

INTERNATIONAL JOURNAL on



Vol. 3, No. 1

University of the Philippines Open University  
Los Baños, Laguna, Philippines

ISSN 2467-7469  
(June 2017)



# Online Learning

Online Communication  
Virtual Learning Environment  
Social Preference  
Teacher Readiness



## **Vision and Mission of the IJODEL**

### **Vision**

To be a leading international academic journal that publishes and disseminates new knowledge and information, and innovates best practices in open and distance electronic learning.

### **Mission**

The IJODEL shall publish and disseminate new knowledge and information based on original research, book reviews, critical analyses of ODeL projects and undertakings from various researchers and experts in the Philippines, the ASEAN Region, and the world, and concept articles with the intention of presenting new ideas and innovative approaches to interpreting and implementing best practices in open and distance e-learning as alternative delivery mechanism for quality education.

INTERNATIONAL JOURNAL ON



Vol. 3, No. 1

University of the Philippines Open University  
Los Baños, Laguna, Philippines

ISSN 2467-7469  
(June 2017)



# Online Learning

Online Communication  
Virtual Learning Environment  
Social Preference  
Teacher Readiness



## International Journal on Open and Distance eLearning



This publication is licensed under a Creative Commons Attribution 4.0 International License (see [www.creativecommons.org/licenses/by/2.0/](http://www.creativecommons.org/licenses/by/2.0/)).

The text may be reproduced provided that credit is given to the original author(s).

To obtain permission for uses beyond those defined in the Creative Commons license, please contact University of the Philippines Open University at [ijodel@upou.edu.ph](mailto:ijodel@upou.edu.ph).

Published in the Philippines by the University of the Philippines Open University

UPOU Headquarters  
Los Baños, Laguna 4031. Philippines  
Tel/Fax: (6349) 536 6014  
Email: [ijodel@upou.edu.ph](mailto:ijodel@upou.edu.ph)

ISSN 2467-7469  
Printed in the Philippines

## Board of Directors and Editorial Staff

### Editorial Board

**Dr. Grace Javier Alfonso**, University of the Philippines Open University, Philippines  
**Dr. Ricardo T. Bagarinao**, University of the Philippines Open University, Philippines  
**Dr. Melinda dP Bandalaria**, University of the Philippines Open University, Philippines  
**Dr. Tian Belawati**, Universitas Terbuka, Indonesia  
**Dr. Alexander G. Flor**, University of the Philippines Open University, Philippines  
**Dr. Primo G. Garcia**, University of the Philippines Open University, Philippines  
**Dr. Felix R. Librero**, University of the Philippines Open University, Philippines  
**Dr. Melinda F. Lumanta**, University of the Philippines Open University, Philippines  
**Prof. Dr. Santosh Panda**, National Council for Teacher Education, New Delhi

### Pool of Referees

**Dr. Celia T. Adriano**, University of the Philippines Diliman, Philippines  
**Dr. Grace Javier Alfonso**, University of the Philippines Open University, Philippines  
**Dr. Patricia B. Arinto**, University of the Philippines Open University, Philippines  
**Dr. Ricardo T. Bagarinao**, University of the Philippines Open University, Philippines  
**Dr. Melinda dP Bandalaria**, University of the Philippines Open University, Philippines  
**Dr. Sheila R. Bonito**, University of the Philippines Open University, Philippines  
**Dr. Curtis J. Bonk**, Indiana University School of Education, USA  
**Dr. Inocencio E. Buot, Jr.**, University of the Philippines Los Baños, Philippines  
**Dr. Li Kam Cheong**, The Open University of Hong Kong, China  
**Asst. Prof. Roberto B. Figueroa, Jr.**, University of the Philippines Open University, Philippines  
**Dr. Primo G. Garcia**, University of the Philippines Open University, Philippines  
**Dr. Benjamina Paula Gonzales-Flor**, University of the Philippines Los Baños, Philippines  
**Dr. Alexander G. Flor**, University of the Philippines Open University, Philippines  
**Dr. Serlie B. Jamias**, University of the Philippines Los Baños, Philippines  
**Dr. Felix R. Librero**, University of the Philippines Open University, Philippines  
**Asst. Prof. Al-Francis D. Librero**, University of the Philippines Open University, Philippines  
**Dr. Melinda F. Lumanta**, University of the Philippines Open University, Philippines  
**Dr. Rory McGreal**, Athabasca University, Canada  
**Dr. Jean A. Saludadez**, University of the Philippines Open University, Philippines  
**Dr. Arminda V. Santiago**, University of the Philippines Diliman, Philippines  
**Dr. Joane V. Serrano**, University of the Philippines Open University, Philippines  
**Dr. Madeline M. Suva**, University of the Philippines Los Baños, Philippines

### Editorial Staff

**Chief Editor:** Dr. Felix R. Librero  
**Managing Editor:** Ms. Alvie Simonette Q. Alip  
**Web Team:** Asst. Prof. Mari Anjeli Lubrica Crisanto  
Asst. Prof. Reinald Adrian dL. Pugoy  
**Graphics Designer:** Ms. Eleanor Payawal Manipol  
**Editorial Assistant:** Ms. Mary Aizel C. Dolom



**Editorial**  
**Volume 3, Issue No. 1**

The University of the Philippines Open University (UPOU) started publishing its academic journal, *The International Journal on Open and Distance e-Learning (IJODEL)* in 2015. Our latest issue, Vol. 3, No. 1 (June 30th) has just been completed and shall be online shortly.

Why are we publishing this journal? There are many reasons we can cite why we are publishing this journal, but I wish to focus on the almost mundane. In the developing world, there are countless experiences in undertaking distance e-learning activities mainly because we have seen this approach as a reasonably efficient approach to mass education in our environment. True, we are following the examples from developed countries, but we in the developing world are engaged in distance e-learning for survival-type reasons rather than just merely employing innovations as experienced by others. When we employ innovative ways of providing mass education to the teeming millions in our country sides, we are talking of social survival of our children. In this process, we have amassed wealth of experience that have hardly been learned by our educational planners and experts. This is understandable because such experiences have not been put on the table for serious discussion. This is perhaps one of the most important reasons why we feel very strongly about getting our colleagues to talk about their experiences in pursuing innovative ways of educating huge masses of humanity in our part of the world. We are as certain about our colleagues in developed countries wanting to learn from our experiences in the developing world as we in the developing world would want to learn from the experiences in the developed countries. The best way to do this, for now, is to present our experiences to academics of the world in an academic journal. This is what we are doing at IJODEL.

This is an open invitation to our colleagues in the developing as well as developed world to send us your articles for publication consideration in IJODEL. Please refer to our article submission procedure for the IJODEL (toward the end of this issue).

**Felix Librero, PhD**  
Chief Editor





## Table of Contents

### *Articles*

<b>Teacher Readiness for Online Teaching: A Critical Review</b> Thanh Thi Ngoc Phan and Ly Thi Thao Dang	1
<b>Design of a Virtual Learning Environment Implementation Framework for State Universities in the Philippines: A Case of Mariano Marcos State University</b> Wilben Christie R. Pagtaconan and Cecilia A. Mercado	17
<b>Social Presence among Distance Learners: Portrait of Online Communication at Universitas Terbuka</b> Irsanti Widuri Asih	33
<b>Smart Lecture Video Production: A Case Study with Philopsophy and Media Literacy</b> Tomotsugu Kondo	49
<b><i>Special Report on Technology Application</i></b>	
<b>Design and Development of an Online Repository System for Thesis and Special Problem Manuscripts</b> Armacheska R. Mesa	61
<b>Measuring System Usability and Readiness of System Users for Basic Healthcare Awareness and Education: A Case Study</b> Cinmayii A. Garillos-Manliguez	73



## Teacher Readiness for Online Teaching: A Critical Review\*

Thanh Thi Ngoc Phan<sup>1</sup> and Ly Thi Thao Dang<sup>2</sup>

<sup>1</sup>Vice Director, eLearning Center – HCMC Open University, Vietnam, thanh.ptn@ou.edu.vn

<sup>2</sup>Staff Executive, eLearning Center – HCMC Open University, Vietnam, ly.dtt@ou.edu.vn

### Abstract

*Online teaching is not only a trend but also a must at most of universities and colleges in many countries. The changes from conventional teaching to online teaching requires good preparation for faculty to adapt to the paradigm shift. Although online teaching has been popular in the world over the last two decades, it is new to faculty at universities in Vietnam, typically Ho Chi Minh City Open University (HCMCOU). Within the context of HCMCOU who is about to launch their online programs, it is essential to prepare the readiness for the faculty in online teaching (e-readiness). Conducting a research-based set of content and criteria is an initial step in this process. Hence, this literature review examines the prior empirical and case study research studies about teacher e-readiness including teacher attitudes, teacher training, and technical skills. The findings provide a foundation for HCMCOU in enhancing the preparation quality.*

**Keywords:** Teacher e-readiness, elearning, Preparation

### Introduction

The landscape of higher education has been changing rapidly in the past few decades, especially in terms of delivery format. The 21st century technology revolution, the changes in student demographics, higher cost of college education, and the competition among universities lead to the shift from conventional teaching to online teaching. The 21st century is the era of online education. The number of institutions including online education in their strategic plans and open more online courses has been increasing. In 2002, less than half of the institutions in the United States, approximately 48.8%, participating in their annual survey believed online education was critical to their long-term strategy (Allen & Seaman, 2013). In 2014, the number grew by 22%, and in the same report, it shows that 70.7% of all currently active degree granting institutions that are open to the public have some distance education offerings (Allen & Seaman, 2015). The online student enrollment for public and non-profit postsecondary institutions has risen continually and reached an all-time high of 33.5% (approximately 7.1 million) students taking at least one of the online course in 2014 (Allen & Seaman, 2014).

