Proceeding of The 4th Asia Regional OpenCourseWare and Open Education Conference 2012

AROOC 2012

"Open Education En Route to Conceptual Society"

January 21-22, 2013 Bangkok, Thailand
# AROOC 2012

The 4th Asia Regional OpenCourseWare and Open Education Conference 2012

"Open Education En Route to Conceptual Society"

## Program

### Day 1: January 21, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.00 - 9.00</td>
<td>Registration</td>
</tr>
<tr>
<td>9.00 - 9.45</td>
<td><strong>Opening Ceremony</strong></td>
</tr>
<tr>
<td></td>
<td>* Welcoming Speech</td>
</tr>
<tr>
<td></td>
<td>: Assoc Prof Dr. Wisa Chattiwat</td>
</tr>
<tr>
<td></td>
<td>(Dean, Faculty of Education, Silpakorn University)</td>
</tr>
<tr>
<td></td>
<td>: Prof. Yoshimi Fukuhara</td>
</tr>
<tr>
<td></td>
<td>(Japan Open Courseware Consortium)</td>
</tr>
<tr>
<td></td>
<td>* Conference Report</td>
</tr>
<tr>
<td></td>
<td>: Asst. Prof. Dr. Thapanee Thammetar</td>
</tr>
<tr>
<td></td>
<td>(Director of Thailand Cyber University Project)</td>
</tr>
<tr>
<td></td>
<td>* Opening Remark</td>
</tr>
<tr>
<td></td>
<td>: Assoc.Prof. Kamjorn Tatiyakavee, M.D.</td>
</tr>
<tr>
<td></td>
<td>Deputy Secretary General, Office of Higher Education Commission, Ministry of Education</td>
</tr>
<tr>
<td>9.45 - 10.45</td>
<td><strong>Keynote Speech I</strong></td>
</tr>
<tr>
<td></td>
<td>How is your institution dealing with disruptive technologies</td>
</tr>
<tr>
<td></td>
<td>Prof. Dr. Terry Anderson</td>
</tr>
<tr>
<td></td>
<td>Athabasca University, Canada</td>
</tr>
<tr>
<td>10.45 - 11.00</td>
<td>Refreshment break</td>
</tr>
<tr>
<td>11.00 - 12.00</td>
<td><strong>Country Report</strong></td>
</tr>
<tr>
<td></td>
<td>Japan</td>
</tr>
<tr>
<td></td>
<td>Korea</td>
</tr>
<tr>
<td></td>
<td>Taiwan</td>
</tr>
<tr>
<td></td>
<td>Thailand</td>
</tr>
<tr>
<td></td>
<td>Moderator: Asst. Dr. Jintavee Khlaisang, Chulalongkorn University</td>
</tr>
<tr>
<td>12.00 - 13.15</td>
<td>Lunch</td>
</tr>
</tbody>
</table>

MC: Dr. Chulaporn KongKeo, Chulalongkorn University
# Program

**Day 1: January 21, 2013**

<table>
<thead>
<tr>
<th>Time</th>
<th>Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>13.15 - 13.45</td>
<td><strong>Keynote Speech II</strong>&lt;br&gt;Prof. Haruo Takemura&lt;br&gt;Vice-Director, Cybermedia Center, Osaka University&lt;br&gt;President, Japan OpenCourseWare Consortium</td>
</tr>
<tr>
<td>13.45 - 14.00</td>
<td><strong>Invited Speaker II</strong>&lt;br&gt;Assoc. Prof. Dr. Thanompong Laohajaratsang&lt;br&gt;Director of ITSC, Chiang Mai University, Thailand</td>
</tr>
<tr>
<td>14.00 - 14.15</td>
<td><strong>Thailand Cyber University and the Best Practice for Open Courseware’s Services</strong>&lt;br&gt;Supannee Sombuntham and Jintavee Khraisang</td>
</tr>
<tr>
<td>14.15 - 14.30</td>
<td><strong>Social Media Based Courseware for ASEAN Open Education: Opportunity and New Challenge</strong>&lt;br&gt;Jintavee Khraisang</td>
</tr>
<tr>
<td>14.30 - 14.45</td>
<td><strong>Thailand Cyber University (TCU) Project and its Best Practice for Open Courseware and Open Education Through the Nine University Hubs in Nine Regional Areas Across Thailand</strong>&lt;br&gt;Thapanee Thammetar and Vorasuang Duangchinda</td>
</tr>
<tr>
<td>14.45 - 15.00</td>
<td><strong>Towards Online Learning Excellence of Higher Education in Thailand: Open Educational Resources Initiative at Sripatum University</strong>&lt;br&gt;Vorasuang Duangchinda, Nitcha Chamniyon and Nipada Trairat</td>
</tr>
<tr>
<td>15.00 - 15.15</td>
<td><strong>Refreshment break</strong></td>
</tr>
</tbody>
</table>
# Program

## Day 1: January 21, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chairperson:</td>
<td>Asst.Prof.Dr. Praweenya Suwannatthachote, Chulalongkorn University</td>
</tr>
<tr>
<td>15.15 - 15.30</td>
<td><strong>Invited Speaker I</strong>&lt;br&gt;Bilingual OERs and Content and Language Integrated Learning&lt;br&gt;Prof.Dr.Vilas Wuwongse&lt;br&gt;Thammasart University, Thailand</td>
</tr>
<tr>
<td>15.30 - 15.45</td>
<td><strong>A Development of Online Inquiry Based Learning Instructional Model for Sukhothai Thammathirat Open University’s Graduate Students</strong>&lt;br&gt;Kemmanat Mingsiritham</td>
</tr>
<tr>
<td>15.45 - 16.00</td>
<td><strong>KUREKA at Open KU: Enhancing Education through Peer-to-peer Learning</strong>&lt;br&gt;Hikyoung Lee and Minja Kim</td>
</tr>
<tr>
<td>16.00 - 16.15</td>
<td><strong>The Users' Evaluation of Universitas Indonesia OpenCourseWare</strong>&lt;br&gt;Lavinia Araminta, Soulaya Lestary, Atmadewita and Fitria Sudirman</td>
</tr>
<tr>
<td>16.15 - 16.30</td>
<td><strong>Creating Google Sites as a Learning Management System</strong>&lt;br&gt;Pichit Trivitayaratana, Wanna Trivitayaratana and Siriporn Trivitayaratana</td>
</tr>
<tr>
<td>16.30 - 16.45</td>
<td><strong>Development of Design and Analysis Methods for Item Bank for Constructing Multiple Equivalent Tests</strong>&lt;br&gt;Pokpong Songmuang and Keizo Nagaoka</td>
</tr>
<tr>
<td>16.45 - 17.00</td>
<td><strong>Computer Assisted Instruction “Radiotherapeutic Technique”</strong>&lt;br&gt;Nuanpen Damrongkijudom</td>
</tr>
<tr>
<td>17.00 - 17.15</td>
<td><strong>Promoting Free Education via an Online Interactive Ecosystem</strong>&lt;br&gt;Taketsugu Hanafusa</td>
</tr>
</tbody>
</table>
### Program
**Day 2: January 22, 2013**

<table>
<thead>
<tr>
<th>Time</th>
<th>Programs</th>
</tr>
</thead>
</table>
| 9.00 - 10.00  | **Keynote Speech III**  
You Need More Than OER to Sustain the Use of OER: Policy, Strategy, Empowerment, and Demand  
Dr. Gerard L. Hanley  
Executive Director of MERLOT  
Senior Director, Academic Technology Services at the California State University Office of the Chancellor |
| 10.00 - 10.15 | Refreshment break                                                                                                                         |
| 10.15 - 10.30 | **Invited Speaker III**  
Expectation of Distance Learning Management to Expand Education Opportunity in Sensitive Area in the Most Southern Provinces of Thailand  
Dr. Charuwan Kritpracha, Prince of Songkla University |
| 10.30 - 10.45 | **Factors affected the Abilities of ICT Manpower in Sustainable Technology Society**  
Suwimon Vongsingthong |
| 10.45 - 11.00 | **m-Learning Solution for Training English**  
Mohammed Samaka, Loay Ismail, Nosayba Abu Abdulla and Brendan Clark |
| 11.00 - 11.15 | **Recent Activities and Future Challenges of OpenCourseWare in Hokkaido University**  
Masashi Sata, Izumi Fuse and Shigeto Okabe |
| 11.15 - 11.30 | **Opinion towards Open Educational Resources: a Case Study of Augmented Reality 3D Pop-up Book-the Seed Shooting Game**  
Poonsri Vate-U-Lan |
# AROOC 2012

The 4th Asia Regional OpenCourseWare and Open Education Conference 2012  
"Open Education En Route to Conceptual Society"

## Program

### Day 2: January 22, 2013

<table>
<thead>
<tr>
<th>Time</th>
<th>Programs</th>
</tr>
</thead>
</table>
| 11.30 - 11.45 | **Re-Examining Our Assumptions: OCW in the Year of the MOOC**  
Larry Cooperman                                             |
| 11.45 - 13.15 | **Lunch**                                                                               |

MC: Dr. Chulaporn KongKeo, Chulalongkorn University

<table>
<thead>
<tr>
<th>Time</th>
<th>Programs</th>
</tr>
</thead>
</table>
| 13.15 - 13.30 | **Invited Speaker IV**  
"Video the major player of OERs"  
Asst.Prof. Dr. Denpong Soodphakdee  
Vice President for Academic and Information Technology  
Khonkan University                                         |
| 13.30 - 13.45 | **The effectiveness of e-Learning pedagogy open online courseware**  
Anirut Satiman and Thapanee Thammetar                                                                 |
| 13.45 - 14.00 | **Effect of Open Education**  
Naoko Tosa                                                                                           |
| 14.00 - 14.15 | **Open Education in e-Learning Professional capacity building in Thailand**  
Chawalert Lertchalolarn, Anuchai Theeraroungchaisri,  
Anirut Satiman and Praweinya Suwannatthachote                                                  |
| 14.15 - 14.30 | **OpenCourseWare in Japan –History and future challenges-**  
Yoshimi Fukuhara                                           |
**Program**

**Day 2: January 22, 2013**

<table>
<thead>
<tr>
<th>Time</th>
<th>Programs</th>
</tr>
</thead>
</table>
| 14.30 - 14.45 | **Boosting Pre-Service Teachers’ Awareness of Open Educational Resources: A case of stock photographs for teacher project**  
Praweenya Suwannatthachote |
| 14.45 - 15.00 | **A Proposed Interactive E-Book Model for Tablet using SQ3R Technique**  
Wichai Srisud and Jintavee Khlaisang |
| 15.00 - 15.15 | Refreshment break                                                        |
| 15.15 - 15.30 | **Projecting the New Strategies of Education System**                    
Miroslav Kuka, Ksenija Jovanović and Jove Talevski |
| 15.30 - 15.45 | **The Status of Open and Distance Higher Education in Iran: A Rapid Assessment**  
Gholamreza Zakersalehi |
| 15.45 - 16.00 | **Model for the Uptake and Continued Use of E-learning in Thai Higher Education**  
Nakarin Pinpathomrat, Lester Gilbert and Gary Wills |
| 16.00 - 16.15 | **Knowledge Management on Teaching Profession According to Khurusapha**  
Maturos Chongchaikit and Wipharat Saengjun |
| 16.15 - 16.30 | **Interactive Multimedia: An Examination of Textbook Complementary experiences for Studying Laithai**  
Ampai Tiranasar |
**Program**

**Day 2: January 22, 2013**

<table>
<thead>
<tr>
<th>Time</th>
<th>Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.30 - 16.45</td>
<td><strong>Online Videos for Art Education: Proposed Analysis Strategies</strong>&lt;br&gt;Ampai Tiranasar, Intira Phrompan and Prapailin</td>
</tr>
<tr>
<td>16.45 - 17.15</td>
<td><strong>Panel Discussion on International Collaboration on Open Education</strong></td>
</tr>
<tr>
<td>17.15</td>
<td><strong>Closing Remarks</strong></td>
</tr>
</tbody>
</table>
Key Note
Prof. Dr. Terry Anderson
Athabasca University, Canada

Dr. Gerard L. Hanley
Executive Director of MERLOT
Senior Director, Academic Technology Services at the California State University
Office of the Chancellor

Prof. Haruo Takemura
Vice-Director, Cybermedia Center, Osaka University
President, Japan OpenCourseWare Consortium

Invite Speaker
Assoc. Prof. Dr. Thanomporn Laohajaratsang
Director of ITSC, Chiang Mai University, Thailand

Prof. Dr. Vilas Wuwongse
Thammasart University, Thailand

Dr. Charuwan Kritpracha, Prince of Songkla University

Asst. Prof. Dr. Denpong Soodphakdee
Vice President for Academic and Information Technology
Khonkan University
Title: You Need More Than OER to Sustain the Use of OER: Policy, Strategy, Empowerment, and Demand

Gerard L. Hanley, Ph.D.
Executive Director of MERLOT
Senior Director, Academic Technology Services at the California State University Office of the Chancellor

Abstract: There is a wealth of Open Educational Resources (OER) available on the web and yet the adoption and use of free online instructional materials is still marginal. Why don’t learners and learning institutions readily accept the gifts of OER? Educational content is embedded in a complex cultural, academic, business, and personal context and community. Substituting OER for traditional educational content requires comprehensive, community-centered processes. The presentation will review four key factors that the international community of MERLOT (Multimedia Educational Resources for Learning and Online Teaching, www.merlot.org) and the California State University System have implemented to enable a growing and sustained use of OER: Policy, Strategy, Empowerment, and Demand. Recommendations and illustrations of how these factors can be applied to the Asia region will also be presented.

Policies declare important values of its communities as well as define the goals, responsibilities and processes that the community will use to achieve their goals. Policies become a foundation for both leaders and community members to change their behaviors. Developing and pervasively communicating a clear policy on OER attract everyone’s attention to the use of OER and sparks discussion of its use. Once the leaders and members of the community become aware of the OER policy, they need strategies for taking action that will achieve the goals of the policy. The presentation will review a number of recommendations for developing, resourcing, implementing, and pervasively communicating your OER strategies; strategies that leverage existing institutional practices and resources for using OER is a major recommendation. Empowering the network of different groups of people within the education community to learn about, evaluate, and adopt OER is another key factor and involves the democratization of education. The presentation will review a number of empowerment approaches that have been used by MERLOT and the California State University System which can be adapted for the Asia region. Understanding and developing the demands of your community is at the heart of an OER program and is the fourth key factor. Demand refers to the wants and needs of the community members which can become the essential drivers for choosing OER over traditional educational content. You cannot control demand but by deeply understanding the wants and needs of a community, you can develop the demands so OER becomes an excellent way to fulfill their wants and needs. Within MERLOT and the California State University System, affordable access to educational content is a deep and pervasive need which free, quality OER can satisfy. The presentation will review how OER has been embedded within the Affordable Learning Solutions initiative to address these demands. Finally, the presentation will review how these four factors can be incorporated into both local OER programs in the Asia region as well as more global, large scale OER programs in connected ways using MERLOT.
OpenCourseWare and Open Education: Global Trends and Local Acts

The Case of Chiang Mai University

Assoc.Prof. Thanomporn Laohajaratsang, Ph.D.

Director, Information Technology Service Center,
Chiang Mai University

Nowadays an increasing number of universities worldwide are developing an interest in Open Education. As for now, more than 250 universities including established universities such as MIT, Harvard, Berkeley, Stanford and Open University (UK) have published more than 21,000 open courses. Massive Open Online Courses (MOOCs) have become the educational buzzword of 2012 (Daniel, 2012). Not only the universities in the US and European countries, several universities in Asian countries such as Japan, South Korea and Taiwan have recently started to show an interest in and explored the possibilities of, adopting these ideas of sharing open and free courses and teaching materials.

Based on the presenter’s experience attending the 26th Asian Association of Open Universities (AAOU) in Chiba, Japan in October, 2012, the two research topics that received considerable interest and came up thick and fast during the Conference were a) the OpenCourseware which refers to course materials in a virtual learning environment created by universities, and b) Open Educational Resources or the OER which refers to freely accessible, openly formatted and openly licensed documents and media that are useful for teaching, learning, education, assessment and research purposes (Wikipedia, 2012).

This presentation will cover the global trend of OpenCourseware and Open Education with a focus on the Massive Open Online Courses (MOOCs), followed by how Chiang Mai University is responding to this global trend. CMU’s initiative on OpenCourseware and OER will be described in detail with some examples of free contents (courseware, learning objects and video lectures). Last but not least, Game-Based Learning (Free Download Games) will also be presented as our innovative openCourseware.
Title: Bilingual OERs and Content and Language Integrated Learning

Vilas Wuwongse
Department of Electrical and Computer Engineering
Faculty of Engineering
Thammasat University

Abstract: The amount and types of Open Educational Resources (OERs) have increased dramatically in the past few years. The year 2012 has been named "The Year of the MOOC" when the three leading providers, namely Coursera, Udacity and edX, have started to fully offer their Massive Open Online Courses. In addition to these post-secondary educational resources, OERs for primary and secondary schools are also available at, for example, OER Commons, OER Africa, CK-12 and Connexions. All these OERs are in English and English is used as the language for their search, access and utilization. The Thailand Cyber University Project of the Office of the Commission on Higher Education has developed a bilingual (Thai-English) resource discovery system that enables Thai users to look for resources available in Thailand and in the Global Learning Objects Brokering Exchange (GLOBE). The resources discovered and retrieved through the system could be more widely utilized by Thai users if they are translated into Thai.

This presentation describes a project aiming at the development of an environment that supports the translation of EPUB OERs and the creation of bilingual EPUB OERs. EPUB is an official standard of the International Digital Publishing Forum and has become the de facto standard for e-books. Original OERs are pre-processed to generate two copies of a given OER to facilitate the translation and creation of bilingual OERs. An EPUB editor is then employed to translate one copy into another language while keeping the other copy with the original language. As a result, a bilingual OER is readily generated. With suitable text-to-speech software and other language processing tools, these bilingual OERs could also be used for language learning as well. In other words, they could become good learning materials for Content and Language Integrated Learning (CLIL), an important learning paradigm for the ASEAN Economic Community (AEC).
Expectation of Distance Learning Management to Expand Education Opportunity in Sensitive Area in the Most Southern Provinces of Thailand
Charuwan Kritpracha¹,
Ophat Kaosaiyaporn²
Wasant Atisabda ³

Abstract
This study aimed to examine the expectation of distance learning management for educational development in sensitive area in the most southern provinces of Thailand. The samples for this study included 112 school administrators, teachers, and educational staffs in five most southern provinces of Thailand. This paper is part of the research project entitled “Expanding educational opportunity for high school students in sensitive area through distance learning.” The research project was divided into two phases. The first phase, expectation of distance learning management to expand education opportunity was examined. In the second phase, model of distance learning management will be developed. This paper will present the first phase of the project.

The findings revealed that teachers who were responsible for the distance learning should be strengthened and be able to prepare themselves for the supplementary class. The teacher should study related teaching content and provide learning manual to students for studying prior to class. Before starting the program, the teachers should have been trained in the use of distance classroom as well as instructional strategies in order to empower students’ learning, together with orientation for assistant teachers, and students for the effectiveness of distance learning. There should be a designated time for teachers to guide when students faced problems related to their studies. Increasing role of assistant teachers was emphasized to facilitate student learning as well as reduce the teacher’s workload.

The number of target classrooms was based on the student population, with a minimum of 4 classrooms in each province. The duration of the study period should be around 3-7 months. There should be pretest and posttest in every study session to evaluate the efficacy of the study. There was also a need for technical staff for the target classroom maintenance and services.

The instructional management of distance learning was expected to be based on students’ needs and the lessons should be able to be accessed from anywhere, anytime. With varieties of instructional approaches and the opportunity for students to communicate, the learning system that allows teachers, assistant teachers, and peers to communicate without limitations of place and time will strengthen the capabilities of students in the most southern provinces of Thailand to be more successful in higher educations.

Charuwan Kritpracha¹, Ophat Kaosaiyaporn² and Wasant Atisabda ³
¹Ph.D. (Nursing), Lecturer, Faculty of Nursing, Prince of Songkla University.
²Ph.D.(Educational Communications and Technology), Lecturer,
³Ph.D.( Higher & Continuing Education), Assistant Professor, Faculty of Education, Prince of Songkla University.
International Executive Committee

Prof. Yoshimi Fukuhara, Meiji University, Japan. (Chair)
Prof. Qiong Wang, Peking University, China.
Prof. Haruo Takemura, Osaka University, Japan
Prof. JinHyouk IM, Ulsan National Institute of Science and Technology, Korea.
Prof. Hikyoung Lee, Korea University, Korea
Dr. Gajaraj Dhanarajan, Wawasan Open University, Malaysia
Prof. Wei-I Lee, National Chiao-Tung University, Taiwan.
Prof. Supannee Sombuntham, Thailand Cyber University, Thailand
Prof. Chawalert Lertchalolarn, Thailand Cyber University, Thailand
Dr. Thapanee Thammetar, Thailand Cyber University, Thailand

Program Committee

Gajaraj Dhanarajan Wawasan Open University
Yoshimi Fukuhara Japan OpenCourseWare Consortium
Jintavee Khraisang Thailand Cyber University
Hikyoung Lee Korea University
Chawalert Lertchalolarn Thailand Cyber University
Praweenya Suwannatthachote Thailand Cyber University
Haruo Takemura Osaka University
Anuchai Theeraroungchaisri Thailand Cyber University
# Table of Contents

**Day 1 : January 21, 2013 (Afternoon session)**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand Cyber University and the Best Practice for Open Courseware’s Services</td>
<td>1</td>
</tr>
<tr>
<td>Supannee Sombuntham and Jintavee Khraisang</td>
<td></td>
</tr>
<tr>
<td>Social Media Based Courseware for ASEAN Open Education: Opportunity and New Challenge</td>
<td>2</td>
</tr>
<tr>
<td>Jintavee Khraisang</td>
<td></td>
</tr>
<tr>
<td>Thailand Cyber University (TCU) Project and its Best Practice for Open Courseware and Open Education Through the Nine University Hubs in Nine Regional Areas Across Thailand</td>
<td>3</td>
</tr>
<tr>
<td>Thapanee Thammeter and Vorasueng Duangchinda</td>
<td></td>
</tr>
<tr>
<td>Towards Online Learning Excellence of Higher Education in Thailand: Open Educational Resources Initiative at Sripatum University</td>
<td>4</td>
</tr>
<tr>
<td>Vorasueng Duangchinda, Nitcha Channiyon and Nipada Trairat</td>
<td></td>
</tr>
<tr>
<td>A Development of Online Inquiry Based Learning Instructional Model for Sukhothai Thammathirat Open Universities Graduate Students</td>
<td>5</td>
</tr>
<tr>
<td>Kemmanat Mingsiritham</td>
<td></td>
</tr>
<tr>
<td>KUREKA at Open KU: Enhancing Education through Peer-to-peer Learning</td>
<td>6</td>
</tr>
<tr>
<td>Hikyoung Lee and Minja Kim</td>
<td></td>
</tr>
<tr>
<td>The Users’ Evaluation of Universitas Indonesia OpenCourseWare</td>
<td>7</td>
</tr>
<tr>
<td>Lavinia Araminta, Soutlaya Lestary, Atmadewita and Fitria Sudirman</td>
<td></td>
</tr>
<tr>
<td>Creating Google Sites as a Learning Management System</td>
<td>8</td>
</tr>
<tr>
<td>Pichit Trivitayaratana, Wanna Trivitayaratana and Siriporn Trivitayaratana</td>
<td></td>
</tr>
<tr>
<td>Development of Design and Analysis Methods for Item Bank for Constructing Multiple Equivalent Tests</td>
<td>9</td>
</tr>
<tr>
<td>Pokpong Songmuang and Keizo Nagaoka</td>
<td></td>
</tr>
<tr>
<td>Computer Assisted Instruction Radiotherapeutic Technique</td>
<td>10</td>
</tr>
<tr>
<td>Nuanpen Damrongkijudom</td>
<td></td>
</tr>
<tr>
<td>Promoting Free Education via an Online Interactive Ecosystem</td>
<td>11</td>
</tr>
<tr>
<td>Taketsugu Hanafusa</td>
<td></td>
</tr>
</tbody>
</table>

**Day 2 : January 22, 2013 (Morning session)**

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factors affected the Abilities of ICT Manpower in Sustainable Technology Society</td>
<td>12</td>
</tr>
<tr>
<td>Suwimon Yongsinghong</td>
<td></td>
</tr>
<tr>
<td>m-Learning Solution for Training English</td>
<td>13</td>
</tr>
<tr>
<td>Mohammed Samaka, Loay Ismail, Nosayba Abu Abdulla and Brendan Clark</td>
<td></td>
</tr>
<tr>
<td>Recent Activities and Future Challenges of OpenCourseWare in Hokkaido University</td>
<td>14</td>
</tr>
<tr>
<td>Masashi Sata, Izumi Fuse and Shigeto Okabe</td>
<td></td>
</tr>
<tr>
<td>Opinion towards Open Educational Resources: a Case Study of Augmented Reality 3D Pop-up Book-the Seed Shooting Game</td>
<td>15</td>
</tr>
<tr>
<td>Dr. Poonsri Vate-U-Lan</td>
<td></td>
</tr>
<tr>
<td>Re-Examining Our Assumptions: OCW in the Year of the MOOC</td>
<td>16</td>
</tr>
<tr>
<td>Larry Cooperman</td>
<td></td>
</tr>
</tbody>
</table>
### Day 2: January 22, 2013 (Afternoon session)

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The effectiveness of e-Learning pedagogy open online courseware</td>
<td>17</td>
</tr>
<tr>
<td>Anirut Satiman and Thapanee Thammetar</td>
<td></td>
</tr>
<tr>
<td>Effect of Open Education</td>
<td>18</td>
</tr>
<tr>
<td>Naoko Tosa</td>
<td></td>
</tr>
<tr>
<td>Open Education in e-Learning Professional capacity building in Thailand</td>
<td>19</td>
</tr>
<tr>
<td>Chawalert Lertchalolarn, Anuchai Theeraroungchaistri, Anirut Satiman and Praveen Suwannatthachote</td>
<td></td>
</tr>
<tr>
<td>OpenCourseWare in Japan History and future challenges-</td>
<td>20</td>
</tr>
<tr>
<td>Yoshimi Fukuhara</td>
<td></td>
</tr>
<tr>
<td>Boosting Pre-Service Teachers Awareness of Open Educational Resources: A case of stock photographs for teacher project</td>
<td>21</td>
</tr>
<tr>
<td>Praveen Suwannatthachote</td>
<td></td>
</tr>
<tr>
<td>A Proposed Interactive E-Book Model for Tablet using SQ3R Technique</td>
<td>22</td>
</tr>
<tr>
<td>Wichai Srisud and Jintavee Khlasang</td>
<td></td>
</tr>
<tr>
<td>Projecting the New Strategies of Education System.</td>
<td>23</td>
</tr>
<tr>
<td>Miroslav Kuka, Ksenija Jovanovic and Jove Talevski</td>
<td></td>
</tr>
<tr>
<td>The Status of Open and Distance Higher Education in Iran: A Rapid Assessment</td>
<td>24</td>
</tr>
<tr>
<td>Gholamreza Zakersalehi</td>
<td></td>
</tr>
<tr>
<td>A Model for the Uptake and Continued Use of E-learning in Thai Higher Education</td>
<td>25</td>
</tr>
<tr>
<td>Nakarin Pinpathomrat, Lester Gilbert and Gary Wills</td>
<td></td>
</tr>
<tr>
<td>Knowledge Management on Teaching Profession According to Khuruspha</td>
<td>26</td>
</tr>
<tr>
<td>Maturos Chongchaikit and Wiphat Saengku</td>
<td></td>
</tr>
<tr>
<td>Interactive Multimedia: An Examination of Textbook Complementary experiences for Studying Laithai...</td>
<td>27</td>
</tr>
<tr>
<td>Ampai Tiranasar</td>
<td></td>
</tr>
<tr>
<td>Online Videos for Art Education: Proposed Analysis Strategies</td>
<td>28</td>
</tr>
<tr>
<td>Ampai Tiranasar, Intira Phrompan and Prapailin Janhom</td>
<td></td>
</tr>
</tbody>
</table>
Day 1 : January 21, 2013 (Afternoon session)
**Thailand Cyber University and the Best Practice for Open Online Courseware’s Services**

**Supannee Sombuntham**\(^1\) and **Jintavee Khiaisang, Ed.D.**\(^2\)

\(^1\)Assistant Professor and Advisor to the TCU Project

**Thailand Cyber University Project, Bangkok, Thailand, ssupanne@gmail.com**

\(^2\)Assistant Professor, Department of Educational Technology and Communications,

**Chulalongkorn University, Bangkok, Thailand, jintavee.m@chula.ac.th**

**ABSTRACT**

Thailand Cyber University (TCU) Project under the Office of the Higher Education Commission (OHEC), Ministry of Education has provided central e-Learning infrastructure for sharing of content and educational resources. This infrastructure includes servers to host the sharable contents, as well as necessary hardware and software. TCU has also established central web portal at [http://www.thaicyberu.go.th](http://www.thaicyberu.go.th) housing many useful resources, such as TCU-LMS (open source and free in-house built Learning Management System). TCU provides the members with continuous help and support and over 700 sharable Open Online Courseware (OOC) at the national standards. 2,877 participants have confirmed that they are satisfied to extremely satisfy by the OOC.

**Keywords**: The Office of Higher Education Commision : OHEC , Thailand Cyber University Project : TCU , Open Online Courseware : OOC

**1) INTRODUCTION:**

In accordance to the education policy of the second Thailand National ICT Policy Framework and IT 2010 (2002-2016), Thailand Cyber University (TCU) founded in 2005, under the Office of the Higher Education Commission (OHEC), Ministry of Education, has initiated various projects in order to enhance education quality by providing e-Learning to Thai citizens at all levels, and to increase educational opportunities as to support the lifelong learning. Therefore, it can be seen that the initiated projects in related to the enhancement of open education can be addressed as follows: (1) TCU as a center for e-Learning infrastructure to share content and educational resources, (2) TCU as a center of web portal ([http://www.thaicyberu.go.th](http://www.thaicyberu.go.th)) housing many useful resources, (3) TCU as a LMS provider called TCU-LMS, an open source and free in-house built Learning Management System, (4) TCU as a learning resource sharing center by developing the e-library, e-learning resource, and e-community, and (5) TCU as a supporter for the production of the sharable Open Online Courseware (OOC) disseminating via UniNet.

Thus for, this paper will focus particularly on the last project, the sharable Open Online Courseware (OOC) which currently contain upto700 courses with more than 50,000 users have enrolled in one or more courses, and more than 600,000 users have visited the website since the starting of the project in 2005 (Thammetar, 2012). This paper aims at presenting: (1) the overview of OOC (2) the user analysis in accordance with the users’ satisfaction collected from 2011 to 2012, and (3) the summary of OOC based upon the mentioned analysis as for the challenge and which should not be overlooked.

**2) TCU OOC : THE OVERVIEW**

TCU OOC can be accessed through TCU main page at [http://www.thaicyberu.go.th](http://www.thaicyberu.go.th). After logging in, learners can choose their self-paced learning courses of their interests, and also can learn from anywhere at any time of their convenience. The screen shot of the TCU main page is presented in figure 1, while figure 2 shows example of user’ page after logging in. Since the OOC was developed based on the concept of self-learning courses, users can enroll in as many courses as they desire to learn, also they have the authority to withdraw themselves from the courses. Figure 3 shows the screen shot of one of the courses from TCU OOC. After entering into the course, there will be a navigation bar presenting the course outlines on the left of the screen, while the content is presented on the right. Currently, there are 602 courses available on the OOC system, while there are almost 100 courses which are in the developing process. Out of 602 courses, there are cooperation from 39 organizations. The majority of the courses (126 courses) was developed by Kasetsart University, followed by Suan Dusit Rajabhat University (110 courses), and Chulalongkorn University (68 courses) respectively. Out of 39 collaborated organizations, most of them are public and private universities, while some of them were cooperation among Thai university and the university in Japan which offer opportunity and enhance quality of education at international level. Thus for, the details of the top 10 organizations developing the highest numbers of self-paced learning courses can be seen in table 1.
Table 1: Total of Self-paced Learning Courses Classify by Organizations (the top 10 organizations developing the highest numbers of OOC)

<table>
<thead>
<tr>
<th>Organizations</th>
<th>No. of Courses</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kasetsart University</td>
<td>126</td>
<td>20.93</td>
</tr>
<tr>
<td>Suan Dusit Rajabhat University</td>
<td>110</td>
<td>18.27</td>
</tr>
<tr>
<td>Chulalongkorn University</td>
<td>68</td>
<td>11.30</td>
</tr>
<tr>
<td>Naresuan University</td>
<td>57</td>
<td>9.47</td>
</tr>
<tr>
<td>Group of Universities supported by OHEC</td>
<td>49</td>
<td>8.14</td>
</tr>
<tr>
<td>King Mongkut’s Institute of Technology Ladkrabang</td>
<td>39</td>
<td>6.48</td>
</tr>
<tr>
<td>The University of the Thai Chamber of Commerce</td>
<td>25</td>
<td>4.15</td>
</tr>
<tr>
<td>Silpakorn University</td>
<td>12</td>
<td>1.99</td>
</tr>
<tr>
<td>The Stock Exchange of Thailand</td>
<td>12</td>
<td>1.99</td>
</tr>
<tr>
<td>Thailand Cyber University</td>
<td>11</td>
<td>1.83</td>
</tr>
<tr>
<td>Microsoft (Thailand) Limited</td>
<td>11</td>
<td>1.83</td>
</tr>
<tr>
<td>Mahasarakham University</td>
<td>10</td>
<td>1.66</td>
</tr>
</tbody>
</table>

When considering total times and number of sessions accessing courses during year 2012, it was found that the top ten courses are listed in table 2. The data indicated that the course with the most total time access was TCU-TMM101 (Tell Me More) (215,463 minutes) provided by Thailand Cyber University, followed by Learning Innovation course provided by Thepsatri Rajabhat University (119,884 minutes), and Chemistry course provided by Prince of Songkla University (95,757 minutes) correspondingly. When considering the time learners spent the most in each session, it was found that Chemistry and Java programming were the two courses learners spent most time in each session. It can be seen that learners spent average time of 30.91 and 10.07 minutes for Chemistry and Java programming courses, respectively.

Table 2: Total Times and Number of Sessions Accessing Course During Year 2012 (The top 10 courses)

<table>
<thead>
<tr>
<th>Course name</th>
<th>Total time (minutes)</th>
<th>No of sessions</th>
<th>Average time</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tell Me More</td>
<td>215,463</td>
<td>46,929</td>
<td>4.59</td>
<td>Thailand Cyber University</td>
</tr>
<tr>
<td>Learning Innovation</td>
<td>119,884</td>
<td>38,436</td>
<td>3.12</td>
<td>Thepsatri Rajabhat University</td>
</tr>
</tbody>
</table>

When considering total times and number of sessions accessing courses during year 2012, it was found that the top ten courses are listed in table 2. The data indicated that the course with the most total time access was TCU-TMM101 (Tell Me More) (215,463 minutes) provided by Thailand Cyber University, followed by Learning Innovation course provided by Thepsatri Rajabhat University (119,884 minutes), and Chemistry course provided by Prince of Songkla University (95,757 minutes) correspondingly. When considering the time learners spent the most in each session, it was found that Chemistry and Java programming were the two courses learners spent most time in each session. It can be seen that learners spent average time of 30.91 and 10.07 minutes for Chemistry and Java programming courses, respectively.
Table 2: Total Times and Number of Sessions Accessing Course During Year 2012 (the top 10 courses) (Continued)

<table>
<thead>
<tr>
<th>Total time (minutes)</th>
<th>No of sessions</th>
<th>Average time</th>
<th>Course name</th>
<th>organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>95,757</td>
<td>3,098</td>
<td>30.91</td>
<td>Chemistry</td>
<td>Prince of Songkla University</td>
</tr>
<tr>
<td>91,178</td>
<td>9,058</td>
<td>10.07</td>
<td>Java Programming</td>
<td>Chulalongkorn University</td>
</tr>
<tr>
<td>70,893</td>
<td>39,712</td>
<td>1.79</td>
<td>Curriculum Development</td>
<td>Thammasat Rajabhat University</td>
</tr>
<tr>
<td>50,537</td>
<td>12,649</td>
<td>4.00</td>
<td>Computer in Business</td>
<td>Chulalongkorn University</td>
</tr>
<tr>
<td>49,470</td>
<td>11,229</td>
<td>4.41</td>
<td>Educational Technology</td>
<td>Thammasat Rajabhat University</td>
</tr>
<tr>
<td>43,230</td>
<td>9,661</td>
<td>4.47</td>
<td>Facebook for instruction</td>
<td>Thailand Cyber University</td>
</tr>
<tr>
<td>42,749</td>
<td>7,786</td>
<td>5.49</td>
<td>Methods of Teaching</td>
<td>Thammasat Rajabhat University</td>
</tr>
<tr>
<td>42,729</td>
<td>17,161</td>
<td>2.49</td>
<td>Learning Management</td>
<td>Thammasat Rajabhat University</td>
</tr>
</tbody>
</table>

3) TCU OOC: USER ANALYSIS

According to the study reported by Thammetar (2012), there was found that 2,877 participants during 2011-2012 have confirmed that they are satisfied to extremely satisfy by the OOC. In accordance to the research result, demographies and background information consistent with the users’ satisfaction rates were collected from the year 2005 to 2012 including: age, occupation, study level, and access time in order to gather the in depth information related to the users’ traits. Table 3 and figure 4 present the user by gender. Of the 266,987 users (collected since 2005), the majority of the users had age average of 27-39 (38.60%), followed by the users had age average of 20-26 (33.42%).

The occupations of the users are presented in table 4 and figure 5. Of the total users, majority of them (37.03%) were students, followed by government officer/staff (21.04%), and employee (11.54%) respectively. Details are reported as follows.

Table 3: Number of Self-Paced Course Registrations Classified by Users’ Age Group

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-19</td>
<td>19,535</td>
<td>7.32</td>
</tr>
<tr>
<td>20-26</td>
<td>89,229</td>
<td>33.42</td>
</tr>
<tr>
<td>27-39</td>
<td>103,044</td>
<td>38.60</td>
</tr>
<tr>
<td>40-46</td>
<td>23,113</td>
<td>8.66</td>
</tr>
<tr>
<td>47-57</td>
<td>20,910</td>
<td>7.83</td>
</tr>
<tr>
<td>≥58</td>
<td>11,156</td>
<td>4.18</td>
</tr>
<tr>
<td>Grand Total</td>
<td>266,987</td>
<td></td>
</tr>
</tbody>
</table>

The education levels of the users are presented in Table 5 and figure 6. Of the total users, approximately one-third of them (32.74%) hold bachelor’s degree, while 11.50% have earned secondary level, and 8.95% have earned master degree level correspondingly. The details regarding users by their educational levels are reported in table 5 and figure 6.
Table 5: Number of Self-Paced Course Registrations Classified by Users’ Education Level

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor’s Degree</td>
<td>87,400</td>
<td>32.74</td>
</tr>
<tr>
<td>Secondary Level</td>
<td>30,692</td>
<td>11.50</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>23,895</td>
<td>8.95</td>
</tr>
<tr>
<td>Diploma</td>
<td>8,072</td>
<td>3.02</td>
</tr>
<tr>
<td>Vocational</td>
<td>6,861</td>
<td>2.57</td>
</tr>
<tr>
<td>Primary Level</td>
<td>5,795</td>
<td>2.17</td>
</tr>
<tr>
<td>Graduate Diploma</td>
<td>2,146</td>
<td>0.80</td>
</tr>
<tr>
<td>Doctoral Degree</td>
<td>1,731</td>
<td>0.65</td>
</tr>
<tr>
<td>Higher Graduate Diplomma</td>
<td>1,397</td>
<td>0.52</td>
</tr>
<tr>
<td>N/A</td>
<td>98,998</td>
<td>37.08</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>266,987</td>
<td></td>
</tr>
</tbody>
</table>

Figure 6: Numbers of Self-Paced Course Registrations Classified by Users’ Education Level

The access time data of the users are presented in table 6 and figure 7. Of the total users, more than half (55.38%) of the users accessed more than 1 minute but less than 1 hour. Concerning the other half of the users, 34.07% accessed more than 1 hour but less than 10 hours, while 8.57% accessed more than 10 hours. The details regarding users by their access time are reported in table 6 and figure 7.

Table 6: Number of Self-Paced Course Registrations Classified by Users’ Access Time

<table>
<thead>
<tr>
<th>Access Time</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessed less than 1 minute</td>
<td>1,230</td>
<td>1.99</td>
</tr>
<tr>
<td>Accessed more than 1 minute but less than 1 hour</td>
<td>34,241</td>
<td>55.38</td>
</tr>
<tr>
<td>Accessed more than 1 hour but less than 10 hours</td>
<td>21,064</td>
<td>34.07</td>
</tr>
<tr>
<td>Accessed more than 10 hours</td>
<td>5,296</td>
<td>8.57</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td>61,831</td>
<td></td>
</tr>
</tbody>
</table>

Figure 7: Numbers of Self-Paced Course Registrations Classified by Users’ Access Time

4) TCU OOC: SUMMARY

As regards to the top 10 courses, the total times, and number of sessions accessing course during the year 2005 until now, data were presented that the courses in related to English subject, teaching and learning subject, and science and technology subject were gained in popularity. When considering the time accessing per session, the average was 7 minutes, while the longest period for users to study in each session was 30 minutes.

When considering the user demographic data, it was found that a majority of users were in the age range of 27-39 and 20-26 years old (38.60% and 33.42% respectively). Most of the users were students and government officers/staffs (37.03% and 21.04% respectively). Data were varied in terms of users’ educational levels which could be categorized into 9 groups (table 5), though most of them (32.74%) have earned a bachelor’s degree. More than half of the users (55.38%) accessed more than 1 minute but less than 1 hour.

In addition, the TCU voting report presents the satisfaction scores during 2006-2011. It can be seen that the overall of voting report during the last 6 years was higher than 70%. The highest vote was in year 2006 (100%), followed by 2011 (77.7%), and 2010 (72.6%). The details are presented in figure 8.

Figure 8: TCU Voting Report
In accordance to the mentioned data, it can be concluded that for further design and development the content for each course, the three mentioned subject areas may be set as priority. When considering the portion of the content in each course, it should be contained no longer than 30-60 minutes for learning and should be considered to divide it into as many subtopics as possible. For each sub topic, it should contain the content that may take 5-7 minutes for learning. This was consistent with the research findings by Khlaisang (2012) and Khlaisang (2010) mentioned that in order to gain learners’ attractiveness and instructional effectiveness, content should be concise, updated, and chunked materials to help organize contents in appropriate categories. In terms of the content reliability, the OOC has addressed name and affiliation of the owners of the contents which are vital and would be benefit of others for further references. When considering the content quality, it was found that the OOC has presented fact with no bias, along with the recognition of resource used in the content. As far as for the interface design and usability testing of OOC, it was also in line with the research findings where the navigation, the accessibility, and the design quality are appropriate, consistency, leading to the instructional effectiveness and attractiveness in order to make learners worth learning. As for the challenge of OOC to enter ASEAN learning community in 2015, the modification of some courseware existing in OOC that applicable for ASEAN context should be considered. Some revision, such as, adding English caption, or providing dual languages may be taken into consideration to make OOC ready and available for ASEAN learning community in 2015.

5) REFERENCES
ABSTRACT
This paper is aimed at presenting viewpoints of the opportunity and new challenge towards the social media based courseware for Open Education in ASEAN. The viewpoints shared were based on the information gathered from the two research studies titled “Proposed Models of Appropriate Website and Courseware for E-Learning In Higher Education: Research Based Design Models” and “Analysis of the Cultural Factors Affecting the Proper Design of Website and Electronic Courseware for e-Learning in ASEAN” which were conducted by the author of this paper in 2010 and 2012 respectively. In accordance to the research results, the similarity of the courseware features was proposed as the opportunity, while the different features influenced by cultural factors towards the ASEAN community were emphasized as the new challenge.

