*Research on mobile learning resources development for lifelong learning*”, supported by the National Social Science Foundation. She is the Editor-in-Chief of *International Journal of Smart Technology and Learning* and an Associate Editor of *Journal of Education and Learning*.

Keynote address

Transferring lessons from informal to formal learning settings

This talk introduces the trajectory of the studies by the speaker’s team on mobile and ubiquitous learning during the past years. The studies have focused firstly on the informal learning settings, and then moved to the formal settings of K–12 and colleges. At first, this talk will examine the design of mobile learning for adult learners to explore how their informal learning was supported when mobile technologies were new and were considered a distraction from formal learning. It will discuss examples of mobile learning projects dedicated to lifelong learning in informal settings. Second, this talk will introduce my team’s recent in-depth case studies on analyzing the strategies of mobile and ubiquitous learning. Such learning is becoming more formal, although it takes place in informal settings. In addition, with lessons from the experience of mobile and ubiquitous learning in informal settings, our current studies are oriented towards that in formal settings. The last part of this talk will introduce studies on the design of using mobile and ubiquitous technologies and strategies in K-12 and higher education settings, and will highlight issues on the support of the mobile and ubiquitous technologies.

Keynote Session IV



Prof. Agnes Kukulska-Hulme
Professor of Learning Technology
and Communication
Institute of Educational Technology
The Open University

Prof. Agnes Kukulska-Hulme is Professor of Learning Technology and Communication in the Institute of Educational Technology at The Open University, UK. She has held academic positions in the fields of language teaching, computational linguistics and educational technology. Since 2001 her focus has been on mobile learning research and innovative practice. She is Past-President of the International Association for Mobile Learning and serves on the editorial boards of several journals including the International Journal of Mobile and Blended Learning, System, RPTTEL, and ReCALL (the research journal of the European Association for Computer-Assisted Language Learning). She has co-edited two books on mobile learning and a third one will be published later this year. Agnes has led research on various UK and European Union projects including MOTILL (Mobile Technologies in Lifelong Learning), the MASELTOV project on smart and personalized technologies for social inclusion, the British Council funded Mobile Pedagogy for English Language Teaching, and the SALSA project on immigrant language learning in the next generation of smart cities. Prof. Kukulska-Hulme also contributes to The Open University's Masters programme in Online and Distance Education and strategic visioning around new learning systems and online tuition.

Keynote address

Beyond the classroom language assistance is a two-way street

Classrooms create useful yet also troublesome boundaries for language teaching and learning which needs to develop in many other settings. Drawing on recent mobile learning research projects in The Open University's Institute of Educational Technology, this talk will consider the opportunities and challenges of technology-supported learning that may take place in a range of locations such as homes, places of work, means of transportation, and various locations in and around the city. We have focused on adult learners particularly immigrants and international students, but the experiences have wider relevance. Mobile and social technologies can offer support for informal learning that enables extended and varied practice in more authentic and learner-centric settings. In the European project MASELTOV, a prototype app comprising a suite of tools and services was developed as a 'mobile assistant' on smartphones for immigrants recently arrived in Europe. This integrated mobile app includes augmented reality navigation, language lessons, a camera-based translation tool, a game to raise awareness of cultural differences and support for social interaction. The development was underpinned by an incidental learning framework that focuses on making virtue out of unplanned 'incidents' in the city as well as planning for more predictable situated and location-based learning. The research has been fertile ground for thinking about the notion of 'assistance' and has highlighted peer learning and the importance of community. Implications include how language teaching and learning needs to adapt to help learners assist others in the host community or target language, as well as being recipients of assistance.

Conference Workshops

Conference Workshop I

Implementing effective e-Learning in Hong Kong schools through the adoption of Open Textbooks

Dr K S Yuen

Director, Educational Technology and Publishing
The Open University of Hong Kong

This workshop will start with a brief introduction of open educational resources, particularly open textbooks, and how different countries around the world are making use of them in teaching and learning at a reduced cost. Some relevant open textbooks project will be introduced and there will be a demonstration how open textbooks are used by teachers, students and the general public. Participants will be provided with the opportunity to explore the various kinds of open textbooks available for use free of charge.

The workshop will then describe the Open Textbook for Hong Kong project, which provides an online collaborative environment containing open source textbooks which are free, flexible, current and directly available for use and adaptation by schools and universities. Open English, the open textbook series written by the project team, will be used to illustrate how students can make use of the learning tools provided in the books, such as dictionary, pronunciation, highlighting, annotation, links to external websites, etc., so that they can learn the subject more efficiently.

Participants of the workshop will be given a set of Open English (printed version), as well as electronic versions of the books. To benefit most from the workshop, participants are requested to bring along an iPad to the workshop; otherwise, an iPad will be provided for use free of charge.

Conference Workshop II

Where are you in the global arena of change with digital technologies in education?

Prof. Niki Davis

Distinguished Professor of e-Learning,
School of Educational Studies and Leadership
Director of the College of Education e-Learning Lab
University of Canterbury

In this workshop participants will be supported to review a course or another focus of their leadership from a global perspective using Niki Davis' arena of change with digital technologies in education. The goal is to open our eyes to the exciting (often conflicting) evolutionary pressures that arise from many sources, including peers and multinational companies.

In 2013m Prof. Davis talked to New Zealand teachers about the arena in this video. Her Keynote includes the latest update on the Arena of change with digital technologies.

Participants are invited to bring their own digital devices to increase interactivity in this workshop.

Conference Workshops

Conference Workshop III

Mobile pedagogy for English language teachers

Prof. Agnes Kukulska-Hulme

Professor of Learning Technology and Communication
Institute of Educational Technology
The Open University

This workshop will introduce ideas and activities from a new Guide for Teachers produced as part of a project conducted at The Open University, UK, funded by a grant from The British Council Research Partnerships scheme. Recognising that we live in an increasingly mobile world, where travel and migration are more common and mobile devices are part of everyday life, the research has focused particularly on the teaching and learning context of English for Speakers of Other Languages (ESOL) and English for Academic Purposes (EAP). Teachers already know many of the ingredients that can spell success for language learning and this naturally leads to consideration of how language teaching might be enhanced by the careful use of mobile devices. In the guide we propose a new framework designed to stimulate thinking around key aspects of mobile-enabled language learning activities for students. One of the aspects of successful mobile learning of English that the framework highlights is the use of activities which exploit a dynamic language and technology environment while drawing on the distinctive capabilities of teachers and learners. Various pedagogical strategies will be discussed and participants will use the framework to design or critique a learning activity. This workshop will help English language teachers to make sense of the rising tide of possibilities created by mobile language learning. The adoption of mobile devices, particularly when it involves learning beyond the classroom, has potentially far-reaching consequences for learners, learning design and how the activity is supported by teachers and advisors.

Conference Workshop IV

Utilization of free resources for teaching

Dr K C Li

Director, University Research Centre
The Open University of Hong Kong

This workshop offers a summary of the skills useful for utilizing free resources from the Internet for teaching, aiming to assist teaching professionals in designing learning activities, as well as developing materials, tools and programmes for learning.

The ambit of this workshop includes types of free resources; copyright issues to pay attention to when adopting or adapting materials from free sources; characteristics and potential benefits of open educational resources as well as massive open online courses; selection of such resources, limitations of common resources. It also extends to a discussion on how such resources could facilitate mobile and ubiquitous learning.

Participants will be offered time to reflect on their use of free resources, identify lacunae between skills and knowledge for effective utilization of free resources, devise plans to use them effectively, and exchange views on utility of such resources.

Best Paper Award Competition

Submission I

The possibilities of using mobile and flexible technologies to enhance workplace learning in vocational education and training (VET)

Ricky Yuk-kwan Ng and Rechell Yee-shun Lam
Vocational Training Council
Hong Kong SAR, China p.53

Submission II

Using the experience of API to track learning in a mobile and flexible learning environment

Kin Chew Lim
SIM University
Singapore p.37

Submission III

The blending of student-generated videos in an operating systems course

Andrew K F Lui, Maria H M Poon and S C Ng
The Open University of Hong Kong
Hong Kong SAR, China p.43

Submission IV

Augmented reality campus learning: Engaging learning objects as an approach

Sheng Hung Chung
Wawasan Open University
Penang, Malaysia p.43

Submission V

Can classroom response systems improve the learning performance of Hong Kong undergraduate students?

Anson Wong
Hong Kong Polytechnic University
Hong Kong SAR, China p.53

Submission VI

Embedding MOOCs in academic programmes as a part of curriculum transformation: A pilot case study

Sarah Lambert and Irit Alony
University of Wollongong
Wollongong, Australia p.44

Best Practices of Flexible Learning Award Competition

Submission I

Best practice for web streaming of lecturers: The UPOU multimedia center experience

Gelisan Luisa
University of the Philippines Open University
Los Baños, Philippines

Submission II

The tablet — A learner's gadget

Lay Huah Goh
Wawasan Open University
Penang, Malaysia

Submission III

Motivating students to investigate abstract concepts in-depth with digital storytelling

Andrew K F Lui
The Open University of Hong Kong
Hong Kong SAR, China

Submission IV

Community-based supportive healthcare mobile app

Eva Y M Tsang, C Y Yeung and Linda Y K Lee
The Open University of Hong Kong
Hong Kong SAR, China

Abstracts of Papers

An effort has been made to classify the abstracts under the conference sub-themes to which they primarily relate, although in some cases they obviously span more than one sub-theme.