In other countries, online learning has been increasing tremendously with a higher rate of learners enrolling in online programs. Leading the 1st position in the field of online learning throughout Asia, India has developed numerous world-class online programs which are expected to “bring in a whopping US\$ 1 billion in revenue by the end of the decade” (“Edudemic”, 2012). In the same report, China, with a long history of distance education, was mentioned as “home to almost 70 online colleges” and is expecting the online learning industry will “grow by leaps and bounds

---

\*The original version of this paper was presented at the 30th Annual Conference of the Asian Association of Open Universities held at Crowne Plaza Manila Galleria, Manila, Philippines on 27 October 2016.

over the next few years.” In the United Kingdom, the funding of 100 million pounds in online education was recommended with the hope that it could make public programs more successful and accessible to students. In Australia, online education had increased by approximately 20% in 2012. It is expected that within the next ten years, Australia will become one of the leading providers of online education.

While online learning is not a new notion in those countries, it has just started to develop in Vietnam in recent years and received more attention and investment from the Ministry of Education and Training of Vietnam (MOET) and universities and colleges. Vietnam has joined Asia eLearning Network - AEN with the participation of the MOET, the Ministry of Science and Technology, University of Polytechnic, etc. (Nguyen, 2014). However, according to Nguyen (2014) comparing to the development of online education in other countries, especially developed ones, Vietnam is now at an initial stage and has a lot of things to do to be able to catch up with them.

Since online education is relatively new in Vietnam, it is necessary to prepare the country's education system to be mindful and well-prepared when implementing this learning delivery format. Lack of understandings about online learning may result in the failure of educational programs. The development of online education is the integration of technology, learning content and human resources including leaders, administrators, faculty members, staff, students and other stakeholders. Whereas a majority of academic leaders increasingly believe online education is critical to their long-term strategy. Only 28.0% of chief academic officers perceive that their faculty members accept the “value and legitimacy of online education.” This rate is substantially the same as it was in 2003, which is lower than the 30.2% reported for 2013, and even lower than the rate recorded in 2004 (Allen & Seaman, 2015). Allen and Seaman (2015) stated that with the apparent widening gap between faculty perception and institutional strategic objectives, many institutional leaders are searching for ways to harness the power of distance learning while maintaining the structural integrity of their institutions and promoting online teaching to a faculty who seem less than eager.

Within the scope of this study, the authors study how a higher education institution, Ho Chi Minh City Open University, prepare their faculty members to be adaptive to online teaching. Initially, the authors conducted a literature search on Google and Google Scholar in both English and Vietnamese language using the key words online teaching in Vietnam, and preparing teacher e-readiness in Vietnam ranging from 2002 to 2017; the authors found no scholarly papers on this topic issued in Vietnam as well as at HCMCOU. Obviously, there is a dearth of literature on this topic, while understanding and learning from experiences of institutions that have good preparation for their faculty e-readiness are very important to the success of their online programs. Therefore, the authors chose to conduct a critical literature review on faculty/teacher e-readiness preparation published all over the world to clarify what and how to prepare and learn from the best practices.

The findings of the literature based on Google Scholar search using the same key words and time range at the initial stage show that preparing faculty/teacher to be ready for teaching online should consider the following factors: attitudes, technology competency, pedagogy, training, and time constraint. The results are viewed, compared and discussed in this paper so that they can be implemented at HCMCOU.

## Objectives of the Study

HCMCOU was established in 1990 and is dedicated to promoting an active learning society by offering the most flexible and obtainable learning methods to their students. The school offers both mainstream and non-mainstream or distance education to learners in Vietnam. In 2016 annual report, there are more than 30.000 students are taking courses at HCMCOU. Among those, there are about 20.000 distance students taking traditional distance education courses. In the last few years, HCMCOU has identified online learning/eLearning as one of the strategic development plans and started to prepare the technology infrastructure and course content. The process requires the involvement of many stakeholders including the school administrators, curriculum designers, information technology staff, financial planner, especially the participation of the subject matter experts (faculty members) and students. However, when it is about to begin their online distance programs and as they chose to apply instructor-led online learning model, there is raising demand for preparing their faculty members to be adaptive to teach in a new environment which is very different from their conventional classrooms. Teaching online is an art which requires the faculty's expertise not only in learning content, technology skills but also online teaching methodology. According to Duong (2013), teachers who are the most successful and have the greatest influence on the growth of the students is not only the most knowledgeable teachers but also is rich in love and emotion. However, how can we convey the emotion and love through a machine – computer? This is indeed a huge challenge for online education, especially online teachers. The faculty/teachers need to be well-prepared to get ready to adapt to this change.

The adoption of online learning resonates well with HCMCOU mission by removing barriers that may impede access to learning, the flexibility of learning provision and student centeredness (Ncube, Dube&Ngulube, 2014). In the implementing process, faculty/teachers play an important role in a successful online learning experience by influencing and motivating their students (Yiong, 2008). Due to their significant role, faculty/teachers need to be well-prepared to teach in a new environment, online classrooms, which are different from traditional ones. The notion of preparing faculty/teacher e-readiness is new in the context of Vietnam, especially at HCMCOU where academic research studies have not been conducted. Consequently, this study aims at:

- conducting a critical literature review on faculty/teacher e-readiness practices and models in other countries;
- building a conceptual framework showing factors that influence the e-readiness preparation for faculty/teachers;
- discuss which practices and models could be implemented and how the influencing factors should be used or avoided in HCMCOU.

## Literature Review

### Online Teaching: Benefits and Challenges

#### Benefits

The development of online education has both advantages and disadvantages for all stakeholders. For school leaders and administrators, it has offered a more cost-saving delivery format in terms of less investment in building classrooms, power, and travel. It provides the flexibility for faculty and learners and reduce travel cost.

#### Challenges

In the new era of online teaching, faculty members and students gradually switch from traditional classrooms to cyber-learning environment. The pressure is heavier on the shoulders of faculty members who are required not only to be content experts but also pedagogical and technological personnel. In an ethnographic case study about the role of online distance learning instructors, Easton (2010, p.103) concluded that the role of online instructors requires merging of multiple roles which are the communication skills and a paradigm shift. The communication skills are similar to those needed for effective classroom teaching, and the paradigm shift regarding instructional time and space, virtual management techniques, and the ability to engage students through virtual communication (Easton, 2010).

Teaching in cyberspace requires instructors to move beyond old models of pedagogy into new practices that are more facilitative (Palloff and Pratt, 2000). According to Palloff and Pratt (2000), in online distance education, attention needs to be paid to the development of a sense of community within the group of participants for the learning process to be successful. In order to achieve success in transition to cyberspace classroom, several key areas were suggested, which are: ensuring access to and familiarity with the technology in use; establishing guidelines and procedures, generated with significant input from participation and “buy-in” from participants; promoting collaborative learning; and creating a double or triple loop in the learning process to enable participants to reflect on their learning process. “Successful faculty in online learning environment can “think out of the box” and set aside the traditional teacher-centered instructional model” (Simonson et al., 2012).

Though roles can be defined and key techniques can mostly be applied, online instructors have to face challenges teaching and managing online courses. Facing and overcoming challenges is difficult for instructors to solve by themselves. They need the support from the school administrators. In a survey study, Roby, Ashe, Singh, and Clark (2012) showed that when university administration provided support instructors, it enhanced the student experience in online learning environments and affords online instructors with adequate support and assistance.

The reality of teaching online courses may get instructors most involved with the operation and use of the learning management system. Blackboard is a medium which has been predominant for instructors and students to access teaching and learning. In their qualitative research, West, Waddoups and Graham (2007) explored how instructors implemented Blackboard, by experimenting with its features. Facing both technical and integration challenges, they attempted to adapt Blackboard features to match their goals and practices. They pointed out challenges that

instructors encountered when instructing online courses in two case studies. The researchers found that technical and integration challenges significantly influenced the success of instructors.

### **What is teacher e-readiness?**

Technically, readiness is defined as being fully prepared for some experience or action (Webster's New Collegiate Dictionary, Oxford Dictionary Online). Elearning readiness is referred as the mental and physical preparation of an organization for e-teaching experience or action (Borotis&Poulymenakou, 2004). Kaur and Abas (2004) suppose that implementing elearning readiness assessment helps a school to design e-teaching strategies and effectively achieve its Information Communication Technology goals. E-readiness is recognized as one of the most significant aspects for the success of implementing elearning programs in higher education (Rohayani.AH, Kurniabudi&Sharipuddin, 2015; Penna &Stara, 2008). According to Penna and Stara (2008), the e-readiness score can reveal "a learning institution's strengths and weaknesses in technology acquisition and training to inform policy decisions, to position the institution technologically in the competitive global market, and to apply limited resources wisely across institutional boundaries" (p.126). One of the reasons that elearning often fails is that "teachers try to carry over predominant styles of the classroom to the new media, rather than developing new pedagogies that would maximize the use of new technology" (Bates &Pool, 2003, as cited in Ncube, Dube&Ngulube, 2014, p.359). Within the context of this study, teacher e-readiness refers to their willingness, their preparation for basic technical and communication skills and training new teaching methodology for elearning.