The addressed similarity included: (1) the extensive use of various types of social media, for example, social web application for the activity based courseware, and social interactive streaming video as a media to foster learners’ attention, as well as to enhance their understanding. (2) the courseware customized to the same group of learners who shared the common manners of social networking and characteristics of 21st century skills in learning, and (3) the courseware shared the commonly promise towards the concept of open education with emphasizing on the creative commons license agreement and the Open Educational Resources (OER) Declaration. Whereas the difference focused particularly on the influenced factor towards the design of the courseware for the ASEAN community of learning, were comprised of: (1) history and ethnicity, (2) languages, and (3) wisdoms. As regards the mentioned factors which presented a vast amount of differences, the challenge would be how they could be integrated into well-designed and meaningful courseware to make them worth learning.

Thus for, the proposed model of social media based courseware with the integration of similarity and difference is proposed as guideline to promote further implementation when considering the design and development of courseware used in open education particularly for ASEAN learning community which should to be all set by 2015.

Keywords
ASEAN Learning Community, Open Education, Social Media Based Courseware

1) INTRODUCTION
The diversity of culture in ASEAN countries has affected ASEAN learning community. Using infrastructure, Information and Communication Technology (ICT), and education management was one way to promote and create an understanding about ASEAN culture. Nada et al. (1999) studied the effect of ICT on business, organizations, and culture and found that ICT has triggered changes in the business world. The lack of the careful use of technology may affect culture. Therefore, appropriate use of ICT, which reflected the importance and responded to the diversity of culture, belief, values, and culture structure, should be encouraged. This was in accordance with Thompson and Thianthai (2008) who studied the opinion of learners from eight out of ten counties in ASAEN about their attitude toward the understanding of ASEAN regarding the region, country information, cooperation, and information sources. It was found that the majority of learners needed to have knowledge about ASEAN culture which should be easy to access, simple, and could be studied from related document and exchanged via the media channel. There should also be a knowledge center for information searching that collected history of ASEAN countries. Therefore, it can be seen that ICT has helped facilitate the exchanging of information for the user.

Online social media was one of the ICT features which can be used for exchanging information in learning community. At present there are various online social media that can be applied to education context, especially e-Learning. This paper will present a model of e-Learning courseware which is considered an important element of e-Learning. This paper aimed at presenting viewpoints of the opportunity and new challenge towards the social media based courseware for Open Education in ASEAN. The viewpoints shared were based on the information gathered from the two research studies titled “Proposed Models of Appropriate Website and Courseware for E-Learning In Higher Education: Research Based Design Models” and “Analysis of the Cultural Factors Affecting the Proper Design of Website and Electronic Courseware for e-Learning in ASEAN” which were conducted by the author of this paper in 2010 and 2012 respectively. In accordance to the research results, the similarity of
the courseware features was proposed as the opportunity, while the different features influenced by cultural factors towards the ASEAN community were emphasized as the new challenge.

2) SIMILARITY AS AN OPPORTUNITY

The similarity of social media based courseware which was considered as the opportunity included: (1) the extensive use of various types of social media (2) the courseware customized to the same group of learners with similar characteristic of 21st century learners, and (3) the courseware shared the commonly promise towards the concept of open education. The details are as follows:

2.1 The extensive use of various types of social media

Courseware that used social media can be divided into two types: (1) social web application for the activity based courseware, such as web application of Google Drives, including Google Docs, Google Drawing, and Google Form. These web applications enabled instructors to prepare contents for activity-based learning. Social media was used for sharing information, communicating, creating participation in activities, and evaluating. At present there are several information sharing methods, such as sharing photos via Flickr (http://www.flickr.com) which was created by Cambridge University (figures 1-2) and via Pinterest (https://pinterest.com) created by Duke University (figure 3); and (2) social interactive streaming video was used, emphasizing as a media to foster learners’ attention, as well as to enhance their understanding such as e-courseware via i TuneU and YouTube as shown in Figure 4. Apart from the mentioned multimedia courseware, the author proposed a model of streaming video courseware to present a case study. The courseware offered options for learners to select using their reasons through brainstorming activity. Learners will not only learn contents, but also practice their cognitive skills such as analyzing, reasoning, and using logic. The courseware was interactive and connected with YouTube as shown in figure 5.

2.2 The courseware customized to the same group of learners who shared the common manners of social networking and characteristics of 21st century skills in learning

Learners in ASEAN community of learning are of the same group, since they all were from digital generation and had high networking skills. Social media based
courseware for this group of learners will support
the learning of learners of 21st century who were
born during 1982-2004, or were between 8-30 years
old. The characteristics of this group of learners
was that they liked technology, Internet, communication and interaction (especially online context), and options. They liked to do several tasks at the same time and they were creative and good at
information searching (especially online information). The changing of learners’
characteristics has prompted instructors to change
their teaching methods; from giving information and passive learning to be guiding and allowing
learners to search for information as an active learning. In accordance with twenty-first century
student outcomes consisting of 4 outcomes: Core Subjects, Life and Career Skills, Learning and
Innovation Skills, and Information, Media and
Technology Skills (http://www.p21.org), e-
Learning and the use of social media based
courseware clearly responded and supported 21st
century learning. For example, information
searching, communication and interaction, especially in online context, will not only help
learners to develop information, media, and
technology skills, but also support the learning of
core subjects and life and career skills. When
learners see different examples and have an
opportunity to communicate and interact with other
people, they will create learning and innovation
skills.

2.3 The courseware shared the commonly promise
towards the concept of open education with
emphasizing on the creative commons license
agreement and the Open Educational Resources
(OER) Declaration
The outstanding features of today popular social
media based courseware were an easy access and
the further interaction from the learning content.
Another equally important feature was that several
social media based courseware attempted to
promote the use of contents to wider users and the
public such as sharing presentation via Slideshare (http://www.slideshare.net). However, there was
still a limit of the rights to use such distributed
contents under the terms that the users had to publish
their own work, so that they can use the work of others.
From such restriction, a group of scholars and various
educational organizations proposed the concept of
public knowledge. Users were allowed to use contents
and, sometimes, adapted contents to their own context.
This licensing was called Creative Commons (CC)
license. It mentioned that intellectual property was the
halfway point between privacy rights and liberalization, as shown in the figure 7. The CC has
been well received as several countries have adopted
the idea and published the CC in their own language, as
shown in the figure 8. Many academic organizations
initiated projects that helped strengthen open education
to give people a wider education opportunity. Example
of an organization/institute which had a strong premise,
UNESCO initiated 2012 Paris OER Declaration, while
Massachusetts Institute of Technology: MIT was an
early institute that initiated this kind of project as
shown in figures 9-11.

Figure 6: 21st century skills for Learning
(Schrumand Levin, 2009)

Figure 7: International Creative Common on
http://creativecommons.org

Figure 8: Thailand’s Creative Common on
http://creativecommons.org/licenses/by/3.0/th

Figure 9: 2012 Paris OER Declaration by UNESCO
(http://www.unescobkk.org) and was translated into
Thai Language by Office of Online Education,
Sripatum University, Thailand
Another public resource was Merlot (Multimedia Educational Resource for Learning and Online Teaching) (http://www.merlot.org), an initiative project of the University of California State University in cooperation with educational institutions, professional organizations, and the private sector. Merlot Consortium was a resource searching tool which can be compared to a library. It collected educational resources from instructors and scholars from around the world, including Learning Object, lesson plans, and media in various types such as video, images, audio, multimedia. However, this searching tool stored only content index into library index which linked to a reliable academic website. It did not keep the content. There was also a peer review system to improve the quality of the content. Users can use the content for academic purposes and they can share their content through this website for education benefit of others.

3) DIFFERENCE AS A CHALLENGE
The similarity of social media based courseware was considered as the opportunity including: (1) the extensive use of various types of social media, (2) the courseware customized to the same group of learners with similar characteristic of 21st century learners, and (3) the courseware shared the commonly promise towards the concept of open education. However, in ASEAN learning community, the diversity and difference in culture cannot be ignored. The different features which were consider as the challenge focusing particularly on the influenced factors towards the design of the courseware for the ASEAN community of learning, were comprised of: (1) history and ethnicity (2) languages and (3) wisdoms as the following details.

3.1 History and Ethnicity
The study titled “Analysis of the Cultural Factors Affecting the Proper Design of Website and Electronic Courseware for e-Learning in ASEAN” found that there were 13 variables in the historical and ethnic differences, including (1) Emphasize on the cultural uniqueness and reflection of each country in ASEAN, (2) Consider relation between different cultural contents in each country, (3) Have the design that enables learners to access the diversity of culture of each country, (4) Present original story but modify the presentation to be more interesting, (5) Present native fiction and folklore, (6) Present contents related to local information of countries in ASEAN, (7) Present traditional art of countries in ASEAN, (8) Combine local historical contents of each country, (9) Present the uniqueness of each country’s local culture, (10) Present the history of the precious heritage, historic sites, and artifacts, (11) Combine a variety of media to present each country’s culture, (12) Present the lifestyle of living of each country, and (13) Present the history of the race.

This was consistent with the reviewed literature by Marcus and Reinhard (1998) which found that the development of courseware to offer knowledge in museum and culture by designing and using media that contained self-study elements (HTML, Java, images) had to connect the process of learning to the curriculum. The design of hypermedia should allow learners to choose the content they wish to study. Different media should be available to suit learners’ interest by integrating various media in the design.

3.2 Languages
There were three variables in language elements: (1) Have official language subtitle, (2) Have English subtitle, and (3) Have dialect subtitle. The conclusion from the research was consistent with the reviewed literature. The research of Sabriet al (2010) found that electronic courseware was produced to be supplemental media to help learners improve their pronunciation as they can hear the correct pronunciation of the original language. There was also the dictionary and animations that create concrete learning. Three signs that showed the improvement of pronunciation were evaluation during the course, adding English version in the lesson.
3.3 Wisdoms
There were three variables in wisdom elements: (1) Design course content to be according to education level in different countries in ASEAN, (2) Include information on the local knowledge management of countries in ASEAN, and (3) Link similar or related information of each country.
This was consistent with the reviewed literature by Kitiya Tilawanna (2005) which found that when designing courseware, it should contain content related to the local. The course should be designed by according to local education level.

4) PROPOSED OF SOCIAL MEDIA BASED COURSEWARE FOR ASEAN OPEN EDUCATION
The above three elements were only examples of the direct factors of cultural variables that affected on the designing and developing of courseware. The research titled “Analysis of the Cultural Factors Affecting the Proper Design of Website and Electronic Courseware for e-Learning in ASEAN” proposed the model as shown in figure 13. Details of elements and variables can be studied from the mentioned research study.

![Proposed Design of Social Media Based Courseware for ASEAN Open Education](image)

DF 1 = History and Ethnicity (direct factor) 13 variables
DF 2 = Language (direct factor) 3 variables
DF 3 = Wisdoms (direct factor) 3 variables
DF 4 = Religion (direct factor) 2 variables
DF 5 = Law (direct factor) 6 variables
IF 1 = Screen design (indirect factor) 6 variables
IF 2 = Content design (indirect factor) 25 variables
IF 3 = Multimedia (indirect factor) 5 variables

**Figure 13:** Proper design of electronic courseware for e-Learning in ASEAN and the cultural factors affecting the design of courseware

From the results obtained from the research, there were suggestions about proper electronic courseware elements for e-Learning in ASEAN which can be applied as follows:
1. The design of electronic courseware should emphasize on using open educational resources (OER), including open courseware and open content from various websites such as MIT Open Courseware and MERLOT.
2. The OER content which was used in the courseware should emphasize on Virtual Lab, Virtual Museum, or videos that showed that the culture of each country in ASEAN such as wisdom, arts and culture for example, The Cultural VR Lab.
3. Electronic courseware should focus on the use of social media to exchange knowledge for example Merlot.org and Slideshare.net. Learners should be both recipients and providers.
4. Electronic courseware will change the design of multimedia to share more information and become more simple design, such as E-Book from website and will be used as a part of teaching and learning activities in activity-based learning, resource-based learning, and a combination of pedagogy such as problem-based learning and project-based learning.

5) SUMMARY
The author intended to present the viewpoints on social media based courseware for ASEAN Open Education: Opportunity and New Challenge by integrating the similar features and challenging the different features to be a guideline for designing and developing courseware that can respond to open education and challenges of learning society in ASEAN community. Regarding the similarity, the author considered the design of social media based courseware, groups of learners, and the idea of extending knowledge to the public which will help strengthen open education. As for the difference, the author emphasized on understanding the social and cultural context, including history, ethnicity, language and wisdoms or indirect factors which might be overlooked. However, both have the same proposes which are to support and prepare the country for entry into ASEAN. Therefore, the proposed model of social media based courseware is proposed as guideline to promote further implementation when considering the design and development of courseware used in open education particularly for ASEAN learning community which should to be all set by 2015.

6) ACKNOWLEDGMENT
This paper was based on the two research studies titled “Proposed Models of Appropriate Website and Courseware for E-Learning In Higher Education: Research Based Design Models” and “Analysis of the Cultural Factors Affecting the Proper Design of Website and Electronic Courseware for e-Learning in ASEAN” which were conducted by the author of this paper in 2010 and 2012 respectively. The two research studies were funded by Thailand University Project, Office of Higher Education Commission, Ministry of Education. The author would like to thank advisors, scholars, and experts for their help and support in creating new knowledge via this paper to strengthen the educational technology field.
7) REFERENCES


8) WEBSITES

[1] Cambridge University (http://www.cam.ac.uk)

[2] Creative Commons (http://creativecommons.org)


[7] Thailand’s Creative Common (http://creativecommons.org/licenses/by/3.0/th)

[8] YouTube (http://www.youtube.com)

Thailand Cyber University (TCU) Project and its Best Practice for Open Courseware and Open Education Through the Nine University Hubs in Nine Regional Areas Across Thailand

Thapanee Thammetar, Ph.D.
Director, Thailand Cyber University (TCU) Project
and Assistant Professor, Faculty of Education,
Silpakorn University, Bangkok, Thailand
kobthapanee@gmail.com

Vorasuang Duangchinda
Director, Office of Online Education,
Sripatum University, Bangkok, Thailand
vorasuang.du@spu.ac.th

ABSTRACT
Thailand Cyber University (TCU) Project under the Office of the Higher Education Commission (OHEC), Ministry of Education (MOE) of Thailand; has established a “Common Infrastructure” connecting nine major state universities in nine different regional areas across the country. These nine state universities are considered as a regional hub university in the area, linking directly with TCU and the other Higher Education institutions within the region. Since all the Higher Education institutions are automatically a member of TCU, this “Common Infrastructure” therefore enables sharing of the educational resources belong to its member institutions and sub-networks, thus also serving as a national hub for Thailand Open Educational Resources (Thailand OER). As the center hub, TCU provides a central web portal, as a mechanism for all the members to search for educational contents within the national network. In addition, TCU also focuses on development of human resources by conducting full-range of e-training programs via TCU Academy. Combination of strong human development programs and strong inter-connecting network should enable Thailand OER to its full potential. To date, this model can be considered as the national best-practice of its kind and has been praised at international level when TCU was awarded Honorable Mentions in the 2009 UNESCO King Hamad Bin Isa Al-Khalifa Prize for the Use of ICT in Education award.

Keywords:
Open Courseware, Open Education, Open Educational Resources, OER, National Best-Practice, Thailand Open Online Courseware, OOC, Thailand Cyber University, TCU

1) INTRODUCTION
Thailand Cyber University (TCU) Project under the Office of the Higher Education Commission (OHEC), Ministry of Education (MOE) of Thailand; was initiated to support all higher education institutions in expanding equal and quality educational opportunities by using Information Technology to allow learners to have access to education regardless of time and place. TCU serves as a center for creation of learning resources to promote Life-Long Learning, to enhance quality of Higher Education with knowledge management, and to manage the sharing of educational resources among Higher Education institutions and beyond.

TCU has actively collaborated with national and foreign Higher Education institutions in sharing a pool of qualified personnel and educational resources. This partnership has created a great opportunity for the member institutions to develop, use, and share quality educational resources in a more effective way, including the cost-saving and efficiency performance. Hence, national budget in education can be reduced accordingly.

During 2010 and 2012, TCU concentrated on providing support at national level to its members for the development and process of sharable educational resources including Thailand Open Online Courseware (OOC). The sharable contents are set to comply with national standard suitable for the provision of efficient education. The sharable contents can also be served as a national resource for self-study and life-long learning.

To date, this model can be considered as the national best-practice of its kind which has been built upon the success that TCU enjoyed at the earlier stage including the Honorable Mentions in the 2009 UNESCO King Hamad Bin Isa Al-Khalifa Prize for the Use of ICT in Education award.
2) TCU MISSIONS AND ACTIVITIES

TCU has been operating since 2005. Its mission has been revised and modified to respond to the need of more open education to create equal opportunity of education of people at all levels. One of the strategies to achieve the goal is to establish regional support centers. This is in accordance with the policy of the OHEC. Universities suggest that TCU should still remain the functions in supporting budget, being the center for sharing knowledge for the research and development, providing the training for educational personnel, and being the center to evaluate the quality of online learning according to international standard.

According to the OHEC, TCU has been set up for the following objectives:

1. Developing the UniNet (University Network) IT infrastructure, to connect every institution of higher education to the Internet for education and research.
2. Supporting the production of courseware for dissemination via UniNet.
3. Developing the Learning Management System (LMS).
4. Developing the e-library, e-community and the learning resource sharing center.

TCU has a clear vision. It is set to be a knowledge and education center, using UniNet and the latest technologies to provide further education for all, for both formal and informal education. The TCU will increase the number of people who can access higher education, gaining knowledge at their convenience, irrespective of time or location. The courses will meet the educational standards set by an internationally recognized quality guarantee system. A credit exchange system will be created, allowing the credit gained from an online course, to be transferred from one institution to another. TCU aims to:

1. To assist all the higher education institutes to deliver distance learning via the Internet.
2. To ensure that all online courses are of a high quality and meet government standards.
3. To promote the sharing of teaching resources and human resources.

In order to realize the objectives and aims, TCU has set the following missions:

1. To conduct research and development in the use of IT to deliver learning online, using a Learning Management System (LMS), for the Cyber University.
2. To research, develop, discover and use educational innovations and new technologies for e-learning, while maintaining internationally accepted educational standards and ensuring a high level of productivity by using established development processes.
3. To cooperate with higher educational institutions to develop lessons for each course, using quality e-learning study programs for formal education. To be efficient they will share educational and human resources.
4. To cooperate with state and private educational institutions, as well as e-learning experts, to develop informal courses as study guides and short certificated courses.
5. To create a mechanism to promote and support the dissemination of all knowledge, including advanced technologies and local knowledge in the form of non-formal e-learning.
6. To coordinate with relevant agencies, for the supervision and management of online learning, to ensure it meets quality standards.

TCU operates under the framework of OHEC, and has divided its operations into 9 regional sub-networks around the country. Each regional sub-network is led by a prominent public university of that region. The 9 regional sub-networks (RSN) are:

1. Upper Northern RSN
2. Lower Northern RSN
3. Upper Northeastern RSN
4. Lower Northeastern RSN
5. Upper Central RSN (including parts of Bangkok)
6. Lower Central RSN (including remaining parts of Bangkok)
7. Upper Eastern RSN
8. Upper Southern RSN
9. Lower Southern RSN

3) TCU ACHIEVEMENTS DURING 2010-2012

For the years 2010-2012, TCU actively supported its member institutions across the country through the 9 Regional University Hubs of the OHEC. TCU provided direct funding to each regional hub for the sustainable development of educational resources including open online content, in which has been classified under the name of Thailand Open Online Courseware (OOC).

Each hub hosted several meetings with their local member institutions before agreed upon development of OOC or other related activities based on the budget allocated. This has promoted harmony and understanding between all the stakeholders’ involved. And the outcome is reported back to TCU for final evaluation. This has been a real cooperative approach among the members.

The nine regional hubs expressed their demand in 3 areas 1) Courseware Development, 2) Human Resource Development (HRD) in ICT for Education, and 3) Computer network development using sharable server. TCU agreed to these points and provided funding to each participating hub. Of the 9 hubs, 6 of them finally participated as shown in table 1.

Since 3 regional hubs did not participate in any projects, TCU then convinced them to instead develop new media such as IPTV, Multimedia,
Life-Long Learning contents, etc. Examples of submitted works are shown in figure 1 to figure 3.

Table 1: 2010-2012 Achievements

<table>
<thead>
<tr>
<th>Participated Regional Sub-Network (RSN)</th>
<th>Courseware Development</th>
<th>HRD in ICT for Education</th>
<th>Computer network development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Upper Northern RSN</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>2 Lower Northern RSN</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Upper Northeastern RSN</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>4 Lower Northeastern RSN</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Upper Central RSN</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Lower Central RSN</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>7 Upper Eastern RSN</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Upper Southern RSN</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>9 Lower Southern RSN</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* including parts of Bangkok
** including remaining parts of Bangkok

Table 1: 2010-2012 Achievements

Combination of the works from all the 9 RSN has provided Thailand with sensible educational resources with applicable computer network system. TCU then provided a national knowledge management system to store all the contents. The online contents provided are classified under Thailand Open Online Contents (OOC) initiatives. In addition, TCU also enhance quality of the service by connecting its database with international networks including GLOBE consortium, The Open CourseWare (OCW) consortium, MERLOT.org the Multimedia Educational Resource for Learning and Online Teaching (the Multimedia Educational Resource for Learning and Online Teaching, etc. Therefore, it can be concluded that the operations have served the following objectives:

2. To provide educational resources at international level by inter-connecting all the educational resources within Thailand and overseas.
3. To foster development of educational resources around the country by encouraging cooperative approach between participating institutions.
4. To provide an enhancement of resources to existing learning organizations by extending the network to allow knowledge creation.
5. To promote the use of the provided open educational resources, especially in educational institutions.

Figure 1: Courseware for IPTV

Figure 2: SCORM Based Multimedia Courseware

Figure 3: SCORM Based Multimedia Courseware

Figure 4: TCU-9 RSN: Physical Locations

Figure 5: TCU-9 RSN: Logical Connections

Figure 6: Search for International Contents
Apart from provision of Thailand OOC, TCU has also provided online training programs under the name of TCU Academy. This initiative has been set to develop a better quality of Human Resource Development particularly for e-Learning related personnel around the country. There have been 2 major training programs with full support, which are:

1. e-Learning Professional Development Program
   a. For Management level
   b. For e-Teachers
   c. For Courseware Developer
2. Teachers’ readiness for the use of ICT in education:
   e-Courseware Development Program
   a. Preparation for e-Courseware creation
   b. Introduction for computer graphics
   c. Designing content structure with Mind Mapper
   d. Designing image contents with Photoshop
   e. Designing streaming media with MS-Producer
   f. Designing interactive contents with Captivate
   g. Web creation using MS Word
   h. Convert Web to eBook
   i. Creating content using eXe program
   j. Movie content editing
   k. Video conferencing using Open Source software

In order to maintain quality of service for TCU academy, an online survey was conducted between November 2011 and August 2012. 109 learners took part in the survey. They were asked to rate their satisfaction towards service from TCU academy. Rating scale between 1 and 5 was used to measure level of satisfaction. Ratings can be explained as follows:

- Average score between 1.00 and 1.80 = Least satisfied = 1 point
- Average score between 1.81 and 2.60 = Somewhat satisfied = 2 points
- Average score between 2.61 and 3.40 = Satisfied = 3 points
- Average score between 3.41 and 4.20 = Very satisfied = 4 points
- Average score between 4.21 and 5.00 = Extremely satisfied = 5 points

### Table 2: 2010-2012 TCU Academy satisfaction survey: Access to the Training

<table>
<thead>
<tr>
<th>Question</th>
<th>Score</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ease of access and enrollment</td>
<td>4.59</td>
<td>Extremely satisfied</td>
</tr>
<tr>
<td>Speed in downloading content</td>
<td>4.28</td>
<td>Very satisfied</td>
</tr>
<tr>
<td>Suitable amount of assignment given</td>
<td>4.22</td>
<td>Very satisfied</td>
</tr>
<tr>
<td>Over all teaching and learning process</td>
<td>4.37</td>
<td>Very satisfied</td>
</tr>
<tr>
<td><strong>Average score</strong></td>
<td>4.37</td>
<td>Very satisfied</td>
</tr>
</tbody>
</table>

### Table 3: 2010-2012 TCU Academy satisfaction survey: Benefits from the Training

<table>
<thead>
<tr>
<th>Question</th>
<th>Score</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>My skills have been improved systematically</td>
<td>4.54</td>
<td>Extremely satisfied</td>
</tr>
<tr>
<td>Online contents have same quality as off-line contents</td>
<td>4.43</td>
<td>Very satisfied</td>
</tr>
<tr>
<td>Freedom to access the contents at anytime</td>
<td>4.72</td>
<td>Extremely satisfied</td>
</tr>
<tr>
<td>Online learning promotes creativity</td>
<td>4.49</td>
<td>Very satisfied</td>
</tr>
<tr>
<td><strong>Average score</strong></td>
<td>4.55</td>
<td>Extremely satisfied</td>
</tr>
</tbody>
</table>

4) PROPOSED FUTURE WORK: THE CReST

TCU has proposed to set up 9 Center for Regional e-Learning support of Thailand (CReST). This is an addition to the current existence of the 9 regional university hubs according to the regional network centers of the OHEC.

This strategy will lead to more cooperation, more sharing and more responsibilities from the universities in each region in relation to e-Learning. Also, TCU will have a chance to deploy the action plan for increasing teacher’s capability to use ICT in education and improving the quality of education. The CReST will emphasize on the cooperation between community and private organizations to create quality e-Learning programs for all education levels which include lifelong learning. This will lead to sustainable development.

The regional e-Learning supporting center will conduct 2 critical missions.

1) **Main Mission**

Receiving policy from the central government and acting as the leader of tri-parties to support and promote network cooperation among educational institutes at all levels, private organizations, and regional administrative organizations in order to support, assist, cooperate and manage knowledge to develop the potential and quality of people at all walks...
of life by utilizing information technology to offer quality education that respond to the community’s needs, using materials and human resource that are primarily invested by the central government.

2) Regional Mission
Conducting special research project, offering advice, developing and managing knowledge for each region by gathering comments and demand from the region to develop local people specially of that region. TCU will coordinate activities and communication between the regional centers and the OHEC, as well as overseeing an annual report from each CReST and report to the OHEC.

5) CONCLUSION
As a national hub, TCU provides a central web portal as a mechanism for the members to search for educational contents within the national network and from inter-connecting Global networks through TCU Gateway. In addition, TCU also focuses on development of human resources by conducting full-range of e-training programs via TCU Academy. Combination of strong human development programs and strong inter-connecting network should enable Thailand OER to its full potential. A prominent example of Thai OER can be seen in the form of Thailand Open Online Courseware (OOC).

Thailand OOC is clearly seen as a critical success factor in enhancing education of the country, which has constantly been underlined in recent Educational and ICT policies issued by the Government or related Authorities. With the support from TCU, Thailand OOC should hopefully be flourished and hence enhancing quality of learning to the unlimited, as well as enabling lifelong learning for all the Thai people in the near future. The proposed establishment of CReST will enhance promotion of OOC including Open Courseware and Open Education through the 9 university hubs in nine regional areas across Thailand, which TCU Academy will be a key factor in human development of the people involved.

6) REFERENCES
Also available online at: http://acecjournal.org/2009/Journal_Data/Vol6No1/6-1-3.pdf


Towards Online Learning Excellence of Higher Education in Thailand: Open Educational Resources Initiative at Sripatum University, Bangkok, Thailand

Nitcha Chamniyon
Coordinator, Office of Online Education, Sripatum University, Bangkok, Thailand
nitcha.ch@spu.ac.th

Nipada Trairat
Coordinator, Office of Online Education, Sripatum University, Bangkok, Thailand
nipada.tr@spu.ac.th

Vorasuang Duangchinda
Director, Office of Online Education, Sripatum University, Bangkok, Thailand
vorasuang.du@spu.ac.th

ABSTRACT

Sripatum University (SPU) is a private higher education institution with four campuses around Thailand and about 20,000 enrollments each year. SPU is now into a new era of its e-Learning process since 2009 when the Office of Online Education (O OE) was established to overlooking overall e-Learning of the university as a whole. OOE is responsible to transform the way e-Learning is created and utilized across the university and at all levels, including both teaching and learning sides. The strong effort has been rewarded when SPU has been named the inaugural National Best Practice for e-Learning Management at the higher education level in 2011, from the Office of the Higher Education Commission (OHEC), Ministry of Education (Thailand). A key factor leading to this achievement includes SPU Open Educational Resources (SPU-OER) initiative, which has been introduced to all the students, faculty members, and support staff of the university. SPU-OER employs a simple concept, which is to provide an alternative free education for personalized study and Lifelong Learning. SPU-OER enables anytime and anywhere self-study with the need of simple internet connection and basic computer equipment. To date, SPU-OER is offering about one thousand freely available courseware in various areas on SPU Moodle LMS and through quality online services from the partners such as Thailand Cyber University (TCU) project. Examples of courseware hosted are such as e-pedagogy and TOEIC lessons. In addition, a part of SPU-OER is now open to public without costs. Thus, SPU-OER is also a part of SPU – University Social Responsibility (USR) project, with the aim to embrace responsibility for the university as a source of knowledge and encourage a positive impact through SPU-OER for the general public. This article provides introduction and updates of the SPU-OER initiative from the perspective of the National best-practice institution.

Keywords:
OER, e-Learning, Online Education, SPU, Sripatum University, Higher Education, e-Learning Best Practice, USR, University Social Responsibility

1) INTRODUCTION

Sripatum University (SPU) is a private higher education institution with four campuses around Thailand and about 20,000 enrollments each year. SPU main campus is located in north of Bangkok, Phayathai City campus is situated in the heart of Bangkok, Chonburi campus is located near the industrial park of the Eastern Seaboard in Chonburi province, and the newly opened Khonkaen campus, situated in Khonkaen province, the hub of the Northeastern part of the country.

Inspired by the vision of Dr. Sook Pookayaporn, who wanted to give Thai youths the chance to develop their full potential, Sripatum University (SPU) was founded on May 28, 1970 under the name Thai Suriya College. The college later was promoted to university status. "Sripatum" means the "Source of Knowledge Blooming Like a Lotus" and was graciously conferred on the college by the Her Royal Highness the late Princess Mother Srinagarindra (Somdet Phra Srinagarindra Baromarajajanan). She presided over the official opening ceremony of SPU and awarded vocational certificates to the first three graduating classes.
Sripatum University is therefore one of the first five private universities of Thailand.

2) e-Learning APPROACH AT SPU AS THE NATIONAL BEST-PRACTICE

e-Learning at SPU has begun over a decade ago. However, in 2009 the University Council has approved the Office of Online Education (OOE), to overseeing e-Learning for the whole university. This newly established office has the authority at the same level as any schools, and ever since has transformed how the e-Learning is being utilized at SPU, not only for teaching and learning process, but also for management and support levels as a complete solution. OOE has introduced Moodle LMS with integration of automatic class recording feature as the core of its e-Learning system.

OOE focuses on e-Learning across the spectrum, including e-Learning management, e-Learning production as well as online teaching and learning at complimentary, supplementary, and replacement levels. This means that OOE promotes anytime and anywhere education by nature. This is in line with the National Thai Education Act. (1999). The Act aims to promote equal quality education to all and for Lifelong Learning of the nation with learners in the center and the teachers as a facilitator. In addition, OOE places a great emphasis on resources utilization with the aim to create e-Learning eco-system under the philosophy of Sufficiency Economy given by His Majesty King Bhumibol Adulyadej (King RAMA IX).

In order to realize the success, OOE actively seeks for partners at national and international levels for e-Learning matters including co-creation and co-sharing of quality contents. Example of success in partnership can be seen from 2010 when SPU and the Thailand Cyber University (TCU) project signed a memorandum of understanding together and since SPU has become the first and still the only higher education institution to have direct access to nearly 1,000 freely available contents on TCU system.

As a result of such strong commitment in e-Learning, in 2011, SPU has been awarded the inaugural National Best-Practice for e-Learning Management level by the Ministry of Education. This is a result from a clear and strong policy to practice in e-Learning from SPU. (Duangchinda and Chamniyont: 2012 and Chamniyont, Trairat, and Duangchinda: 2012).

3) 2012 PARIS OER DECLARATION AND THAI TRANSLATION BY OOE

In June 2012, UNESCO hosted the 2012 World Open Educational Resources (OER) Congress in Paris, France. At the congress, the members officially agreed to the 2012 PARIS OER DECLARATION. This Declaration is the result of a yearlong process, led by UNESCO and the Commonwealth of Learning (COL) with regional and online meetings and final negotiations at the Congress.

In general, this declaration acknowledges those existing protocols that have been recognized internationally, and with the following recommendations:

a) Foster awareness and use of OER.
b) Facilitate enabling environments for use of Information and Communications Technologies (ICT).
c) Reinforce the development of strategies and policies on OER.
d) Promote the understanding and use of open licensing frameworks.
e) Support capacity building for the sustainable development of quality learning materials.
f) Foster strategic alliances for OER.
g) Encourage the development and adaptation of OER in a variety of languages and cultural contexts.
h) Encourage research on OER.
i) Facilitate finding, retrieving and sharing of OER.
j) Encourage the open licensing of educational materials produced with public funds.

It has been a distinct pleasure and privileged honor for SPU to be approached by UNESCO to translate the declaration into Thai language. SPU assigned Office of Online Education (OOE) to the task with Office of Law then proof checked legal wordings. The translation and OER Thai logo have been submitted to UNESCO and should appear on the following website in January 2013:


This has confirmed a strong commitment from SPU towards the prosperity of OER in the country. Translation of the declaration can also be seen in the Appendix section.
4) OER AT SPU

As a university, SPU provides academic services not only to its students, staff, and faculties, but SPU also provides quality e-Learning content to the public through SPU-OER initiative. To be outstanding in ICT as the identity of SPU suggested, SPU has provided nearly 1,000 contents under SPU-OER project at e-learning.spu.ac.th since June 2010. To date, there have been more than 25,200 accesses to the contents. Subject areas of SPU-OER cover broad discipline, including English language lessons, Microsoft Office lessons, Moodle lessons, Social Media for Education, etc. The contents are provided under the framework of Thailand Online Open Courseware (OOC) initiative from the Ministry of Education of Thailand. Figure 2 – Figure 10 display examples of SPU-OER.
5) CONCLUSION

As the winner of National Best-Practice in e-Learning management at Higher Education level since 2011, SPU actively provides quality e-Learning contents to the public via SPU-OER initiative. This is also under the umbrella of University Social Responsibility (USR), another initiative founded by SPU. SPU believes that sharable contents would bring about better learning society (Ebba, Ossiannilsson, and Alastair: 2012). This is also a concept within the connectivism theory (Kamenetz: 2011 as in Ebba, Ossiannilsson, and Alastair: 2012).

Promotion of SPU-OER still needs a lot of support and cooperation from all the parties, including management, faculties, students, staff, and the public. To realize the dream of success in utilizing SPU-OER for the e-Learning eco-system; OOE will have a lot of works ahead including carrying on the current practices and looking after other related matters such as legal issues, etc. (Rothery: 2006; Bissell: 2009; and Jisc Legal: 2011 as in Rolfe: 2012).

6) REFERENCES


การประชุมสาระดับโลกด้านแหล่งทรัพยากรการศึกษาแบบเปิด (Open Educational Resource: OER) พ.ศ. ๒๕๕๔
องค์การศึกษา วิทยาศาสตร์ และวัฒนธรรมแห่งประเทศไทย (UNESCO)
กรุงปารีส ๒๐-๒๒ มิถุนายน พ.ศ. ๒๕๕๔
ปฏิญญากรุงปารีสด้านแหล่งทรัพยากรการศึกษาแบบเปิด พ.ศ. ๒๕๕๔

c. แหล่งข้อมูลทางการศึกษาแบบเปิด Ten Principles for Open Educational Resources (OER)
c. แหล่งข้อมูลทางการศึกษาแบบเปิด Ten Principles for Open Educational Resources (OER)
ส่งเสริมการพัฒนาของนโยบายที่เฉพาะเจาะจงสำหรับการผลิตและการใช้ OER ด้วยกลุ่มทรัพยากรหลากหลายเพื่อกระตุ้นการศึกษา

2. ส่งเสริมความเข้าใจและการใช้กระบวนการออกแบบแบบบัตร

อธิบายความสะดวกในการเรียนการสอนและการเรียนการสอนที่มีคุณภาพ สามารถบรรลุเป้าหมายได้ไม่ว่าจะในประเทศไทย ด้วยนโยบายแบบเปิดภายใต้กรอบกําหนดใดๆที่อนุญาตให้มีการนำเสนอการเรียนการสอนได้ในรูปแบบต่างๆในแหล่งที่มีความพร้อมเพื่อส่งเสริมให้สิ่งการเรียนการสอนที่มีคุณภาพ

3. ส่งเสริมกลุ่มที่มีการพัฒนาแหล่งข้อมูลทางการศึกษาแบบเปิด (Open Educational Resources: OER) ใช้ประโยชน์จากกลุ่มที่มีการพัฒนาแหล่งข้อมูลทางการศึกษาแบบเปิด (OER) เพื่อการเรียนการสอนที่มีคุณภาพ สามารถบรรลุเป้าหมายได้ในแหล่งที่มีความพร้อมที่มีความสามารถในการเรียนการสอนที่มีคุณภาพ

4. ส่งเสริมการพัฒนาและบริการร่วมของแหล่งข้อมูลทางการศึกษาแบบเปิด (Open Educational Resources: OER) ให้เกิดความสะดวกสบายของการเรียนรู้ที่มีคุณภาพ

5. ส่งเสริมงานวิจัยที่เกี่ยวข้องกับแหล่งข้อมูลทางการศึกษาแบบเปิด (Open Educational Resources: OER) ให้เกิดผลความสะดวกสบายในการเรียนรู้ที่มีคุณภาพ

หมายเหตุผู้แปล

- Open Educational Resource: OER = แหล่งทรัพยากรการศึกษาแบบเปิด (OER)
- Open License = ใบอนุญาตแบบเปิด
Significance of the Study

Sukhothai Thammathirat is an open university with the theory of lifelong education. It intends to develop people’s quality and expands educational opportunities by distance education to respond to the needs of people and societies. Printed media are used as the major instructional media with other supplements, including a radio and television broadcast, audio CDs, video, multimedia CDs, etc. Students can study themselves without classroom attendance.

Ordinarily, Sukhothai Thammathirat Open University has an electronic instruction which provides online learning for students to investigate and study themselves without classroom attendance; however, it hasn’t responded to the different contexts of students. According to the study and related research, the researcher has studied and found that there are various methods of instruction which encourage students to study themselves with their own ability and one of them that would be appropriate for students to study through computer connection is inquiry based learning. It urges students to study themselves and construct the knowledge using the scientific process. The instructors only facilitate them to discover the answers of lessons they have studied. This method responds to the learning context of Sukhothai Thammathirat Open University which supports the students to study themselves with a variety of learning styles.

Consequently, the researcher have developed the online learning by using inquiry based learning to be an alternative of distance education through computer connection in Sukhothai Thammathirat Open University’s graduate level.

Purposes of the Study

1. To develop online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students.

2. To compare the learning achievement before and after learning by online inquiry based learning instructional model of Sukhothai Thammathirat Open University’s graduate students.
3. To study the satisfaction of Sukhothai Thammathirat Open University’s graduate students towards the online inquiry based learning instructional model.

**Research Procedure of the Study**

The research procedure was divided into four steps according to the purposes of the study as follows:

**Step 1: Study the elementary information of online inquiry based learning instructional model used for Sukhothai Thammathirat Open University’s graduate students.**

1.1 Study the theory and concepts of the development of instruction, inquiry based learning, online learning and the structure of Sukhothai Thammathirat Open University’s online learning.

1.2 Use the acquired information to develop a questionnaire about online learning and inquiry based learning given to five experts. The form of questionnaire is a checklist relating to online learning, inquiry based learning, learning process, learning activities, problems, and suggestions on instructional model.

1.3 Use frequency and percentage to analyze the responses from the experts and use a content analysis to analyze the responses of open-ended questions for the information to construct the online instructional model.

**Step 2: Develop online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students.**

2.1 Construct the scope of instructional model that could be a structure of designing online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students. The researcher analyzed together with the analysis of the information from textbooks and related research and the result of experts’ responses.

2.2 Construct the learning procedure according to the identified scope of instructional model as follows:

2.2.1 The components of learning, including content, learning activities and process, learning resource, and evaluation

2.2.2 The five steps of online inquiry based learning from the study of the elementary information as follows:

   Step 1 Students’ preparation
   Step 2 Pre-evaluation
Step 3 Online content presentation
Step 4 Online activities: 1) Engagement 2) Exploration 3) Explanation 4) Elaboration and 5) Evaluation
Step 5 Summative evaluation

2.3 Evaluate the appropriateness of online inquiry based learning instructional model by five experts. The result was described as the highest level of appropriateness (\( \bar{X} = 4.93, \text{S.D.} = .10 \)).

2.4 Develop online learning instructional model and check the quality of designing online instructional management system by three experts with the evaluation form of the quality of designing instructional management system in Likert’s five rating scales. The experts have identified the media as the high level of appropriateness (\( \bar{X} = 4.45, \text{S.D.} = .26 \)).

2.5 Use the instructional management system which was developed and checked the quality to the samples. It was experimented in authentic situation for checking the quality of media and content before experimenting to the samples.

2.6 Make the manuals of online inquiry based learning instructional model.

Step 3: Experiment with online inquiry based learning instructional model to Sukhothai Thammathirat Open University’s graduate students.

Experimental design with one group pretest and posttest design was used in this step.

3.1 The sample group in this study consisted of forty Sukhothai Thammathirat Open University’s students in five groups who registered in 51707 Nursing Research, Statistics and Nursing Informatics in the second semester of 2011 academic year by cluster random sampling.

3.2 The experiment had been done for eight weeks.

3.3 The experiment instruments consisted of two categories

1. Online inquiry based learning instructional model and manuals for the instructors and students

2. The instruments for collecting data were pretest and posttest of learning achievement and questionnaire of online inquiry based learning.

Step 4: Improve the online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students.

The researcher improved the online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students.
Research Results

The research results were presented into three sections.

Sections 1: The results of the development of online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students consisted of 2 parts.

1.1 The online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students included 2 parts: 1. The components of the online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students and 2. The procedure of the online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students.

1. The components of the online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students were content, activities and learning process, learning resource, and evaluation.

2. The procedure of the online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students consisted of 5 steps.

Step 1 Students’ preparation
Step 2 Pre-evaluation
Step 3 Online content presentation
Step 4 Online activities: 1) Engagement 2) Exploration 3) Explanation 4) Elaboration and 5) Evaluation

Step 5 Summative evaluation

1.2 The appropriateness result of the online inquiry based learning instructional model evaluated by five experts was at the excellent level (\(\bar{x} = 4.93, S.D. = .10\)). When analyzing in each item, the appropriateness of the instructional model components, the learning process, the learning evaluation, the instructional model implementation, and the implementation condition was at the highest mean (\(\bar{x} = 5.00\)).

The appropriateness of learning procedure and activities of online inquiry based learning evaluation was the highest (\(\bar{x} = 4.78, S.D. = .15\)). When analyzing in each item, step 1: Students’ preparation was at the highest mean (\(\bar{x} = 5.00, S.D. = .00\)).
Figure 1: The online inquiry based learning instructional model for Sukhothai Thammathirat Open University’s graduate students
Section 2: The comparison of learning achievement of Sukhothai Thammathirat Open University’s graduate students before and after learning by the online inquiry based learning instructional model

The researcher had an experiment for eight weeks on the sample group consisted of forty Sukhothai Thammathirat Open University’s students in five groups who registered in 51707 Nursing Research, Statistics and Nursing Informatics in the second semester of 2011 academic year.