Digital game-based learning: A case study of a digital educational game in Hong Kong

Anna Wing-bo Tso and Janet Man-ying Lau
The Open University of Hong Kong
Hong Kong SAR, China

This paper examines how the use of digital games in mathematics education can be beneficial to learning, if not more successful than traditional learning. With a view to helping local Hong Kong primary school students to learn compass directions and bearings, Janet Lau, an educational game designer, developed a free, open-for-all digital game package that assists young students in learning location, direction and distance measurement on maps. In order to find out how useful digital game-based learning is to young learners, in May 2015, we invited 40 Primary 4 to Primary 6 Hong Kong students to participate in a case study. From the post-experiment survey and test performance, it was found that students in the experimental group showed more interest, curiosity and motivation in the learning process. In this paper, we analyse and discuss how game players achieve positive results and become active learners in a stress-free learning environment.

A comparative study of the teaching effect in a 'flipped' MOOC class and a traditional class

Xiaolu Chen and Helan Wu
Tongji University
Shanghai, China

MOOC and flipped classes are models of instruction which have sprung up in the last few years, and are focused on in educational circles all over the world. In the School of Physics Science and Engineering at Tongji University, we have integrated the teaching method in flipped classes with a MOOC teaching platform, which is called a 'flipped MOOC class'. The aim of this paper is to assess whether this improves the quality of instruction in college physics classes and enhances student performance. Two second-year physics classes in the University were randomly chosen as research subjects, with one class being taught in the traditional way and the other with the flipped MOOC method. In order to guarantee a reliable foundation for comparing the student learning effect in these two approaches, we analysed the rationality of the teaching process and the evaluation method. After a correlation analysis of the students' records for both classes, we concluded that the flipped MOOC class showed an enhanced teaching effect and better student grades than the traditional class. In the process, some unexpected problems arose, and we are considering why they happened, and reflecting on what to do to ensure the promotion of quality instruction in college physics classes and enhance the performance of students through this flipped MOOC class.

Education for empowerment: The Arab Open University and Arab society

Mohammad Abu-Qudais and Jehad Al-Sadi
Arab Open University
Jordan

Open universities in the Arab region are modern and technologically advanced centres of learning, rooted in solid educational and cultural foundations, which allows them to play a pivotal role in the development of Arab societies by equipping their students with advanced education. The mission of the Arab Open University (AOU) is to deliver up-to-date education, enrich human knowledge and accelerate the social and economic transformations of our society through the academic studies offered and the training of highly specialized personnel in basic and applied fields. Being the first in the Arab world to adopt open learning, the AOU aims at promoting an open system of higher education that provides opportunities for professional development and lifelong learning. It commits itself to giving students a quality education, providing higher education to the widest possible spectrum of learners, and furnishing society with leaders who can help promote the cultural, educational and social aspects of life. AOU emphasizes independent learning, thus encouraging students to rely on themselves and develop their skills. This paper focuses on the educational strategies of AOU and its role in society, including solving the problem of educating large numbers of students by adopting open learning methods that save resources, cost and time.

Organizing open educational resources for teaching and learning: A review of existing learning object repositories

Jennifer S Belen, Primo G Garcia, Luisa Gelisan and Tomas Cabagay, Jr.
University of the Philippines Open University
Los Baños, the Philippines

With e-learning becoming a widely used approach in teaching and learning, e-teachers have been searching for accessible learning materials for use in their courses. While the Internet provides a wide array of resources that can be utilized, teachers prefer: resources that have been reviewed or at least recommended by peers, are openly accessible to allow remixing of resources, and are searchable according to their instructional requirements (Recker, 2004; Cervone 2012). As a response, several institutions have created digital repositories for the collection, maintenance, and dissemination of open educational resources, specifically learning objects. Learning object repositories are basically 'digital collections in which the learning objects are deposited and organized in a database, either by the content creator or some third party (Heery & Anderson, 2005, as cited by Palavitsinis, 2012). Examples of LORs include DOOR (Digital Open Object Repository), Ariadne, Rhaptos, Connexion, MIT Open Courseware, and Merlot.

As an open learning institution that employs e-learning as an instructional approach and a supporter of the OER movement, the UP Open University is planning to establish a LOR that supports the needs of its faculty staff as well as the wider academic community. As part of the planning for the establishment of such a LOR, a review of the existing models of LOR is needed on both practical and theoretical grounds. Such a review can guide the institution in designing an appropriate LOR, as well as contribute to a deeper understanding of the pedagogical, technical and institutional issues surrounding LORs. This paper attempts to contribute to this end by reviewing from extant literature the different LORs on the basis of institutional structure, metadata, cataloguing, end-user modifiability, the information system, and copyright.

Social media policy training in health professional education

Ching-ye Lam

The Open University of Hong Kong, HKSAR

Agnes Fung-ye Tiwari

The University of Hong Kong, HKSAR

Kendall Ho and Wendy Davis

University of British Columbia, Canada

Jason Last and Hilary Hughes

University College Dublin, Ireland

Damien Walmsley and Baljeet Nandra

University of Birmingham, UK

Claire Anderson and Emily Cutts

University of Nottingham, UK

Louisa Remedios and Phil Goebel

The University of Melbourne, Australia

Martin Hernandez and Estefanía Terrazas

Tecnológico de Monterrey, Mexico

Lu Ye and Runyu Zou

Fudan University, China

While social media have the potential for providing the largest, most accessible and interactive learning environment to support and enhance ubiquitous learning, little is known about social media policy training in health professional education.

The aim of this study is to explore faculty training in using social media for educational purpose and experiences of resources-sharing among educators and students in a health professional context.

An international, interprofessional research team, made up of eight universities across the Universitas 21 consortium, collaborated on the design and implementation of this study. Both health professional educators and students from the eight universities responded to an online survey.

A total of 1,537 people completed the survey, made up of 15% educators and 85% students. While 93% of the respondents used social media for education or learning purposes, only one-third of them had received training from their faculty or school on the policies for using social media. The respondents who had received training reported improved confidence in using social media for educational purposes. Compared to the students, educators are more likely to look for such training. Respondents also reported their experience in sharing information in social media, but without explicit permission being sought. Their major sharing included (i) sharing personal opinions or comments on clinical experience, and about colleagues, educators or students; (ii) sharing information or images of the internal environment of their work institutions; and (iii) sharing clinical images.

University administrators must recognize the increased use of social media in health professional education. Necessary training in social media policy or guidelines will promote the proper use of social media among both educators and students.

Creating OERs for Philippine biodiversity

Consuelo D I Habito, Roberto Figueroa and Reinald Pugoy

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Los Baños, the Philippines

The protection and conservation of Philippine flora and fauna hinges on communication, education and public awareness (CEPA) of individuals, communities and institutions. It is highly important that Philippine flora and fauna information is made available for school children, their teachers, families and communities as a crucial early step in promoting more effective management of our endemic biodiversity. In this digital age, open educational resources (OERs) — or ‘technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes’ (UNESCO, 2002) — and open, distance and e-learning (ODEL), can enhance CEPA on Philippine biodiversity. The creation of OER materials on endemic Philippine flora and fauna is one way of contextualizing and disseminating biodiversity concepts for local communities. An informed society practising sustainable activities can contribute to preventing species extinction and habitat degradation. The UP Open University, as the centre of excellence for ODEL in the Philippines, can lead the development and use of these educational technologies in promoting more effective conservation of Philippine biodiversity by providing access to information through the swish of a finger on a mobile device. In this paper, the process of planning and curating OERs, as well as developing its mobile-friendly platform, is discussed. This includes the process of responsive Web design (RWD), and a series of steps for making Web applications readable and usable in most mobile devices. The importance of RWD in making the platform for containing these OERs mobile-friendly is explained, together with several other methods that can be used in generating a mobile app from a responsive Web platform that are relatively easy for non-programmers to understand and implement.

Towards a generic education pattern of software design courses: An empirical study

Jitong Zhao, Yan Liu, Xiaowen Yang, Yangyang Xu and Zunhe Liu

Tongji University
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Software design plays an important role in the software development process, which makes it a fundamental and mandatory topic in software engineering education. However, the diversity of design concerns and the wide range of activities involved in the design process bring great challenges to delivering the software design topic effectively, especially when students have diverse cultural and education backgrounds. To enhance the learning process beyond the classroom environment, we utilized, for example, a number of online open resources in our software design course for international students, including open source modelling tools, trial products, emerging research prototypes, and various research papers from digital libraries. Students are required to do intensive practice by using the suggested open materials. Positive feedback has been received about stimulating students' interest.

To find a more generic education pattern using open resources for software design education, we conducted an empirical study based on data collected during the course delivery process. Students' class performance, assignment quality, assignment submission time, and educational background were analysed with a data model to explore the potential correlations, and the results were visualized to discover learning patterns. In this study, we found that (1) students show interest in open materials related to their daily lives, such as modelling online role-play games; (2) students with various professional backgrounds differ in the quality of their performance as reflected in assignment performance; and (3) scenario-based modelling practice can help students to understand knowledge more quickly and easily. The results indicate the key factors for an open and generic education pattern of software design courses. It is also expected that this approach will be used for better software design course planning.