### **E-readiness Assessing Models**

The e-readiness assessment was "used as a tool to determine a country's starting point" for implementing elearning in colleges of education in India from the views of its heads/principals (Azimi, 2013). The readiness categories include "ICT infrastructure, Human Resources, Budget and Finance, Psychological and Content regarding the different types of colleges of education" (p.769). Azimi (2013) concluded that there was no significant difference among Colleges with respect to their types (Govt. Private-aided and Private-unaided) in readiness of elearning. In another empirical study, Darab and Montazer (2010) developed a new framework for assessing elearning readiness in the Iranian universities. The framework includes nine elements which are management, policy, network, equipment, security, culture, human resources, financial, regulations, content, and standards. This framework was applied for assessing the e-readiness at universities in Iran. It was found that "two out of nine indices enumerated under soft readiness, i.e. 'laws and regulations' and 'management' are the most important indices for the implementation of elearning systems.

The preparation for the readiness of faculty members plays such an important role in the process of transferring from conventional to cyber learning environment as they are the major driving force connecting the administrators and the students to help carry out the school mission. The faculty readiness including attitude, training, and behavior is described as one of the most influencing factors on student online learning experience (Adair, edited by Shattuck, 2014). Therefore, it is essential to encourage and engage faculty members to willingly participating the process to operationalize the school's online education plans. However, it has been questioned that how administrators can promote faculty buy-in to teach online, what would motivate faculty to offer online courses if they would continue to integrate their teaching after faculty

development programs digitally. These open-ended questions have fostered many scholars in the field to conduct different types of research to figure out methods and models for preparing the e-readiness for their faculty members.

In a critical literature review on the elearning readiness conducted in 2015, Rohayani.AH, Kurniabudi and Sharipuddin found that skills and attitudes as “the most critical factors influencing elearning readiness.” In this study, the authors discussed the theory of E-learning Readiness Factors and examined the readiness factors found in previous research studies. This meta-analysis paper, however, narrowed itself to the number of reviewed articles– only seven articles were used. Although skills and attitudes accumulated as the highest score among other factors, the gap the scores was not huge. While skills and attitudes score 3, the other factors score 2 or 1.

Al-alak and Alnawas (2011) examined the relationship between Jordanian lecturers’ attitudes towards the adoption of elearning system. Studying at a larger scale, Alabdullaziz et al. (2010) investigated instructors’ and learners’ attitudes toward elearning. Both research studies found that there existed positive relationship between the instructors/lecturers’ attitudes toward elearning. Teacher attitudes was concluded to have positive impacts on the success of the implementation of elearning in the sector of higher education (Al-aka & Alnawas, 2011; Alabdullaziz, Alanazy, Alayahya & Gall, 2010). However, pressures from a university may be a de-motivation to the lecturers and made them feel resistant to change their work routines and failed to understand the benefits of elearning system fully (Al-alak & Alnawas, 2011).

According to Mukminin and Hidayat (2013), lecturers need to have some understanding of pedagogy as it relates to distance instruction in order to be successful as an online instructor. Some best pedagogical practices that are specific to distance learning are induction, the building of learning communities, construction of support 3 of 15 networks for students and lecturers and the development of adequate security practices. However, online instructors in Indonesia still do not know how to convert traditional lectures into interactive lessons that encourage students to be active participants; therefore, the worrying attitudes towards online learning remains. As a result, there need to be other best practices which include thorough planning, communication between lecturers and students, student-student interactions, respect of student diversity with regard to learning styles, collegial and individual activities that ensure high levels of time on task, the importance of prompt feedback, and the maintenance of high expectations. Induction refers to ensuring that the students entering an online learning environment have the technological proficiency to be successful. Examples of learning communities for students include discussion boards, avenues for peer review of assignments, and chat sessions.

Sadik (2007) found Higher education institutions (HEIs) in Africa face the challenge of responding to the expanding demand for tertiary education while maintaining or enhancing the quality of their course offerings. This demand has led to some HEIs introducing the use of interactive web technologies to support their distance teaching and learning practices. However, academic staff at these institutions may struggle to provide sufficient support to online learners in part due to inadequate staff capacity in terms of familiarity with and use of online communication tools and virtual learning environments. Moreover, adopting eLearning represents one of the major problems in lecturers development plans at Egyptian University. His report stated that lecturers considered themselves to have the limited competence and little experience in eLearning. Potential online instructors are also apprehensive about the adequacy of institutional support.



E-learning paradigm has grown significantly in the tertiary education sector in Palestine (Shraim, 2008). For Palestinian education, e-learning has become a necessity rather than a luxury to mitigate the negative effects of the ongoing Palestinian Israeli conflict on the access to quality education. Substantial investment has been made in developing the elearning approach since 2002. However, the use of elearning by higher education instructors is still underutilized, and considerable efforts should be made to enable them to take full advantage of the potential of e-learning. The preliminary findings of this study show that instructors have positive attitudes to embark on e-learning initiatives. This research also demonstrates that individual characteristics and technological factors have a significant influence on instructors to adopt elearning. However, organizational factors were found to be the most significant determinant for adopting e-learning. Political will and the capacity of the university to respond quickly and appropriately to the transition change is crucial to facilitate wider adoption. In practice, this requires decision makers to take an active interest in and provide visible support for the e-learning approach to ‘bridge the chasm’ between early adopters and the early majority and promote the rate of diffusion of the e-learning approach.

### **Methodology**

As the objective of the study is to conduct a critical literature on teacher e-readiness to build a framework displaying factors influencing teacher e-readiness, articles relevant to the research topic were identified from Google Scholars search engine with the time range from 2002 to 2017 (the last 15 years). The search strategy used was to identify articles with “online teaching preparation,” “teacher e-readiness,” “willingness to teach online.” All references obtained were entered into a Reference Manager Software named Mendeley to check for duplication.

Our literature search identified 41 articles relevant to the topic; however, most of them focused on the readiness of educational institutions rather than teachers’. Only seven studies were selected for review (Table 1).

### **Results and Discussions**

#### **Factors Influencing Teacher e-Readiness**

The results of the literature search show that there are plenty of research studies investigating the e-readiness of higher education institutions toward elearning. However, the number of studies focusing teacher e-readiness is limited. Table 1 below displays the findings of the empirical research studies related to factors impacting the preparation for teacher e-readiness in colleges and universities.

Table 1. Factors Influencing Teacher e-readiness

Year of Publication	Authors	Title	Factors Influencing teacher e-readiness	Perceptions of Elearning
2016	Glenda H. E. Gay	An assessment of online instructor e-learning Readiness before, during, and after course delivery	Technical skills; Pedagogical skills; Lifestyle skills	Not mentioned in the article
2014	SiphamandlaNcube, LuyandaDube, Patrick Ngulube	E-Learning Readiness among Academic Staff in the Department of Information Science at the University of South Africa	Attitudes Technology Training	Appreciate the value of e-learning
2011	Krishnakumar R & Rajesh Kumar M	Attitudes of Teachers of Higher Education towards eLearning	Attitudes; ICT familiarity Training	Favorable
2010	TaherehEslaminejad, Mona Masood & Nor AzilahNgah	Assessment of instructors' readiness for Implementing e-learning incontinuing medical Education in Iran	Attitudes; Technology competency; Teaching pedagogy; Continuous training	Positive
2008	Ah-Choo Koo	Factors affecting teachers' perceived readiness for online collaborative learning: A case study in Malaysia	Attitudes New learning paradigm; Collaborative intention; Time constraint Technology Training	Positive
2007	Alaa Sadik	The Readiness of Faculty Members to Develop and Implement E-Learning: The Case of an Egyptian University	Competencies, Experience, Attitudes Training	Useful; having the potential to support teaching-related activities

Attitude or lifestyle is an initial and important factor influencing the readiness of teachers/instructors for elearning implementation. Except for the study of Gay (2016), other research studies displayed in Table 1 show that teachers have positive perceptions of elearning. Both Koo (2008) and Eslaminejad, Masood and Ngah (2010) stated that the teachers participating in their research expressed positive attitudes toward elearning. The instructors in Sadik's (2007) found "elearning is useful and have the potential to support their teaching-related activities" (p.445). How teachers perceive the adoption of elearning in higher education institution is, therefore, have strong impacts on the success of the implementing process. "Attitudes" was mentioned as one of the main factors influencing the e-readiness of the teachers/instructors in all the selected research in Table 1. Although the word "attitudes" was not directly used in Gay's (2016) study, "lifestyle readiness" was described as another way of "attitudes." According to Gay (2016), lifestyle readiness refers to the instructor-related issues such as satisfaction, resistance to change, expertise, the organizational culture, administrative instructions, and rules in an online environment.