The comparison of the samples’ learning achievement mean before and after using the instructional model showed that before using the instructional model, the forty samples had the learning achievement mean at 6.00 and standard deviation at 1.83. After using the instructional model, they got 11.90 on the learning achievement mean and 1.30 on standard deviation. The difference of learning achievement mean of the sample before and after using the instructional model analyzed by t-test Dependent showed that the learning achievement mean after using the instructional model was significantly higher than before using the instructional model at .05 significant level (t = -19.87, p = .00)

Section 3: The satisfaction analysis of Sukhothai Thammathirat Open University’s graduate students towards the online inquiry based learning instructional model

After the samples had studied and done the learning activities and procedure of online inquiry based learning instructional model for eight weeks and did the students’ satisfaction evaluation towards the online inquiry based learning instructional model.

The overall of the students’ satisfaction evaluation towards the learning activities was defined as high satisfaction (\( \bar{x} = 4.15, \text{S.D.} = .14 \)).

Discussion

1. The online inquiry based learning instructional model consisted of four components, including content, learning activities and process, learning resources, and evaluation. Each component consisted of details, a guideline, and expected result after learning. All components and learning procedure were already evaluated by the experts of online learning and curriculum and instruction. The experts certified that the online inquiry based learning instructional model is credible and effective to use in Sukhothai Thammathirat Open University’s graduate level.
2. The test result of different mean of learning achievement between before and after the experiment by t-test Dependent was found that the graduate student’s posttest score were significantly higher than pretest score at .05 significant level (t = -19.87, p = .00), as a result of following the procedure of online inquiry based learning which was from the analysis and synthesis of textbooks and related research and from the experts’ opinions. This procedure will encourage students to discover what they have learnt themselves and provide authentic context of learning. The instructors need to prepare learning context, study the instructional structure, content sequences, and the activities that facilitate students to study the lessons and further their knowledge.

3. The students have a high level of satisfaction of online inquiry based learning instructional model, as a result of a freedom of learning with unlimited information. In addition, modern students are happy to study with an instruction with new technology. They are completely ready to accept the technology of this learning model, study themselves, be enthusiastic and responsible, and be eager to express their opinions and learn new knowledge and information. The students also have a better listening skill compared with using the traditional media.
KUREKA at Open KU: Enhancing Education through Peer-to-peer Learning

Hikyoung Lee*, Minja Kim**
Center for Teaching and Learning, Korea University, Seoul, South Korea
hleeku@korea.ac.kr*, minjaya@korea.ac.kr**

Abstract
KUREKA, an open education peer-to-peer learning project, was launched at Korea University, in winter, 2011. In this paper, we describe how this project was initiated and implemented and examine the influence of KUREKA on participating students. KUREKA is one component of Open KU which is Korea University's open education platform and an evolved form of Korea University OpenCourseWare. Open KU serves as a home to fullfledged courses produced by faculty, open educational resources (OER), and KUREKA (coined from ‘Korea University’ + ‘eureka’). KUREKA was initiated under the premise that students are also knowledge generators (in addition to faculty) and students learn best by teaching others. Viewed in this light, KUREKA enables students to organize their knowledge and skills and generate contents to share with others through the Open KU website. During the first phase (from late-2011 to mid-2012), KUREKA operated in two ways in terms of contents generation. Firstly, students generated mini courses, that is, a series of short video lectures on both academic and non-academic subjects. A voluntary student group was subsequently formed to solicit students with knowledge and skills to share and create video contents. Secondly, learning strategies contents were created by students who showed outstanding academic merit. The project is now in its second phase which has begun by recruiting the second generation of the voluntary student group in October 2012. At present, six mini courses and thirty learning strategies videos have been created and opened to the public through the Open KU website and more are being developed. Results of this first phase have turned out to be positive. Survey results from KUREKA contents generators show that KUREKA brought out positive effects to organize knowledge. In addition, the recognition of openness in education has grown among contents generators. A large number of hits for KUREKA contents imply that KUREKA courses are attracting interest. KUREKA, in effect, has proven to be an effective learning platform in which students can proactively participate as both generators and learners.

Keywords
Peer-to-peer learning, open education, OpenCourseWare, OCW, Korea University, Open KU, KUREKA

Introduction
Better education has been the goal for educators in the world throughout time. Open Education is by far the most recent and influential means for making the educational experience richer. Open sources have been drawing attention from educators and the general public throughout the world. Open Education including OCW (OpenCourseWare), OER (Open Educational Resources), and MOOC (Massive Open Online Courses) has indicated that it has the enormous potential to make education effective and equally accessible to all.

KUREKA, a project launched at Korea University in 2011, started under the aforementioned premise. KUREKA consists of student-generated educational contents published in an open manner. However, KUREKA has taken a slightly stance than that of Open Education in general. Foremost, Open Education regards its contents as a means of delivering quality knowledge effectively and increasing accessibility to education. However, KUREKA places stress on the process of creating educational contents and considers the process as a method of learning. KUREKA is expected to help contents creators – students – enhance their learning. This idea is based on the learning method ‘learning by teaching’ through UCC (User Created Contents) creation.

Thus, this paper focuses on exploring KUREKA's possibility as a learning method. KUREKA is expected to help improve participating students’ cognitive and affective domains. In addition, it could help other important
aspects which 21st century learners have to acquire such as communication, collaboration, and IT skills. To examine KUREKA's potential as a learning tool a survey was administered targeting students participating in the first phase of KUREKA (late 2011 to early 2012).

In this paper, we examine the theoretical background of student-generated open educational contents as a learning method by fusing ‘learning by teaching’ and UCC creation methods. Then, we discuss the research method employed and outcomes. Lastly, we conclude with implications for Open Education as an effective learning method.

Theoretical Background

The concept that open educational contents generated by students can be a viable learning method is grounded in previous research regarding ‘learning by teaching’ and UCC creation. However, neither ‘learning by teaching’ or UCC creation are exactly compatible with KUREKA. Hence, this section critically examines both ‘learning by teaching’ and UCC creation in comparison with KUREKA in order to validate student-generated open educational contents as a learning method.

1. Learning by teaching

‘Learning by teaching’ stems from the Constructivists’ thought that learners learn through interaction with others/or the environment and then integrate the knowledge with previously acquired knowledge. Among Constructivists, Lev Vygotsky’s idea that there is a profound connection between speaking and cognition, thus, the one who is speaking is learning, is particularly apt for learning by teaching (Wikipedia, 2012a).

The concept of ‘learning by teaching’ is not new but was firstly introduced in the literature by a Scottish priest and educator Andrew Bell in 1795. Joseph Lancaster, a British educator, who was inspired by Andrew Bell’s idea implemented ‘learning by teaching’ in his school and introduced the ‘Monitorial System (écoles mutuelles)’ in France in 1815. The Monitorial System regards students as helpers of teachers simply passing on the knowledge they learned to their peers. The historical background for this was lack of teachers in France at that time and an increase in the number of students in 1980s (Wikipedia, 2012b). This concept of peer-teaching evolved into a learning method at the end of the 19th century and started to receive broader recognition when Jean-Pol Martin, a professor for foreign language teaching in Germany, developed the concept systematically and gave it theoretical background (Wikipedia, 2012a). He articulated the concept as “Lernen durch Lehren(LdL)”(Learning by teaching) and provided positive results to support this approach.

‘Learning by teaching’ needs to be distinguished from peer-tutoring and student presentations. In the ‘learning by teaching’ method, students do not simply convey certain content but can choose their own method to make their classmates understand and are not 100% autonomous but teaching under a teacher’s guidance (Wikipedia, 2012a). ‘Learning by teaching’ is particularly adequate in the higher education setting. Interaction and cooperation with peers to learn provides not only cognitive gains but also essential skills in workplaces (ibid, 2012a).

2. Learning by teaching by Jean-Pol Martin and by KUREKA

Martin approaches implementing ‘learning by teaching’ in a class as building neural networks in the human brain. He suggests that the main activity in ‘learning by teaching’ is classroom interaction as active neural networks. The most important effect from ‘learning by teaching’ is to develop students’ ‘websensibility’ which is ‘a cognitive and emotional sensibility for interdependence’ (Wikipedia, 2012a). The ‘learning by teaching’ class is a set of several phases. A teacher in a course divides the contents of a course into units and is assigned to a student/or small group of students. The student(s) in charge of a certain unit is/are in charge of a whole class for the unit. In the preparation phase, student(s) must comprehend the unit and prepare the teaching method. The method should not adhere to a teacher-centered unilateral lecture but could be diverse in regard to group exercise, quizzes, discussions, role plays, etc. to best support peer students understanding of the unit. In the classroom, the teaching student(s) introduces concepts of the unit and facilitates fellow students interaction with others to deepen understanding. Students’ interaction can be in the forms of discussion, question and answer, and role play. KUREKA is not a teaching and learning method for a class but can be considered a derivative of ‘learning by teaching.’ Rather, KUREKA is an open educational multimedia content produced by students. For KUREKA
content creation, students form a group and select a theme to teach about. They plan, set a timeline, and prepare and organize teaching materials before recording. Then, the produced content is published online so that anyone can access the material. KUREKA affects students’ learning in two dimensions while creating contents for teaching others. The first is the cognitive dimension. Students reinforce their previous knowledge and extend their circle of knowledge around a certain theme. The other is the affective dimension. Since creating contents is a type of project and has no relation to a regular course in which evaluation is conducted, it is expected that students can achieve a positive effect on learning motivation and self-efficacy.

Both KUREKA and Martin expect that cognitive gain is attained in the preparation (and planning) phase. Additionally, both speculate that students can deepen and consolidate their knowledge through actual teaching (in-class lectures for Martin and recordings for KUREKA) although Martin implements diverse methods to deepen knowledge not only for teaching students but also other students while for KUREKA this is not viable. KUREKA and Martin’s ‘learning by teaching’ concepts are similar in terms of pursuing ‘learning through teaching’ others but differ on several aspects (Table 1). The most distinctive difference is that Martin’s ‘learning by teaching’ is for classrooms in formal education whereas KUREKA is based on the Internet as a form of informal education. For Martin, a teaching student teaches in a class with diverse methods through unilateral information delivery and group activities. KUREKA, however, delivers knowledge in a unilateral manner through multimedia contents. A second distinction is collaboration. Creating multimedia contents to teach others requires active collaboration among group members since it is complex project. Thus, students participating in KUREKA can learn while they collaborate to complete a project. Supported by the power of the Internet, uploaded KUREKA contents can bring out unstructured interaction among authors and audiences across time and space. On the other hand, students in Martin’s ‘learning by teaching’ can learn while they interact while in a class. They are interdependent in terms of understanding and integrating knowledge. Third is who do teaching students teach. Martin’s teaching students target their classmates. Their primary aim is to scaffold and help their classmates fully understand what they teach. Whereas, KUREKA's teaching target is unclear. Since the teaching contents are uploaded on the Internet, they target random individuals who can access and are interested in learning specific themes. However, it can be assumed that mostly college students are the audience of KUREKA since KUREKA’s themes are what college students are interested in and KUREKA has been advertised widely to college students.

<table>
<thead>
<tr>
<th>Table 1. Comparison between ‘learning by teaching’ by Martin and KUREKA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Environment</strong></td>
</tr>
<tr>
<td><strong>Media</strong></td>
</tr>
<tr>
<td><strong>Teaching method</strong></td>
</tr>
<tr>
<td><strong>Teaching student(s)</strong></td>
</tr>
<tr>
<td><strong>Target of teaching</strong></td>
</tr>
<tr>
<td><strong>Process</strong></td>
</tr>
<tr>
<td><strong>Homework</strong></td>
</tr>
<tr>
<td><strong>In-class lecture</strong></td>
</tr>
<tr>
<td><strong>Home</strong></td>
</tr>
<tr>
<td><strong>Publish</strong></td>
</tr>
</tbody>
</table>

In sum, KUREKA is a derivative of offline ‘learning by teaching’ format sharing the premise that students can best learn when they teach others. While both KUREKA and Martin’s ‘learning by teaching’ are expected to bring out positive impact in students’ cognitive domain, KUREKA focuses more on the collaborative feature of creating contents and its positive impact on other important aspects that students need to acquire as 21st century learners such as collaboration, communication, and IT skills.

3. Learning by creating User Created Contents (UCC)
When the Internet entered the Web 2.0 era and the public started to publish what they created easily via the Internet, educators became interested in applying User Created Contents (hereafter, UCC) to education particularly a classroom. They have explored the possibility of using UCC as a teaching and learning method and its impact. Lyou and Park (2007) categorized UCC by type, content, and format (Table 2). According to Lee and Lee (2009), from their research of 84 elementary school students, video type is regarded as the most interesting media creation tool as opposed to image, audio, and text. In their study, the students who created video contents showed higher overall academic achievement than other students who used other media types. Thus, they concluded that creating video is an effective means for learning than other types of UCC.

### Table 2. Category of User Created Contents (UCC) (adapted and modified from Lyou and Park, 2007)

<table>
<thead>
<tr>
<th>Category</th>
<th>UCC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Media type</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Text</td>
</tr>
<tr>
<td></td>
<td>Audio</td>
</tr>
<tr>
<td></td>
<td>Image</td>
</tr>
<tr>
<td></td>
<td>Video</td>
</tr>
<tr>
<td></td>
<td>Packaged (multi-media)</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Information</td>
</tr>
<tr>
<td></td>
<td>Entertainment</td>
</tr>
<tr>
<td></td>
<td>Business</td>
</tr>
<tr>
<td><strong>Format</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>User generated contents (UGC)</td>
</tr>
<tr>
<td></td>
<td>User modified contents (UMC)</td>
</tr>
<tr>
<td></td>
<td>User recreated contents (URC)</td>
</tr>
</tbody>
</table>

Lee and Lee (2009) also examined what production type of video UCC is the most effective for students’ learning. They divided video UCC by production type according to drama, news, and campaign. They found that drama generated the most interest among students and helped them to achieve higher academic performance. Although they did not include teaching videos as a production type in the research, their research was noteworthy to explore the relationship between student learning and UCC type and student learning and production type of video UCC.

Kang (2007) studied how college students perceive UCC creation as a learning tool. 29 college students (10 groups) produced UCC prior to a survey on their perception of UCC creation. She analyzed results by four categories – expression of thought, opinion exchange, information sharing, and effectiveness in learning. Her results showed that students perceived UCC creation as a tool of expression of thoughts and opinion exchange both before and after creating UCC. However, they were more likely to agree that UCC creation can be used to share information and make learning effective. They answered that UCC can be a learning contents containing information but would be more suitable as a supplement to learning since the UCC’s quality cannot be same as professionally or commercially produced ones.

Kim and Yoon (2009) went further to examine the educational impact of UCC creation. They were particularly interested in the effect of UCC creation on learners’ self-directed learning ability. Internal motives, self-regulation, and openness to study were tested to examine self-directed learning. 29 elementary school students participated in the research and they created UCCs according to specific teaching and learning methods in a practical arts class. They evidenced the positive impact of UCC creation in internal motivation and self-regulation while no meaningful difference in openness to study area was found. Although they examined elementary school students in a certain subject, they showed that creating UCC can influence students’ learning ability in a positive manner.

### 4. Learning by creating User Created Contents and KUREKA

KUREKA is a UCC in video or audio mode with the purpose of information delivery. According to Lee and Lee (2009), video type is the most interesting and effective in students’ learning (cognitive domain). In addition, KUREKA can be expected to bring positive results to participating students regarding their learning skills (affective domain) and to learners such as seen in Kang (2007)’s and Kim and Jung (2009)’s studies.
Existing UCC and educational impact related studies, however, overlook other aspects through which UCC creation affects participating students. As aforementioned, since UCC creation is similar to multimedia production, its process is complex and requires a diverse skillset to plan, make a storyboard, and use multimedia tools. Therefore, UCC creation is likely to be realized as a group task. Given this point, UCC creation is a group activity for collaborative learning. Hence, in what ways collaborative learning can impact students warrants attention. The other aspect is openness of the contents. Both UCC and KUREKA are published on the Internet even though UCC can limit public access while KUREKA is open contents for anyone. Web publication implies the possibility to interact with people over time and space. Thus, this can be also an element to examine UCC creations’ educational impact to see how interaction with people impacts both participants and learners’ learning.

5. Examining the possibility of KUREKA as a learning method
KUREKA is a video type of information delivery educational UCC for ‘learning by teaching’. As studies have shown, KUREKA creation is expected to affect students’ cognitive and affective domains as well as other areas of collaborative learning can influence. To examine the cognitive, affective, and miscellaneous domains, we utilize Bloom’s Revised Taxonomy, goal orientation and self-efficacy theory, and 21st century skills, respectively.

1) Bloom’s Revised Taxonomy
In 1956, Benjamin Bloom developed a taxonomy of Educational Objectives (Bloom’s Taxonomy), a classification of levels of learning. His former student Lorin Anderson and group of cognitive psychologists revised Bloom’s Taxonomy in order to reflect 21st century learning. They considered creativity as a higher intellectual activity than evaluation which had been the highest in Bloom’s original taxonomy (Churches, 2009). Table 3 shows the order of thinking skills of the revised taxonomy and associated actions.

<table>
<thead>
<tr>
<th>Intellectual behaviors</th>
<th>Associated actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remembering</td>
<td>define, duplicate, list, memorize, recall, repeat, reproduce state</td>
</tr>
<tr>
<td>Understanding</td>
<td>classify, describe, discuss, explain, identify, locate, recognize, report, select, translate, paraphrase</td>
</tr>
<tr>
<td>Applying</td>
<td>choose, demonstrate, dramatize, employ, illustrate, interpret, operate, schedule, sketch, solve, use, write</td>
</tr>
<tr>
<td>Analyzing</td>
<td>appraise, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test</td>
</tr>
<tr>
<td>Evaluating</td>
<td>appraise, argue, defend, judge, select, support, value, evaluate</td>
</tr>
<tr>
<td>Creating</td>
<td>assemble, construct, create, design, develop, formulate, write</td>
</tr>
</tbody>
</table>

2) Goal orientation and self-efficacy theory
There are numerous aspects to consider in examining the affective domain for learning. However, since goal orientation and self-efficacy are factors strongly correlated to learning (Kwon, 2007), this research focuses on these two factors. Goal orientation refers to why learners participate in actions to achieve. At first, scholars divided it into mastery and performance goals but currently, it has been more finely divided into mastery goal, performance goal, mastery avoidance, and performance avoidance. Among these, mastery goal tends to bring about positive learning actions, motives, and results according to previous studies (ibid, 2007). KUREKA is not a course-based learning method, thus, measuring mastery goal seemed relevant to determine the influence of KUREKA.

Self-efficacy is a personal judgment on one’s ability to organize the process and proceed in order to achieve goals. This has been considered an important factor for learning and a moderating variable for choosing learning strategies, attitude, sentiment, and preferences by scholars (ibid, 2007). Self-efficacy seems to be a more fundamental factor than the self-directed learning abilities that Kim and Yoon (2009) used in their study.

3) 21st Century Skills
As a reflection of conventional education and recognition that the 21st century is quite different from the 20th in the abilities of people needed for work, citizenship, and self-actualization, the concept of ‘21st century skills’ have become popular (Dede, 2009). Among the many institutions that have attempted to define ‘21st century skills’, the Partnership for 21st Century Skills (P21)’s definition is more representative and encompassing than other definitions. P21’s definition spans the three categories of life and career, learning and innovation, and information, media, and technology skills based on knowledge areas of core subjects and 21st century themes. Among these skills, KUREKA is expected to help improve communication, collaboration, and ICT skills.

Research Design
A survey was administered to KUREKA participating students in the first phase of KUREKA to determine KUREKA’s influence on their learning in three domains – cognitive, affective, and miscellaneous. Survey questions were designed and subcategorized into five sections. The first two sections asked about the production process and roles of the respondents. The other three sections included questions about how KUREKA creation affected the students’ cognitive, affective, and other domains. Table 4 illustrates the survey’s design and the number of questions.

<table>
<thead>
<tr>
<th>Section</th>
<th>Subcategory</th>
<th>No. of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>KUREKA production process</td>
<td>4</td>
</tr>
<tr>
<td>Participants</td>
<td>Participants’ roles</td>
<td>1</td>
</tr>
<tr>
<td>Cognitive domain</td>
<td>Remembering</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Understanding</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Applying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Analyzing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Evaluating</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Creating</td>
<td></td>
</tr>
<tr>
<td>Affective domain</td>
<td>Mastery approach (Learning motive)</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Self-efficacy</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Communication skills</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Collaboration skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IT skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Awareness of knowledge sharing</td>
<td></td>
</tr>
</tbody>
</table>

The students who participated in the first phase of KUREKA autonomously produced contents according to very basic guidelines that dictated that results need to be a series of short-length (approximately 10 min each) video contents of the teaching a certain concept. They formed groups and decided on the concepts to teach. 6 courses with 55 videos were produced during the first phase (from late-2011 to mid-2012).

Outcomes
12 out of 42 students responded. The academic departments the respondents were affiliated with were diverse (Business Administration, Liberal Arts, Engineering, Education, Nursing, Media, and Health Sciences) and gender proportions were nearly equal. No freshman answered while 6 respondents were seniors and over.

1. Process of KUREKA production and roles of participants
83% of respondents answered they produced KUREKA contents by collaboration. Group size varied from three to over ten. Group members divided tasks into planning, contacting, script writing, and recording and editing and 50% of the respondents completed their job. Half of the students were involved in more than one task.

The survey divided roles into planner, script writer, lecturer, cameraman and editor, and other. The students responded that 80% were involved as planners although half of them also took other roles. 3 students took the role as script writers and 3 students served as lecturers. Two students were tech people who recorded and edited contents and one student answered that she was in charge of contacting
other members in a group. Since students took more than one role, the number of students adds up to more than 12.

2. **Cognitive domain**

Overall KUREKA creation had a positive impact on the participants’ cognitive domain. Students agreed 3.67 out of 5 that their cognition had improved. Among the five categories of remembering, understanding, applying, analyzing, evaluating, and creating, KUREKA creation is most likely to help students remember knowledge (4.15/5). 85% of the students agreed and strongly agreed that they could remember what they taught and 84% said that they repeated contents related to the concept they chose. Subsequent to remembering, KUREKA enabled students to analyze the knowledge they had chosen to teach (3.75/5). The respondents also answered that KUREKA stimulated understanding (3.67/5), applying (3.5/5), creating (3.39/5), and evaluating (3.42/5) in impact order (Figure 1).

![Figure 1. Cognitive domain](image)

3. **Affective domain**

As for the affective domain, students said that KUREKA creation had a positive impact (3.91/5). They thought that the KUREKA creation project had strengthened their self-efficacy (4.04/5) and mastery goal motives (3.83/5). 84% of the respondents agreed and strongly agreed that KUREKA made them to think deeply about the theme they chose (a question under mastery goal motives) and 83% claimed that the experience of KUREKA creation helped improve their ability to plan, progress the plan, and achieve goals (a question under self-efficacy).

4. **Miscellaneous**

The students also responded positively in communication, collaboration, and ICT skills aspects and awareness in sharing knowledge, OER, and copyrights issue. Among the 21st century skills, KUREKA is more likely to help the participants learn collaboration skills (3.88/5). Additionally, KUREKA played a role to stimulate communication in a group so that students could improve communication skills (3.79/5). 91% of the students agreed and strongly agreed that they could improve a skill to understand others’ intentions through communication during the KUREKA production process. However, KUREKA does not seem to have a strong influence on ICT skills improvement (3.45/5). The two students who took the recording and editing role answered in opposite ways as one strongly agreed that she learned how to find and organize information, what devices to use according to situations, what the tools for multimedia production are, and how to use them while the other less likely agreed. This difference seems to be caused by differences in background knowledge in ICT skills before participating in KUREKA.

For the awareness area, we asked how much participating in KUREKA raised awareness on sharing knowledge, OER, and copyrights issues. The respondents answered that KUREKA positively influenced their perceptions for knowledge sharing (3.91/5) and knowledge about OER or OCW
Particularly, 92% of the respondents agreed and strongly agreed that they acquired knowledge about OER and OCW that they did not know before. Students also generally agreed that KUREKA production helped them understand copyrights and CCL (Creative Commons License) but not strongly than other aspects (3.45/5).

In sum, the results showed that KUREKA production influences learning in cognitive, affective, and other domains. KUREKA is more likely to affect the affective domain than other aspects. Among the subcategories, it turns out that KUREKA stimulates students’ intellectual behavior of remembering the most (4.15/5). On the other hand, compared to other subcategories KUREKA supports intellectual behavior of evaluating (3.41/5), ICT skills (3.45/5), and awareness on copyrights issues (3.45/5).

It was initially assumed that there might have been a correlation among participating roles, the number of groups, and role sharing, and gains in three areas but no clear correlation was found in this research. Clearly the limitations of the study such as small sample size are caveats to be dealt with in future research.

**Conclusion**

This paper explored the viability of student-generated OER as a learning method by eliciting views from the first phase of participants of the KUREKA project. KUREKA is an open educational content which fundamentally supports the ‘learning by teaching’ spirit and one particular form of UCC. The survey results indicate that the participating students showed positive gains in learning. Especially, they showed more improvement in the affective domain through KUREKA production than in other aspects.

This is an initial attempt to explore the effectiveness of student OER generation as a learning method thus further research is needed to answer questions this study could not deal with. For instance, this study was not able to cover the features of open public educational contents and its educational effect. As mentioned in the outcomes section, research focusing on examining the relationship between students’ roles and gains also warrants attention.

This study serves as a springboard to determine how Open Education can be utilized for teaching and learning effectively. As KUREKA enters the next phases, we hope to enhance students’ learning experience through student-generated OER and embark on new OER utilization initiatives.

**References**


Kwon, Soungyoun. (2007). College Students’ goal orientation and self-efficacy. *Journal of Learner-Centered Curriculum and Instruction*, 7(2), 49-71pp


Related Web sites

Korea University Open KU : [http://open.korea.ac.kr/](http://open.korea.ac.kr/)
The Users’ Evaluation of Universitas Indonesia OpenCourseWare

Lavinia Araminta, Soulaya Lestary, Atmadewita, Fitria Sudirman
Universitas Indonesia, Depok, Indonesia

ABSTRACT
While the Universal Declaration on Human Rights demands that higher education shall be equally accessible to all on the basis of merit, a significant obstacle emerges due to the increasing number of students which cannot be all accommodated by higher educational institutions. Along with the era of globalization, one of the attempts in bridging the gap is through OpenCourseWare, in which the digital technology makes it possible to disseminate knowledge and information regardless time and physical distances. Being one of the most leading universities in Indonesia, Universitas Indonesia (UI) has participated in the movement towards accessible higher education. Through bibliographic studies and interviews with related stakeholders, this paper examines the implementation of OpenCourseWare, including the challenges faced and the solutions, at UI as well as the impacts on the users.

Keywords: OpenCourseWare, Universitas Indonesia, implementation, impacts

I. BACKGROUND
While the Universal Declaration on Human Rights demands that higher education shall be equally accessible to all on the basis of merit, a significant obstacle emerges due to the increasing number of students which cannot be all accommodated by higher educational institutions. Along with the era of globalization, one of the attempts in bridging the gap is through OpenCourseWare, in which the digital technology makes it possible to disseminate knowledge and information regardless time and physical distances. According to Valkenburg (2011), the mission of OpenCourseWare is “to advance formal and informal learning through the worldwide sharing and use of free, open, high-quality education materials organized as courses.”

Being one of the most leading universities in Indonesia, Universitas Indonesia (UI) has participated in the movement towards accessible higher education by providing online courses through UI OpenCourseWare. UI Open Course Ware (UI OCW) is a web-based publication of several UI courses content that had outer-class opened by their lecturers. UI OCW is open and permanently available to the world via this website only. However, UI OCW does not grant degrees or certificates nor provide access to UI faculty, and the materials may not reflect entire content of the course. Although UI has been involved in OCW Consortium, it is not a sustaining member. Also, out of 14 faculties, only Faculty of Computer Science and Faculty of Public Health provide courses (10 courses and 1 course respectively). The website has been accessed 40,977 times, yet it was last modified on 22 March 2010. Regarding those facts, this paper aims to evaluate the implementation of UI OCW from the users’ point of view.

II. SUBJECTS
A total of 100 university students, 35 males and 65 females, participated in the study. 45 respondents are from Universitas Indonesia and 55 respondents are from other universities and colleges, ranging from the first to the fifth year of study and majoring in various studies.
The other universities and colleges are located in Jakarta, Yogyakarta, Semarang, Bandung, Bogor, Surabaya, and Jambi. All of the subjects are active Internet users who access the Internet at least once per two days with the duration of 1 hour up to any time.

III. MATERIALS AND PROCEDURES

The data were collected using questionnaire which consisted of 10 questions and attempted to gather information regarding the subject’s habit of gaining materials from online sources and the sites which they access the most often. Specifically, the questionnaire aimed to find out the awareness of students, either from UI or from other scholarly institutions, about UI OpenCourseWare, the reasons why they use or do not use the website to enhance their learning process, and their recommendations for UI OCW. The data collected were then analyzed using descriptive statistics. Frequency counts were done on each item in the questionnaire based on the subjects’ respective answers. The total frequency of responses for a particular item was finally converted to percentages. Moreover, the information related to UI OCW was gathered from related bibliography.

IV. FINDINGS AND DISCUSSION

The first question of the questionnaire dealt with the subjects’ frequency of accessing the Internet to support their learning. 69% students often access the Internet for academic purpose. 19% of them said “always”, while 11% of them said “sometimes”. Only 1 student admitted never using online materials in learning.

<table>
<thead>
<tr>
<th>Students</th>
<th>Always</th>
<th>Often</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td>UI</td>
<td>10</td>
<td>30</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Other institutions</td>
<td>9</td>
<td>39</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>19 (19%)</td>
<td>69 (69%)</td>
<td>11 (11%)</td>
<td>1 (1%)</td>
</tr>
</tbody>
</table>

When the students were asked what website(s) they access the most often, Google and Wikipedia were frequently mentioned, followed by content sites which provide online journals and scholarly articles. Some students had the websites from their institutions as references, such as UI, IPB, and Universitas Diponegoro. It was also found that particular websites are popular among particular studies programs, for example, medical studies and economics.

TABLE 1. Frequency of Accessing the Internet to Support Learning

<table>
<thead>
<tr>
<th>Types of Sites</th>
<th>Names of Websites Mentioned</th>
<th>Total users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search engine site</td>
<td>Google, 3D Warehouse</td>
<td>50</td>
</tr>
<tr>
<td>Content site</td>
<td>BMJ, Lancet, Archdaily, NEJM, Drugs, Sparknotes, Science direct, Proquest, Springer Link, Emeraldinsight, Coursera, PLOS, Medscape</td>
<td>25</td>
</tr>
<tr>
<td>Wiki site</td>
<td>Wikipedia</td>
<td>18</td>
</tr>
<tr>
<td>Government site</td>
<td>CDC (Centers for Disease and Prevention), PubMed, WHO, Pajak, world Bank, Insee</td>
<td>10</td>
</tr>
<tr>
<td>News site</td>
<td>Kompas, Republika, VivaNews, HukumOnline, Time, Kontan</td>
<td>7</td>
</tr>
<tr>
<td>University site</td>
<td>Eprints Undip, Repository IPB, Lontar UI, SCeLe UI</td>
<td>5</td>
</tr>
<tr>
<td>Information site</td>
<td>GoodRead, MIMS, Bimkes, EBSCO, Le Dictionnaire</td>
<td>4</td>
</tr>
<tr>
<td>Media sharing site</td>
<td>Scribd, Dropbox</td>
<td>3</td>
</tr>
<tr>
<td>Community site</td>
<td>FanFiction, ORTax</td>
<td>3</td>
</tr>
<tr>
<td>Corporate site</td>
<td>IDX, Medline</td>
<td>3</td>
</tr>
<tr>
<td>Showcase site</td>
<td>Behance, Logopond</td>
<td>2</td>
</tr>
</tbody>
</table>
The data above implied that the subjects were familiar with online sources. Nevertheless, the result of the next part which pertained to the subjects’ awareness of UI OCW is quite astonishing. Out of 100 respondents, only 2% knows about UI OCW. Still, they are not the users of UI OCW. The student from UI said that it was because the courses provided in S CeLe UI¹ are already comprehensive and are always updated, while the student from the other university said that it was due to the content of UI OCW which still needs to be completed.

<table>
<thead>
<tr>
<th>TABLE 3. Awareness of UI OCW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>UI</td>
</tr>
<tr>
<td>Other institutions</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Interestingly, when asked whether they would like to find out about UI OCW after filling the questionnaire, 78.57% students who did not know about UI OCW gave positive feedback by saying “YES” to the question. It is mainly attributed to their curiosity and hope that this site could be useful as a new and trusted online reference. Some of them also said that they needed more online and open sources to enhance their learning.

<table>
<thead>
<tr>
<th>TABLE 4. Willingness to Access UI OCW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students</td>
</tr>
<tr>
<td>----------</td>
</tr>
<tr>
<td>UI</td>
</tr>
<tr>
<td>Other institutions</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

In contrast, 16.32% respondents said “NO” because they were not interested, they were not informed of UI OCW, and they still had other alternative learning websites. Specifically, the students from other institutions would not try to access UI OCW because UI and their universities were not the same institution that they would have difficulties in accessing the site and because they did not needed the materials.

The last question of the questionnaire asked for the subjects’ recommendations for UI OCW. First, UI OCW should do massive publication both at UI and at other campuses since the main problem why almost all the subjects did not know about UI OCW was the lack of promotion. Also, UI OCW should state its advantages than the OpenCourseWare sites from other universities as well as the manuals to use the site. Second, the courses have to be added and updated regularly. It turned out that only two faculties uploaded their courses, and they have not been updated since 2010. Third, the web design ought to be more interesting so that more students will be attracted and enthusiastic in learning. Moreover, UI OCW had better have the mobile version of its website to make the users easier to access it via mobile phones. Another concern was related to the accuracy and the number of the data available.

In addition, as a comparison, Universitas Sumatera Utara OpenCourseWare (USU OCW) seems to have more advantages than UI OCW, for the courses are more complete. Another plus point of USU OCW is that he site is integrated with other learning portals from USU, such as USU e-Learning, USU Library, Scientific Journals, USU Institutional Repository, and USU e-Journals. Also, the access to USU OCW is easier since the users do not have to create accounts to download the courses.

¹ A website designed only for UI students to help their learning
V. CONCLUSION

UI’s credibility and the high need for online learning sources among college students in Indonesia make UI OpenCourseWare an interesting open reference. However, there are some aspects which need to be improved which include the publication of UI OCW, the courses, the web design, and the data provided. Although UI OCW is open for public, it has not reached the mission of OCW to advance high-quality education materials. If the recommendations from the users are taken into account and are executed, UI OCW will surely be one of the most accessed website for academic purpose and will path the way to a more reachable higher education in Indonesia.

VI. REFERENCES


UI OpenCourseWare. 21 December 2012. <www.ocw.ui.ac.id>

USU OpenCourseWare. 28 December 2012. <www.ocw.usu.ac.id>

Creating Google Sites as a Learning Management System

Pichit Trivitayaratana¹, Wanna Trivitayaratana¹, Siriporn Trivitayaratana²

¹RT e-Learning Center, Department of Radiological Technology, Faculty of Medical Technology, Mahidol University, Bangkok, Thailand, ²Siriwan Medical Esthetic Institute (Thailand), Bangkok, Thailand.

ABSTRACT

To create a learning management system by Google sites, the components of Moodle were studied as a prototype. The abilities of Google sites were also analyzed and compared with the Moodle. The results showed that a learning management system consists of five parts. The basic component of Google sites can be used for the first (course management) and second (content management) parts. For completion a learning management system by Google sites, the third (test and evaluation system: self check), fourth (course tools: web board and chat room) and fifth (data management system) parts were fulfilled with Google form, Google group and another Google sites (file cabinets), respectively. Moreover, the Google document and Google hang out were added for real time interactive. This learning management system, no needed of teamworks and intranet, was adjusted to use and manage by one instructor. The budgets for licensing programs were saved. This learning management system has been applied for e-Learning of medical science students since May 2012. In conclusions, the Google sites has been created as a learning management system for one stop management and non-server e-Learning.

Keywords: Google sites, learning management system, non-server e-Learning
**Introduction**

In virtual classroom of e-Learning, the electronic media (internet, intranet, satellite dish, etc.) were used for some objectives: to present the courseware, to connect the social network, to introduce the course content and learning activity.

An e-Learning enables learners to learn anytime and anywhere. Another e-Learning benefit is its flexibility. It provides an ability to select a course, learning objective or specific learning time and need.\(^{(1-5)}\) For access these possibilities, a learning management system (LMS) plays an important role to conduct the learning process and to support learners and instructors on online interactive and content based learning. The reporting of homeworks, an appointment for learning activity, the knowledge and skill evaluation were also included. Moodle is a open source e-Learning software platform, also known as a LMS.\(^{(4)}\) A server and administrator were required to support a LMS : Moodle.\(^{(5)}\) They caused some problems for e-Learning in inadequate budgets of some learning places. For dissolving these problems, the freeware: Google sites were created as a small LMS with non-server e-Learning.

**Materials and Methods**

To create a LMS by Google sites, The components of Moodle were studied as a prototype. The abilities of Google sites were also analyzed and compared with the Moodle. The Google site and its application were modified for generating a small LMS.

**Results**

The Moodle have 5 components: 1. course management, 2. content management, 3. test and evaluation system, 4. course tool: web board and chat room and 5. data management system. From analyzing the abilities of Google sites, they were adjusted and applied to a small LMS that fulfilled the 5 basic components of a Moodle as following:

1. Course management
   One Google site was used for one learning subject web site. In case of many subjects, the other Google sites were added.

2. Content management
   The content of course wares were constructed by text base, image, sound and streaming media.

3. Test and evaluation system
   Google form was applied for test and evaluation system. The question items included multiple choice, text, paragraph text true/false (modified from check boxes) and choose from a list.

4. Course tool : web board and chat room
   Google group was used to create online and activity-based groups, engage in discussion about a specific subject, organized meetings or social events among members of a group. For social networking and real time interactive, Google plus was used. Interactive assignment was developed to enrich the learning process. The comment board was modified under the home page as a new or information transfer (announce) from instructor to students.

5. Data management system
   Data management system in learning process were uploaded to file cabinet.
This LMS has been established for e-Learning of medical science students since May 2012.

Fig. 1 e-Learning of Anatomy (circulatory system) homepage for RT students

A. a small LMS created by Google site (https://sites.google.com/site/rtelearningcir/) that fulfilled the basic components of a LMS: Moodle

B. a LMS: Moodle (http://10.51.1.4/elearning)
Conclusions

The basic components of Google sites can be used for the first and second components. The third, fourth and fifth parts were fulfilled with Google form, Google groups & Google plus, and file cabinets, respectively. Moreover, the Google document and comment board were added for real time interactive.

The created Google sites LMS were adjusted to operate and manage by one instructor. An administrator and intranet were not needed. The budgets for licensing programs were saved. The Google sites has been created as a small LMS for one stop management and non server e-Learning with successfully delivered online learning to medical science students since May 2012.

References

Development of Design and Analysis Methods for Item Bank for Constructing Multiple Equivalent Test Forms

Pokpong Songmuang, Keizo Nagaoka
Faculty of Human Science, Waseda University, Japan
pokpong@aoni.waseda.jp

Abstract
This paper proposes methods for designing and analyzing an item bank for constructing multiple equivalent test forms. Several studies proposed methods for designing and analyzing an item bank but most of them were proposed for computerized adaptive testing instead of constructing multiple equivalent test forms. Therefore, we propose the methods based on Bees algorithm for designing and analyzing an item bank for constructing multiple equivalent test forms. Moreover, we perform some experiments to show the effectiveness of the proposed methods using actual data of English language performance test.

1. Introduction
In educational measurement, sometime we need multiple equivalent test forms (METF) in which each test form has a different set of items but it still has equivalent qualities (e.g. test difficulty or test information function (TIF) of item response theory (IRT)) to the others.

Until now, several studies proposed methods for constructing METF to maximize the equivalence of test quality among test forms and satisfy all test constraints (van der Linden, 2005; Adema, 1992; Songmuang and Ueno, 2011) from an given item bank to satisfy given test constraints. However, in practical situations, the given test constraints sometimes cannot be changed because of a reason about equivalent qualities among test forms (e.g. prior and later test forms are constructed using the same test constraints). The problem is that the test constraints sometimes cannot be satisfied by a deficient in the given item bank. For example, a given item bank contains enough items with contents required by the test constraints but the given item bank has items with low information of IRT so the test information of IRT of the constructed test forms cannot satisfy the minimum test information in the test constraints. This interrupts the constructing of METF and the increasing of the number of constructed test forms.

To design an item bank, Stocking and Swanson (1998), Veldkamp and van der Linden (2000), and van der Linden, Veldkamp and Reese (2000) proposed design methods using integer programming, which indicated the number of items and the types of items that are required to satisfy given test constraints. However, these methods did not support all types of test constraints and the methods were proposed for designing an item bank for computerized adaptive testing instead of constructing METF.

To address this problem, Belov and Armstrong (2006) proposed methods based on a stochastic search for designing and analyzing an item bank for constructing METF. This method supported us to design an item bank by constructing a test form using a stochastic search and monitoring what kind of items were required to satisfy the given test constraints. In this method, the items that had been used for constructing the test were removed from the item bank and then the next test forms were
constructed from the remaining items. This method was called “sequential construction”. The method effectively constructed test forms to satisfy the given test constraints. However, there was a serious problem in that the quality difference among test forms increases as the number of constructed test forms increases. As a result, although the item bank designed by the method increased the number of test forms, the quality difference among test forms was a remaining problem.

The problems of previous design and analysis methods for an item bank for constructing METF are as follows:

1. Only few methods were proposed for designing and analyzing an item bank for constructing METF,
2. The qualities of test forms constructed form the item bank designed by the previous method were different.

To solve the problems, we apply Bees algorithm (BA) (Songmuang and Ueno, 2011) instead of the stochastic search of Belov and Armstrong (2006) to design and analyze an item bank for constructing METF. The advantages of the proposed method are as follows:

1. The proposed methods design and analyze an item bank for constructing METF,
2. The proposed methods are based on BA that maximizes the equivalent among test forms.

Moreover, we perform some experiments to show the effectiveness of the proposed methods using actual data of English language performance test. The results show the proposed design and analysis methods effectively supports us to design or improve an item bank or a given item bank for constructing METF.

2. Designing and analyzing an item bank for constructing multiple equivalent test forms based on Bees algorithm

In this section, we first describe Bees Algorithm (BA) for constructing METF by minimizing the difference in test information functions among test forms. Next, we describe how to apply BA to design and analyze an item bank for constructing METF.

2.1. Bees algorithm for constructing multiple equivalent test forms

In the method of constructing test forms based on BA (Songmuang and Ueno, 2011), we divide the construction of test forms into two steps:

Step A: Construct test forms only to minimize the fitting errors of each form to test constraints (e.g. the difference between TIF and defined TIF in test constraints) without taking into consideration the equivalence of test forms. Here, the constructed test forms are still not equivalent in quality that indicated by the fitting errors.

Step B: Extract the most equivalent set of test forms from the constructed test forms in Step A that minimizes the difference among the fitting errors of the test forms.

Next section, we describe how to apply BA to design an item bank for constructing METF.

2.2. Bees algorithm for designing an item bank for constructing multiple equivalent test forms

In this paper, the idea is to solve problems of the previous design methods by applying BA to design an item bank for constructing METF instead of using stochastic search (Belov and Armstrong, 2006). Since BA is an approximation method that constructs test forms to satisfy test constraints in several patterns, we can use this information to create a blue print of an item bank for constructing METF to satisfy the given test constraints. This blue print is more flexible than one created by an exact method such as linear programming (e.g. Veldkamp and van der Linden, 2000; van der Linden, Veldkamp and Reese, 2000). Moreover, the proposed method relaxes the problem of difference in fitting errors among test forms as described in Songmuang and Ueno (2011) so the designed item bank is appropriate for constructing METF. Next we describe the steps of the proposed test design base on BA.

1.) Generate all types of items but one item for each type.

2) Construct METF using BA to minimize the difference of test information among test forms and to
satisfy the given test constraints.

3) Count the selection frequencies of each type of item.

The distribution of selection frequencies indicates the numbers of required items in each type.