Employing open educational resources (OER) to facilitate sustainable online 'communities of practice' for vocational education and training (VET)

Ricky Yuk-kwan Ng and Annie Winnie Cheng

Vocational Training Council
Hong Kong SAR, China

Although the concept of open educational resources (OER) has gradually been accepted by higher education institutions after the Paris OER Declaration (UNESCO, 2012), this is a relatively new area to the vocational education and training (VET) sector. Traditional education focuses on the contemplation of academic concepts, but VET emphasizes the mastery of hands-on skills and 'the teaching content of higher vocational education is much more complex and cannot be completely resolved by the general theories contained in general pedagogy' (Pan, 2007, p. 16). Unlike most of the OER developed by higher education institutions, VET's OER requires a large amount of demonstration, practice and interactivity for its specific needs. Furthermore, 'situated activity' is an important feature of VET, implying that learning takes place through participation in 'communities of practice' that are formed by groups of trade-specific practitioners and experts (Wenger, 1991; Mullin, 2013). Learning is a social process in which learners participate in the lived-in world where authentic, trade-specific and generic competencies, such as communication, teamwork, problem-solving and transferability happen (Merriënboer, 2001; Rauner & Maclean, 2008; Bank, 2013; Avis, 2014). For the above reasons, VET depends heavily on workshop practices and industrial attachments rather than lectures, literature reviews and tutorials, and therefore the development of trade-specific OER remains a challenge. In articulating the concept of OER, this paper proposes an interactive self-sustainable online platform for 'communities of practice' to accommodate the specific needs of developing OER for VET. The suggested platform aims to accompany the trade-specific OER with effective e-learning and technologies to enable VET learners, teachers and mentors to co-develop and share learning and teaching materials and practices. This study revealed a need to consider the instructional, practical and technological aspects in developing OER for VET. In addition, the willingness to share trade-specific contents among stakeholders is a hurdle.

How to incorporate open educational resources (OER) into the infrastructure and pedagogy for promoting ubiquitous learning

Kamalika Banerjee

Indira Gandhi National Open University
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Ubiquitous learning can be promoted with the proper usage of open educational resources (OER). Of course, OERs are made in such a way that, with the help of audiovisual effects, they can support learning anytime and anywhere. In this paper, the author has tried to list the various ways in which OERs can be incorporated into the infrastructure and pedagogy for promoting ubiquitous learning. Steps have to be taken so that the different boundaries of education are removed. To involve the teachers for this development is a challenge, which can be met by providing them with the required technical know-how and also training them professionally for the newer paradigms in instructional design and pedagogy which are required for ubiquitous learning. As a result of this change in instructional design, learners shift from being knowledge-receivers to knowledge-actors. Research has to be carried out with varied learner profiles and their proactive participation in using various media and teaching-learning tools. Thereby, the assessment tools have to be made in such a way that they provide useful and relevant formative and summative evaluative information for learners, parents and educators. Also, social platforms have to be used to build a collaborative knowledge culture. To achieve all this, we also need to provide the requisite technical support to the learners. The Internet connectivity is another challenge that has to be tackled and provided to all. The digital divide has to be removed and OERs provided for all. In a nutshell, we should all realize that investment in OERs is the key to improvement in the teaching-learning environment — so OERs and u-learning are the order of the day.

Formative evaluation of Hong Kong's first open textbooks

K S Yuen and K C Li

The Open University of Hong Kong
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In 2012, the Open University of Hong Kong (OUHK) obtained funding from a charity through the support of the Hong Kong government for a project to develop an open textbook system for Hong Kong. The project started in January 2013, and it is planned to complete its 12 open textbooks by mid-2015. The drafts of some units of the textbooks were tried out in the 2014–15 school year. Feedback from teachers and students was gathered for improving the books before their submission to the Education Bureau, upon whose approval the books can be placed on the Bureau's Recommended Textbooks List.

This paper reports on the formative feedback from trial users, i.e. teachers and students who tried out some units of the draft versions of the primary and secondary textbooks developed for the project. A total of 176 teachers (81 primary and 95 secondary) and 5,120 students (1,530 primary and 3,590 secondary) from 43 schools (19 primary and 24 secondary) joined the trial of the textbooks in the 2014–15 school year. A questionnaire was devised to gather teachers' feedback, and another was separately designed for students who had used the books. Focus group discussions were also held with selected groups of teachers to collect in-depth views.

The data were analysed, and the impact of the textbooks on the teaching and learning of Hong Kong schools was examined. The implications for other parts of the world, particularly Asian countries, are also discussed towards the end of this paper.

A study of the relationship between instant messaging communication and student assessment results

Francis Yue

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The use of instant messaging is very popular among local undergraduate students. This paper examines the situation where instant messaging is used in tutoring undergraduate students. These students need to submit an essay assignment as the overall assessment by the end of a course. A large group of students was tutored under two teaching methods, and the instant messages exchanged with their tutor were recorded. The data collected were then compared with the final assessment results obtained by these students. It was found that those who were inclined to exchange instant messages with their tutor were the more capable as well as the less capable students. Also, the gender of students was found to be an influencing factor on exchanging instant messages.

The impact of mobile technology on the learning of management science, and the development of problem-solving skills

Sheila Cheng and Heng Loke Siow

Asia e University
Kuala Lumpur, Malaysia

Learning is the construction of knowledge. E-learning is the application of information and communication technology (ICT) to make education accessible to learners who are not physically on-site. It is ubiquitous, enabling learners to study whenever they prefer and from wherever they are in the world. In the learning of problem-solving skills through the subject of management science, mobile technology plays an important role in enhancing students' understanding and learning. This paper presents part of the research findings from a sample of 15 students who are undergraduates and four facilitators in the course *Management Science*. With the introduction of wireless and mobile technologies, the respondents have mixed opinions about the efficacy of mobile learning — whether it enhances or retards their learning of the subject. The implications of the study are suggested.

Game on, science: How game technology may help physics to tackle visualization challenges

Lu Men, Tian-gang Wu and Zu-Yuan Wang
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Shanghai, China

By studying several popular animation techniques in their respective fields — html5, flash and unity3D — we have concluded that the game industry (unity3D) develops ever more advanced technologies to improve rendering, image quality, ergonomics and user experience of their creations, and provides very simple tools to design new games. In physics, some experts with specialized knowledge have been able to design interactive visualization applications to tackle visualization challenges, but there are limitations in these applications in terms of both picture performance and platform portability. Because of these problems, our work has explored the use of these applications and integrated a Unity3D game engine to develop a physical model of a visual interactive app, so that students can download it to mobile devices for their studies. As an example, in the development of angular momentum, combining this viewer with 3D physical models from experimental data can provide unprecedented opportunities to gain insights into the conformation-function. Publishing the model on native-apps can break the limitation of time and space, allowing learners to access learning materials by mobile phones or pads for ubiquitous learning.

New opportunities and challenges of e-learning in English language training

Irina Malinina
National Research University Higher School of Economics
Moscow, Russia

The purpose of this paper is to give an overview of the Internet resources, tools and technologies that can be used in different types of e-learning of the English language. The paper also highlights the problems that are likely to occur when employing the technologies: a low level of information culture, technological hurdles, psychological unreadiness, and lack of motivation. The main purposes of the pilot project on implementing web-related technologies in the educational process are to:

- determine what Internet resources will suit the standards of educational programmes for training in English as a second language;
- analyse the motivational state of students, their willingness to implement web-related technologies in the educational process and their expectations; and
- research the influence of web-related technologies on students' motivation, and the results of training.

To gain a deeper insight into the chosen topic, different research methods were used, viz. a questionnaire survey, interviews and observation.

Participants in this pilot project considered the educational programme offered to be efficient, useful and beneficial. The most important advantage of e-learning is that it may be adapted to individual student's needs and state of mind, and thus become more effective and motivating in all e-learning areas, ranging from simple vocabulary training to entire university programmes. The results indicate that the students in the experimental group gave a higher estimate of their professional foreign language abilities than those in the control group. The research shows the growing interest in using web-related technologies and increasing satisfaction among students with the learning process based on Internet resources.

The effects of controlling learning environments and instructor intervention on learners' social presence and critical thinking

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Understanding how learners behave in asynchronous learning environments is becoming more important as the use of online learning becomes ubiquitous. Two important measures of learner discourse are the concepts of social presence and critical thinking. These two constructs measure the degree to which learners are engaging cognitively and affectively online. This paper investigates how a certain type of instructional design — control over the environment — and types of instructor intervention affect both social presence and critical thinking. This research took online posts from 217 teacher trainees using an online forum as part of their coursework and measured the levels of social presence and critical thinking in their posts. Nine hundred posts were collected from nine different experimental conditions that varied in the levels of instructor control and instructor posting types within them. Analysis of the learners' posts showed that increases in instructor control over the learning environment, and instructor posts containing direct instruction, increase critical thinking levels in the learners' discourse. On the other hand, social presence was higher when there were lower levels of instructor control and instructor posts focused on facilitating the discourse. These results are useful in that they give some insight into how teachers using asynchronous online forums can change the type of discourse learners will produce based on how the teacher sets up and intervenes in the learning environment.

Accomplishing open and flexible education in higher education through digital media

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Open universities are known for their provision of open and flexible education. This paper argues that open universities can do so without compromising the ideals of higher education through the agency of digital media. The framework — a theory drawn from the organizational communication field that explains how one can act from a distance — assumes that action is shared between human and non-human agents and that the ultimate origin of what is happening in a given interaction is not the participants and their actions/moves, but the specific reasons that they come to stage (or not) their discussions. Archived recordings of online class interactions were collected from three open universities in Asia and analysed by employing the ventriloquial approach that involves a three-step process of: (1) collecting archived/recorded online interactions; (2) identifying markers through which digital media appeared to recurrently and iteratively express themselves in the recorded interactions; and (3) understanding or hearing what the markers are made to say. The analysis shows how digital media perform their agentive role of accomplishing the pedagogical purpose of open universities, as well as exercising their authority and legitimacy as institutions of higher learning.