Technical skills also have strong impacts on the teacher e-readiness. The research findings revealed that the more familiar the teachers are with technology (computer, internet, and media tools), the readier they are for teaching in an online environment. Technical skills are the abilities of the teachers to "access the Internet and a dedicated network connection, their capabilities in using essential software tools and access to the online campus' help desk" (Holsapple& Lee-Post, 2006, as cited in Gay, 2016). According to Ncube, Dube, and Ngulube (2014), the fast evolvement of technology might become issues for teachers as technology could be intimidating. In Koo's quantitative research, the findings reveal that the factor of "insufficient access to technology" had a marginally significant effect ( $P < .1$ ) in predicting teachers' perceived readiness for online collaborative learning in their schools (p.274).

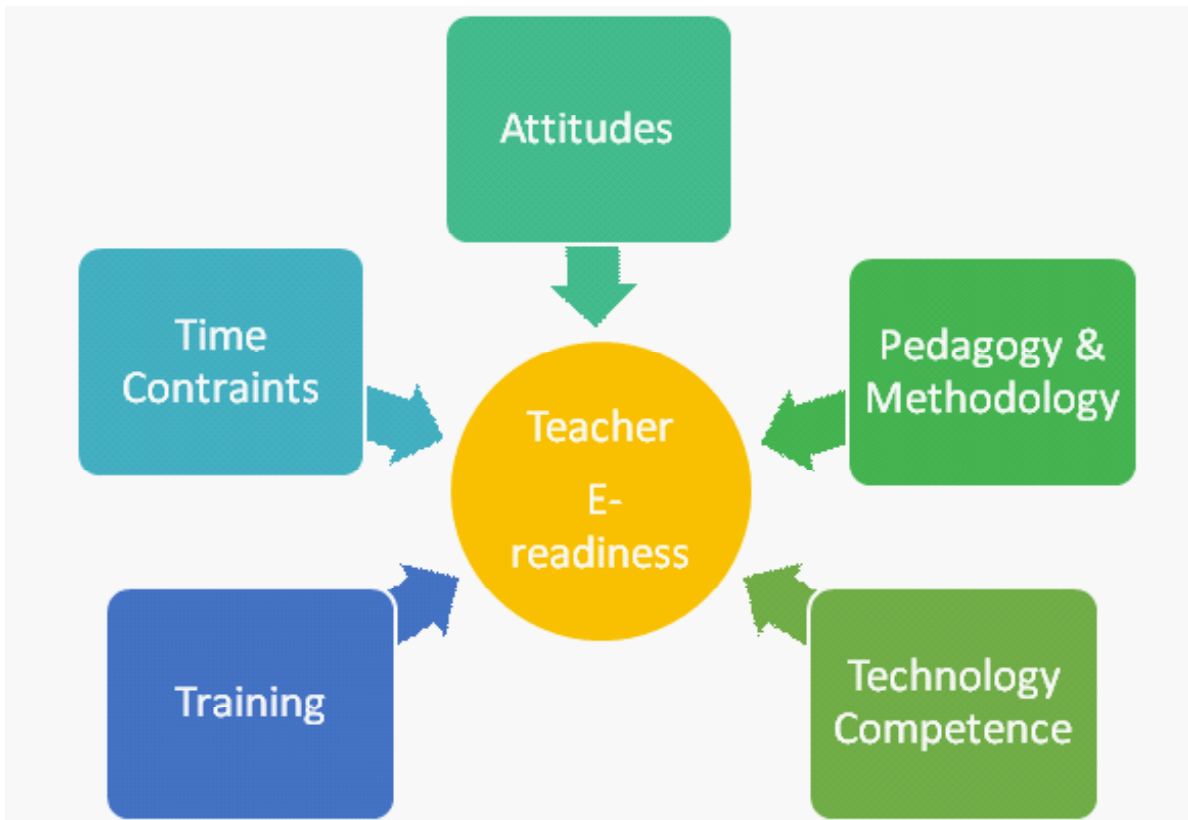
Furthermore, one of the utmost important factors influencing teacher e-readiness is online teaching pedagogy. When accessing the impact of this factor, Gay (2016) evaluate whether online instructors prefer a traditional classroom setting compared to an online environment for teaching, are self-motivated, independent learners of new technologies or software applications, proactive in completing tasks well in advance of deadlines, prefer to receive written feedback or verbal feedback, and are confident regarding communicating effectively and comfortably in writing (p.206). Online teaching requires the paradigm shift from traditional teaching methods to innovative ones (Ncube, Dube&Ngulube, 2014; Eslaminejad, Masood &Ngah, 2010). Eslaminejad, Masood and Ngah (2010) concluded that in the paradigm shift from traditional to the non-traditional education system, instructors need a set of online content and resources to facilitate learning process (p. e412). Hence, it is necessary to be aware of the change of teaching pedagogy when moving from conventional classrooms to a cyber learning environment.

Last but not least, training programs should be carried out to support teacher e-readiness. The training programs needed to be continuously and varied in different aspects of online teaching, including technical skills, online teaching methodology and pedagogy, online educational content, etc. (Eslaminejad, Masood &Ngah, 2010; Krishnakumar& Kumar, 2011; Ncube, Dube&Ngulube, 2014). Finally, time constraint was also an element influencing teacher readiness for elearning. However, it was not widely expressed in all selected articles, and its role comparing to other factors is less vital.

### Conceptual Framework for Teacher E-readiness

The conceptual framework for teacher e-readiness is derived from the findings of this critical literature review. The research studies show that the key factors influencing teacher readiness for elearning include attitude, technology competency, pedagogy, training, and time constraint (Figure 1).

Figure 1: Factors Influencing Teacher E-readiness



#### Envisioning the Context of Ho Chi Minh City Open University through the Framework of Factors Influencing Teacher E-readiness

Ho Chi Minh City Open University is going to launch their online programs after several years of preparation. The school has developed learning content and modern infrastructure; however, there has not much investment in preparing their lecturer’s readiness for teaching online. Hence, this critical literature review helps provide a general picture of what should be considered and done for the preparing process. The newly conducted framework based on the findings of this paper is, therefore, a good lens for the authors to re-envision the status of the school in getting ready before starting a new teaching format.

Currently, there are about 400 lecturers who graduated with master or doctoral degrees from national institutions or abroad. Although the school has used Moodle—an open source learning management system—for more than ten years, its main function was to provide forums for students to post their questions. The number of lecturers and students using the system was very limited because there was no learning activities or learning programs operated in the system. Thus, teaching on Moodle appears to be a new concept to most of the lecturers at Ho

Chi Minh City Open University. Since the administrators of the school began to prepare for online programs which will be mainly carried on a Learning Management System powered by Moodle, they predicted that there is a lot to do to prepare the lecturers to work in a new teaching delivery format. One of the most important factors to take into account is the attitudes of the lecturers who are going to teach online.

### **Attitudes**

According to Ncube, Dube and Ngulube (2014), elearning can assist the university to advance its academic goals but it is important to note that these goals may be influenced by the lecturers' attitudes toward elearning (p. 357). It was found that positive attitudes have strong impacts on the success of the adoption of elearning in higher education institutions (Table 1). Reflecting on the attitudes of the lecturers of HCMC Open University, it is subjective to affirm whether they are positive or negative about the implementation of elearning and teaching online programs because there have not had any research studies conducted on this topic at the school. Understanding lecturers' attitudes will be useful for the school administrators to have strategic plans to support and motivate them to participate in the adoption of elearning with willingness. Within this paper, we would recommend that HCMCOU administrators should encourage more research on exploring the attitudes of lecturers before, during and after online course delivery.

### **Pedagogy and Methodology**

“Readiness in terms of instructional strategies or pedagogy has to do with the knowledge, skills, attitudes, and habits of instructors to use the appropriate strategies acquired through normal face-to-face classroom interaction to accommodate the elearning “classroom” and learners” (Eslaminejad, Masood & Ngah, 2010, p.e406). The term “pedagogical knowledge” refers to the ability to design appropriate learning experiences and good at selecting instructional media and delivery methods, management of small/large group discussion, and internet interaction (Gagne et al., 2005, as cited in Eslaminejad, Masood & Ngah, 2010). Those learning activities must be designed for the web and available through the Internet. These could not be achieved unless the teachers forming good habits with discipline.

Issues of methodology were identified as a major challenge affecting the success or otherwise of elearning. Most researchers emphasized that design, delivery and pedagogy challenges are crucial and traditional approaches cannot be assumed to transfer to the elearning environment. As the original design idea in Ho Chi Minh City Open University is personal and essentially connected with individuals, design education focuses on strong collaboration between teacher and student as well as among peers. Therefore, in order to be like a traditional classroom based activities such as lectures that have been practiced in many other disciplines, online education has to call for a wide array of instructional methods such as problem-based learning, project-based learning, inquiry-based learning, scenario-based learning, etc. The teacher's role has to shift from the lecturers to instructors or facilitators of the online classes and have to maximize the role of the learners. Learners need to be the center of the learning process and can express themselves in online learning. This educational philosophy fits into HCMC Open University's academic goals as the leaders and the curriculum designers always have the learners as the locus of their teaching and training programs. The school aims at providing the learners with practical skills and profound knowledge based on the theory of learning by doing. The process of transferring these educational goals from face-to-face to online environment requires the lecturers of the school to be well

prepared for the paradigm shift. Beyond the knowledge and skills vital for online teaching, online instructors should teach with care, love and passion.