If we have given test constraints and a given item bank, in this paper, we apply BA to analyze the appropriate between them and the details of the proposed analysis method is described in the next section.

2.3. Bees algorithm for analyzing a given item bank for constructing multiple equivalent test forms

In this section, we describe how to apply BA to analyze a given item bank to show what kind of items are required to satisfy a given test constraints. This information is used to guide test author to effectively create a new item to improve the given item bank.

To analyze a given item bank, we apply BA to construct METF using the given item bank to satisfy the given test constraints. While constructing test forms in step A of BA, the constructed test forms can be separated into a success test form (satisfied all test constraints) and a failure test form (unsatisfied test constraints). Here, the details of failure test forms are used to indicate the required type of items not only content of items but also the statistical characteristics. From the both information, we can effectively create a new items to improve the item bank to satisfy the given test constraints and maximize the equivalent among of test forms.

3. Experiment

We perform two experiments to show the effectiveness of the proposed methods to design and analyze an item bank for constructing METF. The actual item bank is English language performance test, which has 1000 items with item parameters of IRT.

To show effectiveness of the proposed method to design the item bank, we compare the qualities of test forms constructed using the item banks that are designed by the proposed method and the design method based on stochastic search (SS) (Belov and Armstrong, 2006).

Before we start this experiment, we define test constraints of several types of test forms and perform the design process as described in Section 2.2 using the proposed method based on BA and the design method based on SS. The test constraints are: 1) a total number of items in each test form is ten, 2) minimum values of TIF are between 0 and 1.5, 3) the number of overlapping items is zero, and 4) the number of test forms is five. Next, we summarize the distributions of item selection frequencies as blueprints of the item banks and create the item bank by select items that have similar characteristics as described in the blueprint from the actual item bank instead of creating all new items. Next, we use BA to construct METF using the created item banks to satisfy the given test constraints that we defined before the experiment. This experiment is iteratively performed 30 times using several types of test constraints.

Table 1 Average and Average of Standard deviations of fitting errors of test forms constructed using the item banks designed by the design method based on BA and SS

<table>
<thead>
<tr>
<th>Item Bank Design Method</th>
<th>Average of fitting errors among test forms</th>
<th>Average of SDs of fitting errors among test forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design method based on BA</td>
<td>0.126</td>
<td>0.018</td>
</tr>
<tr>
<td>Design method based on SS</td>
<td>0.147</td>
<td>0.029</td>
</tr>
</tbody>
</table>

The fitting errors is the difference between the minimum values of TIF in test constraints and TIF of the constructed test forms and the equivalence of test forms is indicated by the average of standard deviations of fitting errors among test forms.

According to the results of this experiment in Table 1, the equivalences of test forms constructed using the item banks designed by the proposed method are better than that of test forms constructed using the item banks designed by the design method based on stochastic search.

Next experiment, we show how the purposed analysis method for an item bank is more effective than the analysis method based on stochastic search. The effectiveness is indicated by the equivalence of the test
forms that constructed using the item banks improved using information from the analysis methods.

Before perform the experiment, we define test constraints and generate item banks by randomly select 100 items from the actual item bank. Next, we analyze the generated item banks using the proposed method based on BA as describe in Section 2.3 and the analyze method based on SS. According to the results of the analysis, we have the types of required items to improve the generated item banks. We improve the generated item banks by selecting the items according to the indicated types from the actual item bank and adding them to the generated item banks. Next, we use BA to construct METF using the improved item bank to satisfy the given test constraints.

Table 2 Average and Average of Standard deviations of fitting errors of constructed test forms from the item banks improved by the analysis method based on BA and SS

<table>
<thead>
<tr>
<th>Item Bank Analysis Method</th>
<th>Average of fitting errors among test forms</th>
<th>Average of SDs of fitting errors among test forms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analysis method based on BA</td>
<td>0.145</td>
<td>0.012</td>
</tr>
<tr>
<td>Analysis method based on SS</td>
<td>0.163</td>
<td>0.032</td>
</tr>
</tbody>
</table>

Finally, we compare the quality difference among test forms constructed using the improved item banks. The results in Table 2 show the equivalence of test forms constructed using the item banks improved by the proposed analysis method better than the analyze method based on stochastic search.

4. Summary

We proposed methods for designing and analyzing an item bank for constructing multiple equivalent test forms based on Bees algorithm.

Moreover, we performed some experiments to show the effectiveness of the proposed methods. According to the results, the equivalences of test forms constructed from the item bank designed by the proposed method were better than the equivalence of test forms constructed from the item bank designed by the previous method. Moreover, the results showed that the equivalence of the test forms, that were constructed using the item banks improved by the proposed analysis method, was better than the test forms constructed using the item banks improved by the previous analysis method.

Reference


Computer Assisted Instruction “Radiotherapeutic Technique”

Nuanpen Damrongkijudom
Department of Radiological Technology, Faculty of Medical Technology, Mahidol University.

Abstract
Radiotherapeutic Technique is the professional course using the technology and equipments for radiotherapy. The students must have the knowledge and practical skills. The purpose of this research aims to produce a Computer Assisted Instruction courseware “Radiotherapeutic Technique”. Blended learning using a combination of Traditional classroom and Virtual classroom is a new strategies learning. The Moodle: LMS and Software programs are also used in order to manage the learning and create the courseware at the Department of Radiological Technology, Faculty of Medical Technology, Mahidol University. The results showed significant improvement in the test scores from 64 students (3rd year Radiological Technology students). The pre and post tests had a significantly different (t = 28.70, p-value < 0.05). The appropriate use to review the knowledge and appearance of the course were also evaluated by 4th year Radiological Technology students. It could be concluded that a Computer-Assisted Instruction (CAI) courseware “Radiotherapeutic Technique” had a quality and able to use for learning.

Keyword: Computer Assisted Instruction, Radiotherapeutic Technique, Blended learning

1) Introduction
Radiotherapeutic Technique is the course content focused on Professional techniques in radiation treatment with the tools and skills to use the technology and equipment for the radiation. It is the Radiological professional course of radiation therapy. Radiotherapy is the backbone of most cancer care, and in many countries the radiotherapist is the only cancer specialist. The students who become the radiotherapist must have the skills and knowledge applied to radiation therapy. According to the national education, students are motivated and supported to have the knowledge, capabilities and skills for utilization of educational technologies. Educational technologies should be integrated in classroom teaching and learning. Teachers should use technology to change their teaching to accommodate and respond to enthusiasm of the students to make full capacity. Therefore, teachers need to look for ways of teaching and learning such as Blended Learning. Blended Learning is the teaching practice that combines teaching methods from both face-to-face (Traditional classroom) and online learning (Virtual classroom). To increase the quality of learning and professional skills in accurate and effective for patients, a combination of e-Learning and Traditional classroom were applied to the students. Multi-media which power by computer’s software, hardware and digital technology are widely used for teaching and learning which all blended methods. Generally students are more familiar with and have more computer and internet literacy than teachers. In this study, the Computer-Assisted Instruction courseware is one of an educational media which talented to use as a supplementary learning media. Students can take interest in lessons and promote research and development for self-knowledge.

2) Purpose of the study
This research study aims to produce a Computer Assisted Instruction courseware “Radiotherapeutic Technique” at the Department of Radiological Technology, Faculty
of Medical Technology, Mahidol University. This study also examine students’ learning outcome after giving a Computer Assisted Instruction courseware “Radiotherapeutic Technique”. The students’ satisfactions of this courseware instruction are examined. The quality and efficiency of Computer Assisted Instruction courseware “Radiotherapeutic Technique” are evaluated by the expert radiotherapists.

3) Scope of the study
To meet the objectives of the study, 64 undergraduate students majoring in Radiological Technology and those who are 3rd year students from Faculty of Medical Technology, Mahidol University are selected subjects in this research study. The 4 expert radiotherapists and 49 students of 4th year Radiological Technology evaluated the quality and efficiency of this CAI courseware.

4) Methods
1. Preparation by reviewed the context in Radiation Therapy to collect radiation therapy contents.
2. Design instruction by studied programs from books and the internet and practiced the program Adobe Flash Professional CS5 and Adobe Photoshop CS5
3. Designed movie clips and create animations and images.
4. Evaluated the courseware: Data analysis by the expert radiotherapists.

The evaluation was made into 3 topics;
4.1. Topic I to analyze the lesson contents
4.2. Topic II to analyze the design of computer assisted instruction
4.3. Topic III to analyze the pre and post test.

The evaluation form was 5-rating scale question (base on Likert’s Scale) and the satisfaction score was ranged from 1 (the least) to 5 (the most). The average score of each topic was analyzed by the expert radiotherapists and 4th year Radiological Technology students.
5. The Moodle: LMS and Software programs are also used in order to manage the learning and create the courseware. The students have pre-test and post-test after giving a Computer Assisted Instruction courseware “Radiotherapeutic Technique”.

<table>
<thead>
<tr>
<th>3.5</th>
<th>ความเหมาะสมในการดําเนินเรื่อง</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>ความเหมาะสมของภาษาเรียน</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ข้อเสนอแนะ…………………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………………………………

Topic II : การออกแบบสื่อ
1. ความเหมาะสมของรูปภาพต่อเนื่องของเรื่อง
2. ความถูกต้องของภาพที่ใช้ประกอบบทเรียน
3. ความสอดคล้องของรูปภาพกับบริบทเรียนในเนื้อหา

### 3.1 ภาษาที่ใช้มีความเหมาะสมถูกต้อง
### 3.2 สีที่ใช้ประกอบในเนื้อหามีความเหมาะสม
### 3.3 ตัวอักษรที่ใช้มีความเหมาะสมและถูกต้อง
### 3.4 ความเชื่อมโยงระหว่างเนื้อหาเหมาะสม
### 3.5 มีประโยชน์ต่อการล attachments
### 3.6 อื่นๆ…………………………………………

ข้อเสนอแนะ…………………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………………………………

Topic III : แบบทดสอบ
1. ความเหมาะสมของคำถามต่อเนื่องกัน
2. แบบทดสอบมีความสอดคล้องกับบทเรียน
3. ความเหมาะสมของแบบทดสอบที่ใช้

ข้อเสนอแนะ…………………………………………………………………………………………………………………………
…………………………………………………………………………………………………………………………………………
5) Results
The results of the evaluated courseware from the 4 expert radiotherapists and 4th year Radiological Technology 49 students, Faculty of Medical Technology, Mahidol University who used the CAI “Radiotherapeutic Technique”. The average score of each topic was analyzed. The evaluation form was 5-rating scale question (base on Likert’s Scale) and the satisfaction score was ranged from 1 (the least) to 5 (the most). The results showed that radiological technology students and radiotherapists gave 4.39 and 3.95 for Topic I, 4.40 and 4.09 for Topic II, 4.39 and 4.08 for Topic III, respectively. The students’ learning outcome showed significant improvement in the test scores of 3rd year Radiological Technology 64 students from the Faculty of Medical Technology, Mahidol University who participated in this study. The average score of the subject’s post-test was higher than that of the pre-test with the significant level of 0.05. Therefore, the Computer-Assisted Instruction (CAI) courseware “Radiotherapeutic Technique” had a quality and able to use for learning.

6) Conclusion
It could be concluded that this courseware is informative for Radiological Technology students had a quality and able to use for learning. Radiological technology students were highly satisfied with the Computer Assisted Instruction courseware “Radiotherapeutic Technique”.
References
2. บุญฉลาด ขันธุมพงศ์. เมื่อใหม่หัดใช้ Flash CS5. กรุงเทพฯ: โปรดิ่ง; 2552.
5. โรคเนื้องอกสมองและไขสันหลัง (บทความออนไลน์). [สืบค้น 17 ม.ค. 2555]. เข้าถึงได้ที่ URL: http://www.si.mahidol.ac.th/sidoctor/e-pl/articledetail.asp?id=100
12. บุญชม ศรีสะอาด. ความน่าจะเป็นและสถิติประยุกต์ 2. ปทุมธานี: สกายบุ๊ค; 2546. หน้า 144.
Promoting Free Education via an Online Interactive Ecosystem

Taketsugu Hanafusa
The University of Tokyo, Department of Psychology

Abstract
The promotion of education in developing countries often catches the public eye, but the fairness of accessibility to top-tier education remains questionable even within developed countries. In the ever-increasingly competitive job market, students attending the best universities are statistically better off. To increase their chances, many students attend expensive private schools and/or cram schools. Ideally, education should be a fundamental right, but the current situation increases the gap between rich and poor, rural and urban. For instance, families making a living in more rural zones where private cram schools don't exist will have to bear a considerably higher financial burden to give their children the same top-tier education as a family living in the city. The investment costs of starting up a private school are equally unbearably high, and the situation does not look like it will improve on its own. manavee presents the world with a solution. It is a completely free online platform where university students and high school students can work together in the pursuit of knowledge and self-improvement. University students with an interest in education wishing to brush up their teaching skills can take a shot at making their own educational videos, while high school students can learn what they didn't understand at school and at the same time choose the teacher they like. Ultimately, high school students who benefited from the system may in turn become volunteers and teach the next generation of students. We are currently developing this system in Japan, but the number of volunteers and users is expanding at a steady pace. We believe that this system, when successfully implemented, can be applicable to other countries with unequal access to education.

Introduction
Until the 1990s, Japanese high school students who accessed higher education accounted for 30-35% of high school students, whereas more than half enrolled at a university in 2010 (Figure 1). With an increasing number of students taking university entrance exams each year, competition is getting harder, and many attend expensive private schools and/or cram schools to raise their chances. This enhances the role of discriminative factors other than the student's original capacity, hard work and talent, such as a financial and geographical gap, as high-income families naturally have easier access to private schools and private coaches than low-income families. Students in rural zones also have to make more financial effort to afford education in urban centers, on top of having relatively difficult access to accurate information about the universities, while this information is within arm's reach of those who live in the city. This gap is widening each year.

Figure 1 – Evolution of the percentage of high school students who enter universities in Japan over time.

In order to democratize education, a group of student volunteers started making lectures covering the program required for entrance
exams available for free online, so that anyone with internet access can study. Two years later, we have more than 10,000 active users, and over 2,800 open access videos. This service is called "manavee".

In Chapter 1, we will describe the strategy and design of manavee. Chapters 2 and 3 will cover functionalities of manavee’s online community on the student’s and teacher’s side, respectively. Finally, we will discuss how we maintain high motivation levels and quality of contents, and say a word about future developments.

1. Design concept of manavee

manavee is not just about storing videos online. We offer a new learning environment in which students can study independently.

A learning environment can be broadly defined as the place where all activities of students are performed. We think a satisfactory learning environment should fulfill the following six functions, and take them into the design concept of manavee.

(a) Transmission of new knowledge
(b) Reinforcement of prior knowledge
(c) Sense of belonging to a community
(d) Goal setting
(e) Level assessment
(f) Study Recommendation

Other educational services also aim to provide students with effective support to get them into the university they want. However, manavee adopts a novel strategy. Other services believe that hiring the most statistically popular teachers will guarantee user satisfaction and quality of education. This way of thinking leads them to seek only the most prestigious and experienced teachers. However, one problem with this strategy is that it may leave out students who don’t fit into popular models. To circumvent this, we decided to value diversity in teaching styles so that every student can find his own favorite teacher. In our system, different teachers are welcome to cover the same material as other teachers using their own methods.

We are able to afford this strategy precisely because all content is free. Businesses which provide contents for sale first have to convince the parents that their service is reliable. This means that they need to adopt a marketing strategy towards the older generation. However, appealing to the students themselves is also crucial to build up motivation, especially if they are experiencing difficulties. At manavee, we aim to offer a broad variety of teaching styles for the same content, so that every student is free to try out several methods and choose the one that makes them the most comfortable.

2. Functionality on the student’s side

(a) Transmission of knowledge

A traditional classroom setting is not applicable to manavee’s ambitious goal of reducing the geographical and financial bias in educational access, so we opted for an online system. Instead of having 1-2 hour-long lessons, we dedicated one 10-15 minutes-long video to each individual concept, which may be closer to the average attention span of a typical student. Moreover, not only does this make content easier to find and more convenient to share, but students can also directly review specific concepts that they may have misunderstood at school. This enables a gradual increase in knowledge and allows for more personalized curriculums.

(b) Reinforcement of prior knowledge

At school, students are given homework and examinations on a regular basis. With manavee, students are encouraged to generate their own tests (Figure 2), and solve tests made by others (Figure 3). Such active and participative learning methods have proven very effective in
acquiring mastery of concepts covered during lectures.

(c) Sense of belonging to a community
Several functions were implemented aiming to overcome famous limitations of online learning systems, which include a lack of human interaction and a high percentage of dropping out. The webpage is designed so that students get the impression that they are in a classroom (Figure 4). The analogy reminds students that they are in a learning environment. This virtual classroom has a comment system to reproduce the feeling of chatting with friends in class (Figure 4). The process of interacting with other classmates is thus reproduced in manavee’s virtual classroom and creates a sense of community. The teacher-student connection is also emphasized, as students can easily check teachers’ profile pages, where unique stories are published, so that students may learn more about their teacher and eventually become fans.

(d) Goal setting
To keep students motivated, the learning environment should be designed to keep them focused on their goal. Volunteer teachers, who are mostly university students, regularly upload videos to talk about campus life on something like a video news blog called manaveeTV. This helps students identify and look up their teachers as they become role models and enable the students to imagine their future selves.

(e) Level assessment
Regular level assessment is necessary to make continuous progress. Self-evaluation of progress is essential to build up confidence and establish the study routine. In the future, a system will be implemented in which students can take web-based examinations to monitor their progression.

(f) Study content recommendations
A couple search functions were implemented to ease access to specific content. (1) Content is divided in official topics and subtopics as in the official program of the Ministry of Education. (2) It is possible to look up teachers by their teaching or personality style, using a set of keywords that are fun and easy for high school students to identify with (Figure 5). (3) manavee offers a kind of purpose-oriented search mode which recommends lists of contents according

Figure 2 – Test-solving interface. An evaluation and explanation appears on the right page after choosing an answer.

Figure 3 – Test-creating interface. The question and multiple choice answers are entered on the left, and the right answer and an explanation on the right.

Figure 4 – The website is designed to look like an ordinary classroom. There is a public chat column on the right.

(d) Goal setting
To keep students motivated, the learning environment is should be designed to keep them focused on their goal. Volunteer teachers, who are mostly university students, regularly upload videos to talk about campus life on something like a video news blog called manaveeTV. This helps students identify and look up their teachers as they become role models and enable the students to imagine their future selves.

(e) Level assessment
Regular level assessment is necessary to make continuous progress. Self-evaluation of progress is essential to build up confidence and establish the study routine. In the future, a system will be implemented in which students can take web-based examinations to monitor their progression.

(f) Study content recommendations
A couple search functions were implemented to ease access to specific content. (1) Content is divided in official topics and subtopics as in the official program of the Ministry of Education. (2) It is possible to look up teachers by their teaching or personality style, using a set of keywords that are fun and easy for high school students to identify with (Figure 5). (3) manavee offers a kind of purpose-oriented search mode which recommends lists of contents according
to the student's goal (Figure 6). (4) There is also a traditional search box allowing the use of keywords or teacher's pseudonyms. We are continuing to improve the search functions based on user inputs.

Figure 5 – Students can look up teachers with unique keywords describing their teaching style or personality, such as “clear handwriting”, “charismatic”, “humorous”, etc.

Figure 6 – “Purpose-oriented” search mode recommends lists of contents according to the student's goal. In the example above, a review of basic level topics for those who want to go to a national university is shown.

3. Functionality on the teacher's side

We have more than 200 volunteer staff recorded on our database. Most of them work exclusively as teachers, but some of them help managing community units that are called "campuses" and located to cover all major areas in Japan. There are 15 campuses in total, each of them functioning as a base for video production, expanding the scale as an independent organization. These campuses are under the responsibility of a campus management team that is tightly connected with headquarters. An online collaborative software was created to support this organizational structure.

(a) Functionality for teachers

Every teacher has access to a personalized page, where they can check how many students use their content, how many tests are created, and questions posted in the virtual classroom (Figure 7). Teachers can easily overview their classroom using this page, and can even get feedback from both students and other teachers to improve their teaching skills. Teachers also have access to a private comment system to exchange ideas.

Figure 7 – Part of a course’s ‘activity’ page. On the top, teachers can check the number of videos in the course, how many students are attending, and how many tests were created. Questions posted in the virtual classroom appear on the bottom.

(b) Functionality for campuses

We have specialized staff for each campus, who concentrate on management work. The main task for them is to get volunteer teachers to finish their video courses. Since campus managers may have to supervise ten to twenty courses at the same time, the workload quickly becomes heavy. To facilitate this, we implemented a management system to monitor an individual teacher's progression (Figure 8). Since campus managers work together as a team, manavee also provides inter-campus communication tools. Like in many other collaborative softwares, standard functions like task management, forums and scheduling systems are available.
Figure 8 – The management team can monitor an individual teacher’s progression. Courses with problems are automatically marked with red, and the progression of each course is visualized with a meter.

4. Discussion

(a) Mutual motivation structure
At manavee, teachers tend to have their videos taken by other teachers, so that they can easily exchange comments. They also have a chance to get feedback online from all the other teachers who are actively working on manavee throughout the country. And more importantly, the web interface allows teachers to receive questions from actual students, which helps them improve their teaching. In addition to this qualitative feedback, we are also recording quantitative data about students’ activity logs and planning to use it to uncover common misunderstandings across the student population.

On the side of students, teachers may play a major role in generating motivation. Student-teacher matching makes a great difference in learning efficiency as a trusted teacher is more likely to give strong incentive to a student. However, interaction among students is also important to create a sense of community. In several situations such as asking a question or making and solving quizzes, it is sometimes easier to do it among students. By collaborating, students may get an answer to their question more quickly and find other students who had the same problem.

(b) Quality control
A typical concern is that videos provided by volunteers may be inferior to those provided professionally. But hiring a professional does not always guarantee results. Even with the best teaching, students sometimes don’t make progress just because they don’t get along with the teacher. You can’t overlook quality of teaching, but other factors such as affinity with the teacher also make a lot of difference.

Apart from offering variety, the open and highly collaborative nature of manavee’s system also ensures continuous feedback from teachers and users, so that occasional mistakes are eventually corrected.

(c) Sustainability
When running a system based on volunteering, it’s important to generate a compelling force that facilitates productivity, as well as to ensure a steady turnover of volunteers.

manavee creates an environment where the current target users (high school students) who benefit from the system can become attracted to the idea of becoming volunteer teachers after becoming university students themselves. This happens because our large offer of teacher personalities allows students to find a teacher they admire. Because teachers are generally young university students who were in high school not so long ago, it’s easy for students to relate to them. We have had testimonies of high school students who wish to join the manavee teacher community after they get into university (Figure 9).
Figure 9 – Examples high school student users expressing their wish to join manavee after they get into university. On the top, a twitter user says “it would be so nice if I could improve with manavee, and join it as a teacher after I enter university”. Below, an anonymous user on 2ch says “I wanna become a manavee teacher when I go to university”.

(d) Collaborations and offline events
The strong point of e-learning system platforms is that the teaching process can be made open access and repeated freely. However, there are limitations such as the lack of personalized human support. To overcome this, in 2012 we collaborated with schools to hold offline events. In one of those events, a school made students watch manavee videos in a real classroom setting. Afterwards, manavee teachers visited the school in person, gave a tutoring session and delivered a motivational speech. We are also planning to hold an offline event in what is called the “flipped classroom” style, where students take classes at home with videos, and then participate in active learning such as problem-solving at school. We are planning more such events in the future.

Conclusion
Fair access to education is a global issue, as even the most developed countries suffer from a deepening educational gap. Online learning platforms can play a leading role. Famous successful online platforms such as Khan Academy, edX, and Coursera have ample funds and superstar teachers. However, starting up and maintain such platforms require relatively big budgets. This cost factor makes it difficult to implement similar solutions elsewhere.

On the other hand, manavee is an extraordinarily low-cost online learning platform and the system works without having to attract superstars. We developed a freely-functioning ecosystem based on the volunteer activity of university students to provide free and open education for highschool students who are preparing entrance examinations. We believe that our system helps improving fair access of education and can be applied to a number of situations other than the specific problem of high school education.

All in all, an effective online interface allows manavee to run a highly cooperative learning environment at an astonishing low cost.

References
1Ministry of Internal Affairs and Communications, Statistics Bureau, Director-General for Policy Planning (Statistical standards) & Statistical Research and Training Institute, Statistics of Japan, 22-17 http://www.stat.go.jp/data/nihon/zuhyou/n2201700.xls


Acknowledgements
I express my gratitude for all the volunteers at manavee, Josephine Galipon for helping with the manuscript, and Prof. Yoshimi Fukuhara for the invitation to the 4th AROOC Conference.
Day 2 : January 22, 2013 (Morning session)
Factors affected the Abilities of ICT Manpower in Sustainable Technology Society

Suwimon Vongsingthong
Department of Information Technology and Management, Krick University, Bangkok, Thailand
(suwimonv@yahoo.com)

Abstract
Economic performance and sustainable growth can only be achieved through continuous innovation. Precisely, innovation must come hand-in-hand with the quality of knowledge-intensive manpower, enormously measured by the level of advanced ICT skills. As many nations have put efforts to re-engineer their higher education systems to prepare essential capabilities of their workforce forasmuch as the needs of ICT for modern business becomes indispensable. Therefore, this research aims to analyze factors affecting the abilities of ICT manpower in demand for modernized business. The questionnaire was adopted as a research tool to elicit factors affecting ICT skills and knowledge from 399 samples of ICT supervisors. Meanwhile, in-depth interview was interpolated to ensure the rightness of the data. Variables analyzed were knowledge and skills in ICT: foundation of ICT, operating system, network system, system development, project management, database management, database application, business and system support. Alternative model of underlying factors affecting skills needed was tested by confirmatory factor analysis (LISREL). The result shows that the revised model provides better model-data fit for all factors. The evidence supports the theory that variables affect the abilities of ICT manpower the most is knowledge and skills in business (factor loading = 0.81), following by database management, system development, project management, operating system, database application, network system, system support and foundation of information technology. (factor loading = 0.71, 0.69, 0.69, 0.66, 0.64, 0.61, 0.52, 0.44) respectively. Moreover, lifelong learning to pursuit innovative technology knowledge and skills is induced to be one of the best practices mandated to survive in digital society.

Keywords: ICT manpower, knowledge and skills, lifelong learning

Introduction
Revolutionary changes in technology have created an increasingly information-centric global economy. Ulrich (2012) describes that a source of information and knowledge has become a key factor to judge the prosperity and competitiveness of the organizations which is classified as one of the six competencies needed for business achievement. This growing prevalence of Information Communication and Technology (ICT) has prominent impact to every sector of business. Though the productivity of business will increase through new technologies and other means, the production of information technology will continue to rely on a large and growing force of manpower. As a result, an aftermath has displayed in the plurality projected growth in ICT related occupations. An aspiration of workforce abilities to boost the strength of the organizations in the middle of the global economy rebounds has changed to specific knowledge and skill sets. Currently, the demand for trained professionals far exceeds qualified applicants. As the 11th National Economic and Social Development Plan of Thailand (2011) calls for an increase in the number of graduates with skills and knowledge needed to meet new or emerging occupational demand. The request was passed to the educational institutes whereas hindrance still remains.

The serious shortage of skilled and qualified ICT professionals has engendered an increasingly negative impact. Vongsingthong (2009) reveals that more than three quarters of the organizations in this country have faced the problems ICT skills shortage. Such inferiority has incurred the abilities of business. This pain noticeably exposed in the fields of programmer, analyst and IT support. Although National Statistical Office of Thailand (2010) reports that a number of professionals going to the labor market has increasingly grown but the figure required is still as many as over one million. Moreover, the knowledge and skills produced are still not concordant with
the business. The strategy of education institutes to procreate graduates does not respond to the requirement of business. The formality of learning should be reformulated by the contiguous collaboration of both education institutes and business.

Therefore, many researchers have struggled with the issue of implementing curriculum models in various ways. Debuse, Lawley (2009) and Miliszewska (2008) characterized quality of ICT graduates and found that even though the educators had collected requirements from business and added into the curriculum but there have been technical problems preventing the achievement. By comparison, the educators pay more attention to the theories while business gives more weight to experience and technical expertise. Ruth (2011) recommended educators to add ICT Problem Solving: operating system, communication skill; Professional Knowledge: ethics, professionalism, teamwork concepts and issues, interpersonal relationship, societal issues/legal issues/privacy, history and status of discipline; Technology Building: programming, human computer interaction, system development; Technology Resources: hardware, software, database, network; Services Management: system maintenance and Outcomes Management: project management to the curriculum. While Brainbench (2007) suggested that body of knowledge like database development and administration, programming and development, system and network administration, technical support, telecommunication and web development and administration are critical factors.

As tightness in the ICT labor market is more likely to occur within a few years as the demand for technology-based products and services grows. From a policy perspective, the focus needs will not only to achieve a proper match between supply and demand today, but also on how the nation will appropriately supply the growing number of trained ICT workers in the future. In consequence, this research aims to find critical knowledge and skills of ICT professionals in 1) foundation of information technology, 2) operating system, 3) network system, 4) software development, 5) project management, 6) database management, 7) database application 8) business, and 9) system support. Main target is to uncover the knowledge and skills indispensible to reciprocate the demand of ICT direct supervisors, executives, and recruitment officers. In particular, the preciseness of data was verified by comparing several sources to ensure of quality.

The Research Approach

A multivariate analysis technique, Structural Equation Model (SEM) is introduced to prove of elements influenced success in ICT careers. Both the theoretical knowledge and empirical findings via two main approaches were introduced by means of 1) the study of theories and related research to build SEM, 2) the statistical analysis on SEM to create a model which is consistent with existing knowledge and in accordance with the terms of the initial research. Factors affecting ICT staff performance were collected through quantitative research methodology to consistency test the fit of the model. Meanwhile, in-depth semi-structured interview was systematically brought in to prove the consistency of the model (Goodness of Fit Measures). A combination of quantitative and qualitative methods are adapted to explain the phenomenon of the base model.

A tool to accumulate data is a questionnaire. Decently, sample group was selected by purposive sampling from 8,501 ICT superintendents in enterprises in Bangkok and metropolitan (National Statistical Office of Thailand, 2010). Five hundred questionnaires were disseminated, the aftermost number of valid questionnaires after pre-processed was 399.

Information, both quantitative and qualitative were presented in the form of descriptive research to find out what and how to predict factors related to ICT staff abilities. The comparison between different variables was compiled in a systematic procedure to profoundly understand the significance of each factor.

Fact Findings

Based on extensive review of prior researches, thoughts, and theories, the questions were structuralized to consist of a listing of 9 knowledge and skills: basic information technology, operating system, network system, software development, project management, database management, database application, business, and system support. To learn about nine factors directly affected the abilities of ICT staff, the questionnaires were targeted at managers, vice presidents, department heads and IT supervisors. Companies responded were in variety types of
business, for instance, service, maintenance, design and development, trading, and manufacturer. Most of them are small to medium-sized enterprises with 10-500 ICT professionals. Even some of those are end-users but they all have dedicated ICT departments.

The respondents were asked to gauge the necessity of each factor on staff who worked as programmers, analysts, and IT support. Responsibilities are defined as follows; programmer: software coding, support and maintenance, analyst: user interface for requirement, system design and development, IT support: user services and maintenance.

The bar chart in Figure 1 indicates that almost half of corporate responding was in service business while 21% in manufacturing business and 17% in trading business. Figure 2 illustrates the behavior of enterprises in the utilization of ICT. It clearly stated that almost half of the sample was using ICT as end-user: internally maintain and support of ICT system, a little over quarter as ICT developer: design, develop, and integrate ICT system for clients, and similar figure as self-supported :modify and maintain of own ICT system. The pie chart in Figure 3 displays the occupation groups of ICT professionals rated with 42% of IT support, 39% of programmer, 13% of analyst and 6% of other occupations like educator, website programmer.

The Confirmatory Factor Analysis (CFA) in Structural Equation Modeling (SEM) was embraced to test the validity and reliability of factors affected the abilities of ICT staff . The instrument questionnaire based on 5-scale rating covered the validity of 9 factors comprises 104 item questions. The value of Cronbach's Alpha for the whole items is 0.969, which means that the instrument has a high level of consistency (above 0.85). Hence, it can be stated that the instrument has high consistencies to compare with CFA by means of LISREL.

Pearson's correlation between factors affected abilities of ICT professionals illustrates in Figure 4. The result reveals that the relationships between nine variables are all significantly correlated with each other. Each element is highly statistically significant at the level of 0.01. The highest correlation (.714) is knowledge and skills in the database application (DBUSE_IT) and operating system (OS_IT), the lowest one (.194) is database management (DBMG_IT) and operating system (OS_IT). Even the correlation coefficient is lower than 0.20 but the result of
Kaiser-Meyer-Olkin Measure of Sampling Adequacy is 0.841 and Bartlett’s Test of Sphericity is found to be adequate to continue to process for CFA.

Table 1 The confirmatory factor analysis of IT Qualification Model

<table>
<thead>
<tr>
<th>Observed Variables</th>
<th>Factor Loading (b)</th>
<th>Standardized Factor Loading (λ)</th>
<th>Standard Error (SE)</th>
<th>P-value</th>
<th>Squared Multiple Correlation (R²)</th>
<th>Factor Score (FS)</th>
<th>ρc</th>
<th>ρv</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEN_IT</td>
<td>0.44</td>
<td>0.52</td>
<td>-</td>
<td>-</td>
<td>0.27</td>
<td>-0.03</td>
<td>0.85</td>
<td>0.45</td>
</tr>
<tr>
<td>OS_IT</td>
<td>0.66</td>
<td>0.62</td>
<td>0.08</td>
<td>8.31**</td>
<td>0.38</td>
<td>0.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NW_IT</td>
<td>0.61</td>
<td>0.70</td>
<td>0.05</td>
<td>13.07**</td>
<td>0.49</td>
<td>0.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRG_IT</td>
<td>0.69</td>
<td>0.74</td>
<td>0.07</td>
<td>9.60**</td>
<td>0.55</td>
<td>0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PGMT_IT</td>
<td>0.69</td>
<td>0.75</td>
<td>0.07</td>
<td>9.82**</td>
<td>0.56</td>
<td>0.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBMG_IT</td>
<td>0.71</td>
<td>0.80</td>
<td>0.07</td>
<td>9.91**</td>
<td>0.64</td>
<td>0.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DBUSE_IT</td>
<td>0.64</td>
<td>0.51</td>
<td>0.08</td>
<td>7.74**</td>
<td>0.26</td>
<td>-0.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BUS_KN</td>
<td>0.81</td>
<td>0.80</td>
<td>0.08</td>
<td>10.41**</td>
<td>0.64</td>
<td>0.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUPP_IT</td>
<td>0.52</td>
<td>0.53</td>
<td>0.05</td>
<td>9.51**</td>
<td>0.28</td>
<td>-0.07</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Chi Square = 22.90**, df = 15, P-value= 0.8625 RMSEA= .038
NFI= 0.99 GFI= 0.99 AGFI= 0.96 RMR= 0.024 CFI = 1.00 SRMR = 0.028 CN= 491.04

Figure 1 Final Structural Equation Modeling of IT Professional Qualification

Table 1 shows the evaluation of the overall fit of the model and the numeric optimization of a likelihood function to produce parameter values. The best fit to the data has shown as Path in Figure 1. The final model generated has undergone substantial modification and well fitted with $\chi^2=22.95$, df =15 ($\chi^2$/df= 1.53), $p < .01$, robust CFI =1.00, RMSEA = .038. It can be interpreted that Confirmatory Factor Analysis (CFA) in the Structural Equation Modeling (SEM) gives well results of testing. Regression weights shows that all 9 latent variables have a significant P-value which is smaller than 0.05 (mark ** indicates figures that p-values is 0.01). Besides, it is apparent that the test result has demonstrated that all 9 factors are strongly important to the success of ICT professionals with standardized factor loading ($\lambda$) between 0.51-0.80 and the reliability of the observed variables ($R^2$) between 0.26 to 0.64. All values are positive and different from zero with statistical significance at the 0.01 level. The observed variables with highest coefficient of determination is knowledge and skills in database management (DBMG_IT) and business (BUS_KN) which have identical standardized factor loading of 0.80, and the square multiple
correlation ($R^2$) with IT_QUAL is 0.64, or about 64%. The observed variables with lowest coefficient of determination is knowledge and skills in database application (DBUSE_IT) has standardized factor loading of 0.51, and its square multiple correlation ($R^2$) with IT_QUAL is 0.26, or about 26%. The Construct Reliability ($\rho_c$) equals to 0.85 which indicates that the reliability of the model is high (greater than 0.60) with average variance extracted ($\rho_v$) equals to 0.45 (a little lower than 0.50) means that the majority factors can explain the variance of the variables in medium level.

Conclusion

The result of goodness-of-fit of overall model and its individual parameters reveals that the Path model of IT Qualification is consistent with the empirical data. The application of knowledge and skills in database application should to build up in correlation with operating system. The importance of each factor can be sorted through factor loading as follows. 1) Business: knowledge and skills in Expert System/Al/Neural Network and Decision Support 2) Database Management: knowledge and skills in user interface, privilege granting. 3) Project Management: knowledge and skills in time management, communication management. 4) System Development: knowledge and skills in VB, ASP.NET 5) Network System: knowledge and skills in local network, network security 6) Operating System: knowledge and skills in Z/OS, Symbian 7) System Support: knowledge and skills in training and interpersonal skill 8) Basic ICT: knowledge and skills in system security, system tuning 9) Database Application: knowledge and skills in Sybase, RBASE. The evidence suggests that if staff can develop ICT knowledge and skills as indicated, he can precisely meet needs of business.

The nine elements of knowledge and skills which cover both hard skills and soft skills are consistent with the standard curricula suggested in Europe (Career Space Consortium, 2001), U.S.A (Brainbench, 2007), Australia (Ruth, 2012) as well as Thailand (Ministry of Education, 2009). It is indicated that the skills should be concurrently implanted. For example, hard skills like database management, database application, system development, network system, operating system and basic ICT shall be accelerated through elective courses or interpolated into core generic courses. In fact, most skills are gained by hands-on experience and case studies in real environment. Therefore, practice-based mechanism, for example, self-studies on related hardware and software tools and field training in enterprises should be adverted to stimulate know-how in business process. Simultaneously, the collaboration between educators and enterprises will enhance clear perspective on its application as well.

Moreover, values-based elements which are crucial for ICT staff to successfully thrive in the real arena are soft skills such as project management and system support. They have typically been important to user support staffing area as well as other areas like programmers and analysts. These skills are by all means becoming increasingly important to all areas. Practical training, class participation and activities are certainly operative approaches to build such skills.

Obviously, companies not only look for professionals with broad range of technical knowledge and skills but also yearn for staff with expertise in comprehension and other interpersonal skills. If the current skills of ICT workers remain in contrast with those sought by firms, the nation will certainly face a severe shortage which will create a drawback to enter the emerging markets as well as jeopardize the economy growth. As a result, educators should pay serious attention to 9 empirical competencies. Absolutely, the intellectual resources for lifelong learning generated through educational reforms policy in collaboration with business and educator support shall be advantages to all parties.

References:


m-Learning Solution for Training English

Mohammed Samaka\textsuperscript{1}, Loay Ismail\textsuperscript{1}, Nosayba Abu Abdulla\textsuperscript{1}, and Brendan Clark\textsuperscript{2}

\textsuperscript{1}Department of Computer Science and Engineering, Qatar University, Doha, Qatar,
\textsuperscript{2}Corporate Training Department, Qatar Petroleum, Doha, Qatar,

Abstract:
The research project described in this paper involves in using of a mobile learning approach to train newly recruited trainees on workplace English, so they can become more effective when communicating in the workplace. Training local human resources in English language skills will prepare them for the global workforce and allow them to communicate more effectively in English so they can become more competitive globally. This project is timely since there is limited research on the use of mobile technology in training and education. The project breaks new ground toward understanding ways in which mobile devices can be used to train employees in the workplace in Qatar. The target beneficiaries for this project are oil and gas employees. Oil and gas employees were picked as a first step where the project shall transfer to other industries and sectors next. This research is a collaborative project between Qatar University, and the Corporate Training Department at Qatar Petroleum-QP. The English content that is delivered via mobile devices trains oil and gas workers on English Grammar, how to listen and interpret different workplace situations, and drill and practice on oil and gas terminologies.

I. Introduction

In recent years, mobile learning has gained in popularity as it provides trainees with learning content wherever they are and at any time they choose. Mobile learning also known as m-Learning is an offshoot of eLearning. People can use mobile learning as an important instrument for lifelong learning thereby utilizing their time more efficiently. Furthermore, mobile learning could bring important benefits to schools by supporting classroom teaching, assisting in the educational process and enabling personal and group learning. This approach to learning could revolutionize the way people learn in the future [1][2].

The major difference between e-learning and m-Learning is that content intended for e-learning is in most cases unsuitable for small handset devices because of their small screens and limited memory. Therefore, course content intended for mobile learning must be packaged in concise and focused learning units. In addition, a learning application that runs on the mobile handsets would have several restrictions including limited processing power and speed, limited memory and storage capacity and a variety in screen sizes and resolution, and a variety of operating system platforms.

For this study, several mobile learning systems have been investigated in the literature. The Blackboard Mobile Learn [3] enables students and faculty members to access and update much of the core content already available on Blackboard. The application can be downloaded into devices with multi platforms including; Android, BlackBerry, and iPhone. This system has many good features such as, it enables the learner to open and join discussion threads, and browse information pertaining to the organization to see recent announcements, and post discussion, or comments.

Another learning application called Mobl21[4] that supports a dynamic, unstructured way of mobile learning. It allows instructors to develop content that learners can access from their mobile devices, allowing them to study at their own pace. Mobl21also enables instructors to track and monitor content access and view test performances. This application is compatible with many devices, including: Android, and iPhone.

The Desire2Learn system has developed an open and extensible Mobile Web platform that enable students and other users to access their learning programs anywhere, right from their mobile device [5]. Students can review what they have read in a history of recently viewed topics, or easily identify unread topics they need to catch up on. In addition, content can be bookmarked for reading later on, and automatically synchs up to other online bookmarks. Students want to be informed and be on-top of what's happening, and stay current with assignment changes. This system divides its applications to three parts. One for Course Design and Delivery which include Instructional Design Wizard ,Course Builder, Class list, Intelligent Agents, User Progress, Auditors/Parents, Content, and News. The second part is for Collaboration and Communication, and this part contains some type of collaboration between the users such as Email, Calendar, Discussions, Synchronous Integration, Instant
Messaging/Pager, and Blog. The last part is for Measurement and Assessment, that is measure the works of users in quizzes, surveys, self-assessments, drop box, grade book, Competencies and Rubrics.

Busuu is a mobile application available on Android and iOS systems to learn English [6][7]. The application covers courses that ranges from beginner, intermediate to advanced levels, each course is consisted of learning units that covers different 150 day-to-day situation that are presented within the mobile device using different types of material through dialogues, audio, vocabulary and key phrases. However this application lacks the ability given to users to review and assess the new gained knowledge.

This research project extends e-learning to mobile handheld devices within the scope of mobile learning. It involves the design and development of a mobile learning platform called m-Learning that allows users at an institution or within a learning situation to participate in electronic learning sessions via mobile devices including smart phones. With m-Learning, users will also be able to share content and interact with each other using synchronous and asynchronous methods for communication. The proposed application will be applied to the professional training corporate of the Qatar Petroleum (QP). It aims to assist their trainees in learning English while at the workplace.

II. Solution Overview and Functional Requirements

For this study, four learning approaches (exposition, exploration, assessment, and communication) were chosen as mobile learning models for the m-Learning platform because they meet the current resource limitations of mobile handsets. Furthermore, they support the computer-aided learning method that was proven to be successful in an e-learning environment. For more detailed information, see (Kerres 2001) [8] and (Meisenberger 2004) [9]. The following sections briefly introduce the four approaches, which are:

Exposition: This approach supports asynchronous learning in the sense that one could download the intended learning objects into a learning device prior to the learning session. It also requires a learning path through which the learning objects are asynchronously presented through a sequence of slides that are concluded with a set of questions. The questions are intended either to check the knowledge of the user or to conclude the newly gained knowledge approach.