Optimizing the learning of the analytics process using a reinforcement learning framework

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Learning analytics (LA) is a relatively new research field concerned with analysing data collected from various sources so as to provide insight into enhancing the learning process and teaching. As suggested by Campbell and Oblinger (2007), a complete LA process typically involves five distinct, yet interrelated, stages — capture, report, predict, act, and refine — which form a sequential decision process. So far, research efforts have been focused mostly on studying independent research questions involved in individual stages. It is therefore necessary to have a formal framework to quantify and guide the whole LA process. In this paper, we discuss how reinforcement learning (RL), a well-understood sub-field of machine learning, can be employed to address the sequential decision problem involved in the LA process. In particular, we integrate LA stages with an RL framework consisting of state space, action space, transition function and reward function, and illustrate this with an example of how the three most studied optimality criteria in RL — finite horizon, discounted infinite horizon, and the average reward model — can be applied to the LA process. The underlying assumptions, advantages and issues of the proposed RL framework are also discussed.

Tools and techniques for creating compelling mobile learning content

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This paper discusses various tools and techniques that are commonly used to create e-learning content. Ubiquitous e-learning content that can be easily used with mobile devices can also be easily produced with commonly available consumer equipment, such as video cameras, voice recorders and smartphones. A wide selection of software also exists today — such as Camtasia, PowToon and VideoScribe — which can be utilized to generate compelling video content for the purpose of mobile learning. In addition, there is a wide variety of apps — such as Recordium, Typorama, WordSwag and Phoster — which can be employed to assist educators in getting their messages across to students.

User acceptance of 'Bring your own device' (BYOD) for language learning: Why and why not?

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The practice of 'Bring your own device' (BYOD) originated in the business world whereby employees are encouraged to bring their personally owned devices — such as laptops, tablets and smartphones — to the workplace and use those devices to access corporate information and applications. BYOD practice has gained in popularity in the education sector in recent years. The United States and Australia, for instance, have introduced BYOD to their school systems as a way to minimize the cost of providing ongoing technological support for the students (Rackley & Viruru, 2014). Proponents of BYOD also believe that the use of personal devices enables teachers to give differential instruction to meet individual students' learning needs, to promote student interaction and participation, and to make learning ubiquitous. However, research on students' attitude towards using their own devices for learning, and on ways of incorporating personal devices into the curriculum, remains scarce, despite encouraging findings in preliminary studies on the issue (de Waard, 2013).

This paper reports on a pilot study of implementing BYOD pedagogy in the context of an *English for Academic Purposes* course at a Hong Kong tertiary institution. Data were collected from 40 students through pre- and post-questionnaires on students' attitude towards and experience with using their own devices in this course. Semi-structured interviews were conducted to examine their perceptions of using their own devices for English learning and the changes they observed in the learning process.

The findings carry implications for language practitioners, curriculum developers and administrators interested or involved in BYOD pedagogy.

The design and development of a 3D model of physics based on WebGL

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In this era of highly developed information technology, learning becomes more and more flexible and open. People can easily use different types of equipment to learn at any time; and all kinds of technologies are being used to improve teaching effectiveness. Various learning platforms and terminals appear one after another. Therefore, in the face of different learning equipment, it becomes very important to achieve a non-differentiated porting as you develop your applications. This paper explores how we can use technology to ensure the same user experience on different platforms and terminals. For the 3D model of physics, the traditional technologies have the defect of the cross-platform spot. To try to solve this problem, we applied WebGL technology to the 3D model of physics. With this method, we can use canvas technology to get the 3D rendering and use the WebGL library, such as three.js, to build the model of physics. Then, the browser on different platforms will present the model. The experimental results show that the application of WebGL technology to the 3D model of physics can overcome the cross limitations and provide a good support for different platforms and mobile terminals. A new idea is suggested for constructing a three-dimensional physical model which makes learning physics easier for students.

Distant teacher-student collaboration

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Implementing forms of teacher-student collaboration via information and communication technologies in distance education is a complex and challenging process. It enhances education, accelerates the exchange of urgent information, and provides a free flow of distant communication. However, there are some controversial issues which slow down its use in teaching practice. The paper presents the advantages and disadvantages of social Internet sites from both the teachers' and students' points of view. While carrying out this project, fourth generation evaluation principles were adopted. The author used observation and interviewing in the process of data collection. The purpose of this paper is to make public the results of this research in the field of ICT, the findings of which are given in the article.

A study of high school students doing physics experiments with Arduino and other data logging devices

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Traditional high school physics labs rely on manual data logging or logging devices with a slow data acquisition rate and low precision. This study aimed at designing data logging devices and a modelling tool for high school physics labs with low-cost modern electronics, including smartphones, Lego Mindstorms NXT, and Arduino equipped with an ultrasonic. For NXT and smartphones, the experimental data were first recorded in the devices and then manually copied to a personal computer for data analysis. For Arduino, the experimental data were transmitted to a PC via BlueTooth in real time. With the data in a PC, each student used a modelling tool on a Web browser to try to find an equation that fitted the data with only a small error. The equation was a function that related one variable to another. For example, in a free-fall experiment, the equation expressed distance as a function of time. With each equation submitted, the tool plots the model against a background of lab data with a measure of error. Based on the visual plot and the error information, the student can then try to reduce the error by revising the equation. The results indicated that both the students and the instructor enjoyed using the modern data loggers and using the acquired data to find equations that fit the data well.

Assessing students' ability to use computing tools within the framework of statistical thinking

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Although statistics education should keep pace with the development of information technology (IT) to strengthen students' capacity to understand statistical processes and conduct statistical investigations, many students think that the use of IT can accomplish statistical calculations without the need for statistical thinking — which is why they cannot carry out regression tasks leading to the construction of a regression model feasible for making predictions. But, in fact, one of the educational objectives in the statistics curriculum is to teach students how to think statistically. Therefore, the present study aims to assess students' proficiency in using computing tools and provide feedback to teachers about the parts of statistical thinking they cannot fully develop so as to improve pedagogy to support learning.

A test was conducted in a computing laboratory to assess the operational level of students' statistical thinking in regression modelling, in addition to their proficiency in using Excel graphing and calculation tools, as well as their knowledge of Excel syntax and programming skills. A sample of 23 students studying in a tertiary academic institution in Hong Kong was selected to attempt seven questions on an individual basis. A qualitative analysis of students' responses to each question was carried out within the assessment framework of Putt et al. to check which of the four levels of statistical thinking the students had: idiosyncratic thinking, transitional thinking, quantitative thinking and analytical thinking. The results of the analysis showed that most students could manage Excel syntax, as well as calculation and graphing tools, and attain either quantitative thinking or analytical thinking when handling more technical tasks — that is, displaying data and reducing data — but not the tasks of reasoning about data, reasoning about results, and reasoning about conclusions. These reasoning tasks demand statistical communication that should be emphasized and monitored throughout their studies. Statistics lessons and written work should be assigned to students so that teachers can provide feedback on their writing, such as helping them to conceptualize material, make links among concepts, and internalize thinking.

The impact of the 'Internet of Things' on engineering education

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The rapid advancement of information and communication technologies (ICTs) in the last decade has created a new paradigm for the Internet, known as the 'Internet of Things' (IoT). This new paradigm — which provides access anytime and anywhere to information in novel ways and contexts — brings people, processes, data and things together in unprecedented ways. Today, IoT touches every facet of our lives, opening new opportunities for growth, innovation and knowledge-creation. Through the interconnection of people with many things (e.g. media, photos and information), and now with physical objects too (e.g. RFID, sensors, actuators and robots), the IoT application in education has the potential to drive new ways of teaching and learning and transform the experience for both students and educators. This paper analyses the influence and application of IoT technologies on the teaching system in engineering education through a practical and methodological approach. The results of the research have shown that the introduction of new methods and strategies of teaching and learning may raise the quality level of the entire engineering educational process, and guarantee the delivery of long-lasting knowledge and skills that are applicable to real-world problem-solving.

Designing smart apps to enhance the learners' engagement with online learning

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Today, the majority of the online learning student cohorts in mainland China are 'digital natives', and there also exist many 'digital migrants', including middle-aged and retired professionals and senior citizens. Using social media apps has in recent years become a trendy movement in every walk of life, with a dynamic and vibrant market for large-screen smartphones.

According to an informal survey, people tend to use mobile phones or tablets to communicate with their friends by keying in words; use apps to browse the Internet for news and blogs; and conduct learning activities on some specific websites. According to the fiscal reports by the three telecommunication network giants in China, mobile phones with larger screens are selling well. Moreover, the 4G network has joined the wireless service throughout the nation. Therefore, it is high time for the online learning universities to integrate mobile learning into the traditional online learning based on desktop/laptop computers with the Internet. The working adult learners can access the Internet through their wireless devices anytime, without any constraints on location.

In this paper, after a survey of learners' needs, we first address the relative concepts and context of current online learning in our university, and then consider the design of apps for smart learning to enhance the students' engagement with online learning. Finally, we discuss the action of smart apps at our university and then look at the potential benefits of adopting this new alternative route to the learning platform, with an expectation of more engagement with learning activities, and learners' satisfaction and versatility.

Guidelines for utilizing technology to enhance art learning in art museums and galleries in Thailand.

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The specific objectives of this research are: (1) to study the current state of technology-enhanced art learning in art museums and galleries in Thailand; and (2) to propose guidelines for utilizing technology to enhance art learning in this context. This study involves focus group discussion with six experts and 78 participants. The research includes a review of online resources via content analysis of a survey of technology-enhanced art learning, such as websites, social media, and mobile applications. The outcomes of this review were used to retrieve suggestions from experts by means of a focus group discussion, together with a list of topics related to utilizing technology to enhance art learning. The opinions and suggestions of the experts and the participants were recorded during the group discussion. The results of this research revealed that art museums and galleries in Thailand use websites and social media to present the contents of exhibitions, but they provide very little learning and research content, and online activities. Moreover, the museums/galleries have not utilize mobile applications. The experts suggested that today's technology should play an important role in presenting contents, as well as publicizing the galleries and museums — technology should allow the audience to download exhibition and education contents; and the art educators should participate in the art museums/galleries knowledge management. The findings on guidelines for utilizing technology to enhance art learning in art museums and galleries in Thailand are discussed in this paper.