### **Technology Competence**

Ho Chi Minh City Open University (HCMCOU) acknowledges that for the instructors to be good facilitators for online learning, they must have the technological skills and competencies of basic computer operation and technical issues relating to internet usage, such as web searching and conferencing and managing a learning management system. Therefore, there has been early efforts to computerize the administration procedures and course management system at HCMCOU. So far, there have been certain positive outcomes such as network and programs have been deployed. However, most of these systems are underdeveloped. Moreover, many teachers who do not consider themselves to be well skilled in using Information and Communication Technology (ICT) feel that technologies are not helpful in their teaching and personal work. According to Le et al. (2014), the level of ICT skills and knowledge of the key participants differed significantly in a large institution like HCMCOU. Young scholars, having grown up with ICT, had an advantage but it could take time for the older generations to get used to the new ICT and LMS.

Apart from the advantages that the existing system brought to HCMCOU, there were many drawbacks that needed to be taken into account. Firstly, there was still insufficient understanding about eLearning and ICT among three important players: manager, lecturers, and students. This was mainly because the current course management system did not apply those in their activities. In 2016, HCMCOU has tried to change the culture by using the modern technology in daily activities. This change started with the training which includes training in basic skills in using technology – Google Apps as well as training in the integration of those technologies into interactive and effective teaching. However, the training still does not have an efficient result.

### **Training**

One of the important missions of Ho Chi Minh City Open University is the support to instructors about applying innovative technology in their effective teaching. Therefore, the University has handled many ICT training courses. However, those trainings have not brought effective results as expected. The reason is that the content is not focusing on how to apply those skills in online class. Moreover, providing pedagogical training for teachers, rather than simply training them to use ICT tools, is an important issue. Nevertheless, the University lacks pedagogical training for instructors. This leads after instructors have attended professional development courses in ICT they still do not know how to use ICT in their class. They explained that this is because the course only focuses on instructors acquiring basic ICT skills and do not often teach instructors how to develop the pedagogical aspects of ICT. Therefore, when there are new tools and approaches to teaching, instructor training is essential in both ICT and pedagogical skills if they are to integrate these into their teaching.

### **Time Constraint**

Koo (2008) supposed that time constraint could be a major impediment to affect the teachers' perceived readiness for online collaborative learning. Some teachers expressed that they were too busy with their classroom and school administrative works (Lim & Hwa, 2007; Koh, 2004, as cited in Koo, 2008). This could be problematic for HCMCOU lecturers when adopting online education. The lecturers have been used to teaching face-to-face classrooms for both mainstream

and distance education. Besides a certain number of periods they are required to teach each year, the lecturers at HCMCOU are assigned other tasks such as designing and developing learning materials, doing research and other administrative work. The workload seems to be high and might make the lecturers feel overwhelming. Hence the school leaders issued a more flexible policy for the lectures in which they can choose whether to do research or designing learning materials or designing and teaching online

### Conclusions

The results of the selected research papers in this critical review show that there are many factors influencing teacher readiness for elearning. A conceptual framework for preparing teachers for e-readiness was built based on the findings of these research studies. The key elements of the framework are factors discovered in the literature review, including attitudes, technology competence, pedagogy and methodology, training, and time constraint. Understanding these factors and having strategic implementation plans will help higher education institutions to succeed in adopting elearning “without having to spend the cost, effort, and time” more than necessary (Rohayani, Kurniabudi, & Sharipuddin, 2015).

### Recommendations

As the purpose of this study is to find out what to do to prepare teachers for e-readiness so that we could suggest solutions regarding this aspect for Ho Chi Minh City Open University before launching their elearning programs. Research on the application of these factors as readiness assessment should be conducted at the school firstly for identifying the level of readiness of the teachers in particular and the school in general and then designing appropriate training courses for the lecturers. The training courses could be about online teaching pedagogy and methodology, technical skills, or seminars presenting online teaching experiences.

### References

- Abhijit B. V., & Duflo, E. (2014). (Dis)organization and success in an economics MOOC. *American Economic Review*, 104(5), 514-518.
- Alabdullaziz, F., Alanazy, M. M., Alyahya, S., & Gall, J. E. (n.d.). Instructors' and learners' attitudes toward e-learning within a college of education. 34th annual, 3.
- Al-alak, B. A., & Alnawas, I. A. (2011). Measuring the acceptance and adoption of e-learning by academic staff. *Knowledge Management & E-Learning: An International Journal (KM&EL)*, 3(2), 201-221.
- Allen, I. E., & Seaman, J. (2013). *Changing course: Ten years of tracking online education in the United States*. Sloan Consortium. PO Box 1238, Newburyport, MA 01950.
- Allen, I. E., & Seaman, J. (2015). *Grade level: Tracking online education in the United States*. Babson Park, MA: Babson Survey Research Group.

- Azimi, H. M. (2013). Readiness for implementation of e-learning in colleges of education. *Journal of Novel Applied Sciences*, 2(12), 769-775.
- Borotis, S. and Poulymenakou, A. (2004). e-Learning Readiness Components: Key Issues to Consider Before Adopting e-Learning Interventions. Retrieved from [http://www.eltrun.gr/papers/eLReadiness\\_ELEARN2004.pdf](http://www.eltrun.gr/papers/eLReadiness_ELEARN2004.pdf)
- Darab, B., &Montazer, G. A. (2011). An eclectic model for assessing e-learning readiness in the Iranian universities. *Computers & Education*,56(3), 900-910.
- Duong, G.V.(2013). The biggest challenge in teaching is emotion. Retrieved from <http://vietnamnet.vn/vn/giao-duc/138576/thach-thuc-lon-nhat-la-cam-xuc-trong-qua-trinh-day-va-hoc.html>
- Easton, S. S. (2003). Clarifying the instructor's role in online distance learning. *Communication Education*, 52(2), 87-105.
- Edudemic (2012). 8 countries leading the way in online education. Retrieved from <http://monitor.icef.com/2012/06/8-countries-leading-the-way-in-online-education/>
- Eslaminejad, T., Masood, M., &Ngah, N. A. (2010). Assessment of instructors' readiness for implementing e-learning in continuing medical education in Iran. *Medical Teacher*, 32(10), e407-e412.
- Hung, N. M. (2014). Using ideas from connectivism for designing new learning models in Vietnam. *International Journal of Information and Education Technology*, 4(1).
- ICT Center for Education MOET Vietnam. (2015). Vietnam higher education: Reform for the nation's development. Retrieved from [http://www.unescobkk.org/fileadmin/user\\_upload/apeid/workshops/maca008/papers/3-p-7-4.pdf](http://www.unescobkk.org/fileadmin/user_upload/apeid/workshops/maca008/papers/3-p-7-4.pdf)
- Kaur, K. and Abas, Z. (2004). An assessment of e-learning readiness at the Open University Malaysia. Paper presented at the International Conference on Computers in Education (ICCE2004), Melbourne, Australia.
- Koo, A. C. (2008). Factors affecting teachers' perceived readiness for online collaborative learning: A case study in Malaysia. *Educational Technology & Society*, 11(1), 266-278.
- Krause, S., & Lowe, C. (2014). *Invasion of the MOOCs: The promise and perils of massive open online courses*. Parlor Press: South Carolina. Retrieved from [http://www.parlorpress.com/pdf/invasion\\_of\\_the\\_moocs.pdf](http://www.parlorpress.com/pdf/invasion_of_the_moocs.pdf)
- Krishnakumar, R., & Rajesh, K. M. (2011). Attitude of teachers' of higher education towards e-learning. *Journal of Education and Practice*, 2(4).
- Le, H. K., Sriratanaviriyakul, N., Nkhoma, M., & Vo, H. X. (n.d.). Ho Chi Minh City Open University: IT governance in Vietnamese higher education. *Journal of Information Technology Education: Discussion Case*, 3(3).



- Mukminin, A., & Hidayat, M. (2013). Teaching in a digital era: English lecturers' readiness toward the internet use in teaching and learning at selected higher education institutions in Indonesia. *Asia-Pacific Collaborative Education Journal*, 9(2), 113-124.
- Ncube, S., Dube, L., & Ngulube, P. (2014). E-learning readiness among academic staff in the Department of Information Science at the University of South Africa. *Mediterranean Journal of Social Sciences*, 5(16), 357.
- Nguyen, H. (2014). Vietnam education and elearning trends. Retrieved from <http://dantri.com.vn/suc-manh-so/giao-duc-viet-nam-va-xu-huong-e-learning-1407947936.htm>
- Palloff, R. M., & Pratt, K. (2000). Making the transition: Helping teachers to teach online. Retrieved from <http://www.educause.edu/asp/doclib/abstract.asp?ID=EDU0006.html>
- Penna, M. P., Stara, V., & De Rose, M. (2009). The failure of e-learning: why should we use a learner centred design. *Journal of e-Learning and Knowledge Society*, 3(2).
- Roby, T., Ashe, S., Singh, N., & Clark, C. (2013). Shaping the online experience: How administrators can influence student and instructor perceptions through policy and practice. *The Internet and Higher Education*, 17, 29-37.
- Rohayani, A. H. (2015). A literature review: Readiness factors to measuring e-learning readiness in higher education. *Procedia Computer Science*, 59, 230-234.
- Sadik, A. (2007). The readiness of faculty members to develop and implement e-learning: The case of an Egyptian university. *International Journal on ELearning*, 6(3), 433.
- Shattuck, K. (Ed.). (2014). *Assuring quality in online education: practices and processes at the teaching, resource, and program levels*. Stylus Publishing, LLC.
- Shraim, K. (2012). Moving towards e-learning paradigm: Readiness of higher education instructors in Palestine. *International Journal on E-Learning*, 11(4), 441-463.
- Simonson, M., Smaldino, S., & Zvacek, S. M. (Eds.). (2014). *Teaching and learning at a distance: Foundations of distance education*. IAP.
- West, R. E., Waddoups, G., & Graham, C. R. (2007). Understanding the experiences of instructors as they adopt a course management system. *Educational Technology Research and Development*, 55(1), 1-26.
- Yiong, B. L. C., Sam, H. K., & Wah, T. K. (2008). Acceptance of e-learning among distance learners: A Malaysian perspective. In *Proceedings: Ascilite Conference*.
- Yuan, L., Powell, S., & CETIS, J. (2013). MOOCs and open education: Implications for higher education.