The exposition learning objects designed for mobile learning can generally be structured the same way as learning objects for e-learning on a PC. The main difference lies in the presentation and the amount of information they hold. Due to the limitation of the screen size, memory, and other resources of the mobile handsets, much less text should be used. Additionally, different kinds of media should be applied including spoken text, images, videos, and audio.

Exploration: With the exploration approach, the trainee does not need to go over a learning path. He/She can explore on his/her own the available learning content of interests. This approach gives the trainee more motivation and control. Also, due to the lack of a learning path, explorative learning is more suitable for trainees who have already acquired basic knowledge and have the ability to learn on their own.

Communication: The communication learning approach allows trainees and instructors participating in a learning session to communicate via mobile devices. This approach requires the availability of different types of asynchronous and synchronous methods of communication on trainees’ mobile devices, such as chat, email, video and audio conferencing, etc.

Assessment: The assessment learning approach is an essential part of learning its meant to test the gained knowledge by the learner, this is done through exercises and practice tests that conclude each learning session. Due to the limitations of mobile devices such as screen size limitations and memory limitation, questions and answers in the assessment part should be designed and structured to guarantee a beneficial assessment. Also, questions should be short and concise such as multiple choice or true or false questions.

A. System Analysis

Three actors interact directly with the m-Learning system:

- Instructor: Initiates the system by uploading learning material on the system and communicate with the trainees to initiate the learning process.
- Trainee: Visits the m-Learning system and download the required learning objects on his mobile device to start learning.
- System administrator: Manages accounts of instructors and trainees.
Each actor has several roles in the system, as shown in the UML use case diagram, shown in Figure 1:

- **Instructor**: The instructor is responsible of posting newly developed and updated learning objects to the system. The instructor would communicate with all or selected number of trainees via synchronous and asynchronous means of communication.
- **Trainee**: The trainee is capable of pulling the needed learning objects from the system and can receive notifications about new courses as well as the courses that he is registered in. Moreover, the trainee can communicate with the course’s instructor.
- **Mobile system**: The mobile system acts as the vehicle that carries the m-Learning system and make it available for the instructors and trainees. It manages several operations, such as the posting and pulling of learning objects, sending notifications to trainees, communications between trainees and instructors and sequence of the learning objects provided to trainees.
- **System administrator**: It manages the creation of accounts for instructors and trainees and the registration of the trainees in different courses.

![Use case diagram](image)

**Figure 1: Use case diagram**

*Sequence diagrams* – The sequence diagram in Figure 2 shows the interaction between the users “trainee and instructor”, the administrator, and the mobile system. First, the administrator give the instructor account “username and password”, after that the instructor can sign in to the system. Then the administrator will check the account if it is correct, it will then accepts the instructor. After that the instructor can select one course to develop and post, or update an existing one in the system. Next the system will send a notification about that to other users “trainees”. When the instructor finishes using the system, she/he can sign out. The trainee can also
enter the system through his/her account. Then, the trainee can select the course from the system. That is followed by pulling the learning object. If this happened successfully, then the trainee can read and practice through the whole content of the learning object. After he/she finishes using the system, he/she signs out. The other interaction, which mentions in this diagram, is between the trainee and instructor. They can communication between each other through SMS, email, or through the forum.

**Figure 2: Sequence diagram**

**B. High level architecture**

The architecture of the m-Learning platform proposed in this study uses the Apache web server and SQLite database platform and XML messaging as shown in Figure 3. It also uses SMS-based delivery methods including Pull, Push, and WAP Push. In addition, the m-Learning architecture offers two options based on the type of transmission content (e.g., text, WAP pages, image, audio, and video) and the type of the end user devices. In the first option, the end users need only basic global system for mobile communications (GSM) mobile devices for sending and receiving text messages on only the SMS platform. This option will be a more practical and convenient solution for the mobile handsets with very basic equipment due to the relatively small volume of exchanged information. The user in this option may not be able to participate in learning sessions that require
rich multimedia content such as videos, because it offers limited data transfer which will make it difficult to send data of a large size.

![High level architecture of m-Learning system.](image)

Figure 3: High level architecture of m-Learning system.

On the other hand, the second option offers rich content delivery into mobile devices by incorporating different types of media. It requires the installation of the –Learning application directly on the smart client component in every end user third generation (3G) mobile device that should also be GPRS/3G enabled. In this option the end user mobile device will communicate with the web service directly over a GPRS/3G network for exchanging the actual XML content.

The learning objects for m-Learning (e.g., course content, training material and interactive tests) are written in XML, which is an open and international standard that can be understood by Android platform, which was used as the development platform. With XML, different types of learning content can be implemented and connected to each other. The learning objects are normally stored in a central web server from which the learners can download the learning objects that they need. A web site should also be developed as part of the proposed system architecture. The authorized users (e.g., course instructors) for delivering learning objects and for creating and scheduling new SMS messages would access it through an authenticated web channel.

The m-Learning activity would normally be initiated when the client (trainee) issues a request for a learning object. The client interacts with the server using XML over HTTP. The server side components are primarily Java servlets. The process begins when the mobile client creates a request object that contains information, such as a destination servlet or servlet operations with the associated parameters. Once the request object is populated, then the client sends the request to the HTTP connection manager, which is a web service component, that acts as a client-side proxy for the server by serializing and de-serializing the object requests to and from XML messages, respectively. The HTTP connection manager passes the request to the server as an XML message and listens for a response. At the server side, the XML message would be first received by the dispatcher servlet that takes the message and de-serializes it into a request object. The dispatcher servlet then passes the request object to the appropriate servlet responsible for dealing with the user’s content request, generating a response object by accessing the data store via a layer of data access objects, and finally sending the response object back to the client through the HTTP connection manager. The client’s HTTP connection manager de-serializes the XML response into an appropriate response object and passes it back to the calling object.

III. Implementation and Deployment

The m-Learning system for this study was built upon the android platform, which has a powerful application framework that makes it easy for developers to create sophisticated add-ons that extend the power of android systems into virtually unlimited directions. The deployment scenario mainly depends on the client/server
architecture of the system, where all system users that are instructors, trainees and administrators are clients, as shown in Figure 4. They all attempt to connect to the system from their client mobile phones using an Internet connection and a client application. The system server validates the identity of the user who is trying to connect to the m-Learning server, then grants the connection, and it starts receiving services requests. The m-Learning server conveys MySQL commands to the database to fetch data or to update the database with new changes. For instance, it receives requests from the trainee to pull learning objects and updates the clients' information table located in the database with the new information. Also, the instructor connects to the server to update or push new learning objects to the systems.

![Platform Deployment Diagram](image)

**Figure 4: Platform Deployment Diagram**

**IV. Conclusion and Future Work**

For this research project, a pilot model was deployed targeting the oil and gas industry, in which the designed architecture and the m-learning pedagogy developed in this research were tested in the Qatar petroleum corporate training center. The 27 learners who took part in the pilot were trainees from five different oil and gas companies. The testing outcome proved that m-learning approach and the m-learning application used in this study are effective in promoting retention in language learning. As for future work, this m-Learning system can be extended to cover more industrial and educational fields.

**References**


Recent Activities and Future Challenges of OpenCourseWare in Hokkaido University

Masashi Sata\textsuperscript{1}, Izumi Fuse\textsuperscript{2}, Shigeto Okabe\textsuperscript{2}

\textsuperscript{1} Institute for the Advancement of Higher Education, Hokkaido University
\textsuperscript{2} Information Initiative Center, Hokkaido University

m_sata@ec.hokudai.ac.jp

Abstract

Since Hokkaido University launched its OCW website in 2006, HU-OCW has published more than 300 courses by the end of November 2012. The number of visitors until now has been up to 2,284,836 Visits. In this report, firstly, we describe recent status of HU-OCW more in detail. Secondly, we introduce our handling process for intellectual property rights of creative works of others and discuss problems we are facing. To solve the problems in handling process of copyrights, we strongly propose that information be shared among members of OCW.

Keywords — HU-OCW; video materials; intellectual property rights;

1. Introduction

Information and communication technologies have had a significant influence on teaching and learning activities with the global popularization of personal computers and internet. OpenCourseWare (OCW) is a web-based publication of educational materials, which is available freely and openly for non-profit educational purpose. From the learners' points of view, people with different backgrounds could catch a fair opportunity to access to interested information and knowledge whenever and wherever they are. Moreover, OCW is a helpful channel for students to prepare and review lectures.

Hokkaido University launched its OpenCourseWare (HU-OCW) website in the spring of 2006, aiming to (1) fulfill the social responsibility of providing knowledge to society as a university; (2) raise the visibility of Hokkaido University; (3) assist to improve teaching quality of Hokkaido University. By the end of November 2012, more than 300 courses have been published.

2. Current Status of HU-OCW

The organization structure, system and access statistics are introduced in this part.

2.1 Organization Structure and Systems

HU-OCW project now is administrated by the Institute for the Advancement of Higher Education, in cooperation with the Information Initiative Center and Administration Bureau. In addition, there are total 27 representatives from different faculties and institutes in charge of contact and communication issues. The main task of operation team is collecting educational materials (i.e., taking videos and collecting documents of lectures), editing and publishing them on internet after copyright issues handled.

In terms of web systems, the HU-OCW operates 5 servers. The main servers are set at the Information Initiative Center in Sapporo, Japan, including a web, a flash streaming, a wmv streaming, and a test server. The flash and wmv servers could set to be accessible from all over the world without any limitation or limited to within the campus, respectively.

Besides, a unique feature of the HU-OCW's
systems is that a mirror web server, for users from China, is set at the Beijing Office of Hokkaido University in China. More and more users from China are expected. Under the background of Japanese government's policy of attracting more international students, this mirror web server should have a role to deliver features of Hokkaido University to foreign public. Consequently, HU-OCW performs as a good channel for Chinese students and citizens to know about Hokkaido University and Japan.

2.3 Access Statistics

Figure 1 shows the number of access per month and accumulation. The upper graph shows the number of visits and the lower one shows the number of page views. The total number of visitors by the end of November 2012 was 2,284,836 Visits (or 15,394,299 Page views). As shown in Figure 1, the access was increased rapidly as the number of video materials published on the HU-OCW website and that of podcasts registered in iTunes Store in 2009. Also, there was another rapid increasing accompanied by joining in iTunes-U in 2012. The monthly-averaged number of access has increased to 565,987 Page views (2012/1-2012/11), which was more than twice as large as that in 2011 (259,216 Page views). Therefore, these results indicate that using several broadcasting channels could be one of the effective ways to disseminate the educational materials.

Figure 2 shows the number of access from Hokkaido University. The upper graph shows the number of visits and the lower one shows the number of page views. At the beginning of each semester, April and October in Japan, the number of visits within campus was larger than that in the other months, implying that HU-OCW contributed for students to search course information.
3. Publication Process

HU-OCW has been publishing video materials taken at formal classes and public seminars. More than 90% of the materials have become to be video materials. In order to publish the educational materials on the web, we have to clear intellectual property rights of creative works of others. We used to employ defocusing and/or cut editing on the creative works in the videos as a default process. However, too many defocusing prevents us from publishing high quality videos. To avoid defocusing and make our activity sustainable, we have been trying to establish an effective policy of handling intellectual property rights.

The handling process is as follows (Figure. 3). When the materials contain works (including simple graphs, tables, but except for the text-only slides), the works are picked up using screen-shot and listed. Then, source information of the works is checked, whether the works were made by faculty member or not. If the works were made by the others, source is searched and confirmed that the works are actually existed.

Figure 3. The flowchart of handling process for intellectual property rights of creative works of others.
After that, copyright policy is checked whether the works can be used explicitly. In the case of the works can be used, the works will be included in the publication materials with a suitable credit. On the other hand, in the case of requests for permission to use is required, the operation team requests to the copyright owners for the permission to publish the contents which contain their works.

The results of the handling process for recent 14 video materials are summarized in Table 1. The total number of the picked up works was 848 and that of the works of others was 200. 69 works was permitted according to copyright policy of each organization. As for the requests for permission, the total number of the requests was 58. The answer refers to 47 (81%) for acceptance, 2 (3%) for refusal and 9 (16%) for no response. Therefore, 116 (58%) works of others could be included in the publishing video materials. However, there still remains a lot of unknown works of others. As shown in Table 1, 82 (41%) works of others was forced to be defocused and unnecessary works were generated. More effective way to get a reference list from faculty member is required.

The main problem at present is that check, search and request/inquiry processes are very time-consuming. To solve this problem, we propose 3 approaches. First, unnecessary work is reduced as follows.

- Non-related works to content of the lecture is forced to be defocused to reduce check/search process.
- Simple graphs published by ministries can be used without inquiry.

Second, making a list containing which organization gave us permission, namely "permission list". Third, most important, since most of members of OCW should have been spending much time in this process, we strongly propose that this process be common by sharing information about "permission list". Also, we expect each consortium to make a umbrella agreement with publishers and approach to change copyright law.

5. Summary

Since Hokkaido University launched OCW in 2006, HU-OCW has published more than 300 courses, including various kinds of contents. The number of visitors until now has been up to 2,284,836 Visits (or 15,394,299 Page views). Moreover, the monthly-averaged number of access has been up to 565,987 Page views.

In our recent case, about 25% works of the lecture materials is required to be handled for intellectual property rights of creative works of others. Since this process is quite time-consuming, we strongly propose that this process be common by sharing information. This approach could lead to sustainable activity for each member of OCW.

Table 1. Results of the handling process.

<table>
<thead>
<tr>
<th></th>
<th>OK</th>
<th>NG</th>
<th>Unknown</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permission according to copyright policy</td>
<td>69</td>
<td>-</td>
<td>-</td>
<td>69</td>
</tr>
<tr>
<td>Requests for permission (%)</td>
<td>47</td>
<td>2</td>
<td>9</td>
<td>58</td>
</tr>
<tr>
<td>Source was unknown, etc. (%)</td>
<td>-</td>
<td>-</td>
<td>73</td>
<td>73</td>
</tr>
<tr>
<td>Total (%)</td>
<td>116</td>
<td>2</td>
<td>82</td>
<td>200</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OK</th>
<th>NG</th>
<th>Unknown</th>
<th>Subtotal</th>
</tr>
</thead>
<tbody>
<tr>
<td>69</td>
<td>-</td>
<td>-</td>
<td>69</td>
</tr>
<tr>
<td>47</td>
<td>2</td>
<td>9</td>
<td>58</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>73</td>
<td>73</td>
</tr>
<tr>
<td>116</td>
<td>2</td>
<td>82</td>
<td>200</td>
</tr>
</tbody>
</table>

Source was unknown, etc.
Opinion towards Open Educational Resources: a Case Study of Augmented Reality 3D Pop-up Book-the Seed Shooting Game

Poonsri Vate-U-Lan, Ed.D.
Assistant Program Director, Ph.D. in eLearning Methodology
Graduate School of eLearning, Assumption University of Thailand
poonsri.vate@gmail.com

ABSTRACT

Augmented Reality (AR) for academic learning purposes is growing in the same directions and at the same pace as the expansion of smart innovations into education and lifelong learning. An Augmented Reality 3D Pop-up Book-The Seed Shooting Game-employed a systematic research and development (R&D) process creating an Open Educational Resource (OER). This paper reports on an Internet-based survey of users’ attitudes towards a developed AR 3D Pop-up Book namely The Seed Shooting Game. The developed OER is available for free access through the browser. The participants were invited onto the Internet. The research instruments consisted of 1) an AR 3D pop-up book, namely The Seed Shooting Game, 2) a user guide for an AR 3D pop-up book and 3) an Internet-based 5-point rating-scale questionnaire. The average reliability score for this survey form calculated by Cronbach’s coefficient Alpha was 0.762. There were 199 respondents, 66.8 per cent were female and 33.2 per cent were male. The average score of the survey results reflected positive appraisals on all aspects. The conclusion can be made that the users of the AR 3D pop-up book felt excited when viewing this OER. The content analysis of the responses to the open-ended questions highlighted the users’ very positive interest in AR technology for other subjects and for different educational levels.

Keywords

1) INTRODUCTION

An Augmented Reality (AR) 3D pop-up book refers to a computer application presenting a digital 3D pop-up book physically in a real-world environment through a web camera; it is superimposed on either a marker or without marker, also known as markerless when zooburst application perceives a coding sensor.

As seen in Figure 1, a user is holding a marker which is a black symbol square printed on simple paper. Then seen through an AR application via the web camera, the 3D pop-up book comes to life, serving as a platform for a 3D multimedia pop-up book including colorful graphics, sound and interaction. The sound of each object is separately controlled. The appearance of colourful pop-up cartoon characters aims to motivate students to continue their learning. The 32 pages of the book are
This AR 3D pop-up book was designed for academic purposes in teaching English as a Foreign Language at a selected elementary school in Metropolitan Bangkok, Thailand. This project was supported as an innovative learning resource by the Department of Education, Bangkok Metropolitan Administration. After this AR 3D pop-up book, *The Seed Shooting Game*, was developed, it was made freely accessible on the web site of poonsri.weebly.com. It is also an openly formatted and openly licensed media resource useful for teaching, learning, education, assessment and research purposes. Thus, it has been categorized as an open educational resource (OERs). Moreover, on the web site of this innovative media, there is included a completed learning package which consists of: 1) instructions in how to prepare hardware for AR, 2) a marker, 3) an exercise for use during class, 4) an achievement test, 5) a manual for the user, and 6) an Internet-based satisfaction survey.

One of the most exciting aspects of AR is the ability to superimpose additional information on a physical object (Kaganskiy, 2010). Additionally, the most fascinating application of AR possibly is its ability to modify physical structures and environments (Kaganskiy, 2010). AR technology has become popular since most of computer devices or handheld devices are today integrated with a camera. However, the marker needs to be prepared for viewing some AR projects which means it is not independent. The character of AR technology which is unique and differs from other computer technology makes it outstandingly innovative. Thus, it is important to study users’ opinions towards AR, particularly if it is being openly used for educational purposes.

This article aims to detail the research findings regarding users’ opinions towards the developed AR 3D pop-up book, *The Seed Shooting Game*. The data were collected through an online questionnaire which is available on the same web page of the OER. The research questions needing to be answered in the survey covered many aspects. They were designed to measure the attitudes of the users of this OER. It is also important to compare the opinions of both gender groups.

### 2) BRIEF LITERATURE REVIEW

The AR concept can be simply described as a way that digital information augments reality on particular objects while people are seeing them through a camera. The pilot implementation of AR was created along with Virtual Reality (VR) by Sutherland in 1969 (Fallenwritter, 2012). The official and technical term of AR refers to an amalgamation of at least three main sections “combining real and virtual information, being interactive in real time, and being registered in 3D” (Azuma, 2011). AR is able to control the capacity of superimposing virtual objects, particular 3-dimension (3D) objects, and computer
graphics in a real environment (Buchau, Rucker, Wo¨ssner, & Becker, 2009). With the many potentials of technology such as geolocation, image recognition, and object tracking, AR along with an Android device like Google Glass will be very useful for the future (Fallenwritter, 2012). A Project Glass from Google might become the next big thing and be a part of ubiquitous computing since the advancement and availability of mobile devices with a camera can bring people closer to their practical use than ever before (Fallenwritter, 2012).

2.1) Learning Objectives

The Seed Shooting Game, AR 3D pop-up book, was created by Zooburst. At the beginning, it had been created as a teaching material for a blended learning environment in elementary schools in Bangkok, Thailand. The Seed Shooting Game, the AR 3D pop-up book, was mainly used to serve five learning objectives for these young Thai children:

1. understand where to put quotation marks,
2. demonstrate an understanding of the story,
3. place the events correctly in chronological order,
4. match pictures with the vocabulary item correctly, and
5. use simple prepositions to describe the image.

Another highlight of this AR 3D pop-up book is the integration of knowledge and entertainment through storytelling techniques, colourful cartoons and the systematic evaluation, both qualitative by experts from the relevant fields and quantitative with several trials with students. Both the learning material and the survey questions were revised multiple times based upon the feedback from experts in many fields.

2.2) Presentation of AR 3D Pop-up Book

Each AR project usually has its own mode of presentation, the same as this AR 3D pop-up book which can be viewed as 1) a 3D pop-up book which is called ‘screen mode’ (Figure 2) and 2) AR 3D pop-up book which is called ‘web camera mode’. The web camera mode which presents the 3D pop-up book in an AR environment can be presented in three orientations:

2.2.1. In front of the marker
- users need to hold a marker with face to the camera (Figure 3),

2.2.2. On top of the marker
- users need to adjust the camera to capture the marker, and the AR will superimpose on the marker (Figure 4),

2.2.3. Always on screen
- the AR is shown without a marker - therefore implying being “markerless” (Figure 5).

Figure 2: Screen Mode of 3D pop-up book
Source: Vate-U-Lan (2012)

Figure 3. In front of the marker orientation
Source: Vate-U-Lan (2012)
3) RESEARCH METHODOLOGY
This research employed the online self-administered mode to elicit users’ attitudes towards OER for many reasons. Firstly, the developed media is available freely on the Internet. Secondly, people tend to disclose their opinions more when filling in the online form. Moreover, the manual or guidelines for using this AR 3D pop-up book and marker were available when the survey was launched. This was to assist respondents to view AR successfully. The note to turn the volume on was also mentioned. The Internet-based questionnaire included seven items with a 5-point rating scale, one question regarding the preferred mode of AR orientation with the last as an open-ended question. The contents of the form were initially drafted and then revised after consultation with the experts. It was printed in paper-pencil form and then trialed with participants at the development stage and demonstrated an average reliability calculated by Cronbach’s co-efficient Alpha of 0.762, over the required 0.5. Then the contents of the survey were re-published on the Internet.

4) RESULT AND DATA ANALYSES
At the end of the data collection, there were 199 participants who answered the online self-administered form. Table 1 presents the demographic information of respondents by gender and occupation. In total, 66.8 per cent were female (133 women) and 33.2 male % (66 men). Almost all respondents were university students (94% or 187 persons), some (4.52% or 9 persons) were teachers and only one per cent (2 persons) were students.

Table 1: Demographic information

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Female (%)</th>
<th>Male (%)</th>
<th>Total (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>University student</td>
<td>63.3</td>
<td>30.7</td>
<td>94</td>
</tr>
<tr>
<td>Teacher</td>
<td>2.5</td>
<td>2</td>
<td>4.5</td>
</tr>
<tr>
<td>Student</td>
<td>0.5</td>
<td>0.5</td>
<td>1</td>
</tr>
<tr>
<td>Executive of the school</td>
<td>0.5</td>
<td>0</td>
<td>0.5</td>
</tr>
<tr>
<td>Total</td>
<td>66.8</td>
<td>33.2</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2: Attitudes towards the AR 3D Pop-up book

<table>
<thead>
<tr>
<th>Statement</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I feel excited when using the AR book</td>
<td>4.45</td>
<td>0.625</td>
</tr>
<tr>
<td>2. I feel that AR book increased demand for studying</td>
<td>4.38</td>
<td>0.655</td>
</tr>
<tr>
<td>3. I feel happy using AR book</td>
<td>4.55</td>
<td>0.608</td>
</tr>
<tr>
<td>4. I understand content while studying from AR book</td>
<td>4.32</td>
<td>0.693</td>
</tr>
<tr>
<td>5. I liked the presentation of AR</td>
<td>4.59</td>
<td>0.560</td>
</tr>
<tr>
<td>6. I want to study from AR</td>
<td>4.39</td>
<td>0.657</td>
</tr>
<tr>
<td>7. I am interested in AR technology</td>
<td>4.67</td>
<td>0.532</td>
</tr>
<tr>
<td><strong>Average mean score</strong></td>
<td><strong>4.48</strong></td>
<td><strong>0.427</strong></td>
</tr>
</tbody>
</table>

Likert scale data where 1 means strongly disagree and 5 means strongly agree

According to the data which does not detail in Table, the oldest of the respondents was 52 years old and the youngest was 14 years old.
old with an average 22.26 years. The female average age was 21.98 years old and male average was 22.83 years. The statements, mean score and standard deviation of 5-point rating-scale questions of the satisfaction survey (N=199) presents in Table 2. The satisfaction levels were over-whelmingly positive on all items. The average mean score reflected strong agreement with all statements (4.48, S.D. 0.427). The highest average score was for the statement indicating that participants are interested in AR technology (4.67, 0.532). The findings emphasized that participants enjoyed using The Seed Shooting Game as a 3D AR pop-up book. In order to measure the diversity of each gender’s opinion towards the Seed Shooting Game, the results are presented in Table 3, including the results of an independent-sample t-test result, showing the differences between females and males.

Table 3: Opinion of each gender towards the AR 3D Pop-up book

<table>
<thead>
<tr>
<th>Question</th>
<th>Female</th>
<th>S.D.</th>
<th>Male</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>4.51</td>
<td>0.598</td>
<td>4.33</td>
<td>0.664</td>
</tr>
<tr>
<td>2.</td>
<td>4.45*</td>
<td>0.621</td>
<td>4.24</td>
<td>0.703</td>
</tr>
<tr>
<td>3.</td>
<td>4.61</td>
<td>0.562</td>
<td>4.44</td>
<td>0.608</td>
</tr>
<tr>
<td>4.</td>
<td>4.35</td>
<td>0.688</td>
<td>4.24</td>
<td>0.703</td>
</tr>
<tr>
<td>5.</td>
<td>4.68*</td>
<td>0.501</td>
<td>4.42</td>
<td>0.634</td>
</tr>
<tr>
<td>6.</td>
<td>4.47*</td>
<td>0.634</td>
<td>4.24</td>
<td>0.681</td>
</tr>
<tr>
<td>7.</td>
<td>4.74*</td>
<td>0.471</td>
<td>4.52</td>
<td>0.614</td>
</tr>
<tr>
<td>Total</td>
<td>4.54*</td>
<td>0.399</td>
<td>4.35</td>
<td>0.454</td>
</tr>
</tbody>
</table>

Likert scale data where 1 means strongly disagree and 5 means strongly agree
*p<0.05, Independent-Samples t-test (female vs. male)

It is important to note that the average female score for all items (4.54, 0.399) is higher than the male score (4.35, 0.454), statistically significant at the 0.002 level with a mean difference of 0.196. Table 3 shows four statements out of seven where female opinion was significantly higher than the male score. This implies that females tend to prefer using this 3D AR pop-up book than the males. The reason for this might be because this media is a children’s book which females seem to enjoy more.

Figure 6 presents the preferred mode of orientation, showing more than half the respondents selected the ‘always on the screen’ mode (65.8%), others the ‘top of the marker’ (22.1%), some ‘in front of the marker’ (10.6%) with three not answering (3) (1.5%). This might be because the ‘always on the screen’ mode can present AR without the requirement of the marker or markerless, thus providing free hand function for users.

The summary of the responses to the open-ended questions was congruent with the satisfaction survey. The attitudes were very positive, highlighting that AR technology is an innovation that is very interesting and it may increase demand for OER.

5) RECOMMENDATIONS

The result of the satisfaction survey of The Seed Shooting Game, AR 3D pop-up book showed high level of satisfaction in many respects. Participants found the innovation was very exciting, interesting and positive as an OER. A further study contrasting each gender’s attitude should be conducted to gain deeper understanding. The demand of AR 3D pop-up book as OER is high. Thus, the educator should consider addressing AR technology and integrating it into future educational resources.

REFERENCES


![Figure 6: The mode of AR 3D Pop-up book](image-url)
teaching of electrodynamics. The International Journal for Computation and Mathematics in Electrical and Electronic Engineering, 28(4), 948-963.


Title: Re-Examining Our Assumptions: OCW in the Year of the MOOC

Author: Larry Cooperman

Affiliation: University of California, Irvine

Abstract:

This paper examines the relationship between OpenCourseWare (OCW) and massive online open courses (MOOCs) in the light of the shared goal of making higher education courseware universally accessible. The older of the two phenomena, OCW, has always expressed a clear mission to provide access to quality higher education through the free licensing and distribution of assets organized as courses. As measured by raw numbers of courses, more than twenty thousand, this project has been an outstanding success. However, no one would infer from these numbers that the mission of universal higher education access has been achieved, at least not in the sense of the development of new digital paths to higher education that either bypass or run in parallel to existing institutions.

In 2012, there was an explosive growth of MOOCs from the first few courses (artificial intelligence, circuit) that attracted hundreds of thousands of users, hundreds of announced courses in the currently dominant MOOC providers as well as their use as a cost reducer in higher education. The adoption by Antioch College of several MOOC courses from Coursera, the agreement with a U.S. accrediting body to review some Coursera courses for transferable credit, and the decision of the University of Washington and University of Texas systems to incorporate MOOCs to reduce tuition or costs all have antecedents in the ten-year history of OpenCourseWare, particularly in the Asia region: both Korea and Indonesia had either institutional or systemic policies that supported credit-by-exam with OpenCourseWare being used as the content to be studied. Other close parallels between the development of OCWs and MOOCs can be found in the “prestige” factor: the initial association of OCW with MIT and the later association of MOOCs with Stanford (Coursera, Udacity) and Harvard and MIT (Edx).

What explains the dramatic growth of the MOOCs in 2012 while OCW growth has been for the most part linear? It is clear, at least in retrospect, that OCWs and OERs were designed as educational materials, while MOOCs were designed as learning experiences. If the mission associated with OCW is to provide universal access to higher education, then both MOOCs and OCWs sometimes suffer from inaccessibility: even high-quality courseware can be inaccessible educationally to students who in their millions suffer from inadequate primary and secondary preparation. This suggests that, as a future direction, universities that wish to contribute to the effort for universal access to higher education, should focus on articulated curricula rather than individual courses and, learning from the MOOCs, provide both scaled opportunities as well as clear instructional paths to follow, from introductory and remedial courses to more advanced courses.

Introduction

The New York Times declared 2012 to be the Year of the MOOC. (Pappano 2012) In 2012, the explosive growth of MOOCs from the first few courses (artificial intelligence, circuit) that attracted hundreds of thousands of users, hundreds of announced courses in the currently dominant MOOC providers as well as their use as a cost reducer in higher education. The adoption by Antioch College of
several MOOC courses from Coursera, the agreement with a U.S. accrediting body to review some Coursera courses for transferable credit, and the decision of the University of Washington and University of Texas systems to incorporate MOOCs to reduce tuition or costs all have antecedents in the ten-year history of OpenCourseWare, particularly in the Asia region: both Korea and Indonesia had either institutional or systemic policies that supported credit-by-exam with OpenCourseWare being used as the content to be studied. Other close parallels between the development of OCWs and MOOCs can be found in the “prestige” factor: the initial association of OCW with MIT and the later association of MOOCs with Stanford (Coursera, Udacity) and Harvard and MIT (Edx).

This paper aims to review the assumptions that buttress the open education movement: the intellectual property regime, the problematic notion of access, and the goal of ever-increasing levels of higher education.

The MOOC Disruption

The network effects of the Internet are well-known. Social media, in particular, has benefited enormously from the adhesion of millions, both from the standpoint of the financial value of networks like Facebook as well as their utility to the user base. The size of the network itself and first-mover advantage dictate that only the largest new entrants, like Google, can compete in the space.

It has already been widely commented the disruption of publishing by the intertwined rise of free content and social networks. Huffington Post Live, for example, is a new streaming news and commentary channel designed as a web-based alternative to standard cable news shows. (Pompeo. 2012) However, Huffington Post itself is an aggregator of traditional news outlets combined with a large (and largely unpaid) group of bloggers, many well-recognized, typically left-of-center political personalities and academics. In recognition of the value of this business model, AOL purchased Huffington Post for $315 million in February 2011. (Peters and Kopytoff. 2012)

This paper argues that Massive, Open Online Courses (MOOCs) have the same relationship to universities as the Huffington Post does to the traditional news media. They are dependent upon either universities or an aggregation of professors for content, in this case developed courses. And their value is determined by the size of their network effect, in this case, a very highly educated network attracted to coursework from top universities (EdX, Coursera) or professors (Udacity).

But the final test of this analogy will be the inverse relationship between the new aggregator and the old industry. That is, while blogging, in general, and Huffington Post, specifically, has risen in value while the newspaper industry has seen a wave of consolidations, bankruptcies, and downsizing. The following table shows the accelerating decline of newspaper employment since 1997:

Figure 1. Total employment in the newspaper publishing industry 1997-2011.
Of course, this picture has not yet been replicated at all within higher education. The following table paints a picture of slow growth of both full-time and part-time positions in higher education from 2003-2009:

**Figure 2. Number and percentage of instructional staff at Title IV degree-granting institutions other than medical schools, by sector of institution and employment status: United States, fall 2003, 2005, 2007, and 2009**

<table>
<thead>
<tr>
<th>Sector of institution and employment status</th>
<th>Fall 2003</th>
<th>Fall 2005</th>
<th>Fall 2007</th>
<th>Fall 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public 4-year</td>
<td>369,635</td>
<td>100</td>
<td>387,230</td>
<td>100</td>
</tr>
<tr>
<td>Full time</td>
<td>249,610</td>
<td>67.5</td>
<td>257,968</td>
<td>66.6</td>
</tr>
<tr>
<td>Part time</td>
<td>120,025</td>
<td>32.5</td>
<td>129,262</td>
<td>33.4</td>
</tr>
<tr>
<td>Private not-for-profit 4-year</td>
<td>286,610</td>
<td>100</td>
<td>299,989</td>
<td>100</td>
</tr>
<tr>
<td>Full time</td>
<td>149,849</td>
<td>52.3</td>
<td>154,536</td>
<td>51.5</td>
</tr>
<tr>
<td>Part time</td>
<td>136,761</td>
<td>47.7</td>
<td>145,453</td>
<td>48.5</td>
</tr>
<tr>
<td>Private for-profit 4-year</td>
<td>39,144</td>
<td>100</td>
<td>73,342</td>
<td>100</td>
</tr>
<tr>
<td>Full time</td>
<td>6,874</td>
<td>17.6</td>
<td>10,439</td>
<td>14.2</td>
</tr>
<tr>
<td>Part time</td>
<td>32,270</td>
<td>82.4</td>
<td>62,903</td>
<td>85.8</td>
</tr>
</tbody>
</table>


Of course, the continued growth of employment in higher education is not surprising given the 22% growth of U.S. first-time enrollments from 2001 to 2010. But, despite the rapid growth during this period of free university courseware, typically OpenCourseWare, there is no indication of disruption of the basic business model of university education, as evidenced above in the levels of industry employment nor in any other possible indices, such as revenues, degrees granted, or enrollments.
The MOOC model differs from OpenCourseWare in its presentation of an instructional experience, typically through the use of video. OCWs, by contrast, have had no clear minimal definition, other than the educational contents are “organized as a course,” such as syllabi, readings, exams and quizzes, and presentation slides. It should be stated that there is no counterposition between OpenCourseWare and courseware presented as a full instructional path. It is simply that until the MOOCs surged, this lack of a key educational feature was not so important. Furthermore, there is a higher development cost to include the kinds of short instructional videos or even quizzes with a feedback loop that are part of the Khan Academy model adopted by the MOOCs.

OCW, MOOCS and content licensing

One of the fault lines exposed in the Year of the MOOC was the absence of Creative Commons licenses as a strategic objective among the best known MOOCs: EdX, Coursera, and Udacity. Yet for the OpenCourseWare movement, its consortia, and its members, Creative Commons licenses were a definitional component of OpenCourseWare. The impact of the Hewlett Foundation’s open education strategy was felt worldwide through funded projects that ranged from MIT to the African Virtual University (and later OER Africa). Beyond the world of OERs and OCWs, Creative Commons licensing became a popular intellectual property regime for websites that rely on user contributions, up to and including becoming a licensing option on photo- and video-sharing website.

The MOOCs have laid bare some of the weaknesses of the OER/OCW publishing model. Despite the fact that the term MOOC was coined by open education theorists and practitioners (Downes, Siemens, Wiley), the MOOCs that have received funding and >100,000 enrollments in some of their courses began without the formal trappings of Creative Commons licenses. Udacity in September 2012 announced that its courses would be available under a Creative Commons attribution, non-commercial, non-derivative 3.0 license, Coursera does not make a comparable statement, partially because it does not own course content provided by universities and their professors and therefore cannot license it at all without their permission. Coursera’s situation resembles that of a platform provider and their choice will be limited to creating optional platform mechanisms for CC licensing or leaving it to the University partners to do it through a licensing declaration on the course page. EdX states only that it intends to make course content “available under more open license terms that will help create a vibrant ecosystem of contributors and further edX’s goal of making education accessible and affordable to the world” without committing to a specific license.

The apparent evolution of these MOOC non-profit and for-profit organizations toward open licensing at first blush appears to be a vindication of the approach taken for 10 years by the OER/OCW communities. But a second, more contradictory point seems equally important: hundreds of thousands of users packed into massive courses that were free, but not open, at least not at the time of their launch. Even worse, the business models that will sustain these MOOCs will likely require the more restrictive Creative Commons clauses, as in the case of the CC-BY-NC-ND 3.0 license in use by Udacity.

To Udacity’s credit, even their course videos available via download for those who don’t have YouTube access! But the use of the non-derivatives clause highlights a contradiction within Creative Commons licensing: something can be formally “open,” but not allow remixing. Under this license, the sole differentiating feature between publicly available, fully copyrighted educational materials and OERs that contain the ND clause is the ability to download and display in a different context. This resolves into
a single, principal benefit over traditional copyright: when a resource disappears from its web-accessible location, it is still available.

This becomes the first challenge to our assumptions. The advantages of reuse and remixing are primarily in authoring and then only occasional. End users want quality content and learning experiences from free sources.

The “Access” Axis

The second area that needs more investigation is the nexus between access to free educational content and instructional narratives and enhancing the supply of educated professionals and skilled workers. “Access” is the mechanism by which free courseware, whether of the OCW or MOOC variant, is supposed to deliver its public benefit. Yet it isn’t clear whether, in the absence of adequate primary and secondary educational systems, access is capable of reaching significant percentages of underserved populations. Leaving aside the significant gaps in internet access that still exist in most countries, the question resolves to “what percentage of those accessing OER/OCW/MOOC assets would not otherwise have the opportunity to learn through traditional channels?”

The challenge can be expressed another way: do free, publicly available web-accessible learning resources educate the already educated? As an example, and with the clarification that the data is not precise because of gaps in the way the survey questions were worded, only 3% of adult respondents to the University of California, Irvine’s (UCI) indicated that their highest level of educational attainment had been high school. (Cooperman, 2012)

Where access has been dramatically expanded has been through open enrollment and distance learning universities. The success of universities from Open University UK to the Indira Gandhi National Open University, with enrollments ranging from hundreds of thousands to a few million (!), the use of distance learning has provided a cost-effective mechanism for expanding access to higher education, complete with fully accredited degrees, to the ever larger percentages seeking higher education across every region of the globe. These have filled the gaps left by the elite, private institutions that typically have had lower enrollment growth than corresponding population growth. While university enrollments grew 22% in the decade from 2001-2011, Harvard and Stanford had only a 1% and 6% increase in first-time student enrollments respectively.

The question of access is also complicated by the supply problem. While the Saylor.org website intentionally reproduces the college catalog, including prerequisites and sequences of core courses, most MOOC and OCW websites do not include full learning paths in given subjects. Those that do, such as the African Virtual University’s OER@AVU site of 70 modules for secondary teacher preparation in math and science, or TU Delft’s master’s degree tracks in topics like water resource management, have vastly expanded the benefits of OCW and have been capable of being delivered in multiple international settings. By and large, what MOOCs have done for the academic integrity of free courseware has not been replicated in curriculum.

The Universal Higher Education Assumption

Imagine for one moment that everyone really could attain the highest level of education they want. And let’s take this one step further, reductio ad absurdum, and suggest that everyone would want and attain a PhD. On the one hand, our global society of highly educated people might experience higher
levels of innovation and other social benefits. On the other hand, these several billion newly minted PhDs would still have to find employment and sort out into the list of necessary occupations – doctors and nurses, to be sure, but also janitors and receptionists. Some PhDs would work in mines and others driving taxis.

In fact, most educational systems perform a sorting function. Expectations of future earnings are created by a variety of selection processes. Some are based on ability to pay, but others are conditioned by past educational choices and achievements. Someone who has done poorly in mathematics would not be expected to end up as an economist or an engineer, for example. The point of the story of universal attainment of doctorates is that, immediately, a high degree of frustration would be felt by those who experience a mismatch between their skills and knowledge and their employment.

The case of Tunisia is telling in this regard. It was providing more support for higher education as a percentage of all education expenditures than the OECD average. (Abdesalem 2010) In fact, in terms of achieving public objectives, the results between 2000 and 2008 are excellent: (1) a doubling of science and technology graduates and an increase in their share of graduates from 29 to 34 percent; and (2) by 2007, 59% of university students and 61% of graduates were female.

Furthermore, as elsewhere, earnings are correlated with educational attainment. However, unemployment rates show an inverse pattern: the higher the level of education, the more likely an individual is to be unemployed. Worse, the unemployment rate in the year after graduation had reached 61% by 2006.

Figure 3: Some Indicators of Annual Wages by Education Level (2008), Tunisia

<table>
<thead>
<tr>
<th>Educational Level</th>
<th>TND</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Wage</td>
<td>2,500</td>
<td>1</td>
</tr>
<tr>
<td>Public Administration remunerations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondary (&quot;Baccauléat&quot;)</td>
<td>4,200</td>
<td>1.7</td>
</tr>
<tr>
<td>University</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Baccauléat&quot; + 2</td>
<td>6,000</td>
<td>2.4</td>
</tr>
<tr>
<td>&quot;Baccauléat&quot; + 4</td>
<td>7,440</td>
<td>3.0</td>
</tr>
<tr>
<td>&quot;Baccauléat&quot; + 5 and above</td>
<td>9,600</td>
<td>3.8</td>
</tr>
</tbody>
</table>

Source: Ministry of Development and International Cooperation, Tunisia (Abdesalem 2010)

Figure 4: Unemployment Rate by Educational Level in Tunisia (percent)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>17.6</td>
<td>9.8</td>
<td>10.1</td>
<td>12.8</td>
<td>11.3</td>
<td>12.7</td>
<td>7.8</td>
<td>8</td>
<td>5.9</td>
</tr>
<tr>
<td>Primary</td>
<td>18.3</td>
<td>17.3</td>
<td>17.1</td>
<td>16.6</td>
<td>15.8</td>
<td>15.7</td>
<td>15.7</td>
<td>15.2</td>
<td>13.5</td>
</tr>
<tr>
<td>Secondary</td>
<td>13.1</td>
<td>18</td>
<td>16.4</td>
<td>15.9</td>
<td>15.3</td>
<td>14.7</td>
<td>14.9</td>
<td>14.3</td>
<td>15.4</td>
</tr>
<tr>
<td>Higher</td>
<td>3.8</td>
<td>10.9</td>
<td>10.4</td>
<td>11.6</td>
<td>11.7</td>
<td>10.2</td>
<td>14.8</td>
<td>17.5</td>
<td>19</td>
</tr>
<tr>
<td>Overall</td>
<td>15.6</td>
<td>15.7</td>
<td>15.1</td>
<td>15.3</td>
<td>14.5</td>
<td>14.2</td>
<td>14.2</td>
<td>14.3</td>
<td>14.1</td>
</tr>
</tbody>
</table>


So, here we see the underlying pattern that fueled the social explosion in 2010-2011 in Tunisia. In Egypt, a similar picture can be seen. Civil service employment was the main, desired outcome of a higher education, but the Egyptian government became increasingly unable to provide the rate of expansion of this system for financial reasons, leading to ever-larger unemployment among college-educated youth.

Of course, the Tunisian and Egyptian cases are quite dissimilar from the nearly universal higher education that South Korea has achieved in the postwar period, an achievement that facilitated its rise
from near devastation to its status as a developed country by every metric. So universal higher education may be a social good – even the toppling of the Tunisian dictator can be seen as a positive result of an increasingly educated population – but there needs to be a careful study of the mechanism by which higher education yields greater prosperity for ever larger numbers. It may be that there is no general pattern. The rise of U.S. higher education in the postwar period was in large part due to government policy that provided free education to a generation of military veterans, reintegrating them into the economy, and spurring the transition from elite to mass higher education.