Using the experience of API to track learning in a mobile and flexible learning environment

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The purpose of this paper is to investigate how the xAPI (application programming interface) can be used to track learning in a mobile and flexible learning environment. The xAPI is a new open source based learning technology specification, which allows one to capture data about a person's or group's activities from many technologies, either online or offline. There are advantages in using the xAPI. Firstly, the xAPI takes e-learning outside the browser. Secondly, it allows for both informal and formal learning. Thirdly, the xAPI focuses on tracking learning activities. Fourthly, it can be used to track learning via games, simulations, virtual worlds, social learning, self-directed learning, collaboration and team-based learning. The xAPI allows software programs to read and write data statements in the form of 'I did this', or 'actor verb object'. Data statements such as 'I attended Conference C' are stored in the LRS (learning record store).

Information management requirements for precision education

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This paper addresses the information management requirements of a new approach to curriculum design called *precision education*. This approach aims to provide accreditable, but highly targeted and customizable, curricula. To be accreditable, a standardization of the intended learning outcomes (ILOs) is proposed. Issues of delivery and vehicle are separated from the ILOs. For example, a course on object-oriented programming can be delivered face-to-face or online, using Java or C++ (vehicle). It can also be taught using a variety of textbooks, development environments, problems and examples. Courses and programmes can then be validated by considering only how they meet their ILOs. In order to overcome the potentially high resource requirements that can arise due to the customizability requirement of this approach, a new model for IT-mediated inter-institution collaboration is proposed as an integral part of a new methodology.

Unlike career planning, which has been criticized for its rigidity in response to rapid changes in domain knowledge — especially in the technological fields — the new approach is incrementally adaptable and incorporates the general interests of the students, their varying and evolving backgrounds, their aptitudes, and their broader career goals.

This new approach is inspired by precision irrigation and borrows concepts of service-oriented architectures (SOA) in software engineering. Precision education represents a new curriculum design model that incorporates elements of both product-oriented and process-oriented models as presented by Ralph Tyler, Benjamin Bloom and Lawrence Stenhouse. The paper outlines the requirements of the core information system infrastructure needed to support this approach: curriculum customization, student enrolment, programme accreditation, and industry involvement in study plans and to coordinate the delivery of the content across multiple institutions.

Learner interviews for flexible education in a Japanese tertiary curriculum

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This study outlines a series of face-to-face semi-structured interviews conducted in a Japanese tertiary English classroom. It begins with an explanation of the background search underlying the chosen interview process and how the interview data were analysed. This is followed by a description of the major features of the students' responses, and then an investigation of how their comments — especially those regarding teaching methods and materials — changed over the course of the academic year. The findings illustrate the importance of providing students with opportunities to express their opinions openly and directly with their instructors, so that the instructors are better able to determine how they might improve their teaching methods and materials, and shape their curricula.

Teacher design teams: Building capacity for flexible and learner-centred course development

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Blended learning, a mix of face-to-face learning and online learning, has been growing in popularity in universities as a means of introducing distance e-learning to its students and faculty staff. It is also a way to promote innovative instructional approaches and accommodate various learning styles. By fostering learner-centred course design that includes a wide variety of learning activities (such as classroom instruction, virtual meetings, online books, mentoring, self-paced study, simulations and assessments), Schools can utilize learning resources more efficiently, while allowing students more learning flexibility. Thus, there is now a need to train the faculty staff on how to design their course for blended learning. The University of the East used teacher design teams to ensure high-quality course design and provide support for the course developers/faculty. This paper explores the techniques and processes employed by the University to ensure that our blended learning courses are learner-centred and flexible, and are aligned with the output-based educational goals. Instructional designers and educational technologists were employed to help the course developer/faculty to design their courses. A quality assurance team was also put together for each course in order to ensure that all aspects of the course (content, instructional design, technology and language) were of the highest quality. The results show that employing teacher design teams produces quality courses and creates a positive perception of e-learning from both the students and faculty.

A case study of the development, use and impact of an online module for teaching financial literacy

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In their quest for the enhancement of personal financial literacy, researchers have for several decades analysed the behaviour and intentions of individuals and their attempts to manage their personal financial learning. Notably, their research findings suggest that there is a gap between an individual's behavioural intention and the actions required to accomplish the financial goals.

This case study examines how an online elective module — leveraging on technology and innovations in flexible curriculum development and blended learning pedagogy — was developed for the teaching of financial literacy and to bridging the gap between intention and action.

More specifically, this case study discusses the flexible curriculum development and blended learning pedagogy adopted for an online module (*COR167 Managing Your Personal Finance*) that is offered as an elective to over 1,000 undergraduates each semester at the SIM University. It identifies the major challenges encountered during the different phases of project management from the conception to the delivery of the online module. It also highlights the practical issues faced in bridging the gap between students' intentions and actions through the delivery of various e-learning components comprising online discussion, online quiz and face-to-face facilitation, as well as the post-course student feedback.

The lessons drawn from this case study will make a significant contributions to the domain of online module development and delivery, as well as providing a good source of motivations for online course developers. In addition, it also serves as a key impetus for the current development of a 100% online module *Money 101* with enhanced ubiquitous teaching and learning.

Assessing academics' needs for research support: The experience of the Open University of Hong Kong

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Research support plays a crucial role in the research capacity development of an institution. Providing proper research support services relies on an effective channel for collecting feedback from academics on their needs.

This paper presents a needs assessment study conducted at the Open University of Hong Kong to identify its academics' needs for research support. The study aims to identify the extent to which the University's current research support is adequate for the academics and whether other kinds of support are preferred by them. It involved three sessions of roundtable sharing, with academics from a broad range of disciplines and at different levels of activeness in research. Following the Researcher Skill Development Framework (Willison & O'Regan, 2008), the needs of participants in different facets of research — from initiating a research study to presenting research findings — were shared and discussed systematically in the roundtable meetings.

The results showed the diverse needs of academics at different levels of research activity. The needs highlighted by research-active academics included activities for generating research ideas and identifying partners for research collaboration. Those who were not previously actively engaged in research also wished to have more activities for experience-sharing of research and making successful funding applications. There were also suggestions made by all groups of participants, such as the provision of training on research software and quantitative data analysis. Some of the needs lie at the policy level, such as the proportion of work time allocated for research, as well as familiarity with relevant research administrative policies. Based on their feedback, new or refined research support services have been provided to cater for academics' research needs.

Teaching practice in college physics based on the SPOC teaching model

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MOOC has set off a worldwide education reform, which has raised significant questions about the traditional education mode. However, it is not perfect, and the SPOC teaching model has appeared at this critical juncture. It does not replace the traditional teaching model and MOOC, but rather recombines them in a hybrid pattern. This hybrid pattern makes full use of the advantages of traditional face-to-face teaching and MOOC to reshape the relationships between teachers and students. This paper presents the main processes in the teaching of college physics, based on the SPOC teaching model in Tongji University; and it analyses the effects according to test scores which indicate that the SPOC teaching model can help students to improve their academic performance. At the end of the paper, a summary is given of the key factors influencing teaching according to this teaching practice. The main purpose of this paper is to provide references for improving teaching.

Issues and implications of involving stakeholders in budgetary planning in a self-financing university providing open and flexible education

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As in most tertiary education institutions which provide open and flexible education, the Open University of Hong Kong (OUHK) is a self-financing university. In order to support effective operations and student enrolment — and, most important, to excel in its mission of making higher education available to all through open and flexible education — sound financial budgeting is considered as very significant. Over the past 25 years, the OUHK has successfully tackled the challenges of running a self-financing institution within limited financial resources through well-planned financial budgeting. The budgetary planning mechanism of the University is characterized by having multiple levels and involves multiple stakeholders. The heads of academic units are invited to identify new programmes or the expansion of existing ones, and project student numbers for the coming academic year; and heads of administrative units are required to estimate the expected expenditure for each financial year. The budget is then subjected to approval by a number of committees at different levels, namely the Budget Committee, the Finance Committee and Executive Committee and, finally, the Council. At each level, multiple stakeholders are involved. Involving stakeholders in budgetary planning enhances the budget to be developed with input from diverse perspectives; facilitates the identification of any gap between needs and practice; ensures that the preferences of the ultimate recipients of resources are taken into account; and improves the transparency and accountability of governance. However, the wide involvement of stakeholders may lengthen the decision-making process. To evaluate the outcome, the important indicators of resource usage, including equity, efficiency and effectiveness in achieving educational objectives, are used. Despite the difficulties, the present experience demonstrates that the involvement of stakeholders in the budgetary process facilitates the development of a realistic budget for meeting operational needs and sustaining the growth of the University. Specific suggestions are given for further improvements in the current operation.

Flipped classrooms in Japan

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Flipped teaching, developed by Bergmann and Sams (2004), is a recent teaching method requiring students to watch an online lecture before coming to the class. Then, during class-time, rather than having a traditional lesson conducted by the instructor, students have discussions and do assignments based on the online lecture under the guidance of their instructor. The benefits of this flipped approach to teaching, which merges traditional learning with the continuously advancing world of online learning, are enormous for both students and instructors (Fulton, 2012). Although various combinations and applications of this model have been implemented, little research has been conducted on which models are more effective at enhancing students' motivation and encouraging them to take control of their learning. This study looks at the development and evaluation of flipped classroom approaches as implemented in various Japanese educational settings, and discusses the benefits and limitations revealed so far.