## Design of a Virtual Learning Environment Implementation Framework for State Universities in the Philippines: A Case of Mariano Marcos State University

Wilben Christie R. Pagtaconan<sup>1</sup> and Cecilia A. Mercado<sup>2</sup>

<sup>1</sup>Mariano Marcos State University, Philippines, chris\_pagtaconan@yahoo.com

<sup>2</sup>Saint Louis University, Philippines

### Abstract

*Virtual Learning Environment (VLE) provides a unified platform for content delivery, communications, assessment, and course management with managed interfaces linked to the institution's central information systems and resources. A VLE is a web-based package designed to help teachers create online courses. It involves facilities for teacher-learner communication and peer-to-peer communication. Many universities nowadays are adopting VLE to support their respective teaching and learning process. With VLE, they can innovate the mode of the delivery of instruction as well as to introduce new pedagogy for learning and interaction among faculty and students. However, without a robust understanding of the user needs, the infrastructure and the technology requirements of the VLE, any implementation plans become futile. A well designed VLE implementation framework is, therefore, a vital precursor to the success of an effective implementation. The study presents a VLE implementation framework for State Universities in the Philippines specifically for the Mariano Marcos State University along three major elements: the users, the ICT infrastructure, and the VLE architecture along with their unique implementation requirements. The design of the VLE implementation framework was based on the various inputs and results of the assessments undertaken in the study. The assessments include a) ICT e-Readiness in terms of its existing ICT infrastructure and users' ICT profile, b) VLE functional requirements, components, features and capabilities and c) open source technologies for VLE implementation.*

**Keywords:** Virtual Learning Environment (VLE), e-Learning, ICT infrastructure

### Introduction

The use of technology for learning is influenced by developments in numerous fields: technology itself, global trends (market economy growth, changing immigration patterns, and intellectual shifts to emerging economies), societal trends and trends within educational research.

According to the Joint Information Systems Committee, the term VLE refers to the components in which learners and tutors participate in “on-line” interactions of various kinds, including on-line learning. However, not all interactions have to be online since a VLE can act as a focus for students' learning activities and their management and facilitation, along with the provision of content and resources required to help make the activities successful (Stiles, 2000).

The Mariano Marcos State University (MMSU) is a comprehensive institution of higher learning in the Ilocos region. At present, MMSU has ten academic units. Learning setting at MMSU is mostly face-to-face that is, through classroom discussion. Subsequently, traditional classroom setup has been observed not enough for teachers to deliver their lessons especially in cases where classes are suspended due to holidays, school activities, calamities, and other interruptions. That is why some faculty members use the Internet as an extension of the classroom setting. Blogs, personal websites, chat, and email are some of the tools that faculty members use to suffice students' needs.

The purpose of this study is to design a VLE implementation framework for MMSU that will innovate the university's mode of delivery of instructions to the students and introduce a new pedagogic model for learning and interaction with faculty and students.

### **Methodology**

The study was conducted at the Mariano Marcos State University, Batac City, Ilocos Norte. The surveys conducted considered only the undergraduate faculty and students of the Batac campus. Respondents were randomly chosen with the use of the stratified random sampling technique. The population of faculty in each college was based on the list of the faculty provided by the Human Resource and Management Office. Also, the population of students in each college was based on the report of enrolment prepared by the Registrar's Office during the period of Second Semester for Academic Year 2010-2011. The total sample sizes considered are 160 faculty and 377 students for a total of 537 respondents.

To determine the e-Readiness status of MMSU ICT in terms of its ICT infrastructure, personal interview, interview through a questionnaire and analysis of secondary data were conducted. The ICT infrastructure assessment rubric by Mokhtar, et al. (2007) was utilized.

The researcher adopted the self-evaluation rubric developed by Mankato (Minnesota) Public Schools. This tool was designed to help staff understand their current level of skills with computer technologies. The self-evaluation rubric considers 13 areas: Basic Computer Operation, File Management, Word Processing, Spreadsheet Use, Database Use, Graphics Use, Internet Use, Telecommunications Use (E-Mail), Ethical Use Understanding, Information Searching, Video Production, Presentation Skills, and Technology Integration.

The VLE functional requirement assessment tool designed by JISC infoNet (n.d.) was used to understand the users' VLE needs of both students and faculty.

Series of comparative studies were made using the currently available free software and open source VLEs: Chamilo; Claroline; Dokeos; eFront; ILIAS; Moodle; and Sakai. The comparative studies undertaken are a comparison between the VLE products based on functions, a comparison between the VLE products based on features and capabilities, and assessment of the requirements for the VLE framework for MMSU.

The design of the VLE implementation framework was based on the different inputs and results of the assessment undertaken in this study. This includes assessment of MMSU ICT e-Readiness in terms of its existing ICT infrastructure and users' ICT profile, and review of the VLE functional requirements, components, features and capabilities, and open source platforms.

## Results and Discussion

### Status of MMSU ICT e-Readiness

Addom(2004) pointed out that e-readiness assessment is the first step in almost all approaches to the measurement of digital-divide problem to consider an organization's ability to integrate ICT.

### Status of MMSU's ICT Infrastructure

The level of implementation of MMSU ICT infrastructure in terms of computers is moderate. Network and Internet manifests a moderate level of implementation. Display screen technologies and peripherals show that there is a moderate level of implementation. On the other hand, the software and information systems category interpreted as high level of implementation. The overall level of implementation of MMSU ICT infrastructure based on the results shows that the university has a moderate level of ICT implementation.

### Status of MMSU Faculty ICT Profile

This section aimed to understand and define the professional profile of the faculty members of MMSU in terms of their ICT capabilities.

Table 1. MMSU faculty profile based on ICT skills.

Scale	No Capability		Beginner		Intermediate		Advance	
	f	%	f	%	f	%	f	%
Basic Computer Operation	0	0.00	8	5.00	90	56.25	62	38.75
File Management	0	0.00	3	1.88	84	52.50	73	45.63
Word Processing	0	0.00	18	11.25	90	56.25	52	32.50
Spreadsheet Use	4	2.50	52	32.50	55	34.38	49	30.63
Database Use	60	37.50	67	41.88	18	11.25	15	9.38
Graphics Use	33	20.63	78	48.75	28	17.50	21	13.13
Internet Use	0	0.00	53	33.13	64	40.00	43	26.88
Telecommunications Use (email)	8	5.00	84	52.50	27	16.88	41	25.63
Ethical Use/ Understanding	3	1.88	99	61.88	32	20.00	26	16.25
Information Searching	3	1.88	98	61.25	34	21.25	25	15.63
Video Production	121	75.63	20	12.5	6	3.75	13	8.13
Presentation Skills	8	5.00	34	21.25	59	36.88	59	36.88
Technology Integration	5	3.13	64	40.00	78	48.75	13	8.13

As shown in Table 1, the respondents assessed themselves with an intermediate level of skills on the following areas: basic computer operation, file management, word processing, spreadsheet use, Internet use, telecommunications use, presentation skills and technology integration. Likewise, the respondents rated themselves beginner in terms of database use, graphics use, ethical understanding and information searching. However, majority of the respondents have no capability on video production skill. The survey's result reflects that the level of ICT skills of MMSU faculty members is intermediate. This shows that MMSU faculty members are capable or fit in handling such VLE to enhance their teaching method.

### **Evaluation of VLE**

This section discusses the result of the evaluation as regards the priority level of users on VLE functional requirements and the evaluation of the VLE components, features and capabilities vis-a-vis open source platforms.

#### **Users' Priority Level of Preference on the VLE Functional Requirements**

Access and security functions marked with the highest level of priority on both faculty and students as regards to secure access, security on groups' communication tools, and organizing and managing groups. Tracking of learners' activity and achievements both marked the highest level of priority under audit function. Along with archiving and copy functions, respondents prefer archiving and copy of all materials. The users prefer learning materials should allow a variety of common formats, support inclusion of video and organization of materials. All the components of the enrolment function were marked with the highest level of priority. Learners' assessment records, assessment materials (integrated) and assessment question bank to enable reuse were considered as high priority. Users prefer module tasks and calendar. The survey function was not considered by users.