These are critical issues for open education. Are the purported benefits the social good that results from an educated population? Or is it a question of economic benefits and national economic development? Hallak (1999) finds that there are two possible scenarios. The first scenario is one of conflict between the cultural and individual benefits of higher education and the demands of a globalized economy and a “productivist” concept of education, calling for greater efficiency in education. His second scenario is that, through an educated global populace, globalization itself is subject to “humanist” constraints.

**Conclusion**

Open education is still in its infancy. Rather than competing strategies for advancing access to higher education, MOOCs have continued the evolution that began with MIT’s announcement of the OpenCourseWare project in 2001, building upon the pedagogy of the Khan Academy, and incorporating the use of big data pioneered by the Open Learning Initiative at Carnegie-Mellon.

Nevertheless, the advent of MOOCs offers us another opportunity to re-examine our assumptions about the purposes and characteristics of open education. Creative Commons licenses have seemed completely aligned with the notion of sharing in education, yet depending on the specific conditions imposed, often provide no concrete benefit for open learners. Access is provided to anyone for free, but access is not provided at appropriate educational levels except to the already advantaged. And, finally, the ultimate goal of a universal system of higher education has to be clarified: is it a public good in and of itself or does it have to be justified by economic results?

The goal of this paper was not to come to hard conclusion, but rather to kindle debate and provoke research into the optimal forms of content organization, of pedagogy, and of insertion into the real economy.
References


Day 2 : January 22, 2013 (Afternoon session)
The effectiveness of e-Learning pedagogy open online courseware

Anirut Satiman, Ed.D. 1
Thapanee Thammetar, Ph.D. 2

Abstract

The development of e-Learning pedagogy open online courseware was to study to find the effectiveness for instructors in educational institution, Thailand. The objectives of this research were: 1) to develop open online courseware on e-Learning pedagogy for instructors in educational institution, Thailand. 2) to evaluation learning achievement by using online courseware on e-Learning pedagogy 3) to evaluation online courseware on e-Learning pedagogy. The sampling were 33 graduate students during the second semester of the academic year 2011, the faculty of education, Silpakorn university. The research instruments were 1) online online courseware on e-Learning pedagogy 2) The achievement test and 3) Students opinions questionnaire. Data were analyzed by using mean, standard deviation, and t-test dependent statistics. The research finding were as follows 1) The course design and development of contents and features was approved by the content experts and the result of quality evaluation of online courseware on e-Learning pedagogy course was good (Mean = 4.25, S.D = 0.18) 2) The students learning achievement posttest of the online courseware on e-Learning pedagogy course was higher than pretest at.05 level of significance. 3) The students opinions evaluation of online courseware on e-Learning pedagogy course was at higher level (Mean =4.10, S.D =.38) Content (Mean = 4.15, S.D = 0.34), Design (Mean = 3.99, S.D = 0.48), Usability (Mean = 4.03, S.D = 0.47)

Keyword: open online courseware, e-Learning, e-Pedagogy, learning achievement.

Introduction

The office of higher education commission, ministry of education, Thailand has promoted the policy on ICT in education since 2001 by establishing the inter-university network (UniNet) to provide the information network for research and inter-university network for higher education institutions. Also, Thailand Cyber University Project (TCU) was set up to prepare the universities to implement e-Learning effectively. The office of higher education commission, via UniNet and TCU, has partnered with Thai and international leading universities to share knowledge and resources in educational technology. Joint research has been continually conducted along with seminars, conferences, and publications.

Thailand cyber university Project (TCU) followed one of its missions by gathering faculty from different universities to jointly experiment online learning in Learning Management system. e-Learning professional program was established in 2006 with faculty from 10

1 Faculty of Education, Silpakorn University
2 Faculty of Education, Silpakorn University
universities participating in creating the program, selecting appropriate technology, developing guidelines for online teaching, creating courseware, providing teaching, and evaluation, etc. There has been over 400 students registering, consisting of teachers from educational institutes at all levels and interested persons. Several students have completed the program. To collect and distribute knowledge and experiences from e-Learning professional program systematically, TCU produced online learning package for self-paced learning on e-Learning pedagogy (e-Pedagogy) for instructors in educational institutes. The learning package covered all processes learned from the program and were widely disseminated to educational institutions and interested persons, in line with the government policy to promote the use of ICT in education.

Online learning or e-Learning is not merely the use of technology and information technology in teaching and learning. It is a concept of teaching which focuses on learners – student centered learning (e-Learner). Mostly, the study of e-Learning focused on learners and overlooked teaching methods which were, in fact, important. The science of teaching or e-pedagogy is actually significant.

e-Learning pedagogy is based on teaching methods in the classroom. However, in e-Learning, the focus is on e-Teaching which is the teaching method on how to transfer contents of the knowledge and experiences to students effectively and efficiently to meet the objectives of the course. This method also requires students to do learning activities. To create knowledge asset from experiences of implementing e-Learning professional program systematically, TCU produced open online courseware on e-Learning pedagogy for instructors in educational institutes. The courseware covered all processes learned from the program and was widely disseminated to educational institutions and interested persons, in line with the government policy to promote the use of ICT in education. The objectives of this research were: 1) to develop open online courseware on e-Learning pedagogy course for instructors in educational institution, Thailand. 2) to evaluation learning achievement by using online courseware on e-Learning pedagogy course 3) to evaluation online courseware on e-Learning pedagogy.

The Study

Research method: the research population consisted of 300 second-year graduate students in the faculty of education, Silpakorn university in the second semester of the academic year 2011. A sampling group was 33 graduate students who enrolled in computer Assisted Instruction course during the second semester of the academic year 2011 by simple random sampling. Research processes are as following:

Step 1: Study contents, concepts, theories, and practices to design online courseware. The study included the study of theories and research on the design of online teaching materials and teaching techniques and methods to be used as guidelines in determining contents and learning activities. Brainstorming meetings of e-Learning experts from educational institutions in Thailand and focus group discussion were organized to collect ideas and suggestions.

Step 2: Development of online courseware on e-Learning pedagogy. The courseware production started with reviewing related documents and research and determining teaching methods and objectives. Opinions and suggestions from the brainstorming meetings of e-Learning experts. Contents were produced by multimedia software and Moodle LMS (Learning Management System). Each course consisted of pre-test and post-test, content
module, exercise, communication channels, including webboard, chatroom, videoconference and created screen design of coursewares (picture 1). After designing and producing courseware was quality evaluated of courseware by 3 content experts and 3 e-Learning experts by using 5 rating scale assessment.

**Step 3: Evaluation online courseware on e-Learning pedagogy course.** The study to compare learning achievement pre-test and post-test studying online courseware on e-Learning pedagogy course for instructors in educational institutes was conducted. Also, the study of opinion on the online courseware was conducted. The data was analyzed to present in the research.

**Findings**

1. The online courseware on e-Learning pedagogy course included the 7 courseware contents: 1) Fundamental of Online Instruction, 2) e-Pedagogy: Lecture Learning, 3) Discussion-based Learning, 4) Problem-based Learning, 5) Project-based Learning, 6) Games and Simulation Learning, and 7) Case-based Learning. The features of each courseware were: 1) fully online course, 2) self-paced learing course, 3) non-linear course, 4) 6-9 study-hour course. Contents of each course consisted of 1) objectives, 2) theories and applications in online teaching, 3) learning activities, 4) interactive activities between students and contents, and between students and instructors, 5) suggestion of appropriate internet tools, 6) suggestion on how to evaluate learning achievement. Each course consisted of text, audio, illustrations, and video clips, and learning achievement test. Design of contents and features was approved by the content experts and the result of quality evaluation of the courseware by e-Learning professionals was good ($\bar{x} = 4.25$, S.D = 0.18) as shown in the table 1.
Table 1: Table shows average score of courseware quality evaluation by e-Learning professionals

<table>
<thead>
<tr>
<th>Evaluation Topics</th>
<th>Means (x) Descriptions</th>
<th>S.D</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Content</td>
<td>4.27</td>
<td>0.46</td>
<td>Good</td>
</tr>
<tr>
<td>2. Design</td>
<td>4.30</td>
<td>0.24</td>
<td>Good</td>
</tr>
<tr>
<td>3. Usability</td>
<td>4.50</td>
<td>0.29</td>
<td>Excellent</td>
</tr>
<tr>
<td>Average Scores</td>
<td>4.35</td>
<td>0.34</td>
<td>Good</td>
</tr>
</tbody>
</table>

2. Learning achievement result from post-test of online courseware on e-Learning pedagogy course was higher than pre-test. t-test showed statistically significant difference at 0.05. It could be explained that students gained learning achievement from the online course as shown in the table 2.

Table 2: Table compares the score of 33 students’, in sampling group, learning achievement pre-test and post-test.

<table>
<thead>
<tr>
<th>Test</th>
<th>N</th>
<th>Full Score</th>
<th>x</th>
<th>S.D</th>
<th>t</th>
<th>Sig.(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-test</td>
<td>33</td>
<td>30</td>
<td>16.06</td>
<td>3.44</td>
<td></td>
<td>.000*</td>
</tr>
<tr>
<td>Post-test</td>
<td>33</td>
<td>30</td>
<td>21.75</td>
<td>4.47</td>
<td>-7.873</td>
<td></td>
</tr>
</tbody>
</table>

* p <.05

3. The study of students’ opinions on online courseware on e-Learning pedagogy course was conducted with the sample group of 33 students answering 5 rating scale questionnaire. The students opinions application has good level positive toward the online learning package courseware on e-Learning pedagogy course (x=4.10,SD =.38) as shown in the table 3.

Table 3: Table shows average score of sampling group’s students opinions on online courseware

<table>
<thead>
<tr>
<th>Evaluation Topics</th>
<th>Means (x) Descriptions</th>
<th>S.D</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Content</td>
<td>4.15</td>
<td>.34</td>
<td>Good</td>
</tr>
<tr>
<td>5. Design</td>
<td>3.99</td>
<td>.48</td>
<td>Good</td>
</tr>
<tr>
<td>6. Usability</td>
<td>4.03</td>
<td>.47</td>
<td>Good</td>
</tr>
<tr>
<td>Average Scores</td>
<td>4.06</td>
<td>.38</td>
<td>Good</td>
</tr>
</tbody>
</table>

Conclusions

The first research purpose which is to collect concepts, theories, and practices on e-Learning is qualitative research. The qualitative research is done by analyzing the documents, collecting qualitative data, and brainstorming meetings. Qualitative data collecting methods that were widely used included in-depth interview (IDI) and brainstorming meetings of e-Learning experts which the was conducted in this research. The results of this study were the 7 courseware contents and 6 features of each courseware designing process was suggested and monitored by experts at all stages.
The study of learning achievement result from post-test of online courseware on e-Learning pedagogy course was higher than pre-test. t-test showed statistically significant difference at 0.05. It could be explained that students gained learning achievement from the online courseware. This was because the courseware underwent the design process and efficiency evaluation systematically and was improved in every process of production. It was tested with the sample group. Quality courseware with interactive dialog will help students to enjoy safe-paced learning. This is in accordance with Tejagupta (2006) which noted that the teaching that allowed students to think systematically and emphasized on practice rather than memorizing would enhance students' ability to think critically and synthetically which will lead to the development of cognitive skills. In addition, activities in online learning package enabled students to be an active learner, which is different from a regular classroom lecture which makes students to become a passive learner. This is consistent with the concept of interaction design of Suwannatthachote. (2011). The courseware should be designed to be easily navigated, convenient to go back and forth and should enable students to study by themselves. Students should know the correct answer right away or ‘feedback’ which will reinforce them to continue the lesson.

The students’ opinions on studying online learning package courseware on e-Learning pedagogy (e-Pedagogy) course was at good level (\(\bar{x} = 4.10, SD = .38\)). It can be explained that the courseware was something new that the student have never seen before. Every element in the courseware such as contents was well-designed. Objectives of each course were clear and consistent with the contents. The contents were clear, concise, easy to understand, and were organized into order. As for the design, illustrations were interesting, making contents easy to understand. The quality and clarity of audio were appropriate. The contents were useful and students gained knowledge from the courseware This is in accordance with Monsakul. (2011) reported that research a study appropriate website e-Learning design for higher education, the e-learning design contained 3 factors, 16 elements: multimedia design, content design, website Interface design. Evaluation results of students’ opinion were at high level every item.

References


Effect of Open Education by Kyoto University Open Course Ware

Naoko Tosa, Michihiko Minoh
Institute for Information Management and Communication, Kyoto University
Kyoto University
tosa@media.kyoto-u.ac.jp
minoh@media.kyoto-u.ac.jp

1. Overview of Kyoto University Open Course Ware.

Kyoto University Open Course Ware (OCW) started in 2005. Prof. Miyagawa of MIT visited Kyoto University to appeal the importance of introducing OCW into Kyoto University to Prof. Oike, who was Kyoto University President at that time. Pres. Oike clicked with him and entrusted the work of establishing Kyoto University OCW to Prof. Minoh, one of the coauthors of this paper. After that, OCW Preparatory Committee was established and the members were called from each Faculty. This is the history of the beginning of Kyoto University Open Course Ware. Prof. Miyagawa often refers to the results of open-source projects of MIT (like GNU) as an example of open atmosphere that fits with OCW.

What does open education bring us? It gives us the way to share our knowledge and education. It creates social network of educational community that is open to the world. The world's intellectual standard rises thanks to it. This is one of a perfect model of open education. However even if we can achieve them, there must be many unexpected barriers.

As a first step we started to ask teachers to provide their lecture information for OCW. Such information forms the basis of Kyoto University OCW. Then the contents of the OCW have gradually increased and now the university can appeal to the world through OCW. The teachers can freely use world's OCW for their teaching materials. OCW is different from E-learning. It can be called as media for announcing “today” of university education. Access from outside of university is much larger than internal one in most universities. In Kyoto University 80% of the entire access is from outside. Because OCW is an educational digital content, the quality is important. But the quality is the first step. Someday the quantity exceeds
the quality. The definition of OCW by MIT was, at first, the publication of lecture notes. The teachers made PDF of their lecture notes to publish. But the contents were not so much because normal lectures had no preparation for copyrights. Many teachers didn't open their lecture notes except of their students. After that, video streaming on the Internet became popular around 2008. They started to stream videos of their lectures. Kyoto University OCW started to publish streaming of recorded lectures at the time. Then more teachers asked to stream their lecture videos on OCW. Kyoto University OCW now has more than 1000 lecture videos. In fact, the teachers have their hopes to publish their lecture videos to appeal to the viewers.

2. For Whom Should OCW Send Out Information?
To whom is OCW beneficial? Below is the list of the several groups of people who would be able to receive benefit from OCW.

• For those who want to obtain high-level knowledge.
• For those who want to enter the university.
• For graduates who want to re-learn the information they obtained.
• For faculty members who want to develop their future career.
• For faculty members who want to brush their teaching skills.
• For those who want to investigate learning/education models, education methodology, education support, self-learning, etc.

At the same time it is important to identify which information should be kept open and which should be kept closed.

3. Case Study of Effect of Use Open Course Ware in 2012
Below are the two typical examples of OCW lectures that show the effectiveness of the use of OCW.

3.1 Case study 1: "Introduction to Foreign Literature on Agricultural Machinery"
This is a tele-education course focusing English presentation aimed for graduate students carried out in collaboration with National Taiwan University (NTU). Significant improvements of students’ attitudes such as seriously preparing for the class, actively participating the presentation, etc. have been observed. Also the
communication between NTU students studying at Kyoto University and NTU faculty members has been significantly improved.

3.2 Case study 2: "Let’s understand the importance of organic molecules in our daily life"
This is an introductory lecture for the 1st grade undergraduate students of Kyoto University focusing the role of various types of organic molecules in our daily life. By utilizing visual material distribution featured by OCS, it became possible for students who are not familiar to chemistry to easily understand the molecular structure of various kinds of materials in our daily life.

4. Future Activities Expected for Kyoto University OCW
Based on the success of the first stage activities of Kyoto University OCW, we plan to introduce several improvements into it and provide more effective OCW in the future
4.1 Improvement of OCW Infrastructure
Below is the list of several improvements to be done at the infrastructure level.
• Automatic input of syllabus utilizing speech recognition function.
• Speed up of the OCW system.
• The connection with intra-LMS (learning management system) makes it possible for faculty members to upload their own contents created by CMS (contents management system) onto OCW.
• Connection with tele-learning system.

4.2 Systematic Promotion of OCW in Each Faculty
At the same time further promotion of Kyoto University OCW within the university is necessary. Below are the several activities that would be necessary to realize this.
• Establishment of university level OCW management committee.
• Systematic promotion of OCW utilizing incentive budget of each faculty.
– Faculty of Agriculture.
– Center for Field Research on Education.
• Promotion of English version of OCW
– Global COE, English lectures, International symposium/conferences organized by
Kyoto University.
· Upload of various kinds of field studies onto OCW would prepare adequate lecture materials for those students who are not familiar for such field studies.
· Upload of open campus video onto OCW would make it possible for high school students in distant place to obtain detailed information about Kyoto University.

5. OCW Management Committee
Based on the necessity for the further improvement of Kyoto University OCW OCW Management Committee has been established. The direct effect of the committee is that it made possible for each faculty to recognize the importance of OCW.
The first job of the committee was to introduce various kinds of new functions into OCW for the easier use of OCW: caption of lecture talk using voice recognition, visualization of syllabus, tool for advanced search, etc.

Speech recognition function
Bellow figure is the lecture by Prof. Yamanaka, Novel Prize winner on iPS research in 2012. The caption of lecture talk is obtained using voice recognition. In the future Japanese captions will be automatically translated into English.
Tool for advanced search

TSUBAKI system developed by Prof. Kurohashi will be implemented in the new OCW system. TSUBAKI is a new search system that takes semantic ambiguity of each word, synonyms, etc. into consideration.

6. Discussions at the OCW Management Committee

OCW Management Committee is being held periodically and active discussions have been carried out for the fundamental role of Kyoto University OCW and also its future direction. Some of the opinions expressed in the previous several meetings are that OCW should focus on the work to collect and archive knowledge and wisdom owned by Kyoto University and that how to utilize OCW should depend on each faculty. Below are several examples of the opinions expressed by several Faculties on how to utilize OCW.

• To utilize OCW for the promotion of the faculty to overseas and to recruit students from overseas.
• To utilize OCW to archive huge amount of lectures.
• To distribute Chinese version of OCW to Chinese students.
• To archive and to distribute various kinds of lectures/presentations by internal and invited researchers.

7. Future Work for Open Education

As a future direction of OCW we believe that we should have more fundamental concept for future education. As such future target we have proposed the concept of “Open Education.” Although the concept of open education is not mature and we are in the middle of the discussion, we have already started some preliminary trial aiming this direction.

7.1 Basic Contents for Future Kyoto University OCW

All the lecture videos of 90 mins are now being shortened to about 10 mins and is tagged with several adequate key words. Then it is registered to the archive system developed on the Sony archive system called.

7.2 Promotion of Secondary Utilization of OCW Contents.
We collaborate with prof. Tajino of High Level Education Promotion Institute and have developed a tool for English e-learning. This tool has been used in our academic listening class since last October.

References

[1] Kyoto University Open Course Ware
http://ocw.kyoto-u.ac.jp/

[2] Kyoto University Open Course Ware YouTube
http://www.youtube.com/user/KyoDaiOcw

[3] OCW Content Management System
http://educommons.com/downloads/educommons/
Abstract
The paper described the background and basic information about the capacity building on e-learning professional called "e-Professional Certificate Program" offered by Thailand Cyber University Project, the Office of Higher Education Commission, Ministry of Education. The certificate program that had been given to several hundred learners in the last 6 years for free of charge was designed to prepare teachers, faculty members, educational administrators have capability in teaching, designing and managing the education in the new ICT facilitated learning environment. The feedback from administrators, teachers, and learners toward the program were surveyed and analyzed. The data would reflect the effectiveness and non-effectiveness, and the appropriation of implementing e-learning in Thailand.

This initiative open and distance learning can provide alternative educational experiences and challenge the location-based courses in the knowledge society. The lesson learned would be beneficial to e-learning initiatives in institutes.

Introduction
The Ministry of Education (MOE), Thailand has announced the Information and Communication Technologies (ICT) for Education Master Plan (2004-2006) to promote the use of ICT in education. Its vision is to ensure that learners, educational institutions, and educational offices have equal access to and derive benefits from information and communication technology for lifelong learning. Its mission emphasizes developing effective management, professional development in ICT, and the expansion of ICT infrastructure for education. (Laohajaratsang, 2009).

Foreseen the importance of online learning in higher education, Pavich Thongroj, the Director-General of the Commission on Higher Education, Ministry of Education has founded Thailand Cyber University Project in 2005. The main objectives of the project were to be as catalyst office to initiate, cooperate with, and support e-Learning initiatives among Thai higher educational institutions (Sombuntham, 2008). In addition, TCU has attempted to cooperate with local and international universities to drive and implement high awareness and understanding of quality and standard e-Learning to Thai institutions to expand educational

2 Faculty of Education, Chulalongkorn University.
3 Faculty of Education, Silpakorn University.
4 Faculty of Pharmaceutical Sciences, Chulalongkorn University.
opportunities to all Thai people becomes lifelong learners. (Sombuntham, 2008). Presently, there are 44 local educational member institutions. Without the limit of time and place, 721 open coursewares are provided for self-paced learning, more than 153,501 students have registered for the courses, while the TCU website have been visited over 4,690,861 times since January, 12, 2005.

Figure 1: Screen capture of the Thailand Cyber University project homepage
(See http://www.thaicyberu.go.th)

A recent research study indicated about the digital divide and insufficiency of instructors’ knowledge for e-learning, in effect, the difficult of changes were found in terms of instructors being reluctant to use e-Learning. e-Learning method of teaching and learning are somewhat different to the past experiences of teaching and learning that teacher and student get used to, in e-Learning, teacher needs certain e-Learning teaching competencies, and in the same, student also needs certain internet competencies in learning (Lertchalolarn, 2006). One of the initiative open learning and distance learning to fulfill knowledge and competencies of instructor and individual in the education and private sectors was set up and named ‘e-Learning Professional Certificate Program’. The virtual classroom infrastructure was set up using a widespread open source learning management system (LMS) called Moodle. This program delivered by full online learning since 2006-2011. The certificate program was designed to prepare teachers, faculty members, educational administrators have capability in teaching, designing and managing the education in the new ICT facilitated learning environment for free of charge. To distribute the e-Learning knowledge and support people employing in the e-Learning field, three tracks of learning sub-program were designed for three target groups as follows:

1) e-Learning teacher
2) e-Learning courseware designer
3) e-Learning project manager
The following twelve e-Learning courses were designed and delivered: 1) Principle of e-Learning, 2) e-Learning Methods and Skills, 3) Monitoring e-Classroom, 4) Design e-Learning Courseware 5) Designing Effective Website for e-Learning 6) Evaluation of e-Learning Courseware, 7) Evaluation Methods and techniques in e-Learning 8) e-Learning Delivery System, 9) e-Learning Project Management 10) Organizational e-Learning Policy and Strategy 11) Innovative Technology in e-Learning, and 12) Quality Assurance in e-Learning. In addition, all online learners in the program were required to study ‘Principle of e-Learning’ as a prerequisite course before taking other courses followed the learning track.

Table 1 shows three sub-program under the e-Learning Professional certificate program and its core courses and elective courses.

To build up the curriculum, the steering committee of TCU had done the research and survey in the international academic provider. Some good practices in the year of 2005 found such as the certificate in e-learning professional, The Training Foundation, foundation house University of Warwick science park, coventry, United Kingdom and the distance education professional development program, school of education/outreach, University of Wisconsin-Madison. Since 2006, the TCU steering committee team had developed the e-Learning professional certificate program with the support from volunteer experts in the field of educational technology from various universities in Thailand such as Chulalongkorn University, Silapakorn University, Rajamangala University of Technology Krungthep, King Mongkut’s Institute of Technology Ladkrabang, Sripatum University, Konkaen University, and Thailand Cyber University Project. This group of experts has also become the instructors of the program. Moreover, each course assigned one teaching assistant to support the online instructor to solve the technical problems of online learners who had immovable with their limited of technology skills and to keep update the content and to respond to posted questions on the webboard within 48 hours. Asynchronous learning was the communication and learning platform of this certificate program. Sample of using webboard in one course called ‘e-Learning Monitoring’ during July-September 2009 showed highly interactive learning among learner and learner, there were 43 online learners registered for that course and it was found 43 discussion forums referred to the topic of online instructor’s role during the third week. The total of all posts were 570 posts (Suwannatthachote, 2010).
Since offering the program until December 2012, there are 201 graduated from the program, some only one track or two, quite a number finished all three tracks.

Various aspects of the program have been evaluated occasionally. Opinion of learners, instructors, and administrator upon the positive and non-positive aspects of the program have been conducted lately by interviewing survey.

The results of the survey of all three target groups were summarized as the followings:

1. Program Administrators

1.1 From the follow-up of the program found that most of the graduates have implemented the knowledge learnt from the program, either to develop the e-Learning courses or e-training program in their organizations. Some also conducted research related to e-Learning. Moreover, graduates from Project Manager track, have initiated changes in education institutions. Distinct success were namely: Nursing Program of Ramathibodi Medical School, Pilot Preparation Program of Thai International, and Thai Telecentre Program.

1.2 This program as an open education program made an effect to awaken and draw interest of administrators, practitioners, and scholars from various organizations, including state universities, private universities, Elementary and Secondary school teachers, business sectors, both in Thailand and aboard to apply to this program.

This open education program has led TCU as the recipient of Honorable Mention awarded from UNESCO King Hamad Bin Isa Al-Khalifa in 2010 for the Prize for the use of Information and Communication Technology in Education” for its outstanding contribution to

<table>
<thead>
<tr>
<th>Courses</th>
<th>e-Learning Teacher</th>
<th>e-Learning Courseware Designer</th>
<th>e-Learning Project Manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Principle of e-Learning</td>
<td>Core</td>
<td>Core</td>
<td>Core</td>
</tr>
<tr>
<td>2. e-Learning Methods and Skills</td>
<td>Core</td>
<td>Core</td>
<td>Elective</td>
</tr>
<tr>
<td>3. Monitoring e-Classroom</td>
<td>Core</td>
<td>Elective</td>
<td>Elective</td>
</tr>
<tr>
<td>4. Design e-Learning Courseware</td>
<td>Elective</td>
<td>Core</td>
<td>Elective</td>
</tr>
<tr>
<td>5. Designing Effective Website for e-Learning</td>
<td>Elective</td>
<td>Core</td>
<td>Elective</td>
</tr>
<tr>
<td>6. Evaluation of e-Learning Courseware</td>
<td>Core</td>
<td>Elective</td>
<td>Elective</td>
</tr>
<tr>
<td>7. Evaluation Methods and Techniques in e-Learning</td>
<td>Elective</td>
<td>Core</td>
<td>Elective</td>
</tr>
<tr>
<td>8. e-Learning Delivery System</td>
<td>Core</td>
<td>Core</td>
<td>Core</td>
</tr>
<tr>
<td>9. e-Learning Project Management</td>
<td>Elective</td>
<td>Elective</td>
<td>Core</td>
</tr>
<tr>
<td>10. Organizational e-Learning Policy and Strategy</td>
<td>Elective</td>
<td>Elective</td>
<td>Core</td>
</tr>
<tr>
<td>11. Innovative Technology in e-Learning</td>
<td>Core</td>
<td>Core</td>
<td>Core</td>
</tr>
<tr>
<td>12. Quality Assurance in e-Learning</td>
<td>Core</td>
<td>Core</td>
<td>Core</td>
</tr>
</tbody>
</table>
the theme "Teaching, Learning and e-Pedagogy: Teacher Professional Development for Knowledge Societies" and to promoting the use of ICT's for achieving quality education for all. Besides, with partly financial support from TCU, Khonken University and Chiangmai University have initiated open education programs for faculty development provided to faculties from small university and school teacher surrounding their location.

1.3 The courses in e-Professional program have been referred and adopted to graduate degree program, such as Graduate Program on ICT in Education Program, Surindhara Rajabhat University.

1.4 The e-Professional program has been recognized from the administrators of the Office of higher education Commissions for the successful program with investment cost per person rather low.

2. Instructor

Positive Side of the Project
2.1 Several teachers already possessed competency and were experts in e-Learning. Hence, it was indeed helping run this project.

2.2 The Supporting Team were high efficiency. The personnel in supporting team were essentially important in the project. They were accurate effectiveness, particularly, respond to or feedback to learners' inquiry.

2.3 Teaching and learning in the course employed simple and reachable technology for ease of access for both students and teaching team

2.4 Transparent activities and feasible tasks used in the teaching process.

Non-Positive Side of the Project
2.5 There was no regulation nor screening in recruiting the learners. Therefore, there were widely variations of learners' readiness and learning attention. Quite a number of un-attention learners have been dropped-out.

2.6 There was no regulation of learning evaluation in the course, so variety of ways were used to evaluate learning. Formative evaluation had been frequently in some courses but less frequently in other courses. Summative evaluation of most courses was based mainly on an individual final course project. Therefore, it might cause uncertainty of knowledge, affective, and skills of individual learners which should have developed competency-based learning more effectively.

2.7 Lack of standard of learning media and resources used in each course coursed variations and differences of clearly format of instructional presentations.
2.8 There were several teaching methodologies and learners' control made learners with various expectations of standard of different learning management and control. Besides, there were also problems of teacher's standardization of mercy. For example, some students often fail to submit their works on time but later ask for special considerations without genuine reasons. Although there was a protocol to handle this, but teachers tend to have mercy for the students since they are mostly adult learners.

3. Student

Positive Side of the Project

3.1 Knowledge and skill learned from the e-Professional program is very valuable and essential for becoming an e-learning professional.

3.2 Instructors of the e-Professional program are expert in the e-learning fields, so comments and feedbacks from instructors were very informative and practical.

3.3 The design of content and learning activity pattern in learning management system, Moodle, were clear and understandable.

3.4 The learning interaction with peers were very useful. Since learners stayed spread the country and have a variety of backgrounds and works position, so discussion and exchange idea among peers gained more understanding of knowledge.

3.5 The supporting staffs were very active and helpful.

Non-Positive Side of the Project

3.6 The e-Professional program has too many courses and the period of time to graduate from the program were too long (one year). Most learners complain that the long period of studying discouraged them and decrease the level of motivation.

3.7 There was no standard pattern of course content.

3.8 There was no synchronous communication session in the teaching and learning process, so lack of interactive question and answer session that would benefit to understand the content.

3.9 The program did not arrange face to face sessions for providing opportunity for learners to socialize with instructors and peers that would increase familiar among them that should be beneficial to online discussion.

3.10 The comprehensive exam events were not arranged periodically.
**Discussion and Conclusion**

The e-Professional certificate program that had been given to several hundred learners in the last 6 years for free of charge which got reputation from UNESCO and also awaken and draw interest of administrators, practitioners, and scholars from various organizations. The positive sides and non positive sides surveyed of program administrators, instructors and learners shown significant areas that was done successful and areas that need improvement.

This initiative open and online distance certificate program can provide alternative educational experiences and challenge the location-based courses in the knowledge society. The lesson learned from administrators, instructors and learners would be the guidelines for online distance learning initiatives in institutes.

**References**


OpenCourseWare in Japan
–History and future challenges–
Yoshimi Fukuhara, Japan OpenCourseWare Consortium
yoshimi@jocw.jp

Abstract
OpenCourseWare was proposed by MIT in 2001 and has been launched its web site with five hundred courses in 2003. MIT have paid much effort not only for moving forward their own activity but also for promoting OCW to many institutions all over the world since 2004. Global OCW have grown rapidly under the OpenCourseWare Consortium who has been established as a non-profit organization since 2008 and nowadays more than two hundred and eighty organizations joined the consortium from all over the world. Currently some new challenges have been started in various countries to advance OCW. One of them is creating learners community to share opinions and QA among users who are learning same course. The other is to give certificates to learners who completed the course to admire their learning achievement. In near future Open Education might be the global content infrastructure for life-long education. In this paper OCW activity in Japan is described as well as its global activity.

Keywords
OCW, JOCW, Regional Consortium, International Collaboration

Introduction
OpenCourseWare which has been launched by MIT in 2001 and published globally in 2003 became the fountainhead of the worldwide big stream of Open Educational Resources(OER). Since 2004 MIT started the promotion of OCW to the various institutions all over the world and those activities have come to fruition gradually. Since 2008 OpenCourseWare Consortium has been established as an official non-profit organization and they succeeded the OCW promotion from MIT and nowadays more than two hundred eighty organizations from forty-six countries joined the consortium with more than twenty two thousand courses publishing totally. MIT has completed the whole courses they have and MIT courses proportion got decreased less than ten percent in OCW consortium.

OpenCourseWare in Japan has been launched by six universities simultaneously, which were Keio University, Kyoto University, Osaka University, Tokyo Institute of Technology, University of Tokyo and Waseda University in 2005, and in 2006 JOCW (Japan OpenCourseWare Consortium) has been established with ten organizations. Member institutions have increased up to 2009 but since then it has come to a standstill. Member institutions have became two groups, one is very active and steady and the other is inactive. In this paper history and current status of OCW in Japan and future possibilities are described.

Significance of OCW
Significance of OCW is mainly divided into following two;
(1) Perspective from University, in other words, provider
(2) Perspective from society, in other words, users or learners
When MIT started OCW, they thought the main aims are
- To raise the reputation of MIT who was little bit behind in terms of e-Learning by
announcing the message with huge impact to the World.

- To get long-term merit for MIT and Hewlett Foundation by raising level of higher education in mainly developing countries through spreading out of OCW. However after several years’ experiences of publishing courses, importance of more short term merit got increased. According to the survey report published from MIT OCW, 35% of freshmen who knew about OCW prior to choosing a school say OCW influenced their choice significantly, that is, it has been contributing to get excellent students. Furthermore 90% of existing students answered that they used OCW for pre- and post classroom and 84% of faculty use colleagues’ materials on the site.

Merits of OCW in Japan will be following,

(1) From University standpoint:
   - Social responsibility including international standpoint
   - Raising reputation for applicants including foreign students
   - Improving quality of lectures

(2) From Social standpoint
   - Provision of content infrastructure for life-long learning society
   - Increasing social capital by improving quality of higher education
   - Offering opportunity for effective pre- post- learning to the existing students
   - Practical option for selection of institutions to applicants

First merit of University standpoint means that framework of OCW is essentially globally common, and so international contribution is feasible by opening up of content under the common concept of OCW in the same community. Particularly lectures related to natural science and social science in Japan must be excellent and they could be a good help for human resource development in the many developing countries. However there is an obstacle of language to be cleared for practical usage because most of lectures provided in Japan are in Japanese. But recently technology related to the machine translation has been improved dramatically. And so this obstacle will be conquered in near future.

Second merit means that most of local Japanese universities are facing serious problem of decreasing children and under the circumstance OCW could be a good promotion channel for those universities which have unique educational program to let applicants all over Japan including foreign countries know their nice content. Third point means that publishing courses forces faculty to improve their content consciously. According to the MIT report 30% of faculty improved their lecture content before publishing.

First merit of Social standpoint means OCW allows users to reuse its content for educational and non commercial use and so more content from more universities will be provided, more importance as special educational archives will be realized. This kind of content archives which consist of special courses from major universities must have a significant value as a social infrastructure. Second merit means that it must be a big contribution for level up of global knowledge to supply excellent educational content to educators/learners who need a good quality content and it must lead to the solution for global issues like environment, population, foods and economy in a long term. Third point means that the OCW must be the good educational content for existing students as their daily supplemental materials and it could be used as more active learning materials as flipped learning. It also good help for foreign learners to find out a suitable institution to go to study abroad. Last point means OCW can change the selection policy for applicants of university from the public reputation to the real value for individual learner.
History of OCW

It was 2001 that the basic concept of OCW has announced from MIT. At the beginning of task force under the president of MIT they aimed the possibility of e-Learning business, but the result of the comprehensive survey by the task force recommend the university opening up of their courses instead of commercial e-Learning. President at the time made a big decision to launch OpenCourseWare to follow the recommendation from the committee and made a fund raising from Hewlett Foundation. In 2003 they launched MIT OCW globally with five hundred courses from various department. Since that time they have opened 200-300 courses annually and in 2007 they completed almost all courses they have with 1800 courses totally. Since 2004 MIT begun to make a promotion of OCW to various institutions all over the world. In Japan we held the first OCW workshop in November, 2004 in Tokyo with Prof. Shigeru Miyagawa of MIT as a keynote speaker. After the workshop six universities, Keio University, Kyoto University, Osaka University, Tokyo Institute of Technology, University of Tokyo and Waseda University, which were participated in the first workshop and got an approval of the university president earlier, made a decision to launch OCW simultaneously and establish an organization to share the issues, experiences and know-how. In 2005 we had a joint press conference and announced the launch of OCW site from above six universities with about 150 courses and the establishment of Japan OpenCourseWare Alliance (in short JOCW). Next year, in 2006 JOCW hosted the very first annual conference of OpenCourseWare Consortium, which was the informal and internal organization of MIT at that time, and renamed JOCW as an official consortium in Japan with newly joined three universities. Nowadays members of JOCW is totally 38, which consist of 22 universities, 3 NPOs and 13 companies respectively(Fig.1). Total courses published from JOCW are 3,061(in 2012.11), which are 2,572 Janese courses and 489 English courses(Fig.2).

Opinion Poll

JOCW has carried out opinion poll annually since 2009. At first we would like to get feedback from users who accessed to each university’s OCW site including JOCW web site and put the questionnaires on the web sites but very few answers could got from very active users only. There is no doubt that those answers are not neutral and not reflected the actual opinion of major users. So we decided to ask the internet portal company the survey from users. The summary of opinion poll which JOCW has carried out is following;
- Theme of poll: Survey on opening up of Japanese Universities
- Method: Internet research (send questionnaires to survey monitors who registered in advance)
- Number of respondents: 1,200 (200 from each generation, teens to sixties)
- Number of questions: 37

Some result of poll in current three years are shown in Fig.3-Fig.7
From the results of poll various tendencies are indicated; More than 90% of respondents think this activity is desirable, but only 20% of them know even on a part of members’ activity. Regarding purpose of supposed learning, more people think light purpose like just watching from curiosity rather than deep purpose like career development. In terms of content type, more people want lecture note which were used in the actual class room but many people want to watch lecture movies. And final graph shows a big potential for expecting learners, that is, About 80% of people have intent to access contents provided from universities.

**Issues and challenges**

In Japan OCW activity itself began earlier stage of Global OER history, but speed of progress have been very slow. There are some reasons of this issue. One is financial issue. In most of the JOCW member universities OCW project have been operated only with the budget from university temporary budget without external budget. Second reason is very low recognition about the significance of open educational activity among faculty. Higher education in Japan is one of typical closed market. Very few university think to increase courses in English.

The other obstacle for OCW is Intellectual Property Right problem. In Japan laws related the IPR is very severe and too much protect content holders’ right. There is no fair use concept and exception for academic use is very limited, mostly out of date.

However opinion poll which we have carried out for previous six years indicates huge potential with hidden users. And big stream of Open Education has come in recent days. So JOCW will try to promote Open Education not only with OCW community in Japan but also with Community in Asian countries and some other regions.

**References**


Fukuhara, Y (2005). “Japan OCW Activities”, OCW Experiences Panel, Advancing the Effectiveness and Sustainability of Open Education Conference,


Fukuhara, Y (2010). “Bridging Informal/formal learning”, 7th The Seventh Annual Open Education Conference

Related Web sites

Japan Opencourseware Consortium: http://www.jocw.jp/

OpenCourseWare Consortium: HTTP://www.opencourseware.org/
Boosting Pre-Service Teachers’ Awareness of Open Educational Resources: A case of stock photographs for teacher project

Praweenya Suwannathachote, Ph.D.
Faculty of Education, Chulalongkorn University
THAILAND

Abstract: The study investigated pre-service teachers’ awareness of open educational resources (OER) after experienced the stock photographs for teacher project. Online survey with open-ended questions was used to collect data from pre-service teachers who participated in the basic photography class since 2010. Five major steps, DIPCO, based on project-based learning approach are: 1) Define topic and needs of subject-matter expert, 2) Inquiry and gather information, 3) Photographing and selecting, 4) Check the internal validation and revise, and 5) Openness. Selected web tool for openness was Picasa web albums services that integrated photo-sharing feature and it supports creative commons. The results revealed the high level of awareness and positive attitude of pre-service teachers. Being a participant of the OER movement with DIPCO-Stock photographs for teacher, pre-service teachers developed their deeply understanding of the needs of OER. A bottom-up approach can start from the instructional strategies, however, the movement of OER awareness among pre-service teacher should be recognized in the institutional strategy.

Keywords: open educational resources, awareness, project-based learning, pre-service teacher

Introduction

Stock photographs are valuable and useful for educational purposes; however, the stock images are one of the common business sectors. Traditional stock photography agencies offer mostly photographs that have been shot by professional photographer. Currently, stock images agencies and new wave agencies do their business via the internet such as Shutterstock.com, Dreamstime.com, Fotolia.com, iStockphoto.com. This new wave of stock photography agency websites accepts images from amateurs and hobbyists. Individual or business that uses the photograph must purchase and get the royalty-free. Royalty-free images are free of royalties that allows individual or business the right to use the picture without paying a royalty each and every time the picture is used. However, this common purchase system is limited to the educational usage due to a small amount of budget related to educational material production.

Based on the ASSURE model, teachers consider the appropriate of instructional materials by selecting available materials, modifying existing materials, or designing new materials. Although the available stock photographs exist noticeable, teachers have no budget to purchase every time they consider using pictures as instructional materials. To purchase the photographs from the stock photographs business, educators are impossible to collect and plan for within the limited educational budget. The concept of open educational resources (OER) is the factual answer for teachers to use OER in teaching and learning openly without an accompanying need to pay royalties or license fees. OER is defined as digitised materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research (Organisation for Economic Co-operation and Development [OECD], 2007). There are various resources to be stored in an online repository such as using the institutional repository, selecting an open repository, building the OER online, and exploiting social networks (Commonwealth of Learning, 2011).

Increasing of images portal websites that collect materials like photographs, images, and illustration, teachers will have more opportunity to cooperatively increase more relevant and productive learning materials for students. ICT skills and competency of the new generation of teachers required them to use more digital devices such as a compact camera and video camera to produce their own learning materials. Teacher education responses the need of develop the new skills of teacher, therefore, the core course like Educational Technology course is redesigned and integrated ICT skills and competency. Moreover, some related courses are provided to develop more 21st skills for teacher in information media, and technology skills. This paper aimed to describe pre-service teachers’ awareness of OER and to present the case of instructional strategy promoting the
The proliferation of OER like photographs among pre-service teachers. Faculty of education, Chulalongkorn University offers the basic photography course for pre-service teacher majoring in educational technology. One of the two final projects of the basic photography course is an individual project called ‘stock photographs for teacher’. The goal of this assignment is to enhance pre-service teachers’ transferring their knowledge and skills to the real work of teachers’ life. Project-based learning approach is designed and delivered to students, the learning model includes five major steps called DIPCO: 1) Define topic and needs of subject-matter expert, 2) Inquiry and gather information, 3) Photographing and selecting, 4) Check an internal validation and revise, and 5) Openness.

Figure 1: Five learning stages, DIPCO - stock photographs for teacher project

The DIPCO - stock photographs for teacher project

Define topic and needs of subject-matter experts (SME)

The first step of the individual project, pre-service teacher must define the needs of photographs usage from subject-matter experts in the selected fields such as Thai language, English language, Social studies, Science, Math and Technology. Results from SME (teacher) helped pre-service teachers to scope the topic and content of educational photographs. Each pre-service teacher is assigned to contact SME related to his/her major of study.

Inquiry and gathering information

When the topic is well-defined, the process of inquiry and gather information to support how to shoot the pictures is needed. This step urges pre-service teachers learn how to analyze the learning content inevitably. Afterward, they will survey a location or prepare some materials and others properly for shooting. Also, they have to plan beyond a post-shooting phase on how the photographs will be presented and used as the instructional materials.