From MOOCs to mainstream: Educational and enterprise design thinking

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This paper focuses on the educational and enterprise design thinking surrounding massive open online courses (MOOCs) at the University of New South Wales. Our engagement in the MOOC space has provided opportunities to trial new ways of working, as well as building institutional and staff capability and capacity. Within the educational domain, the MOOCs platform has allowed for developing and testing new curricula, feedback, assessment and governance, and related technology solutions that directly inform on-campus learning and teaching. At the enterprise level, partnerships made between higher education institutions and commercial platform providers create unique challenges, not only in terms of equity and access but also in matters related to copyright, intellectual property and exposure to the world.

This paper explores our involvement with MOOCs as a vehicle for 'controlled experimentation' and doing things differently that can stimulate and lead to change in mainstream learning and teaching. The MOOCs themselves are not seen as necessarily innovative, but they provide the opportunity for offering courses in non-traditional ways, open to all, anywhere, with potential links to the institution's conventional award-bearing programmes. This paper then focuses on the underlying values for institutions being involved in MOOCs. The benefits can be subtle and include new opportunities to develop curricula beyond the domain of the faculty, with central service involvement providing specialist skills in new pedagogies and new technology applications.

When MOOCs are used to support mainstream on-campus course development, they can in turn lead to better developed and quality-assured blended courses. In addition, central services can ensure that matters of copyright, disability laws and intellectual property have been addressed and the use of educational technology is appropriately developed to enhance the student learning experience within a proven learning design model, outlined in the paper. Experience with MOOCs can accelerate the development and enhancement of institutional capacity for change and growth in educational applications across all disciplines, while simultaneously advancing staff capabilities in working in larger curriculum design teams with multiple inputs from different specialists.

In summary, the educational and enterprise design thinking that surrounds MOOC development can act as a catalyst for change; and what is learned in one MOOC can be used

to support improvements in the development of another MOOC. The MOOC experience can also throw new light on the structure of the curriculum and offer new possibilities for developing varied levels of participation in a course, from a free involvement open to all from around the world, to a certified course for professional development, to becoming core to mainstream courses. Leveraging the opportunities MOOCs offer to trial and develop new practices, new models of learning and teaching, as well as new ways for thinking about courses and the relationships between courses and programmes are major learning opportunities that should not be missed.

The blending of student-generated videos in an operating systems course

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Digital video is an effective instructional tool for providing learning content and illustrating concepts. Digital video storytelling turns students from media consumers into media producers, and consequently motivates them to take control of their learning processes. In this paper, a pilot study of blending digital storytelling into an operating systems course is described. Students in an operating systems course need to overcome the difficulty of abstract and dynamic concepts. The findings show that, through a highly engaging course project involving the production of a video for illustrating these concepts, students were able to reach even a metacognitive level of understanding. The experience was a successful and satisfying one for both the students and the course instructors.

Augmented reality campus learning: Engaging learning objects as an approach

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In this paper, augmented reality campus learning is proposed for teaching and learning using learning objects in Wawasan Open University (WOU). It provides self-directed virtual learning capabilities through an augmented reality (AR) approach running on mobile and tablet devices. This initiative focuses on learners' interactions with virtual learning objects in the teaching and learning environment. The augmentation was performed mainly on: (i) posters; (ii) 3D model objects; and (iii) campus buildings and facilities. Augmented reality campus learning aims to bring a new dimension to life on the campus and learning for adult learners as it allows them to enhance what they observe in images (AR books/posters/figures/charts) and model objects and campus buildings using the camera in their mobile phones and tablet devices. A layer of augmented reality is added to what learners can see on their devices, which has embedded learning object content such as three-dimensional (3D) objects, videos, audios and animations. This extra layer can be used to exhibit student facilities, scenery, points of interest, and activities — and even to teach the concepts of geometry in a mediated reality learning environment. The AR campus learning approach proposed in this study provides potentially transformative added value in the WOU campus learning environment. The paper describes the points of interest and the AR learning objects created during this experimental study.

Embedding MOOCs in academic programmes as a part of curriculum transformation: A pilot case study

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The University of Wollongong's first locally developed and hosted massive open online course (MOOC) — *The Reluctant Mathematician* — was a highly scaffolded MOOC designed to support stressed and low-efficacy mathematics learners. It was developed to lift mathematics skills at our university and also in the community, where such skills continue to be a challenge and, in some cases, a source of stress. Internally, the MOOC provided an alternative online way to support students who struggle with mathematics at university level, and as a complement to the existing face-to-face services. This paper describes a successful approach to using MOOCs not only for addressing skills shortages among university students, but also to involve staff in the hybrid learning aspects of curriculum transformation. Based on a small-scale pilot, the paper describes the narrative of engagement of academics, and highlights the main elements which were conducive to their engagement in selecting and using the MOOC as a support for an assignment in their curriculum. A framework is proposed for educators who are interested in using MOOCs for a similar purpose.

Factors affecting the media literacy of young students

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The objective of this paper is to discuss the current situation and differences in media literacy and explore the factors that affect the core competence of media literacy among young Chinese students. The sample for this study included 534 young people aged between 12 to 18. Principal components analysis revealed a five-factor structure that corresponded closely to the underlying conceptual model. Based on these findings, the researchers made a number of recommendations. This scale may be valuable for the measurement of factors affecting media literacy.

A study of instruction in college physics experiments in the context of big data

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The research on big data in the field of education is a positive response to the era of big data. Mining big data produced by students who learn through mobile learning (m-learning) and ubiquitous learning (u-learning) can promote effective instruction. In physics experimental learning, the big data about the experiment process should be recorded, mined and used. To study instruction in college physics experiments in the context of educational big data, this paper analyses the present research results on m-learning, u-learning and educational big data, and combines the characteristics of teaching and learning in physics experiments. The paper includes five parts, as follows:

- 1 Educational big data can promote personalized adaptive learning, which means that educational data mining and learning analytics can be used to help students find the best learning methods and resources for physics experiments, when needed.
- 2 Digitalizing college physics experiment courses is the foundation for us to record resource usage and the experiment operation process.
- 3 With physics experiment teaching reform, teachers are required to provide rich e-learning resources and useful communication platforms, which can be used to record the data which are produced by students in the physics experiment learning process. Teachers should analyse the big data to adjust their teaching methods and use different teaching strategies for different students.
- 4 The reform of physics experiment learning requires students to adopt the blended learning method which combines informal after-class learning and formal classroom experiment learning; and students can use the prediction function of big data to change their learning method for different experiments.
- 5 With reform in the physics experiment evaluation method, by analysing the whole physics experiment learning process, students' actual level can be reflected more objectively.

Learners without borders: Utilizing social media as a self-directed learning tool

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According to a recent study by Babson (2014), at least one out of three adult learners are now enrolled in at least one online course. For some students, the change from the traditional face-to-face (F2F) classroom to a virtual learning environment (VLE) can be daunting, but technology has its advantages for both the learner and the instructor/facilitator. The use of this new technology, as well as the start of a new form of socialization, can be an adventure or a tragedy for some students. However, the purpose of this paper is to look at ways educators can make this transitional phase an adventure, which encourages, motivates, and retains potential adult learners. One method that has shown good results is the connecting of social media to learners. While some adult learners may be slow in transitioning to online learning, they appear to be using social media on various levels with ease, prior to this new form of learning. Thus, more academic institutions and instructors are realizing that the skills and experiences adults have gained from their own use of social media can act as a bridge to the online learning environment. This paper demonstrate how many adults may already have enough technological savvy with social media tools to carry these attributes over to a successful learning adventure with online learning by using various social media as another tool for self-directed learning for today and lifelong learning tomorrow.

Reaching out to the young: A case study on teachers' initiatives in using social media in the classroom

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Considering the wide accessibility of the Internet and the new breed of learners viewed as 'digital natives', teachers in higher education are learning to explore the use of technology, taking advantage particularly of social media tools to make the teaching and learning relevant and readily available — be it inside or outside the residential (face-to-face) setting. However, one issue that needs to be examined is how these social media tools are actually selected, integrated and used in the classroom. Using Puentedura's Substitution, Augmentation, Modification and Redefinition (SAMR) model, this paper describes and analyses the practices of selected faculty members at a residential university in the Philippines in terms of using social media in education. The findings from semi-structured interviews with the faculty members are presented to reflect how social media tools can be used to reinforce how they teach. The conclusions and recommendations made for General Education courses — such as *Academic Writing*, *Speech Communication*, and *College English* — may serve as a guide for developing professional training and development programmes for teachers in residential settings to help them develop the appropriate knowledge and skills for teaching successfully with technology.

Bridging the distance in guidance and counselling education: Web-based video-sharing platforms as a tool for accessing and creating information

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This paper explores the use of web-based video-sharing sites in an online guidance and counselling course. Given the nature of guidance and counselling — with transactions being private, if not intimate — the introduction of distance as an element in studying and training for this process has brought with it inherent limitations. Web-based video-sharing sites can be used as cost-efficient, ubiquitous, and sufficiently easy-to-use platforms for the exchange of information. While such sites are being used more and more for educational purposes, especially in blended learning, little research has been carried out on their use and usefulness, particularly in online guidance courses. This paper examines the capacity of video-sharing sites to bridge the distance in online guidance education, as information is accessed, created and exchanged from various parts of the globe. The paper provides a brief review of the relevant literature, and describes the use of videos as supplementary sources of information in an online course on basic guidance and counselling, as well as the creation of new information for the class. The teacher's observations and students' experiences (through questionnaire responses) on viewing and creating videos are also discussed. Online educators in general, and guidance and counselling instructors in particular, may find the results informative.