Users' priority level of preference on data output category marked high on both learning materials function and learners' assessment record. While the learners' survey result got medium priority. The links function for learning resources rated high level of priority.

The users' priority level of preference on communication is synchronous communication between tutors and learners and chat garnered the highest priority. While asynchronous communication on email integrated with institutional system got high priority. Users' priority level of preference on configuration category revealed that interface or front-end function was considered with the highest priority level in terms of the institutional logo and colour, learning system's name and personalization. Four out of 6 functions under usability category were marked highest priority by the users. The functions considered include search, views, legal requirements, and ease of navigation.

#### **VLE Components, Features and Capabilities vis-a-vis Open Source Platforms**

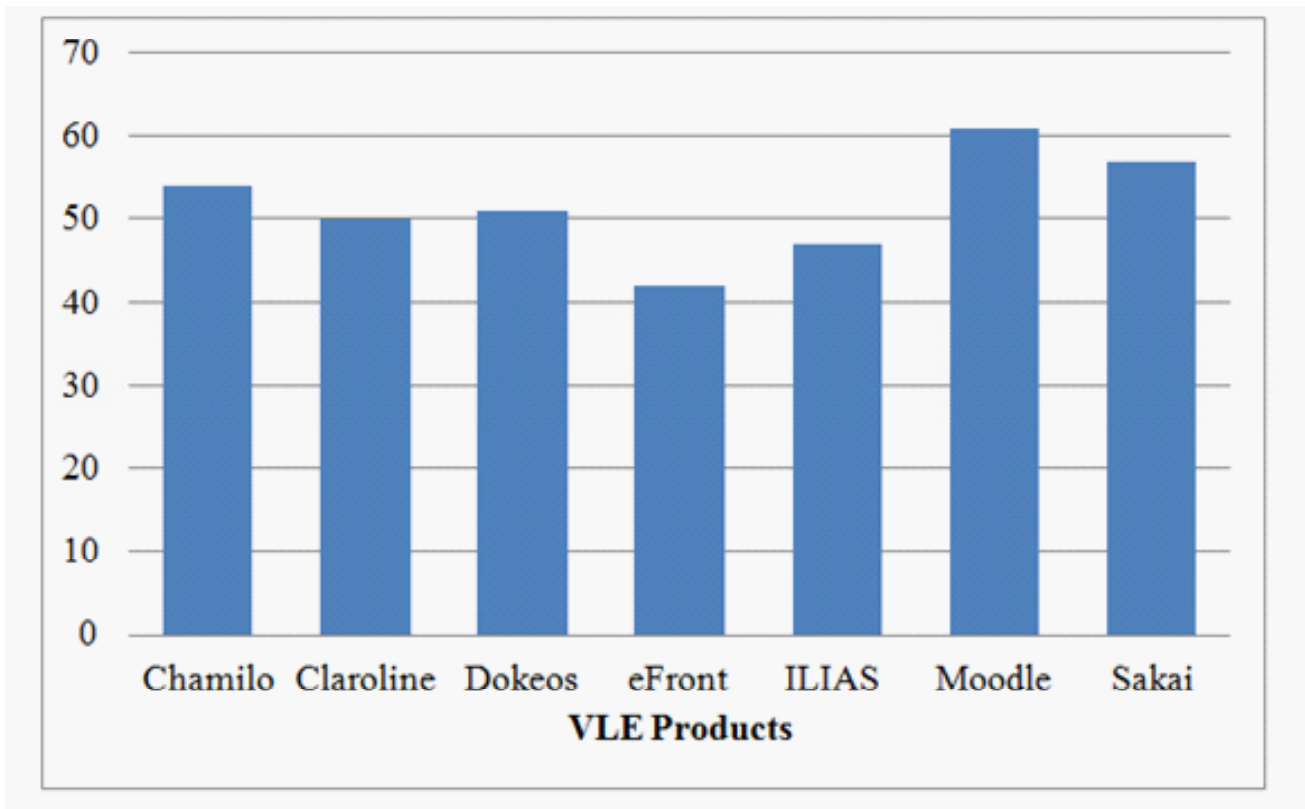
This section presents the features, capabilities and components of the selected currently available free software and open source VLE products. The VLE systems considered are: Chamilo; Claroline; Dokeos; eFront; ILIAS; Moodle; and Sakai.

## Comparative Study Between the VLE Products Based on Functions

VLEs as an e-learning system have many functions. For simplicity, the researchers made use of the statement of requirements for VLE provided by JISC [4].

As presented in Figure 1, the best VLE product is Moodle as compared with the other six VLE products.

Figure 1. Total Functions Supported by Each of the Selected VLE Products



## Requirements for the MMSU VLE

This section presents the requirements for the MMSU VLE. Table 1 shows the mapping of findings on Faculty ICT profile. Faculty ICT skills on basic computer operation, file management, word processing and spreadsheet is inadequate. It has been noted that faculty members have poor knowledge or level of skills on database, graphics and information searching. It was found out that there is an insufficient level of skill of Faculty members along Internet and telecommunications use. As to ethical understanding, the faculty admitted that they have too little understanding of copyright and fair use. Faculty members have no capability of video production. Also, faculty members have intermediate level of skill on presentation and technology integration.

Along with the findings on Faculty ICT profile, it is recommended that the identified problems or deficiencies of Faculty ICT skills be addressed. Faculty should undergo re-training programs and/or attend short-term courses. This will prepare them to engage in VLE.

Table 2. Mapping of Findings on Faculty ICT Profile

Indicator/ICT Skill	Findings	Program Requirements
<b>Basic Computer Operation</b>	Faculty have inadequate knowledge/level of skill on basic computer operation, file management, word processing and spreadsheet.	Faculty should undergo re-training programs and/or attend refresher courses on basic computer operations, file management, word processing and spreadsheet.
<b>File Management</b>		
<b>Word Processing</b>		
<b>Spreadsheet Use</b>		
<b>Database Use</b>	Faculty have poor knowledge/level of skill on database and graphics.	Faculty should attend short-term courses on database and graphics.
<b>Graphics Use</b>		
<b>Internet Use</b>	Faculty have insufficient level of skill on Internet and telecommunications use.	Faculty should go through re-training programs on Internet and telecommunications.
<b>Telecommunications Use</b>		
<b>Ethical Understanding</b>	Faculty have too little understanding on copyright and fair use.	Faculty must be educated with the basic understanding of copyright and fair use through seminars/forums.
<b>Information Searching</b>	Faculty have poor knowledge/level of skill on information searching.	Faculty should attend to enhancement trainings on information searching.
<b>Video Production</b>	Faculty have no capability on video production.	Faculty should enroll to short-term courses on video production.
<b>Presentation Skills</b>	Faculty have intermediate level of skill on presentation and technology integration.	Faculty should undergo re-training to enhance their skills in presentation and technology integration.
<b>Technology Integration</b>		

To support the VLE needs of the University, the University must have a sustainable ICT infrastructure. Table 3 shows the mapping of findings on the University’s ICT infrastructure.

The University’s computer resources are adequate as shown by the computer to student ratio and Internet-enabled computer to student ratio. The University should maintain or increase the ratio to achieve an ideal 1:1 ratio. But there is an inadequate number of computers to academic staff at the same time inadequate number of Internet-enabled computers to academic staff. They can be addressed by increasing the number of computers to support academic staff needs.

Along with the network and the Internet, the University’s network specification is 100MB Ethernet, meaning that the university has a very low Internet bandwidth that causes slow network performance during peak or busy hours. It is, therefore, recommended that the University should increase its network specification to at least Gigabit and subscribe to higher Internet bandwidth for faster Internet access even at busy times. Though more than 50% of the learning areas are connected with wireless technology, there is still need to expand the wireless coverage to achieve 100% wireless connectivity.



As to the University's display screen technologies and peripherals, there are more than 50% of the classrooms equipped with display screen technologies. However, there is inadequate number of printers and other peripherals. There is a need to increase the number of printers and other peripherals to address this problem.

In terms of software and information systems, though there is available licensed and open source software, there is a need to acquire updated software to cope with the current state of technology. Other information systems should consider interoperability to provide an enterprise service oriented type of environment.

Table 3. Mapping of findings on ICT infrastructure.

<b>Indicator</b>	<b>Findings</b>	<b>Program Requirements</b>
<b>Computers</b>	Adequate number of computers to students.	Maintain or increase the number of computers to students to achieve a 1:1 ratio.
	There is 1:3 or better ratio of Internet-enabled computers to students.	Maintain or increase the number of Internet-enabled computers to students to achieve a 1:1 ratio.
	Inadequate number of computers to academic staff.	Increase the number of computers to academic staff.
	Inadequate number of Internet-enabled computers to academic staff.	Increase the number of Internet-enabled computers to academic staff.
<b>Network and Internet</b>	The network specification is 100MB Ethernet.	Increase the network specification to Gigabit or better.
	Very low Internet bandwidth.	Improve network infrastructure and increase Internet bandwidth.
	Wireless coverage is more than 50% of the learning area.	Expand the wireless coverage to 100% of the learning area.
	Slow network/Internet performance at busy times.	Subscribe higher Internet bandwidth for faster Internet access even at busy times.
<b>Display Screen Technologies and Peripherals</b>	More than 50% of the classrooms are equipped with display screen technologies.	Provide all (100%) classrooms with display screen technologies.
	Inadequate number of printers and other peripherals	Increase the number of printers and other peripherals such as scanners, speakers, camera, etc.