Photographing and selecting

This learning step requires students show their knowledge and skills on how to use and control their digital camera for shooting what they already design before. Storyboarding is implemented to think visually. Sometimes they learn how to solve unexpected problems during shooting due to the atmosphere changes or shooting within the limited spaces. After finish photographing, students found lots of pictures so they have to develop their self-evaluation on images. To assess and select pictures out of hundred pictures, poor quality of pictures are the sources of learning.

Checking the internal validate and revising

This step requires the SME involvement for internal validate the photographs’ quality of usage. If some pictures are not suitable enough to use in the instructional materials, pre-service teacher must return to do more shooting or re-select from available photo album that already taken. Using the assessment form, SME rates the quality of pictures and gives some comments.

Openness

After qualified photographs are ready to share, pre-service teacher need to upload for both exhibiting their work to friends and teacher and sharing it to the world. Recently in 2012 academic year, Picasa web album is selected as a web tool for displaying; besides it also support the use of creative commons. There are four important
provisions of the creative commons licenses: Attribution, NonCommercial, NoDerivatives, and ShareAlike (Creative Commons, 2009)

```
<table>
<thead>
<tr>
<th>Photo reuse</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Some rights reserved</td>
</tr>
<tr>
<td>2. Do not allow reuse</td>
</tr>
<tr>
<td>3. Allow reuse (Creative Commons)</td>
</tr>
<tr>
<td>□ Allow remixing</td>
</tr>
<tr>
<td>□ Allow commercial use</td>
</tr>
<tr>
<td>□ Require share-alike</td>
</tr>
</tbody>
</table>

Save  Cancel
Reset photo to account default
Set account default: Settings
```

Figure 2: Screen capture of Picasa web album shows the photo reuse options between copyright and creative commons

The DIPCO-stock photographs for teacher project was first implemented in 2010 academic year and continued into 2011 academic year, while the fifth step called openness was not first completely defined to fit the concept of OER. The fifth step, openness, was assigned students to return all pictures they took to SME. The students may or may not allow SME modify and share depends on his/her point of view. All students did agree to allow the permission of re-use. In the recent academic year, the Picasa web album was selected as a substantial tool for declaring the materials as OER. Within three academic years that using the DIPCO learning model, only informal talk happened in class after presentation showed learners’ appreciation. The purposes of this study were to investigate pre-service teachers’ awareness of open educational resources (OER) after experienced the stock photographs for teacher project and to review the DIPCO learning model from pre-service teachers’ point of view.

Method

Participants

The participants were pre-service teachers who enrolled in 2726211 Basic Photography course at Chulalongkorn University during the first semester of 2010-2012 academic year. Of the 64 students who registered the course within three academic years, 49 students volunteered to participate in this study, 76.56%. Online survey with both closed questions and open-ended questions was used to collect data during the second semester of 2012 academic year. There was a high participation (95.24%) from the pre-service teachers who enrolled the basic photography course in academic year 2012 while the groups of 2011 and 2010 academic year showed 54.54% and 89.47% volunteered respondents.

Survey Instrument

Online questionnaire was designed as 3 parts which part 1 had 9 items to ask respondent to rate about their opinion on OER awareness using 7-point scale. Part 2 and part 3 were open-ended questions related to pre-service teacher opinion on being part of OER movement with ‘DIPCO-Stock photographs for teacher’ project and suggestion to the learning model.

Results

OER awareness

Data from Table 1 showed number of respondents who scored 5-7 from 7-point scale questions divided by academic year of course enrollment. All participants agreed and showed their high attitude as OER creator as particularly indicated in the statement no. 3 and 5. Showing happiness of self-valued when someone use the resources they produced, all participants agreed that the project has benefit to educators in terms of openness. And most of participants agreed to support and use OER in teaching and learning and agreed that sharing resources can be enhancing their character as a good teacher.

Nevertheless, half of respondents had concerns over copy rights. About two third of participants believed they can acknowledge others as the creator of images. This finding can be recommended to the next future of
instructional strategy before the DIPC-Stock photographs for teacher’ project is implemented, concepts and practices among variety of licenses should be discussed more in class.

Table1: Pre-service teachers’ awareness of OER

<table>
<thead>
<tr>
<th>Statement</th>
<th>2012 class (n=20)</th>
<th>2011 class (n=12)</th>
<th>2010 class (n=17)</th>
<th>Total No. respondents (%) who scored 5-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I can develop instructional media production skills during the project work.</td>
<td>16 (80.00)</td>
<td>8 (66.67)</td>
<td>16 (94.12)</td>
<td>40 (81.63)</td>
</tr>
<tr>
<td>2. Under this project, I can acknowledge others as the creator/photographer of images.</td>
<td>8 (40.00)</td>
<td>3 (12.00)</td>
<td>6 (35.29)</td>
<td>17 (34.69)</td>
</tr>
<tr>
<td>3. The project, stock photographs for teachers, is beneficial to educators.</td>
<td>20 (100.00)</td>
<td>12 (100.00)</td>
<td>17 (100.00)</td>
<td>49 (100.00)</td>
</tr>
<tr>
<td>4. Sharing resources enhance my reputation as a good teacher.</td>
<td>19 (95.00)</td>
<td>11 (91.67)</td>
<td>16 (94.12)</td>
<td>46 (93.88)</td>
</tr>
<tr>
<td>5. I would be happy for someone to use my resources.</td>
<td>20 (100.00)</td>
<td>12 (100.00)</td>
<td>17 (100.00)</td>
<td>49 (100.00)</td>
</tr>
<tr>
<td>6. I have concerns over copyright.</td>
<td>11 (55.00)</td>
<td>4 (33.33)</td>
<td>10 (58.82)</td>
<td>25 (51.02)</td>
</tr>
<tr>
<td>7. To declare the creative commons license, the author agrees intently</td>
<td>19 (95.00)</td>
<td>11 (91.67)</td>
<td>17 (100.00)</td>
<td>47 (95.92)</td>
</tr>
<tr>
<td>8. I support and use OER in teaching and learning.</td>
<td>16 (80.00)</td>
<td>11 (91.67)</td>
<td>19 (95.00)</td>
<td>46 (93.88)</td>
</tr>
<tr>
<td>9. I would only use resources recommended by someone I know and trust.</td>
<td>13 (76.47)</td>
<td>9 (75.00)</td>
<td>12 (60.00)</td>
<td>34 (69.39)</td>
</tr>
</tbody>
</table>

Note. 1-Strongly disagree, 2-Disagree, 3-Somewhat disagree, 4-Neither agree or disagree, 5-Somewhat agree, 6-Agree, 7-Strongly agree

Opinions about OER movement: Stock photographs for teacher

All respondents showed and supported positively to the stock photographs for teacher project. Some significant comments were categorized as below:

- More OER, more materials to use for teaching and learning to promote students’ learning engagement.
- Images that fit to the teachers and students’ needs are more valuable to expand teaching and learning, students can develop more concrete learning with the OER materials such as photographs.
- Should promote the concept, production, and implementation of OER among pre-service teachers and in-service teachers.

Being a participation of OER movement

Most pre-service teachers showed their self-efficacy and proud to be part of OER movement via the project they have done so far. The authentic learning approach as they were assigned to do like the stock photographs for teachers encouraged pre-service teachers to have more value on their ICT skills. Wide use of their materials, OER, have made them delighted and concerned more about their self-efficacy of being a teacher student. Some selected participants expressed their reflections as following:

- “I am really happy to know that what I had done can be part of OER movement in Thailand, though I am a very small part of it.” [2011 class_437]
"This project supported to in-service teachers’ needs, many pictures found on the net could not use suitably with the Thai curriculum and lessons. As a creator of those pictures, I am proud of myself and happy to do that."  [2012 class_435]

"Being a small helper to in-service teachers last 2 years ago, I accepted that instructional materials are very important to enhance learners how to learn more effective. And simple materials like photographs have powerful impressions enough to learners."  [2010 class_380]

"I am happy that I can use my knowledge and skills I learned benefit to education sector in public."  [2010 class_437]

Suggestions to ‘DIPCO-Stock Photographs for Teacher’ Learning Model

Implementing the five-step of the DIPCO learning model for three academic years, the instructor has designed and changed some minor details in each year. This study aimed to seek the opinion and suggestions from pre-service teachers and found three productive recommendations from the participants as shown in table 3.

<table>
<thead>
<tr>
<th>Suggestions from pre-service teachers</th>
<th>Referred to</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should conduct the needs assessment from both teachers and students.</td>
<td>Step1: Define topic and needs of SME</td>
<td>9</td>
</tr>
<tr>
<td>After the internal validation, pre-service teachers should re-shoot to revise the quality of educational photographs before publishing as OER.</td>
<td>Step4: Check an internal validation and revise</td>
<td>3</td>
</tr>
<tr>
<td>Should require the evidence of images usage of SME or other teachers.</td>
<td>*related to the implementation of images (additional evidence) during step 4</td>
<td>3</td>
</tr>
</tbody>
</table>

Satisfaction of Picasa Web Album

All 20 pre-service teachers who enrolled the basic photography course in the first semester of academic year 2012 were assigned to use the web tool, Picasa web album, to collect their photographs and share as OER. After experienced using Picasa web album, they strongly agreed and supported to use Picasa for asserting creative commons license. On the other hand, some pre-service teachers commented that Picasa web is not a well-known much among the educational users who are seeking for the free images though it supports creative commons than other sites.

Discussion and Conclusion

Creator of OER would be everyone who wishes to promote reusing, revising, and remixing materials; moreover, creator of OER is not limited to one who qualified work on duty. This study presented the case of instructional design for driving OER in the classroom via the project-based learning among pre-service teachers. The results from survey revealed the high level of awareness and positive attitude of pre-service teachers to the stock photographs for teacher project and OER. With this project, quality of OER is someway perceived by SME. In addition, pre-service teachers showed their mindfulness for being a part of OER movement. This kind of instructional strategy, the DIPCO learning model, can activate pre-service teachers understand more deeply to the important of OER. However, culture of the future of higher education and basic education institutions will be changed if the new generation of teachers responsive more about the creation, sharing, and re-use of OER.

A study of Clements & Pawlowski (2011) showed some factors from teachers’ view on OER quality; there is a strong connection between trusts and quality of OER. To produce quality OER and raise the use OER among teachers, finding from Clements & Pawlowski indicated OER should be produce from an organization with reputation therefore university and school of education should involve more on OER movement. Higher
education institutions can be the place of OER production and the place to diffuse OER concept and implementation. The DIPCO-Stock photographs for teacher is designed and attempted to promote the creation of OER from classroom of the institutional level. This small scale as a bottom-up approach can be an initial development in mind of pre-service teachers. More clear policy from institutional level should be set up to raise more awareness and implementation among educators.

Comments from the participants about the Picasa site showing the concern of OER openness in terms of wide spread usage, the accessible system should be well-known enough for Thai educators to access. Although Picasa web album has been popular internationally, Thai educators are not much using it. Several comments found from the participants about the use of Facebook, however, they recognized that Facebook photo album is not fit as a generator tool to creative commons and OER. While Hilton III et al (2010) indicated that the OER should license in such a way that can be reused, redistributed, revised and remixed.

In conclusion, this survey study aimed to investigate what pre-service teachers reflect their awareness of OER via the stock photographs for teacher project as they already experienced while enrolling the basic photography course. The findings suggest that this instructional strategy develop OER awareness, however, some more OER concept should be added in the course and teacher education curriculum. Three critical suggestions from participants to the DIPCO learning model have been considered to revise the first and fourth learning step as following: 1) Define topic and needs of subject-matter experts and students, 2) Inquiry and gather information, 3) Photographing and selecting, 4) Check an internal validation and revise and re-shoot, and 5) Openness.

References

A PROPOSED INTERACTIVE E-BOOK MODEL FOR TABLET USING SQ3R TECHNIQUE FOR ELEMENTARY SCHOOL STUDENTS: A SYNTHESIS MODEL

Mr. Wichai Srisud
Asst. Prof. Jintavee Khiaisang, Ed.D.
Faculty of Education, Chulalongkorn University

Abstract

This Article aims at presenting the design of the Interactive E-Book Model for Tablet using SQ3R Reading Technique. The data presented is part of the research study titled “A Proposed Interactive E-Book Model for Tablet using SQ3R Technique to Develop English Critical Reading Ability of Elementary School Students”. There were 2 operating processes of the research study as described in the following: the first process, “Model Creation”, and the second process which is during the testing operation for studying the development of English Critical Reading Ability. For the design part, it has been designed by analysis and synthesis together with the indicators of the critical reading, reading technique, interactive e-book standard, and using tools. As a result, it was concluded to be an Interactive E-Book Model for Tablet using SQ3R Technique which comprised of 4 processes as follows: analysis, design, development, and evaluation. The advantage of this study will assist in creating a compelling E-Book and will influence the readers to be developed in part of critical reading and extend ability to develop an E-Book for the development of language learning and teaching particularly in part of critical reading in other languages.

Keywords: E-Book / Tablet / Reading Technique / SQ3R / Critical Reading / English languages

1) Introduction

From the survey in regard to the reading of the population in year 2011 of The National Statistical Office (2555Gor: 18, online) indicated one of the necessity in developing childhood’s reading skill that many students in Elementary School from year 1 – 6 have purpose for reading to develop their knowledge and ability and if the students have been developed the ability in reading until the level of critical reading, it will help the students to be able to create learning process from what they have read more and more. Therefore, when they enter into youth age, they can use the ability in critical reading to evaluate and make decision in trusting the news information more and more and this characteristic will be with the students continually in the future.

2) Source of model

This Interactive E-Book Model has a research operating procedure in order which comprises of 1) Studying on the documentations and other researches which related to the Interactive E-Book in many models; 2) Studying from an interview with the specialist
in regard to the E-Book Model for Elementary School Students and Model in using reading technique with an E-Book design including using of the indicators in measurement of critical reading to be used in E-Book; 3) Draft an Interactive E-Book Model for Tablet using SQ3R Technique to Develop English Critical Reading Ability for Elementary School Students and propose to the experts for verifying the models.

3) Model presentation

This article will present the Interactive E-Book Model for Tablet using SQ3R Technique in 5 levels of the reading technique which attaches with the indicator of critical reading as follows: Survey Level with the indicator of distinction, Question Level with the indicator of paraphrase, Reading Level with the indicator of analysis/synthesis, Recite Level with the indicator of evaluation and making decision on what have read, and Review Level with the indicator of application whereas the details will be as follows:

3.1 E-Book design with reading technique in Survey Level in order to developing the indicator of distinction

This design anticipates that the readers can primary distinguish the contents roughly from survey the table of contents, glossary or first stage of presentation in order to suppose of the overall contents. This technique level will use Highlighting or Note-Taking which can integrate the technologies together on this E-Book for example:

3.1.1 Linking many dimensions to Web Note Taking Support means bringing the technology which providing free service on website to integrate with some E-Book which does not have tools to support the evaluation of the readers or to show the ability in distinguish the contents. Therefore, using online service from the website is one of the tools that can be used to replace the support features of software effectively which there are many service providers such as. PrivNote (www.privnote.com) or Listthing (www.listthing.com) etc.

3.1.2 Insertion of HTML into some of the software’s features which can be inserted, is considered as opening for the designer to be freely in creating the tools for reading support which requires variety of programs i.e. use animation software to design the forms or questionnaires such as Hype, Flash, or Swift etc. by having process of HTML programming work together with programming in order to send back the information to the Server for the purpose of process data and report afterward. At present, HTML programming may not support
the new version of tablets. Therefore, it is necessary to adjust from using HTML language to be HTML5 language to support the usability.

3.1.3 Using feature of Note-Taking which is embed in Reader’s Viewer, the readers can save the selected date immediately for take notes, texts in the same way of using Post-It. This Note-Taking feature can be applied as students have to select the important texts and use Note-Taking feature for saving the selected data etc.

3.1.4 Using feature of Highlighting which is embed in Reader’s Viewer, the readers will be able to use tools to highlight the alphabets in the same way as using pen to highlight the text while reading which this feature, the readers can save the highlighted part in their own tablets. This Highlighting feature can be applied as the readers use the color to highlight the important texts in order to separate from the general content in the book etc.

![Picture 1: Using feature of Highlighting which is embed in Reader’s Viewer](image)

3.2) E-Book design with reading technique in Question Level in order to developing the indicator of paraphrase

The design in this level anticipates that the readers can paraphrase from what they have read in order to try to understand the author’s view point. Therefore, choosing technology for E-Book can be done by:
3.2.1 Linking many dimensions to Web Based Word Processing by may use link to other service providers on the website such as Google Drive (http://drive.google.com), ThinkFree (www.thinkfree.com).

3.2.2 Using HTML and SWF in term of creating new tool in order to evaluate the indicator. This can be applied such as bringing to create a form or page for paraphrase from what have read etc.

3.2.3 Using feature of Note-Taking which is embed in Reader’s Viewer by saving the data that the readers have paraphrased.

3.2.4 Using feature of Study Card which is embed in Reader’s Viewer but have to use together with Highlighting feature and/or Note-Taking feature that is when the readers have highlighted the important part and/or have recorded additionally from the selected part, the system will show the outcome in the Study Card automatically and the users can continually save the additional data immediately. This feature can be applied such as after having the students highlighted the important part and use Note-Taking to distinguish from the group, let the students open Study Card to review what they have got, paraphrased from what they have read, and record for understanding.

Picture 2: Linking of many dimensions to Word Processing online Service
3.3) E-Book design with reading technique in Reading Level in order to developing the indicator of analysis/synthesis

The E-Book design in this level anticipates that the readers can synthesize and analyze the author’s view point from what they have read. The technology must support the readers to be able to read to find the correct answer from the questioned points in the previous level and bring what they have paraphrased to analyze and work together with reading again by using technologies as follows:

3.3.1 Linking many dimensions to Web Cognitive Tool Service for supporting software which does not have features for report or evaluate indicator of synthesis and analysis of the author’s view point such as Mind Map, Collective Table, and Presentation. There are websites that can provide services immediately without install program and can be applied for example, Bubble.us (http://bubbl.us), Mind42 (www.mind42.com), Google Drive (htppts://drive.google.com)

3.3.2 Using HTML and SWF is using software feature which opens for the E-Book publishers to be able to create the tools for re-measurement and re-evaluation by themselves. This can be applied such as bringing to create a form or activity for measurement of the author’s view point.

3.3.3 Using feature of Review which is created by the designer who wants to evaluate the Reader’s Viewer. This tool, the designer can select the evaluation form in way of Multiple Choice or Drag Label to Target which may be applied by having the readers drag all the correct view point of the author into the answer areas etc. which this tool can be designed to use pictures instead of choices.

3.4) E-Book design with reading technique in Recite Level in order to developing the indicator of evaluation and making decision on what have read

The design in this level is to measure the understanding of the readers from the ability to explain the expectation of the author correctly by designing for testing the understanding by using the related technologies such as

3.4.1 Linking many dimensions to Web online services in part of evaluation and making decision for replacing the ability in evaluation which is missing from some software by choosing the use online services such as Google Drive (htppts://drive.google. com), Survey Monkey (www.surveymonkey.com).
3.4.2 Using feature of Digital Form, Processing Form which having shown in some software in order to create forms to measure the evaluation of the readers but the usability is still require online space to back up information on Server which may cause additional expenses.

3.4.3 Using feature of Review which is created by the designer who wants to evaluate in Reader’s Viewer. This can be applied by having the readers answer from the selected choice correctly etc.

![Picture 3: Using feature of Review which is embed in the Reader’s Viewer](image)

3.5) E-Book design with reading technique in Review Level in order to developing the indicator of application

The design of tool in this level will emphasize in part of measurement and evaluation, summarize all dimensions of the indicators of critical reading together with the ability of the readers for application by express opinion or answer in other points. Technologies which can bring to link many dimensions to the web online services in case that there is no software feature to support can be as follows:

3.5.1 Linking to Web Cognitive Tool Service which may be applied by having the students embed Mind Map for analysis in each chapter of the book etc.

3.5.2 Linking to Web Based Word Processors which can be applied by having the students summarize all the matters within the set length.
3.5.3 Linking to the Web Analytics Support which can be applied by having the students answer the correct answers in order to measure and evaluate in term of exercise or test etc.

3.5.4 Using HTML, SWF, Digital Form, Processing Form and Review are creation of the evaluation form which is embed in the E-Book in order to test in all kinds of models for measurement of the understanding for application.

3.5.5 Using feature of Study Card or Review which is embed in the Reader’s Viewer can be applied by having the students or readers summarize their thought at the end etc.
Therefore, the researcher will bring SQ3R Technique to jointly plan with production of E-Book Model in order to lead to Critical Reading which the model for production of E-Book has synthesized relationship together with the indicator of evaluation of development in critical reading ability including has chosen software for production of the E-Book which synthesized from the ability to create according to the significant features of the E-Book and the indicators of evaluation of development in critical reading ability.

<table>
<thead>
<tr>
<th>Software for producing E-Book</th>
<th>Element of Interactive E-Book</th>
<th>Technology which related to the indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cover</td>
<td>Table of contents</td>
</tr>
<tr>
<td>Flip Album (Jintavee, 2555Gor)</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Flipping Book (Jintavee, 2555Gor)</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Desktop Author (Jintavee, 2555Gor)</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>I Love Library (Jintavee, 2555Gor)</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Flipbook Soft (Jintavee, 2555Gor)</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>Calibre (Jintavee, 2555Gor)</td>
<td>O</td>
<td>O</td>
</tr>
<tr>
<td>iBooks Author (Shurtz, 2012)</td>
<td>O</td>
<td>O</td>
</tr>
</tbody>
</table>

Table 1: Synthesis of E-Book elements work together with the related technology and indicator of critical reading
4) E-Book design (open source): Future’s direction

In view point of bringing to use for education in the future, anticipate the usability for the purpose of developing the students to have full capacity in learning and having the design of the textbooks in the future in way of efficient E-Book model. It may have connecting with network inside internal school or Intranet, School Hub for the efficiency in selecting and download books from the central system into devices of the students. In the future, may create to be joint-network between schools in order to develop education system which has school format in common. Besides, some educational institutes may open for online book center for providing services to anyone interested and develop model of using E-Book which is connected to the characterize of each network e.g. examination, quality test etc. including bringing technology web 3.0 to integrate in various models until become the model of blended learning with E-Book in the future.

![Picture 4: Propagation of the University’s books via using E-Book (Open Source)]
5) Conclusion

The design of E-Book in current model, the students are interested because there is an increasing of using tablets. Therefore, E-Book design shall have to consider many factors which support the learning of the students such as choosing the appropriate blended technology, choosing the interesting content and Multi Media. If there is a development of the usability model which meets the students’ requirement nowadays, it is proposed to integrate the model of communication and interactive which is fun or attractive continually and give a chance for the students to express their opinions, view point for application in order to have the E-Book in new models support the direction for sustainable development of the students in 21st Century.

Reference

Jintavee Khlaissang. Desktop Publishing to E-book in order to support seeking knowledge of learners in digital age. Bangkok : Chulalongkorn Publisher, 2555Gor.


English


PROJECTING THE NEW STRATEGIES OF EDUCATION SYSTEM

Ph.D. Miroslav Kuka¹, Ph.D. Jove Talevski³
Faculty of Pedagogics
Bitola, Republic of Macedonia¹,³
kuka@infosky.net; jovetalevski@yahoo.com

M.Sc. Ksenija Jovanović²
High School for Business and Industrial Management
Kruševac, Serbia²
ksenija.m.jovanovic@gmail.com

Abstract:

Education has a strategic importance for economic and social development, that is, for developing knowledge-based society. It was shown by the analysis of international organizations and institutions, such as the World Bank and Organization for Economic Cooperation and Development (OECD). Regardless the fact that Serbia participated in several international tests, related to the level of student achievement, we can not claim where Serbia is in relation to other systems of education in general. The presented work here is an integral part of a broader set up and realized preliminary project on „Redefinition of Education Structure of Republic of Serbia“ forwarded to the Ministry of Education of the Republic of Serbia in 2010. The preliminary project guided by Ph.D. Miroslav Kuka and Ph.D. Vukosava Zivkovic was realized in the team work and in coordination of work of the central and regional working groups in Serbia and the surrounding countries having 80 collaborators in total working on the project. Model of our structure of the education system extends the period of compulsory education up to 10 years of age (till the first grade of high school which is the same for all regarding the curriculum) and is based on differentiation of the education levels (from preschool to high school) in cycles, which, on their part, are defined by aims and tasks. Short-term, middle-term and long-term aims have been clearly defined and concise division of competence and the follow-up methods of successfulness of its implementation has been made within the proposal of our model.

Key words: education, new strategies, argumentation for implementation, and reform.

1. SIGNIFICANCE OF THE STRATEGY OF KNOWLEDGE IN THE TEACHING

Various studies (from an economic or sociological perspective) show that a higher level and quality of education in society at large has the positive effect on productivity, innovation, democracy and social cohesion. That education could accomplish such a contribution, it is essential that the education system in one country is a high quality, effective, efficient, accessible and equitable. The biggest challenge, over the last years of the twentieth century was the creation of most favorable conditions for achieving quality of primary (basic) education witch should be accessible to all. However, the educational structure is not in advance all that is said about. To be open - adapting a complex system, it is necessary to get around it, i.e. in society as causally causes and within it, to acquire certain conditions. Pedagogical practice confirmed many times that some modifications not only don’t lead towards the improvement of success within the education, but also become the source of regression in this area (advocating the so-called general socio-trend directions with the tendency of incorporating them into the educational process as well). Our project with its conceptual approach, the reform within the structure of the education system, implies the strategy of modifications “from the bottom up”, that is, the strategy in which the local initiatives of higher education institutions (faculties, institutes, vocational schools…) come to expression. This approach would suit the thesis which believes that less successful strategies of improving the educational process are the ones that operate from higher levels, where the politics is being created, and which are characteristic to rely on consultants that influence externally and have no connection with educational practice except intuitive assumptions. In which category would our redefinition of the education system structure be classified? Depending on the principle of modifications (reforms), we can speak of four types of possible changes in the existing pedagogical practice: adaptive, external, regulatory and structural. Our reform in this general setting refers to the structural type of modification, which is aimed towards changes in the organizational structure of the education system, but it doesn’t affect the realization of the educational process. Primarily, the structural systemic modifications are directed to economy, rationality, educational liberalization and acquisition of specific knowledge. Essentially, education is, with our structure, directed to results, that is, to defined knowledge, skills, attitudes and values that students should have after finishing a certain education cycle. Our modifications within the already existing
structure can be categorized under the model of the so-called controlled expansion. This approach to reforms is the most appropriate for education systems which don’t need radical changes, but the interventions of limited proportions – alterations, repairs, modifications, that is, the implementation of new details into the existing system, i.e. structure. Modifications of this kind have a character of conceptual modernization aimed towards better achievements of students in school. In the educational process, the main attention should be paid to knowledge structure, to the development of one idea from another, and to what age level can given algorithm (with its structural concretization) be applied. The structure is what enables to sort out and classify unfamiliar impressions and in that way what is learnt gets meaning and through meaning it initiates other motivators in the educational process. What should be emphasized in our approach is the idea that every content of teaching can be taught effectively at any level of student’s development, provided that the given ideas and principles are adapted didactically in order for the student to use them. Our starting point in these evaluations, which differ from structural conceptions from 30 - 40 years ago, starts from the point that the development of a child is mostly conditioned by social factors. How far will a child get in the intellectual development and when we ourselves can influence the same, primarily depends on the cultural surrounding, that is, on the impact of the environment. The development of consciousness of every individual, including children aged 7 – 18 years (our sample within the redefined structure of the education system), has had such a cognitive leap in the last 30 years (perception, reasoning, anticipation, the critical thinking process, the time consistency of attitudes, interests…), that everything that was true in perceptive age gradations of the children at the given age once, has now moved for at least one generation up. Many social psychologists that analyse the mental and manual skills of the children of different age and compare them with earlier similar studies share this view. Hence, in our system of education structure we start with perceptively cognitive and psycho-motor, manual skills of the children at the given age, with aims and tasks that have been placed upon them as well as with the relevance of the process of rationalization and economy of the educational process. Specifically our education structure, the model of controlled liberal education – is oriented towards a child, supports active teaching concretized on the example of the differentiated cycles at given educational levels, as well as the redefined curriculum according to it.

The fact that the "knowledge-based society" is also "lifelong learning society", implying that education in general must be viewed in a broader context. The model of our structure of the education system is based on the differentiation of the educational levels (from pre-school to high school) on cycles, which are determined by the defined aims and tasks for each specific age. Those aims are defined within the reform of the existing education itself which is directed to curriculum and its transfer to education directed to outcomes, that is, defined knowledge, skills, attitudes and values that students should acquire after finishing a certain education cycle. One of the main outcomes of our structure, which is in this segment primarily sociologically determined, is the extension of the period of compulsory education from 8 i.e. 9 years, to 10 years (V cycles) which is in accordance with European and other international tendencies in education. In most countries of the world education begins at the age of 6 or 7 years, and in some countries even earlier. The duration of the compulsory education varies, but in most cases is 9 years and it is finished at the age of 15 – 16 years. From the objectives set within the pre-school education (stands for 0 grade, i.e. I cycle), the same transforms from the current playgrounds into a program defined socio-educational environment. The responsibilities of the educator increase with regard to the demands that are being requested from him. Terminological dichotomy, as in our country so in the world, about defining the notion of primary education (primary education, elementary education, l’enseignement primaire élémentaire) in the period from year 1992 – 1996 is defined by means of the new version of the International Standard Classification of Education. According to the new version of the classification of education, primary education includes the first level of education (ISCED level 1) that is the first cycle of basic education. This level generally lasts from 5 – 7 years of regular schooling that includes all levels of education. The second level of education (secondary education) has two levels: the first level or the second cycle of basic education (ISCED level 2) and the second level or the third cycle (ISCED level 3). Unlike the concept of basic education, compulsory education is more easily defined and regardless of the structure of the education system in certain countries, it (compulsory education, schulpflicht, obligatoire, objazatel’noe, etc.) represents schooling that is obligatory by law for children of certain age. Compulsory education by its essence and purpose makes the basis for the formal structure of the education system. What is in common for

2. SOCIAL ELEMENTS OF INSTITUTIONALIZATION OF OUR EDUCATIONAL STRATEGY

The fact that the "knowledge-based society" is also "lifelong learning society", implying that education in general must be viewed in a broader context. The model of our structure of the education system is based on the differentiation of the educational levels (from pre-school to high school) on cycles, which are determined by the defined aims and tasks for each specific age. Those aims are defined within the reform of the existing education itself which is directed to curriculum and its transfer to education directed to outcomes, that is, defined knowledge, skills, attitudes and values that students should acquire after finishing a certain education cycle. One of the main outcomes of our structure, which is in this segment primarily sociologically determined, is the extension of the period of compulsory education from 8 i.e. 9 years, to 10 years (V cycles) which is in accordance with European and other international tendencies in education. In most countries of the world education begins at the age of 6 or 7 years, and in some countries even earlier. The duration of the compulsory education varies, but in most cases is 9 years and it is finished at the age of 15 – 16 years. From the objectives set within the pre-school education (stands for 0 grade, i.e. I cycle), the same transforms from the current playgrounds into a program defined socio-educational environment. The responsibilities of the educator increase with regard to the demands that are being requested from him. Terminological dichotomy, as in our country so in the world, about defining the notion of primary education (primary education, elementary education, l’enseignement primaire élémentaire) in the period from year 1992 – 1996 is defined by means of the new version of the International Standard Classification of Education. According to the new version of the classification of education, primary education includes the first level of education (ISCED level 1) that is the first cycle of basic education. This level generally lasts from 5 – 7 years of regular schooling that includes all levels of education. The second level of education (secondary education) has two levels: the first level or the second cycle of basic education (ISCED level 2) and the second level or the third cycle (ISCED level 3). Unlike the concept of basic education, compulsory education is more easily defined and regardless of the structure of the education system in certain countries, it (compulsory education, schulpflicht, obligatoire, objazatel’noe, etc.) represents schooling that is obligatory by law for children of certain age. Compulsory education by its essence and purpose makes the basis for the formal structure of the education system. What is in common for
almost all countries is the fact that compulsory education is of general education character. Its duration differs and depends on a school system and prerequisites for mass education. In most countries, besides primary education, compulsory education also includes the first level of secondary education, which is the conception of our structure as well (V cycle). In our conception of education structure, the grade repetition is abolished and replaced with the form of moving students to a higher grade with obligatory re-attendance of subjects that are not acquired properly in terms of knowledge (at least 50% of the anticipated number of classes for that subject at the year level). Starting from III – V cycle (with the transition from class to subject teaching) the student can transfer four or less subjects from one grade to the next. In case that at the end of a school year a student has more than four negative grades, the categorization of subjects is conducted for the level of compulsory education (basic subjects → compulsory subjects). If a student is being moved more than three times during compulsory education, therefore almost every grade, he limits his education in that way to the level of compulsory education (to the end of V cycle). At the end of III cycle, the check of the acquired knowledge is introduced, by means of the examination of general knowledge as well as the check of potential advancement within intellectual abilities as compared to the enrollment period. Through these data and information on typifying students’ personalities → completed by a class master as well as an educator at the end of I cycle, a new formation of the groups (classes) of given grades is conducted, within the already familiar educational environment (school). This is, in addition to monitoring the rate of acquired knowledge, skills and character traits, a way for the children to be directly exposed to the challenges of social adaptability within the partially familiar social environment, which is also a good preparation for the next redefining of groups that follows in high school and is predominantly determined by the unfamiliar social environment. The first grade of high school is obligatory for everyone and regardless of the type of school has the same curriculum. This structure initiates the idea that through the controlled liberalization of the educational process, the same enhances and develops the interest of children for education even after a cycle of compulsory education.

However, at the level of pre-school education, and within the integration of our educational system, there is no clearly defined strategy of social objectives that would be predicted by the programme in the objectives of pre-school education. This indicates the artificial nature of pre-school education, which should be redefined in terms of the programme and curriculum. According to proposals given in our project, this objective is achieved by the permanent guidance of the child towards the contact in the communication itself in the line of child-child, child-adult. Starting from the development of the communication contact, it is now significantly easier for the child to study the social skills needed for socially acceptable situations.

Development trends for the assessment of ethical values by pre-school children are also undefined in terms of the programme, which abstracts the development of the emotional feeling and the involvement in joint activities with other children related to the same task and objective. Therefore, the experience of the collective success (the success is individually determined) is abstracted by the programme, as well as the need to help and support another child (ethical values). If they are observed at the level of pre-school education, objectives should be divided into cognitive, affective and psychomotor. In the context of social objectives, children should be exposed to experiences of the basic norms of social coexistence and experiential situations in which the freedom of an individual should be balanced by the individual and collective rules and discipline. Children should develop their abilities to maintain attention and concentration to different messages. This could be practised or learned when participating in various role play activities and through performing individual tasks which require the cooperation with others. The physical development of children through different physical activities should be particularly emphasized as well as the adherence to hygiene and health rules. Pre-school children (aged between 5 and 6 years) should be exposed to learning that resembles the one in elementary education. That includes basic elements of preparation for reading, writing and arithmetic. Likewise, children should be acquainted with numbers and simple mathematical operations through the grouping of elements, making associations between mathematical symbols and various specific subjects and solving simple life problems by the use of mathematical operations. According to proposals in our project, at the end of the pre-school cycle, educator is supposed to fill out the questionnaire for each child which would be defined in terms of the content by the pedagogical-psychological department.

That questionnaire should be unique at the national level and should provide answers to questions thus completing the impression on the cognitive, character, affective,

3. NEW STRATEGIES OF PRE-SCHOOL EDUCATION

Since the school year 2006/07, in Serbia was introduced obligatory pre-school education for children at the age of six, which is in the Statute referred to as an integral part of obligatory education that lasts nine years.
psychomotor and socially adaptive trait, and the achievement of the perfect pre-school child. This questionnaire with already given answers (multiple choice answers or alternative character answers) requires that the educator on the basis of his/her experience and immediate perception of each individual pre-school child circles the answer which is the closest to his/her impression and professional assessment. The questionnaire defined in such a way must include the assessment of the character and temperament of the pre-school child, which will as independent variables be primary gradients in forming the more uniform classes at the beginning of the elementary school process, in addition to the testing in elementary school. In the given questionnaire educator also answers the questions about the level of acquired knowledge (reading, writing, and arithmetic), skills (psychomotricity) and habits (cultural and hygienic, working and behavioural). Educator writes only particularly notable characteristics, if any, in the part called remarks.

REFERENCES


The Status of Open and Distance Higher Education in Iran: A Rapid Assessment
Gholamreza Zakersalehi
Institute for Research & Planning in Higher Education, Tehran, Iran

Abstract

Open education is an approach to teaching and learning emphasizing the student's right to make decisions and that views the teacher as facilitator of learning rather than as a transmitter of knowledge. It may include such characteristics as vertical grouping, cross-age teaching, independent study, individualized rates of progression, open plan schools, and unstructured time and curriculum.

The purpose of this study is to present a macro-evaluation on the present status of open and distance education in Iran. The methodology of this research is rapid assessment. The findings are classified into five categories based on UNDP model: policy development, content and application development, developments of institutions and those involved, technical infrastructure and development of human resources.

Key Words: Open Higher Education, Distance Higher Education, Open Course Ware, Rapid Assessment, Iran

Introduction

Open University of Iran was established about forty years ago aiming to develop distance higher education. In 1998, it commenced the second set of its activities under the name of Payame Noor University. At the present, there are 1,100,000 students attending this university at 400 different centers throughout the country. Additionally, about twenty virtual higher education institutions admit students in various disciplines. The number of students who study at virtual courses in Iran has increased from 5,000 to 20,000 in the previous three years. Although it is a small number compared to the total number of students, that is 4,400,000, there has been a good progress in the process of admission.

Sarfarazi and Memarzadeh (2009) indicated that in Iran universities, E-learning is implemented with different strategies in the execution phase.

Taherkhani and Abbasi (2009) argued that virtual educations in Iran universities have been established imperfectly. They possibly mean that complete virtualization has not occurred yet. Here, we approach blended learning model.
In this regard, Taleb (2009) considers blended learning as a response to challenges of E-learning in Iran. Yavar and Rahmani (2009) have also considered this model as a way to improve efficiency and performance of students in the traditional education system.

Yaghoobi and Zafari (2009) suggested E-learning solely as a supplement to face-to-face education in Iran.

According to United Nations Development Programme (UNDP) development of information technology is the product of interaction between the following five main factors: equipments and technical infrastructure – development of human resources – policy development – content and application development, and developments of institutions. This five-sided model is used in this assessment.

The purpose of this study is to present a macro-evaluation on the present status of open and distance education in Iran.

**Method**

The methodology of this research is rapid assessment through analyzing the statistical data and the policies being implemented, study the official reports and “qualitative content analysis” of the articles published in Iran. Besides, in order to collect more information, the websites of these institutions were visited by the researcher and the necessary information was recorded in the check list.

**Results**

The findings showed that open education in Iran is a supplementary system and not an alternative one. This system includes both independent virtual universities and dual mode universities. These institutions focus their attention on the third generation of virtual education. The policymakers were aimed to have flexible education and variety access to higher education and not on the full virtualization in the education.

The majority of volunteers for open universities in Iran are not adults, managers and entrepreneurs but also the youth who did not succeed to attend face to face courses prestigious public universities. These courses bear cultural theme and they are not for financial aims yet. The universities first aim is responding to the dignity and social needs of families and their aims not to increasing efficiency and profits or decreasing the per capita costs.

However, these courses does not meet the expectations of seekers of knowledge yet and classical and traditional educations have maintained its position.

Technically, good distributions tools are also available, but the level of interaction is not ideal due to bandwidth problems.

Some universities such as Shahid Beheshti University put on MIT Open Courseware in its website and translate it to Persian (farsi) and they are encouraged students to use it.
Others like Sharif University of Technology try to provide a native model for development of participation stakeholders in curriculum. Many (Dozens of) other universities established Virtual learning beside the other faculties and they use their academic abilities. All of them have shown a crowded market and variety of higher education.

Results on the Rapid Assessment of status of E-learning in Iran higher education based on UNDP model:

<table>
<thead>
<tr>
<th>Factors</th>
<th>Status</th>
</tr>
</thead>
</table>
| **Policy Development**               | • Establishment of high council for IT in the government  
• Execution of IT application development project  
• The policy of diversifying and increasing access to higher education |
| **Content and Application Development** | • Entry of universities into supply and demand market of E-learning since 2003  
• Using SCORM standard  
• Benefiting from LMS  
• Developing blended learning system in the majority of traditional universities  
• Incomplete multi-media systems  
• Utilizing virtual classrooms, research and discussion halls, mobile version, video conference, voice mail, and etc.  
• Weakness in standardization of educational contents, instruments and activities  
• Some universities using open course ware |
| **Developments of Institutions and Those Involved** | • Establishment of E-learning committee in Ministry of Science, Research and Technology since 2005  
• Authorizing those universities able to present 10 percent of courses electronically  
• Increase in the number of virtual students from 5314 in 2009 to 20000 in 2012  
• Establishment of 20 virtual higher education institutions  
• Increase in the number of students in semi-attendance and distance learning system (PN universities) up to 1100000 |
| **Technical Infrastructure (According to US)** | • 42 million internet users (53.3% of population)  
• Thirteenth rank in the world in the number of internet users |
### Internet Usage Statistics Website

- Number of internet users having access to high speed internet is 734000

### Development of Human Resources

- Having too many IT experts in the country
- The shortage of interdisciplinary experts
- Good level of information literacy among students, professors, and university staffs

---

**Conclusion**

Although social demand for open education courses and distance education is not high, universities and ministry of science and research have prepared themselves for a new phase of rapid development of these kinds of education. In comparison with the past 3-4 years, students are interested in virtual education four times more than before. However, part-time course wares which are presented for working students have more advocates. Therefore, Payam-e-Noor University with 400 branches and 1100000 students in Iran is one of the major universities in the world.

Open education in Iran is a native model which is developing. The policy of diversifying and increasing access to higher education is followed strongly. Regarding 5 components of UNDP relevant to IT, we are assessed in an intermediate level. If we make use of all the facilities of these 5 components to develop open education, we can expect a better situation. 20000 virtual students in contrast to totally 4400000 students is a low figure. The reason is the feeling of more prestige and social status when attending face-to-face courses. Students tend to communicate with their professors in the campus and take photos with them. This tendency is more observed in eastern countries where social relationships are stronger. In this condition, infrastructural developments do not necessarily result in the increase of students interest in open course wares. Finally, university volunteers and their families consider them as subordinate education.

**References**

- Babazadeh, M. and Maleki, M. (2009) the Place of Information Literacy in E-Learning, E-University Conference, Tehran
- Taherkhani, N. and Abbasi, K. (2009) Obstacles To E-Learning In Iran, E-University Conference, Tehran
A Model for the Uptake and Continued Use of E-learning in Thai Higher Education

Nakarin Pinpathomrat, Lester Gilbert, Dr Gary B Wills
School of Electronics and Computer Science, University of Southampton, Southampton SO17 1BJ, UK

Abstract: In order to achieve long-term sustainability of E-learning projects in Thai Higher Education, the purpose of this research is to investigate the factors that affect a Thai student’s decision to take up and continue using E-learning. To this end, a mathematical model has been constructed to explain the uptake and continued use of E-learning in Thai universities. At this stage, through review of related theories and literatures, a model was constructed by applying three grounded theories; these are: Unified Theory of Acceptance and Use of Technology (UTAUT), Keller’s ARCS model, and Expectancy Disconfirm Theory (EDT). As the learning preference factor was included in the model and past literature confirmed that the difference in a student’s learning preference between Thailand and each other country is caused by culture, Thai national culture will also be considered in this research.

Key words: E-learning, uptake, continued use, Thai national culture influenced learning preference

1. Introduction

Despite the high investment from the government of Thailand and university commitment, researchers have found a low uptake of E-learning amongst students, and those who do start to use the system opted out later (S. Boondao, Komlayut, & Punnakan, 2009). In order to achieve long-term sustainability of E-learning projects, the main purpose of this research is to construct a model of effective uptake and continued use of E-learning in Thai Higher Education. To realise this, three research questions have to be answered. They are as follows:

1. What factors affect the uptake and continued use of E-learning?
2. What is the model of uptake and continued use of E-learning?
3. How can the model be applied to Thai Higher Education Institutions?