The evaluation of the quality of mobile applications in Al-Quds Open University

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The future trend in mobile applications for education will pay more attention to flexibility with high quality. Palestinian students have adequate knowledge of and practice in mobile usage in their daily lives. Also, Al-Quds Open University (QOU) has the necessary infrastructure to implement mobile services in terms of wireless networks and applications. QOU needs to provide flexible mobile education services regardless of time and place. This study aims to evaluate the quality factors in mobile applications among students in QOU. A questionnaire was utilized to measure the quality factors, with 239 students participants of varying ages and from different faculties. The results show that all the participants agreed on the information quality, system quality, and service quality. Regarding the services available on QOU's mobile application, respondents ranked the Exams Timetable as the most frequently used, followed by GPA and Passed Credit Hours. The results indicate that students are very active in using QOU's mobile applications; and that they are highly appreciative of the quality factors of the services accessed via the University's mobile applications. This study indicates the quality factors that management, developers and educators should pay attention to.

Creating awareness of food safety and climate change through mobile learning

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Food safety and food security have emerged as important concerns in the era of climate change. The potential impact of climate change on food safety includes the increased ability of fungi to produce mycotoxins; the emergence of virulent pathogens; stress-induced microbial evolution; and increased use of pesticides and decreased water availability. The policy resolutions and studies connecting food safety and abiotic stress lay emphasis on capacity-building to mitigate the risks associated with food spoilage. There is a dire need for sensitization, training for trainers, education and applied research on food safety in relation to climate change. Open and distance learning (ODL) has huge potential for a wider and larger coverage in innovative ways. The educational content must be adequate, both qualitatively and quantitatively. The qualitative features of the educational content include clarity, brevity and engagement; and the quantitative feature refer to the detailed coverage of food safety science through information and communication technology (ICT), enabling educational tools to deliver a creative learning environment. The challenge of reaching the unreached in a cost-effective manner can be met by technology-enabled mobile learning since the use of mobile phones, particularly smartphones, is on the rise. Mobile learning involves the use of mobile technology, either alone or in combination with other ICTs, to enable learning anytime and anywhere. It involves the delivery of tailored learning contents and learning support on mobile phones, tablets and notebooks. The development of mobile applications in different mobile operating systems, such as Android, iOS and Windows, can help to create awareness, as well as stimulating critical thinking. Triggering critical thinking can be done by providing contents such as Scrabble, crosswords, brain games, puzzles and cartoons. By developing mobile application containing these components, the learner can not only get up-to-date on recent development on food safety and climate change, but can also be motivated to take action to implement them. This paper focuses on creating awareness about food safety and climate change through mobile learning.

Using mobile-based interactive e-books in K-12 Chinese as a second language classroom: Opportunities and challenges

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The educational affordances of the new interactive e-books (compared to the conventional PDF e-books) on mobile devices — especially eBooks on iPads — have drawn great attention from different stakeholders. However, their implementation in K-12 Chinese classrooms as a second language (CSL) at international schools in Hong Kong has so far been relatively slow, although such a context is often considered as technology-enriched. A preliminary investigation found that teachers had concerns about the difficulties they would face when creating their own interactive e-books for mobile devices while few publishers offer their intended teaching materials in this new form. This paper reports a case study involving three Mandarin Chinese language teachers who were interested in utilizing technologies in their classrooms at an international school in Hong Kong. New tools — such as Apple iBook Author and Kindle Textbook Creator — were introduced in order to enhance the educational experience and support the attainment of student learning outcomes. These tools are expected to enable teachers without high-level technical knowledge to create and disseminate their first-hand interactive e-books with diverse forms of multimedia contents and various interactive functions. As an evaluation, qualitative data were collected through interviews, focus group meetings and direct observations. The problems teachers encountered, as well as the additional efforts made, were documented, and all the data were analysed by a content analysis approach. The results of the study, and the possible implications and recommendations, are given. They are expected to not only contribute to understanding the challenges in producing interactive e-books for learning on mobile devices in today's K-12 classrooms, but also serve as practical examples for teachers' future effective adoption of the technology.

Mobile learning in an open and distance e-learning (ODEL) institution

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Based on UNESCO's (2012) Working Paper Series on Mobile Learning, mobile phones are purchased more than personal computers in Asia, particularly in low-income countries. In the Philippines, the number of mobile phone subscriptions is 86.7 per 100 inhabitants, while the percentage of household computers is only 13.7 (ITU, 2011, as cited in UNESCO, 2012). *The Economist* (2011) also reported that 'mobile phones are a more accessible and more affordable tool for communication and learning than PCs'.

According to O'Malley et al. (2003), mobile learning or m-learning occurs when a learner who is on the move 'takes advantage of the learning opportunities offered by mobile technologies'. M-learning in the University of the Philippines Open University (UPOU) goes back to 2004, when it launched its own 'mobile learning programmes to support learners *on the go*', which involved pocket-sized learning modules and SMS-facilitated learning for lesson contents and questions (Bandalaria, 2005). However, no data were available regarding its sustainability and students' perceptions of m-learning. This paper aims to review the status of m-learning in UPOU and the implications for teaching and learning. Specifically, it aims to: (1) identify the m-learning initiatives in UPOU; and (2) determine the m-learning readiness of UPOU students.

The usability of mobile technologies in engaging the learners is revealed in the review of research studies related to m-learning in UPOU. The findings also indicate what needs to be considered in designing courses and websites for greater accessibility, convenience, and the mobility of students. The m-learning readiness survey of UPOU students revealed an average awareness of m-learning and the ownership of varied mobile devices. As an open and distance e-learning (ODEL) institution mandated to widen access to quality education, UPOU needs to continuously innovate and take advantage of the Internet's ubiquity, and at the same time ensure that no students are disadvantaged in using mobile technologies for learning and communication purposes.

Crowd-sourcing as a tool for content analysis of asynchronous course conversations in the mobile social networking system and Web environments

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Crowd-sourcing, often referred to as the *wisdom of the crowd*, is often regarded as an acceptable resource for gathering collective consensus, which was an area previously tackled exclusively by experts. However, the legitimacy of the analyses and answers is a concern among researchers whenever this method is used.

This paper is an extension of a study that compared interactions between collaborators via mobile devices and desktop computers. It reuses the same instrument, which required a selected group of educators in the targeted field to label a series of online discussions as its primary data.

In this study, the data gathered from the online discussions is re-evaluated through a crowd-sourcing platform, using an open source system called 'Pybossa'. The objective is to compare the results of the previous research against the data obtained from the Pybossa platform. This will help to reconfirm the primary data in the previous findings, as well as lend more credence to using crowd-sourcing as a valid tool in content analysis.

Usability analysis of a block-based programming interface for teaching and learning programming in mobile devices

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A previous study looked at the use of a graphical programming interface as a tool that could be utilized for reducing programming anxiety and increasing perceived learning among distance learners in an introductory programming course. This interface, called *blockly*, allows users to drag code blocks to write programs. A syllabus was designed and implemented to incorporate *blockly* in a course that aims to teach the basic concepts of programming to students who are majoring in multimedia studies at the University of the Philippines Open University. Two platforms that implement *blockly* were included in the students' activities, and the results showed that programming anxiety was reduced among them. The study also considered future applications of the tools, especially for schools that have a limited amount of desktop computers. The draggable nature of blocks showed potential for teaching introductory programming to students using tablet computers or mobile phones. The country's recent projects for improving public schools that lack desktop computers by supplying tablet computers opened up more possibilities for programming to be taught through these mobile devices.

However, the level of usability of these tools needs to be measured so that future pedagogies and curricula that feature mobile programming will achieve greater success. Also, an instrument for measuring the usability of these platforms in mobile devices should be established in the context of the target learners. This paper seeks to answer this need by applying the System Usability Scale to measure the usability of these platforms among learners who access them using mobile devices. The results of this study will be helpful for educators who are planning to teach programming using *blockly* in tablet computer laboratories and classrooms. Furthermore, this will also help distance educators to plan their programming curricula to accommodate online learners who use mobile devices in accessing their courses, thereby making these courses mobile-friendly and ubiquitous.

Mobile learning in nursing education: Preference and readiness of nursing students

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Nursing education stresses the importance of theoretical and practical integration. Teaching and learning activities occur both in the classroom and the clinical venue. Clinical learning, in particular, commonly takes place away from the classroom, outside and beyond regular school days and hours. Owing to these characteristics, nursing education has to be delivered in a flexible way and mobile learning appears to be a desirable means of doing so. In order to achieve effective learning outcomes from mobile learning, one of the essential issues is to deliver mobile learning that meets the preferences and readiness of nursing students.

This paper presents a survey which aimed to investigate the preference of nursing students for engaging in mobile learning and their readiness to adopt this learning mode. A convenience sample of 158 full-time undergraduate nursing students from The Open University of Hong Kong was recruited. Data were collected through a questionnaire which was developed according to the findings from two previously conducted focus group interviews with nursing students. The survey results revealed that nursing students mostly preferred to access their learning materials anytime and anywhere. The nursing students considered 'ease of reading' and 'ease of note-taking and highlighting' as the most important factors that determined their use of electronic learning materials. They further considered 'level of comfort in reading', 'portability', and 'input and output capabilities' as the three most important factors in using a mobile device for learning. Among the different study topics, they highly preferred to have body systems and diseases as well as medical terminology to be provided in multimedia materials in the mobile device. Based on these findings, the challenges and opportunities of mobile learning in nursing education are discussed. Unique features of mobile learning for nursing education are suggested.

Mobile learning support to distance learners: A study on the usage pattern

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WhatsApp Messenger is a popular mobile application which is commonly adopted by people in Malaysia. Since its use is pervasive among Open University Malaysia (OUM) learners, this paper examines how the University attempts to use this recent mobile technology as a tool for supporting learning. The pilot project was implemented with a new group of about 3,000 first-semester learners. The mobile learning messages were in the form of images, audio and video, in addition to the text format. There are four areas of mobile learning support, viz. (1) important announcements; (2) learning tips; (3) a guide to myVLE (OUM's learning management system); and (4) information on helpdesk support available in the University. A preliminary survey was conducted using the Google Drive survey instrument, and it was communicated to the learners via WhatsApp. This paper outlines the OUM's efforts and processes in implementing WhatsApp as a tool for mobile learning support, and distance learners' experience and usage pattern for the mobile learning messages.

Mobile learning in the lecture theatre: The use of Google forms for teaching Chinese linguistics

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Those who teach large groups always find difficulty in interacting with students and evaluating their learning progress during lectures. Student response systems (SRSs, also known as audience response systems or personal response systems) are proposed to promote active learning in the lecture setting. SRSs are devices and connected software that enable teachers to pose questions for students to answer during class, with their responses shown instantly to the lecturer in the format of statistical charts or summary tables. The teacher can clarify the teaching content or adjust the pace of teaching in accordance with student difficulties.

A widely adopted SRS is clickers, which are hand-held devices with small keypads for students to choose answers to multiple-choice questions posed by the teacher. Other SRSs such as uReply, PollEverywhere, MessageGrid, ClassQue and ChimeIn are also used in universities, and students have to install these stand-alone systems on their mobile devices beforehand.

In my lectures on an undergraduate course on Chinese linguistics (the number of students is about 70), I have used Google Forms, a web-based spreadsheet program for conducting surveys for other purposes, and I found the following advantages compared to other SRSs:

- (1) No additional devices, such as clickers, are required. Students can use their mobile devices such as mobile phones, tablet PCs and notebook computers to finish the tasks.
- (2) No specific software needs to be installed prior to the implementation of SRS by both the teachers and students, as Google Forms is web-based and cross-platform.
- (3) The question type is not limited to multiple-choice questions. Open-ended questions with responses in text are allowed, which can encourage students to express their opinions in more detail and thus enhance student-teacher interaction in the lecture room.
- (4) It is free of charge — no additional costs are incurred.

Two cohorts of students were compared on the same course, with one cohort being conducted without SRS and the other with it. The percentage of 'agree' and 'strongly agree' in response to the description 'teaching and learning activities helped me to achieve the subject learning outcome' rose by almost 30% in the latter case, showing that students' feedback on the use of SRS is highly positive.

What makes learners use portable educational applications on the smartphones in their pockets?

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The purpose of this study is to illuminate the factors which influence learners' acceptance of educational applications on a portable computing technology, the smartphone. The research attempts to examine the factors influencing learners' acceptance of educational applications of smartphones, and to establish a theory-based model, and verify it. To explore these areas, the researcher used grounded theory methodology. The data were gathered through 12 focus group interviews in South Korea. The results showed that the influential properties were 'open minded', 'effective learning', 'accessing easily', 'independence', 'willingness', 'fun', 'challenging', 'problem-solving', 'usage of peers', 'usefulness', 'test score', 'money', 'teachers' suggestions', 'experience of online learning', and 'carrying out'. The researcher then found core categories which were applicable to the extended Technology Acceptance Model (TAM). In addition, the researcher found 'attitudes to learning' and 'social influence' in the acceptance of educational applications on smartphones. After finding the properties of learners' attitudes to learning, it was found that these properties can be explained by the Self-Directed Learning Readiness (SDLR) (Guglielmino, 1977; Gibbons, 2002).

The possibilities of using mobile and flexible technologies to enhance workplace learning in vocational education and training (VET)

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This paper discusses the possibilities of using mobile and flexible technologies to enhance workplace learning in vocational education and training (VET). It also proposes a number of innovative pedagogical practices enabled by technologies to facilitate better learning and teaching experiences for VET students and mentors in the workplace. Reforms in Hong Kong's VET programmes have given rise to the value of using the workplace as an authentic learning environment. This includes a change in delivery modes — such as the New Earn and Learn Pilot Scheme, the Dual-track System and the Workplace Learning and Industrial Attachment — that have become more work-driven than content-driven, and intend to train students in competencies sought by the industry. Unlike traditional education, VET focuses on deliver workplace competencies in situated workplaces more than contemplation of academic theories. Students receive theoretical knowledge and practice in simulated work environments in school, while 'authentic' trade-specific learning and practices happen in their work engagements in real-life workplaces. Although a number of studies have shown promising results using mobile and flexible technologies to enhance learning and teaching in higher education institutions, their adaptability for VET is still in question. While these technologies emphasize self-paced online and virtual learning experiences, VET stresses the mastery of hands-on skills and practices in authentic workplaces — how can these two learning paradigms complement each other and benefit workplace learning? The findings of this study showed that, despite the need for innovative pedagogical practices, the increase in effectiveness of mobile and flexible technologies relies on the instructional design of the trade-specific learning and teaching materials, as well as the readiness of students, teachers and workplace mentors.

Can classroom response systems improve the learning performance of Hong Kong undergraduate students?

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Clicker is one of the most popular wireless classroom response systems. Numerous studies have reported that clickers can engage students effectively in class. However, most of them were not related to Hong Kong, and their findings seldom report student perceptions of using this mobile technology for learning. This study aims to fill this gap by collecting students' perception of using clickers, and investigating the impact it has on the academic performance of Hong Kong undergraduate students in finance classes. The data on student perceptions of using clickers were collected by a survey and their academic performance was measured in term of their final examination results. In this study, most students agreed that using clickers was fun and believed that it could improve their learning competence. The results found a statistically significant difference in the examination results between clicker users and non-clicker users, with the former performing better. Overall, the study found that clickers can improve learning efficiency and increase student involvement in class, and most of the Hong Kong students were positively towards using clickers.

Revisiting flexible learning: Definitions, implementation and potentials

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For decades, flexibility has been a focus of attention and effort the field of education. Flexibility in learning, which emphasizes student choice, has been considered as one of the keys to enhancing education quality and satisfying highly diverse student needs. It is often associated with the terms 'open learning', 'distance learning', and 'e-learning'. With the increasing application of information and communication technologies in the field of education, flexible learning has been especially closely associated with e-learning, and sometimes is considered to be the essence of the term. Since the ambiguity of the term could be counterproductive in discussions of flexible learning, a systematic review of relevant literature is very much needed to put the meaning of the term into perspective. This paper provides a critical review of literature relevant to flexible learning. The development of the use of 'flexible learning' and the implementation of the term are summarized. In this paper, the term 'flexible learning' is redefined with a clarification of its relationship with the relevant terms and a proposed system of its dimensions. Suggestions for future research are also provided.

The flipped classroom in professional nursing education: Where are we now?

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The flipped classroom has been used in health professional education recently and it is thought to be a trendy teaching method for the new generation. This pedagogy not only enhances student-directed ubiquitous learning, but also facilitates educators to engage students in classroom activities. However, the evidence for flipped classrooms in nursing education is sparse and limited. In this study, we review the current knowledge and assess the deliverables, feasibility and effectiveness of the flipped classroom in professional nursing education.

A literature search was performed, using the keywords flipp*, classroom and nurs* in computerized databases, including PubMed, CINAHL plus, EBSCOhost, and ProQuest. English peer-reviewed journal articles focusing on undergraduate and postgraduate nursing education were included. Relevant articles meeting the inclusion criteria were reviewed and the full papers were then retrieved and assessed.

The flipped classroom has been introduced to a number of professional nursing subjects of different educational levels. Both educators and students reported positive feedback on this course design. While a variety of technologies are accessible to educators in preparing pre-class online teaching materials, challenges in implementation were identified. The re-designing of classroom activities allows more interactions between nurse educators and nursing students. Overall, increased student engagement, flexibility in learning, and student ownership of learning were appreciated.

A flipped classroom supports learners to learn according to their own pace. It motivates nursing students to learn actively and to take charge and responsibility for their studies. Although flipping the class may be viewed as a paradigm shift in teaching and learning, nurse educators have the responsibility for giving students contemporary learning experiences and preparing them to learn how to learn in the future.

Transforming content development in the era of distance and e-learning in the University of the Philippines Open University

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One of the mandates of the University of the Philippines Open University (UPOU) is to deliver quality distance education courses and materials to students nationwide and worldwide. Delivering these materials means making instructional packages more accessible to the students.

In UPOU's 20 years of existence, one of the main sources for the student learning process is the learning materials and packages they receive every semester. In the early years, these included the course module (the main source of students' learning), a Reader (for some courses) and a book supplement (for wrap-around modules). In 2004, UPOU started its transition to becoming fully online, with some of the modules being transformed into electronic format/pdf and uploaded on the course site of the programme. Today, UPOU is venturing into interactive materials, MOOCs and OER.

This paper presents the evolution of UPOU materials from print to electronic, and how this affects the students' learning process. It considers the changes in the content development approach in the era of open and distance e-learning (ODEL), in terms of policies, course writing, instructional design, capacity-building and training.

Developing chemistry laboratory experiments for distance education using the context-led framework

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One of the important roles of chemistry education is to provide students with knowledge and skills to understand chemistry in their everyday lives. This may be achieved by allowing students to perform laboratory experiments in the context of globally important issues and challenges. In distance education (DE), various ways have been explored for delivering chemistry experimental laboratory classes. This paper shares the experiences of the author in developing various context-led laboratory experiments which are delivered at a distance. Laboratory experiments were developed and designed in the context of globally-relevant science challenges, taking into account the alignment of the cognitive level of the experiments and the DE students, safety issues and logistic concerns, and employing open educational resources. At the same time, the experiments ensure that students will learn the knowledge and skills in chemistry and the essential laboratory techniques. The experiments are also designed to ensure the required laboratory precision and accuracy.

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