2. The factors influencing the uptake of E-learning

Upon reviewing the literature on students’ uptake of E-learning, almost all researchers unanimously view E-learning as an application of technology. That rationale led researchers to ground their research in the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Šumak, Heric’ko, & Pušník, 2011). As TAM highlights the importance of a user’s attitude towards the system but lack of emphasis on social and resource factors, it seems to be better to adopt UTAUT as the theoretical framework for this investigation (Bourgonjon, Valcke, Soetaert, & Schellens, 2010).

2.1 Unified Theory of Acceptance and Use of Technology (UTAUT)

The UTAUT model was constructed by Venkatesh and colleagues (2003). This group of researchers asserted that there are four factors which influence a user’s decision to take up a new information system, including performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC). PE, EE and SI significantly influence the intention towards the uptake of a system; while FC is a direct antecedent of uptake. Interestingly, the researchers also explored that the influence of all four elements on user’s uptake can be moderated by individual’s background. See Figure 1.
2.2 Application of UTAUT in this investigation

Similar to UTAUT, behaviour intention (BI) will be included in the research model to capture a student’s motivational level in order to predict his/her E-learning uptake. This idea is supported by Theory of Reasoned Action and many researches in this field; their findings confirmed that students will take up the system if they have high levels of intention (Maldonado et al., 2011; Park, 2009). While the UTAUT asserts that FC directly impact uptake, Theory of Planned Behaviour and related researches describe FC as having an indirect impact on uptake through BI (Ndubisi, 2004; Shih, 2008). In total, the proposed model will have the four key factors that influence student’s intention to uptake E-learning, including PE, EE, SI, and FC. PE is defined as the degree to which an individual student believes in the ability of an E-learning system to support them in learning and teaching activities to achieve their intended learning outcome. EE is the degree to which an individual believes that the use of that system does not require an increase in effort. SI is the degree to which the influence of normative expectations of reference on student’s motivation towards the uptake of E-learning. Finally, the degree to which an individual student believes that personal or organisational IT resource serves to support the use of a new system is the definition of FC. However, the moderating effect of an individual’s background upon the influence of the four factors on student’s intention will not be studied in this research. A model is a simplified view of a complex domain. To begin, our model focused on major variables. Additionally, there is low supported evidence that individual’s background factors are the major variable of E-learning uptake (Ong & Lai, 2006).

2.3 Learning motivation factors on the uptake of E-learning

The factors from UTAUT model seem to be sufficient enough to explain the uptake of E-learning. However, these factors only emphasize on “technological motivation”. “E-learning” has two aspects to its definition, ‘learning’ and ‘E’ (referred to technology); the former is overlooked by almost all researchers in the field, thus any existing model could not fully explain or predict the uptake of E-learning (Chen, 2011). This research will fill in the gap left by other researchers by adding “learning motivation” to the model. To find learning motivation factors, the ARCS model will be adopted in this investigation for two main reasons: 1) The model simplifies complicated human motivation theories in a learning and education context (Keller, 1999, 2008); 2) ARCS was widely validated and confirmed to have made instructional material motivationally more appealing (Winiecki, Fenner, & Yonnie Chyung, 1999).
2.4 Keller’s ARCS model and the application of Keller’s ARCS model in this investigation

The ARCS model asserts that four major factors influence a student’s learning motivation, it includes ‘attention’ (A), ‘relevance’ (R), ‘confidence’ (C) and ‘satisfaction’ (S) (Keller, 1999). Two ARCS factors will be not included in the proposed model. According to Keller (2000), attention can be promoted by arousing the learner’s curiosity in what is being taught at the beginning of the course. However, this research aims to increase E-learning uptake in general and assuming that students have never learned by using such systems before; thus their attention and curiosity about a particular course is not relevant. Therefore, attention will not be integrated in our uptake model. Similarly, learning satisfaction is not included as uptake factor. Learning satisfaction occurs when a learner achieves their desired outcome from a course (Keller, 2008). At initial stage \( t_0 \), before a student takes up E-learning, their satisfaction with provided course in E-learning has not manifested at this stage. The use of remaining two ARCS factors (learning relevance and confidence) in this investigation is called ‘learning preference’, which is defined as the degree that an individual believes that instructional environment in E-learning (which includes the ILO, content, teaching and learning activities) is relevant to their goals, learning styles and has confidence in their past experiences about what being learn.

3. Factors influencing the continued use of E-learning

As mentioned before, a high opt-out rate with E-learning is also found in Thailand. Increasing motivation towards taking up E-learning will partially solve the problem; the study into how to attract students to continue using the system is the other half of the problem that must be addressed simultaneously.

In the continued use of E-learning research area, almost all the researchers utilise the Expectancy Disconfirms Theory (EDT), followed by Expectation Confirm Model (ECM) as grounded theory (Roca, Chiu, & Martínez, 2006). ECM emphasises the post-acceptance variables only (Bhattacherjee, 2001), whereas the main purpose of this research is to study both E-learning pre-acceptance (uptake) and post-acceptance (continued use) factors and also how post-acceptance factors relates to pre-acceptance in order to construct a model of E-learning uptake and use. Thus EDT seems more appropriate than ECM for this investigation. EDT asserts that repurchase intention is primary influenced by a customer’s satisfaction with prior use of the product (Oliver, 1980). The principle seems to be consistent with Thorndike’s law of effect, organisms are likely to continue exhibiting certain behaviours if the consequence of this behaviour satisfies them, (Thorndike, 1998). Furthermore, the consensus among researchers in continued use of E-learning research area is that satisfaction with the E-learning system is a key influential factor that leads the E-learner to continue using the system (Roca, Chiu & Martínez, 2006). It makes for a sound argument to use satisfaction as a key factor that influences a student’s intention to continue using E-learning in this investigation. In addition, Oliver (1981) claims customer satisfaction with the product is directly influenced by confirmation of their level of expectancy; discrepancy between perceived product performance and the initial expectation. This principle is supported by many researchers in this field; they assert that E-Learners will be satisfied with the E-learning system if the actual outcome is better than their initial expectation (Chiu et al., 2005; Roca et al., 2006).

Thus, there are four factors that seem to influence a student’s intention to continued use of E-learning, including satisfaction with E-learning, expectancy confirmation, perceived performance and E-learning expectation. See Figure 2
4. A model of E-learning uptake and continued use

By applying selected grounded theories such as the UTAUT model, Keller’s ARCS model and EDT, a model for E-learning uptake and continued use was constructed. See Figure 3.

As can be seen from Figure 3, before a student takes up E-learning (represented by the expression $t_0$), an initial expectation of E-learning is created (Oliver, 1980). According to the UTAUT model and Keller’s ARCS model, an E-learner has five potential expectations (belief) toward E-learning; including performance expectancy ($b_1$), effort expectancy ($b_2$), social influence ($b_3$), facilitating condition ($b_4$) and learning preference ($b_5$). Thus, the expectation of E-learning construct (represented by the expression $b_e$) would be added into the model to capture levels of belief for each expectation (uptake) factor and can be expressed as:

$$b_e = \begin{bmatrix} b_1 \\ b_2 \\ b_3 \\ b_4 \\ b_5 \end{bmatrix}$$

To explain the uptake of E-learning, as in $(t_0)$ the E-learner has never used the system before, they do not perceive the performance of the system and the evaluation of outcome ($e_4$) does not occur at $t_0$. Thus, the intention is directly influenced by beliefs (the uptake factors in this research) and the E-learner will decide to take it up if their expectation is high; sum of beliefs is positive (Oliver, 1980).

$$\text{Intention to use at } t_0 = f(\sum b_1) = b_1 + b_2 + b_3 + b_4 + b_5$$
During an initial consumption period (represented by the expression $t_1$), perceptions of the system performance will be formed, captured by the perceived performance of system factor (the expression $p_1$) in this model. Oliver (1981) asserted that initial expectation is formed for creating reference level that the customer uses to make a comparison with perceived product performance to determine their level of confirmation. Thus, in perceived performance of system factor, there are five sub-factors basing on each expectation factor and each of these can be measured independently from each other, which can be expressed as:

$$
p_1 = \begin{bmatrix}
  p_1 \\
  p_2 \\
  p_3 \\
  p_4 \\
  p_5
\end{bmatrix} \rightarrow \begin{bmatrix}
  \text{Perceived performance of } b_1 \\
  \text{Perceived performance of } b_2 \\
  \text{Perceived performance of } b_3 \\
  \text{Perceived performance of } b_4 \\
  \text{Perceived performance of } b_5
\end{bmatrix}
$$

Then, the E-learner will compare his/her perceived performance with their initial expectation to determine the level of expectancy confirmation (the evaluation of outcome, or $e_i$). Therefore, the expectancy confirmation is expressed as follows:

$$
\begin{bmatrix}
  e_1 \\
  e_2 \\
  e_3 \\
  e_4 \\
  e_5
\end{bmatrix} = \begin{bmatrix}
  p_1 \\
  p_2 \\
  p_3 \\
  p_4 \\
  p_5
\end{bmatrix} - \begin{bmatrix}
  b_1 \\
  b_2 \\
  b_3 \\
  b_4 \\
  b_5
\end{bmatrix}
$$

An E-learner’s satisfaction with E-learning is a function of expectancy confirmation; E-learners will be satisfied with the system if each actual performance is better than each anticipated performance. This can be expressed as:

$$\text{Satisfaction with E-learning} \equiv \text{positive expectancy confirmation} = + e_i = \begin{bmatrix}
  +e_1 \\
  +e_2 \\
  +e_3 \\
  +e_4 \\
  +e_5
\end{bmatrix}
$$

Fishbein and Ajzen (1975) assert that the most immediate precursor of intention towards specific behaviour is attitude, which is the function of personal belief and evaluation of outcome. Therefore, the general equation is:

$$\text{Intention to use} = f(\text{Attitude}) = f(\sum b_i e_i)
$$

By putting (5) into (6) and assuming that a student who takes up E-learning will have a positive belief toward E-learning, thus:

$$\text{Intention to use} t_1 = f(\text{+Attitude}) = f(\sum( b_i)(+ e_i)) = e_i b_1 + e_2 b_2 + e_3 b_3 + e_4 b_4 + b_5
$$

As can be seen from equation (7), satisfaction (+$e_i$) is a key factor for supporting E-learner to continue using the system; if E-learner does satisfy with the system ($-e_i$), they will have negative attitude towards system which lead them to drop out from the system.

The use of mathematical equations helps to describe the model and understand how the model works. The mathematical description also allows predictions of uptake and use of E-learning in a given context. In the next section, the application of this model into Thai Higher Education will be explained.
5. How the model can be applied to Thai Higher Education Institutions

As every proposed factor has been widely validated in both eastern and western countries, and has been accepted by many researchers of their influence on uptake and continued use of E-learning; the model should also be applicable to solving the problem of E-learning uptake in Thailand as well. However, one factor that may differ between Thailand and other countries is learning preference, which include learner’s goal and style (Raktham, 2008; Tetiwat & Huff, 2003; Thongprasert & Burn, 2003). Additionally, past literature confirmed that the main cause for difference in learning preference between each country is culture (Boondao, Hurst, & Sheard, 2009). Therefore, Thai national culture will also be considered in this research to truly understand Thai student’s learning preference.

In Thai education where teachers ‘know best', teachers are authoritative figures who commands high respect, and typically considered extremely knowledgeable (Raktham, 2008). As Thai national culture has high uncertainty avoidance (fear of failure), and the Thai’s strict belief that teachers can help them achieve their intended learning outcome or goal; it is not surprising that Thai students relies heavily on structured lecture where experienced teachers reside over teaching process; preferring Reflective Observation regardless of other teaching methods (Raktham, 2008; Tetiwat & Huff, 2003). Furthermore, Thai culture are collectivist by nature, the national characteristics of Thais are interdependent and has tight social networks (Raktham, 2008). Their way of life is reflected in the classroom, where students normally give reciprocal and moral support to one another (in Thai called "Kam lang jai") during their times of need (Burn & Thongprasert, 2005; Komin, 1991). The evidence left no doubt that the highly collectivist nature of Thai culture shapes Thai student into a social learner; group learning and peer co-operation, are preferred ways of learning (Raktham, 2008; Thongprasert & Burn, 2003). Furthermore, Teowkul et al. (2009) who conducted research studying Thai students’ educational value stated that students in Thailand seem to be exam-directed.

Thus, Thai students will uptake E-learning if the content can support them to achieve good grades and has functions that suits the way they learn; online lectures and synchronized learning system. However, only focusing on learning motivation is not enough. As E-learning is a piece of technology; students will not uptake this technology if they do not accept it. Technology motivation is also important and need to be considered (Davis, 1980). The literature review found four factors; 1) PE: E-learning have to support Thai student to achieve ILO with ways compatible with their learning style 2) EE: the system design suits the student’s level of IT experience 3) SI: student will uptake the system if their significant others (e.g. parent, teacher and peers) recommend usage 4) FC: availability of necessary IT resource also cannot be looked over. By achieving the mentioned condition, Thai students will not only take up E-learning, they will also continue to use the system perpetually. This is because Expectancy Disconfirms Theory asserts that people will continue using the service if their expectations are achieved.

6. Future work

In this paper three research questions have been answered through a desk-based study; the proposed model and the application of the model was constructed through review of related theories and literature. In order to complete the answer to these research questions, future work will focus on another validation triangulation of the model; including investigator and methodological triangulation.
7. Reference


Abstract

Knowledge Management on Teaching Profession According to Khurusapha*
Content Standards Using the Knowledgebase of Electronic Medias Enhancing E-Learning
Associate Professor Dr. Maturos Chongchaikit
maturos.c@ku.ac.th

The “Knowledge Management on Teaching Profession According to Khurusapha Content Standards Using the Knowledgebase of Electronic Medias Enhancing E-Learning” is a master research project funded by Thailand Cyber University Office under the Commission of Higher Education. It is composed of 3 subprojects: “Synthesis of Teaching Profession Learning Contents According to Khurusapha Content Standards for the Knowledgebase of Electronic Medias Enhancing E-Learning”, “Development of Learning Objects on Teaching Profession According to Khurusapha Content Standards for the Knowledgebase of Electronic Medias Enhancing E-Learning” and “The Implementation Study of the Knowledge Management on Teaching Profession According to Kurusapha Content Standards Using Electronic Medias Enhancing E-Learning.” The objectives of this master research were to:

1) analyze and synthesize the knowledge according to 7 Khurusapha professional content standards; 2) create the scripts of the learning objects (LO) and the electronic learning resources enhancing e-learning; 3) design and develop the storyboards of the learning objects (LO) for the knowledgebase of electronic media enhancing e-learning; 4) design and develop the knowledge management system for teaching profession according to Khurusapha content standards; and 5) study the effects of the knowledge management on teaching profession according to Khurusapha content standards using the knowledgebase of electronic media enhancing e-learning. Two sample groups were purposively selected and used in trial use of the knowledge management system. One sample group consisted of 3 groups of 5 educational personnel and the 2nd sample group were 100 teaching profession students.

The research results were the Knowledge Management System for Teaching Profession According to 7 Khurusapha Content Standards and the Electronic Media Knowledgebase Enhancing E-Learning containing 50 learning objects and the electronic learning resources on the following topics: educational institutions, educational journal and research, mass media for education, Thai and foreign resources supporting 7 Khurusapha teacher professional content standards. The use of knowledge for teacher profession according to Khurusapha content standards revealed the high and highest levels of satisfaction and the good opinions towards being the open knowledge and resources for Teacher Profession according to Khurusapha Content Standards. The solutions used in managing the problems found while conducting the subprojects could be benefit to further developers of the LO and the KMS on the content design and the storyboarding.

*Khurusapha, the Teachers’ Council of Thailand had established 9 Standards of Professional knowledge and experience which are Language and Technology for Teachers, Curriculum Development, Learning Management, Psychology for Teachers, Educational Measurement and Evaluation, Classroom Management, Educational Research, Educational Innovation and Information Technology, Teacher Professionalism
Rational and Backgrounds

The Teachers Council of Thailand had set up the Teachers and Educational Personnel Council Act B.E. 2546 (2003) consisting of 3 Standards: Standards of Professional Knowledge and Experience, Standards of Performance and Standards of Conduct. As provided by the law, Section 48, persons who practice the licensed profession shall conduct themselves following the professional standards and ethics. The Qualifications for those who practice the profession must hold at least a degree in Education or its equivalent or other related fields accredited by the TCT. Based on the above criteria, the teachers shall have one year teaching experience and 9 areas of necessary knowledge as follows: 1) Language and Technology for Teachers 2) Curriculum Development 3) Learning Management 4) Psychology for Teachers 5) Educational Measurement and Evaluation 6) Classroom Management 7) Educational Research 8) Educational Innovation and Information Technology 9) Teacher Professionalism. These requirements had caused the spread of information related to professional knowledge of teachers on the Internet, which are not all reliable and have quality. Moreover, since there are no research in Thailand on the nature of knowledge management about teacher professional standards, Thai Cyber University Project Under the Commission on Higher Education had agreed a fund for the research project called "Knowledge Management on Teaching Profession According to Khurusapha Content Standards Using the Knowledgebase of Electronic Medias Enhancing E-Learning" in order to provide the educational personnel with related electronic media and resources, giving them the opportunity to develop their own profession. The research plan was made up of the following three sub-research projects: the “Synthesis of Teaching Profession Learning Contents According to Khurusapha Content Standards for the Knowledgebase of Electronic Medias Enhancing E-Learning”, the “Development of Learning Objects on Teaching Profession According to Khurusapha Content Standards for the Knowledgebase of Electronic Medias Enhancing E-Learning” and “The Implementation Study of the Knowledge Management on Teaching Profession According to Khurusapha Content Standards Using Electronic Medias Enhancing E-Learning.”

Research Plan Objectives:

The objectives of the master research were to:
1) analyze and synthesize the knowledge according to 7 Khurusapha professional content standards;
2) create the scripts of the learning objects (LO) and the electronic learning resources enhancing e-learning;
3) design and develop the storyboards of the learning objects (LO) for the knowledgebase of electronic media enhancing e-learning;
4) design and develop the knowledge management system for teaching profession according to Khurusapha content standards; and
5) study the effects of the knowledge management on teaching profession according to Khurusapha content standards using the knowledgebase of electronic media enhancing e-learning.
Research Methodology:

This is a research and development project with the following research procedures:

- Preparing the analysis tables of 7 Khurusapha Teacher Profession Content Standards to determine the expected learning outcomes, the learning and assessment activities and the forms and roles of the Learning Objects (LO) for the scripting of LO learning contents.

- Presenting the tables and scripts to the teaching profession experts in order to evaluate the compliance with Khurusapha Teacher Profession Content Standards and bringing the suggestions to edit the scripts.

- Gradually delivering the scripts to the 2nd research project team who wrote the storyboards until completeness and developed the Learning Objects and the Knowledge Management System on Teacher Profession.

- The 3rd research project team conducted the research by providing the 2 sample groups the trial use of the knowledge management system containing 50 Learning Objects and Content Scripts and the Electronic Learning Resources for Teachers then making a conclusion on the results as research finding of the knowledge management on teaching profession according to Khurusapha Content Standards using the knowledgebase of electronic medias enhancing e-Learning.
  - The first sample group consisted of three groups of 5 educational personnel: teacher, lecturer, administrator, supervisor and teaching profession student.
  - The second sample group consisted of 100 teaching profession students.

Research Findings:

The research findings were as follows:

1) The Knowledge Management System on Teaching Profession According to 7 Khurusapha Content Standards composing of Electronic Media Knowledgebase Enhancing E-Learning that contained the 50 learning objects and the electronic learning resources for teachers on the following topics:
   - educational institutes
   - educational journal and research
   - mass media for education
   - Thai and foreign resources supporting 7 Khurusapha teacher professional content standards.

2) The trial use of the knowledge management system revealed the high and highest levels of satisfaction and the good opinions of the sample groups towards the open knowledge and resources for Teacher Profession according to Khurusapha Content Standards.
3) The solutions used to manage the problems found while conducting the sub research projects could be benefit to further developers of LO (Learning Objects) and KMS (Knowledge Management System) on LO content design, content scripting and the storyboarding.

**The Use of Research Findings:**

This research was featured on the synthesis of Khurusapha content standards leading to the design and development of the LO and the Knowledge Management System on Teacher Profession that were compliant with the standards and on the collecting and organizing of the information related to teacher professional content standards that are scattered on the internet.

1) The output of the research can be used to improve many educational personnel: school administrators and teachers, education administrators as well as the undergraduate Teaching Profession students within the formal, non-formal and informal education. For example:
   - Supporting the learning and teaching activities in various curriculum
   - Improving the basic knowledge of the students who lacked of educational backgrounds but needed to continue their study in this field in order to have a promotion in their work related to education.
   - Self development by learning independently until having the same standards of knowledge without the restrictions on time and place of learning.

2) The knowledge management system developed in form of website with database supported by the open source software will ensure the continuous and sustainable use of the developed electronic learning media. This research output will have a contribution to world trends on open education and open learning in the same way as the OER, using the supported components on communication channels and exchange system. The system consists of the easy-to-add and change the tacit knowledge into explicit knowledge including the data storage for the important body of knowledge.

**Feedback from Research:**

1. **The Research Design.**
   The research plan projects consisted of the implementation in various stages of research until having the research output as a result of each step clearly. The idea of doing this research by using the nested research and methodology to support each other such as research and development, document research and survey research will not only increase the potential in conducting different types of research of the researchers but will also increase the values of each research output.
2. **The Dissemination of Research Findings**

The production of digital learning media and knowledge management system is a high investment both in time and money, especially when they were the medias with academic contents compliant with the standards. Thus, the output should be continuously developed to distribute and worth the investment. Broadly and widely distribution of research products needs to achieve the collaboration and the support from many parties, particularly the investors in collaboration with the researchers to plan a support system in a way that is appropriate to the nature of different types of research findings.

**Suggestions for Further Research:**

1) Support the conducting of research to achieve the dissemination and use of the KMS for Teacher Profession in various educational agencies using the existing media and technology.

2) Encourage the conducting of research in cooperative network to use the output from this research in different ways and study the results occurred in various dimensions.
Interactive Multimedia: An Examination of Textbook Complementary experiences for Studying Laithai

Ampai Tiranasar
Chulalongkorn University, THAILAND

The author wrote a chapter "Lai Thai: A Closer Look at Intriguing Thai Ornaments" in Teaching Asian Art: Content, Context, and Pedagogy. This textbook published by National Art Education Association for the purpose of enhancing teaching and learning Asian art particularly for American art teachers and high school students. The complementary experiences has been created in the form of Interactive Multimedia set functioned as an alternative to enhance the textbook readers' understanding, studio skills, and appreciation. The set includes two components: 1) Interactive multimedia: Articles, PowerPoint presentation, Movie clip, and Gallery, and 2) Hands-on exercises: Worksheet and a piece of on-process Thai lacquer-ware. The set created in forms of both On-line set and CD-Rom package. The purpose of this paper is to examine the functions of each part in the Interactive Multimedia set concerning ways of enhancing teaching and learning art. The results revealed that the content in according with the DBAE Inquiry concepts covered all four disciplines. More important, the multimedia set could function as a complementary material corresponding to the purpose of the book, Teaching Asian Art: Content, Context, and Pedagogy. The highest discipline that this Multimedia set could serve was in the discipline of Art production. In addition the set also showed the potential to serve in the discipline of Aesthetics. It should be noted that the set can be accessed by both on-line and off-line version.

Keywords: Interactive Multimedia, Asian art, Thai art, Laithai, Teaching and learning art

The anthology Teaching Asian Art: Content, Context, and Pedagogy, Sheng Kuan Chung (Editor) published in 2012 aims at introducing American art teachers and students to Asian artistic practices and traditions (for example, paintings, graphic arts, ceramics, sculpture, textiles, and other artistic traditions) from, but not limited to, the following Asian cultural locations: Burma, Cambodia, China, Indonesia, Japan, Korea, Laos, Malaysia, Mongolia, Philippines, Taiwan, Thailand, Tibet, and Vietnam. The anthology includes a
collection of practical examples of lessons emphasizing contextual approaches to exploring and teaching Asian art at the K-12 level.

Authors who either are cultural insiders (Asian natives) of or have first-hand knowledge concerning respective Asian artistic traditions are encouraged to contribute to the anthology from their respective regional standpoints.

The anthology’s structural composes of the following components:

- The particular Asian artistic tradition that the author intended to explore, its historical and cultural origins, and artistic form (for example, materials, media, methods, and/or processes).
- The specific context of the particular artistic tradition in terms of its biographical, aesthetic, social, cultural, religious, spiritual, philosophical, and/or historical importance to the people in the cultural location in which it is practiced.
- The cross-cultural significance of the artistic tradition and an age-appropriate, culturally sensitive art lesson for American K-12 art students (define a grade level) inspired by this artistic tradition.
- How and what American students would benefit from learning about the artistic tradition culturally, socially, and/or philosophically.

The content description of Chapter 28 "Lai Thai: A Closer Look at Intriguing Thai Ornaments" pp. 185-191 consists of:

- The History of Lai Thai
- Creating Processes of Lacquer work
- Learning Drawing Thai Ornaments
- Thai People's Way of Life
- Appreciating and Practicing Lai Thai from Exemplars
- Conclusion

Creating the multimedia set

The purpose of the multimedia set is to offer an alternative for learning Thai art other than to be read from the textbook. Initially, the author decided to create the multimedia set to distribute to audiences attending my presentation at the book press at 2010 National Art Education Association NATIONAL CONVENTION in Baltimore, Maryland, USA: April, 2010. Since the CD-ROM could be opened by the Internet browser, the on-line version had been created shortly after that.

The set includes two components:
1) Interactive multimedia:

- Articles
- PowerPoint presentation
- Movie clip
- Gallery
2) Hands-on exercises:
   - Worksheet and
   - A piece of on-process Thai lacquer-ware.

The set created in forms of both On-line set and CD-Rom package.

**Technical Description**
- Tools and technologies: Hyper Text Markup Language HTML format and Rollover Image button and Use JavaScript for building Interactive PowerPoint Presentation (PPT) document
- Document Formats: Shock Wave Flash(SWF), PowerPoint (PPT), and Portable Document Format (PDF)
- Media: The Video Clip length 8.54 minutes
  Created by a video editing program and covert to the video to Flash FLY Video
  Demonstrators: Associate Professor Sanya Wongse-Aram (Distinguished Scholar) and Dr. Apichart Pholprasert
  Video Editor : Mr. Puchong Rojsangrat
  Using Sounds from the “Ton Bun Tase” song

**Examination procedures:**

**Set Examination framework** Among theories of teaching and learning art, this study used Discipline-Based Art Education (DBAE) as a content framework. The goal of discipline-based art education is to develop students’ abilities to understand and appreciate art. Content for instruction is derived primarily from the disciplines of aesthetics, art criticism, art history, and art production. These disciplines deal with: (1) conceptions of the nature of art, (2) bases for valuing and judging art, (3) contexts in which art has been created, and (4) processes and techniques for creating art. Of the four content areas, Greer (1987) proposed related inquiry concepts as presented in the table below:

<table>
<thead>
<tr>
<th>AESTHETICS</th>
<th>CRITICISM</th>
<th>HISTORY</th>
<th>PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Description of qualities</td>
<td>-Description of content</td>
<td>-Restoration of objects</td>
<td>-Inspiration(invention)</td>
</tr>
<tr>
<td>-Analysis of responses</td>
<td>-Analysis of form</td>
<td>-Analysis of style</td>
<td>-Analysis of problem/sketch</td>
</tr>
<tr>
<td>-Elaboration</td>
<td>-Interpretation</td>
<td>-Attribution</td>
<td>-Creation of work</td>
</tr>
<tr>
<td>-Appreciation</td>
<td>-Evaluation</td>
<td>-Authentication</td>
<td>-Exhibition</td>
</tr>
</tbody>
</table>

Greer (1987) suggested that a set of categories for the content and inquiry in each discipline are in a pattern that allows for instruction that interweaves the ideas and skills from the four disciplines in understanding and making art. (p. 228)
Creating and utilizing Examination form: The form was constructed by the author by employing the framework from Discipline-Based Art Education. The analysis has been done by a group panel of 3 specialists: a Thai traditional art artist, an art educator and technology specialist. The results came from content analysis by means of data from examination form. [See Appendix I]

Summary

The results revealed that the content in according with the DBAE Inquiry concepts covered all four disciplines. More important, the multimedia set could function as a complementary material corresponding to the purpose of the book, Teaching Asian Art: Content, Context, and Pedagogy. The highest discipline that this Multimedia set could serve was in the discipline of Art production. In addition the set also showed the potential to serve in the discipline of Aesthetics. It should be noted that the set can be accessed by both on-line and off-line version.

Reference


On-line at http://www.noasbestos.org/01laithai/


## Appendix I: Discipline-Based Art Education Inquiry concepts analysis of Multimedia set "Lai Thai: A Closer Look at Intriguing Thai Ornaments"

<table>
<thead>
<tr>
<th>Materials in the multimedia set</th>
<th>INQUIRY CONCEPTS*</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AESTHETICS</td>
<td>CRITICISM</td>
</tr>
<tr>
<td></td>
<td>a</td>
<td>b</td>
</tr>
<tr>
<td>1) Interactive multimedia</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Articles</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Lai Thai: A Closer Look at Intriguing Thai Ornaments</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>-Thai Traditional Art and Art Education</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td><strong>PowerPoint presentations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-2010 NAEA Book release session</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>-Appreciating and Practicing Lai Thai from Exemplars</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td><strong>Movie clip</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-How to make &quot;Lai Rod Nam&quot;</td>
<td>/</td>
<td></td>
</tr>
<tr>
<td><strong>Gallery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>2) Hands-on exercises:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-Worksheet</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td>-On-process Thai lacquer-ware</td>
<td>/</td>
<td></td>
</tr>
</tbody>
</table>

* **INQUIRY CONCEPTS:**
  AESTHETICS: a) Description of qualities, b) Analysis of responses, c) Elaboration, d) Appreciation
  ART CRITICISM: a) Description of content, b) Analysis of form, c) Interpretation, d) Evaluation
  ART HISTORY: a) Restoration of objects, b) Analysis of style, c) Attribution, d) Authentication
  ART PRODUCTION: a) Inspiration(invention), b) Analysis of problem/sketch, c) Creation of work, d) Exhibition
Online Videos for Art Education: Proposed Analysis Strategies
Ampai Tiranasar, Ph.D., Intira Phrompan, Ph.D., Prapailin Janhom, Puchong Rojsangrat, and Chaiwat Suwan-on
Chulalongkorn University, Thailand

ABSTRACT
This is an exploratory study aiming at finding the way to use online videos available on the internet for art education by proposing analysis strategies composed of 1) Setting the scope of selection the online videos: in terms of contents covered four major disciplines in art education (DBAE) consisted of a) art production, b) art criticism, c) art history, and d) aesthetic. From videos published in YOUTUBE, five top-ranked clips were selected by means of searching terms in relation to each discipline. 2) Designing video analysis framework consisted of three parts: general information about the video, matters in relation to teaching and learning art, and the online teaching and learning art characteristics, and creating the analysis form which consisted of descriptive information, rating scale items and screen shot samples, and 3) Employing the analysis form. It was found that there were useful video clips that could be used in art education. Further research should be valuable to suggest more alternatives for more specific context in relation to art education especially those suitable for Thailand.

Keywords: Video Online, Art education, Creativity, Discipline-Based Art Education (DBAE), Teaching and learning art

Problem Background
Utilizing ICT is needed for the future of higher education in Thailand for achieving the 21st century competences and skills. The country sets the framework of the 2nd Long-term 15-Year Higher Education (2008-2022) to focus on the use of ICT to improve the quality of education and to create the equal opportunity to access education. One of the strategies for using ICT blended mode for lifelong learning is to develop regional university human resources for conducting e-learning education. (Tatiyakavee, 2009)

One of the major problems of utilizing ICT in Education is that the teacher did not change teaching behavior. Other problem is the interest of the young people concerning seeking knowledge via ICT. Thailand Cyber University Project reported that the age group of 0-19 years old shared only less than 10 percent registering the self-paced online courses. (Tatiyakavee, 2009)

Characteristics of Thai People
In Podhisita's study (1998), he explained 5 sets of the relationships between Buddhism and the Thai world views. The characteristic should be mentioned here is the world of hierarchy. Individuals are seen as higher or lower, younger or older, weaker or stronger, subordinate or superior, senior or junior, and rarely equal, in relation to one another. Thus, young people need to learn appropriate behavior concerning the hierarchy. They are taught to recognize the difference between "high place" and "low place" particularly as in the roles of adults and children, or teachers and students. Smuckarn (1991) urges that when people hold on this belief without appropriate reasons, it could be one of the weak points of Thai culture.

Concerning the school art education, in general, art educators have shown greater interest in children as creators of art than as appreciators of visual forms. The highly personal and creative nature of art has received more attention than the influence of art on society. What we need is a concept of art education that will help children to appreciate the artistry in varied life styles and to wisely shape their own. (Tiranasar, 2004)
To sum up, it is crucial to emphasize the role of ICT for students in the years to come. In doing so we have to consider the related factors particularly the Thai educational context and the characteristics of Thai people. We have to find alternative way to introduce to teachers especially to change teaching behavior. Using newer materials is one of the alternative, particularly using video clips. The purpose of this study is to find the way to use online videos available on the internet for art education.

Related Literature

Art education: Among theories of teaching and learning art, this study used Discipline-Based Art Education (DBAE) as a content framework. The goal of discipline-based art education is to develop students’ abilities to understand and appreciate art. Content for instruction is derived primarily from the disciplines of aesthetics, art criticism, art history, and art production. These disciplines deal with: (1) conceptions of the nature of art, (2) bases for valuing and judging art, (3) contexts in which art has been created, and (4) processes and techniques for creating art. Of the four content area, Greer (1987) proposed related inquiry concepts as presented in the table below

<table>
<thead>
<tr>
<th>AESTHETICS</th>
<th>CRITICISM</th>
<th>HISTORY</th>
<th>PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Description of qualities</td>
<td>-Description of content</td>
<td>-Restoration of objects</td>
<td>-Inspiration(invention)</td>
</tr>
<tr>
<td>-Analysis of responses</td>
<td>-Analysis of form</td>
<td>-Analysis of style</td>
<td>-Analysis of problem/sketch</td>
</tr>
<tr>
<td>-Elaboration</td>
<td>-Interpretation</td>
<td>-Attribution</td>
<td>-Creation of work</td>
</tr>
<tr>
<td>-Appreciation</td>
<td>-Evaluation</td>
<td>-Authentication</td>
<td>-Exhibition</td>
</tr>
</tbody>
</table>

Greer (1987) suggested that a set of categories for the content and inquiry in each discipline are in a pattern that allows for instruction that interweaves the ideas and skills from the four disciplines in understanding and making art. (p. 228)

Information Technology Trends in educational video viewership have risen in recent years. This is an indication that the use of online videos and its benefits are tapped by the education practitioners. Much of this growth is contributed by YouTube, a video sharing website formed in 2005. The popularity of tube videos have raised with the emergence of more video sharing sites. (Muniandy, and Veloo, 2011) In the first year of use after YouTube was established, individual users created and contributed more video than the three original television networks (ABC, NBC, and CBS) had produced in the half century since they were founded. Five years later, hundreds of thousands of videos are uploaded to YouTube every day, at a rate of more than 20 hours of video per minute (YouTube, 2009).

Although it is not always used in a constructive or responsible manner, video has become a way to share experiences, express creativity, and convey ideas. Because video about nearly any topic is becoming available, some students are beginning to employ it as an initial point of reference when they have questions about a topic (Helft, 2009).

Berk, R. A. (2009). discussed about the learning value of video clips in the classroom by proposing 20 potential outcomes:
1. Grab students’ attention;
2. Focus students’ concentration;
3. Generate interest in class;
4. Create a sense of anticipation;
5. Energize or relax students for learning exercise;
6. Draw on students’ imagination;
7. Improve attitudes toward content and learning;
8. Build a connection with other students and instructor;
9. Increase memory of content;
10. Increase understanding;
11. Foster creativity;
12. Stimulate the flow of ideas;
13. Foster deeper learning;
14. Provide an opportunity for freedom of expression;
15. Serve as a vehicle for collaboration;
16. Inspire and motivate students;
17. Make learning fun;
18. Set an appropriate mood or tone;
19. Decrease anxiety and tension on scary topics; and
20. Create memorable visual images.

Procedure

This study was an exploratory research. The main purpose was to introduce the strategies for searching and selecting video clips from free resource, particularly those published via YouTube. The strategies included the follow steps as followed:

1) Setting the scope of selection the online videos: in terms of contents, consist of four major disciplines in art education (DBAE) consisted of a) art production, b) art criticism, c) art history, and d) aesthetic. From videos published in YouTube, five top-ranked clips were selected by means of searching terms in relation to each discipline.

   In relation to the contents, keywords as the name of each discipline would be used first for searching the clips, and then some other related terms were also used in order to compile the list. After that all in the list were analyzed and selected the best fit of the content scope mentioned.

   In terms of properties of the video clips, this study set the length of each clip for not longer than 10 minutes. The top-ranked clips were identified by the number of viewers.

2) Designing video analysis framework consisted of three parts: general information about the video; matters in relation to teaching and learning art, the online teaching and learning art characteristics; and creating the analysis form in which consisted of descriptive information, rating scale items and screen shot samples.

3) Employing the analysis form.

Prior to the actual investigation, the researchers conducted a pilot study by surveying Thai video clips by using Thai language searching terms in relation to the scope mentioned in the step one. It was found that most of the clips came from Teaching Art Television program broadcasting regularly for art teachers. The video clips have been uploaded in YouTube. The teachers could view those clips as their own view. However, the content of those clips mostly concerning some particular art techniques very often were about the handicraft which attracted just a margin of viewers when compared to video clips searched by keywords in English which could tab wider range of the materials.

   Interestingly, some set of various keywords in Thai, for example, "aesthetics" in Thai, the results of the search turned out to be the uploaded television programs in relation to recorded
academic seminars. Other than that, results showed the advertising pieces in which there were such word to introduce of either products or services.

**Findings**

This study will report findings about video clips in each domain particularly the top-ranked clips published in YouTube by means of the result from analysis form and content analysis.

The overall results of all 20 clips in this study, in terms of the points in relation to teaching, the most rated were most of them had a clear statement of purpose of the clips, the presentation styles were concise and easy to follow, and the language used was simple and easy to understand.

In terms to inquiry concepts in accordance with the content nature of the 4 disciplines, it was found that art production clips matched with creation of work; art criticism clips matched with description of content; aesthetics clips matched with description of qualities; and in art history matched with analysis of style. The following are the description and discussion of the top-ranked clip in the four disciplines.

**Art production:** Initially the researchers explored the possibility by using the general keyword as 'art production' or 'studio art'. The result of this search showed the numerous clips more like performance with some music background but no narration. Just like capturing artists at work. Then, the researchers used the terms for particular studio techniques such as drawing, painting, sculpturing and print making.

When compare the amount of clips from techniques mentioned, it was found that most of the clips were about 'Drawing'. Thus, the top 5 video clips were about Drawing. Interestingly all of these turned out to be the creation of the same person, by using the uploading name as "markerilley." (Mark Crilley, the Japanese 'Manga' cartoonist). The top-ranked clip was "How to Draw a Realistic Eye." The artist demonstrated how to draw certain part of his cartoon character together with explanation and text caption.

In addition to the top-ranked clips, among the highest viewed clips were produced by 12 years old girl. The clips were recorded by the hand-held camera. Then, she inserted captions to explain creating steps.

**Art criticism:** The top-ranked video clip was "Chuck Close: Advice to Artists During a Crisis" The clip recorded the discussion of an artist who knows the piece of artwork. The content of the clip was not the criticism of the particular piece of work shown, rather the artist focused upon the past events that effect the direction of creating the piece of work.

**Art history:** With the keywords in relation to art history including History of Art, Art history, Art history teaching and Art history education, it was found that there were mixture of clips mostly not relate directly relate to informative aspect of Art history. When the researchers narrowed the scope of searching into the educational category, what had been found were the clips mostly the introduction of Higher education institutions that program study in Art history was offered.

However, after closely classified by means of analysis form constructed in this study and comparing the number of views, it was found that the video clip "500 Years of Female Portraits in Western Art" gained the most popularity. The content of this clip showed female portraits however, the sequence did not in accordance with the historical timeline. This clip did not have narration, only included the classical music as the background. The transitions of the portraits were made by morphing technique.
Aesthetics: When search with the keyword 'Aesthetics' in Thai language, the searching result included the clips in relation to advertisements in which the description of their products contain the word 'Aesthetics.' When search by English 'Aesthetics,' the top-ranked clips turned out to be something in relation to plastic surgery. Thus, the researchers decided to switch searching terms to aesthetics questions such as 'What is art?' That gained some useful clips that could justify Aesthetics discipline. It should be noted that there were rather limited clips. Among the selected video clips, the one that gained rather high viewing was 'What is Art.' The clip was in the form of raising the aesthetics issues and presented by means of discussion rather that clearly present the learning content. The clip was composed of images incorporate with background music.

Conclusion

The main purpose is to introduce one exploratory set of the strategies for searching and selecting video clips from free resource, particularly those published via YouTube. This particular study was done in September, 2012, it should be aware that in interface of the site, in this case, YouTube may change the interface. Further research should be valuable to suggest more alternatives for more specific context in relation to art education especially those suitable for Thailand.

References


Smuckarn S. (1991) Cultural Evolution of the Thai Society, Odien Store, Bangkok, Thailand [In Thai]


Appendix

Top-ranked video clip in each discipline

Art production

Figure 1 : How to Draw a Realistic Eye (Print Screen)

Title: How to Draw a Realistic Eye
Length: 10.16 minutes
Site: http://www.youtube.com/watch?v=LZ9Hpp8JygI
Uploaded on: Sept 25, 2009
Uploaded By: markcriley
Views: 10,102,873 times [Till: 19 September 2012]
Like: 53,626
Unlike: 1,145
Comments: 18,481 messages Mostly expressed appreciations, next were enquiry about tools and equipment, the program used to make the video clip
Art History

Figure 2: 500 Years of Female Portraits in Western Art (Print Screen)

**Title:** 500 Years of Female Portraits in Western Art  
**Length:** 2.53 minutes  
**Site:** [http://www.youtube.com/watch?v=nUDIoN-_Hxs](http://www.youtube.com/watch?v=nUDIoN-_Hxs)  
**Uploaded on Apr 22, 2007**  
**Uploaded by:** Philip Scott Johnson  
**Views:** 12,740,451 times  
**Like:** 38,419  
**Unlike:** 1,327  
**Comments:** 17,956 messages mostly appreciated.

Aesthetic
Figure 3: What is Art? (Print Screen)

Title: What is Art?
Length: 6.08 minutes
Site: http://www.youtube.com/watch?v=gZXOL-HUfWM
Uploaded on: 21 October, 2006
Uploaded by: Lowerbunk
Views: 90,114 times [Till 19 September 2012]
Like: 274
Unlike: 31
Description: Where do we draw the line between what is and isn’t art?
Comments: 327 messages, mostly expressed appreciations, many others tried to answer the question posted at the end of the video clip “What is Art?” The answers came from the viewers’ viewpoints, some were in agreeable with the artist, some other argued differently. It should be noted that the author of this clip also took part in sharing ideas to some of the viewers’ comments.

Art Criticism

Figure 4: Chuck Close: Advice to Artists During a Crisis (Print Screen)

Title: Chuck Close: Advice to Artists During a Crisis
Length: 3.00 minutes
Site: http://www.youtube.com/watch?v=BkOyZQymJ2A&feature=fvwre
Uploaded on: 9 February, 2009
Uploaded by: bigthink
Views: 41,883 times [Till 19 September 2012]
Like: 145
Unlike: 5
Description: The contemporary artist says the best time to make art is when everyone thinks art is dead.
Category: Personal, Blog
Comments: 52 messages Mostly were the opinions about the expression both agreed and disagreed