<b>Software and Information Systems</b>	There are available licensed and open source application software.	There should be a regular update on the latest versions of the available application software.
	There is an available customized LMS but used only for some time and not for University-wide use.	Development and implementation of a VLE for the entire University.
	Existing student information systems (enrolment/assessment systems) does not support interoperability standards	Migrate or redesign existing student information systems that allows interoperability to other existing information systems such as Library, student services, etc.

The following VLE functions were selected to compose the activated components of the VLE for MMSU at the same time these functions are supported and are available in the Moodle platform.

Under data management, the following were prioritized: access and security along secure access, groups' communication tools and organize and manage groups; tracking of learners' activity and achievement within audit function; archiving of all materials; and copying of all materials.

Along with data input category, users prefer learning materials to allow variety of common formats, inclusion of video, and organization of learning materials. In enrolment function, enrolment to available modules, tutor enrolment and learner enrolment records were considered. Learner assessment records, integrated assessment materials and assessment question bank to enable reuse were prioritized within assessment function. Also, calendaring function includes module tasks and calendar.

Data output category contains learning materials and assessment functions. Users marked high priority on timed release, learner and tutor access to learning materials and timed release of learner assessment records.

Links to learning resources was also prioritized to allow lists of resources available in shareable format to both learner and tutor. Synchronous communication between tutors and learners using chat and asynchronous communication using email integrated with the institutional system were considered by the users.

Interface or front-end function under configuration category includes institutional logo and colours, name of the learning system and personalization. Other priority functions incorporated are search, views, legal and navigation.

### **VLE Implementation Framework for MMSU**

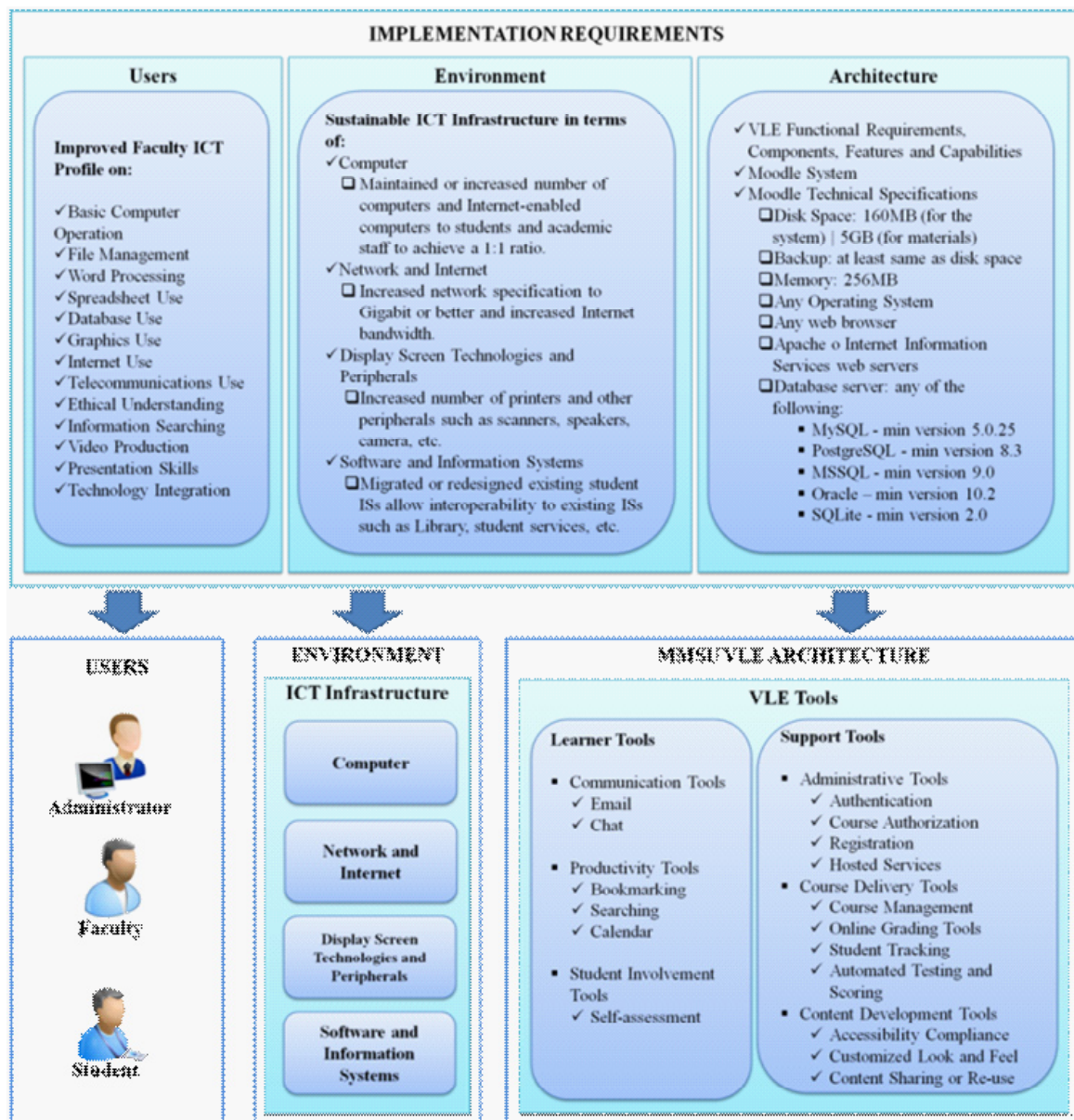
This section discusses the components integrated into the VLE framework suited for MMSU based on the results of findings on different areas considered. The assessment results of MMSU ICT e-Readiness in terms of ICT infrastructure and faculty ICT profile were used to determine the elements of the framework. The results of the comparative study on the different VLE products were also integrated into the framework.

Universities nowadays are investing in implementing different VLEs to support the teaching and learning process. However, without a successful implementation, many objectives and advantages are not realized. Therefore, a well-designed strategy to follow is vital to the success of an effective VLE implementation.

Introducing a VLE into the school environment can be a challenge because it requires some degree of changed management. First, the administrators, teachers, and students should acknowledge that this will affect the way they work, teach and learn. It is also important to realize that the implementation will take some time. However, if done properly, the VLE is a fantastic tool which has shown to raise attainment and to make content and learning materials available for students both while at school and at home.

Figure 2 presents the designed VLE implementation framework for MMSU. The elements included are users (Faculty ICT profile), environment (ICT infrastructure, Moodle technical specifications), the VLE architecture (VLE product and tools) and implementation requirements.

Figure 2. VLE Implementation Framework for MMSU Users



It has been noted that MMSU Faculty ICT skills are inadequate enough to engage them in VLE. Their level of skill in database use is low (beginners) where they understand the use of database and locate information from a pre-made database such as Library search. Graphics use skills garnered low because most faculty members can only open, create, and place simple pictures into documents using drawing programs. As to ethical use understanding skill, only a few understand the ethical usage of all software. Most faculty members are not capable of video production. All these can be solved by providing more training and workshop programs to prepare the faculty in using VLE.

The three types of users considered are administrator, faculty, and students. The administrator is the most important user and has the full permission to do anything in the VLE system. It has the responsibility to manage the site and control all users. Faculty users can do anything within a course. Faculty's responsibility is to control and manage the learner tools. And, student users have fewer privileges within a course.

### **ICT Infrastructure**

The number of computers to academic staff is inadequate. With this, there is a need to increase the number of computers to academic staff to cater their needs. The University's Internet connectivity is very slow due to low bandwidth. To address this problem, the network infrastructure must be improved by subscribing higher Internet bandwidth for better Internet access. There is also a need to increase the number of printers and other peripherals such as cameras, scanners, etc.

There are different information systems used in the University such as Students Information System, Personnel Information System, Library System, and others. But there is a problem with interoperability standards. Addressing this issue needs the migration or redesigning of some of the information systems that will allow interoperability of other information systems including the VLE.

### **MMSU VLE Architecture**

As a result of the comparative studies conducted, it turned out that Moodle is the suitable platform for the MMSU VLE. The MMSU VLE site architecture was patterned to the architecture of Moodle as shown in Figure 3. The VLE tools enable teachers to build resources fast and without the need to develop technical skills. VLE tools are criteria-based, and they enable developers to evaluate and select the most suitable VLE product. Moodle contains a wide range of activity modules that can be used to build-up any course. They provide the central point for information, discussion, and collaboration among users.

Learner and support tools were considered in the VLE architecture of the framework. Learner tools include communication tools, productivity tools, and students' involvement tools. While support tools consist of administrative tools, course delivery tools, and content development tools.

## Learner Tools

Email is also the ideal tool for one-to-one communication. It can be used by teachers to remind students of deadlines and to distribute course materials. Students can also submit queries and assessments by email. With email, it is possible to set up a group mailing list, making one-to-many communication much easier. Messages posted on a mailing list can also be archived and accessed via a web browser.

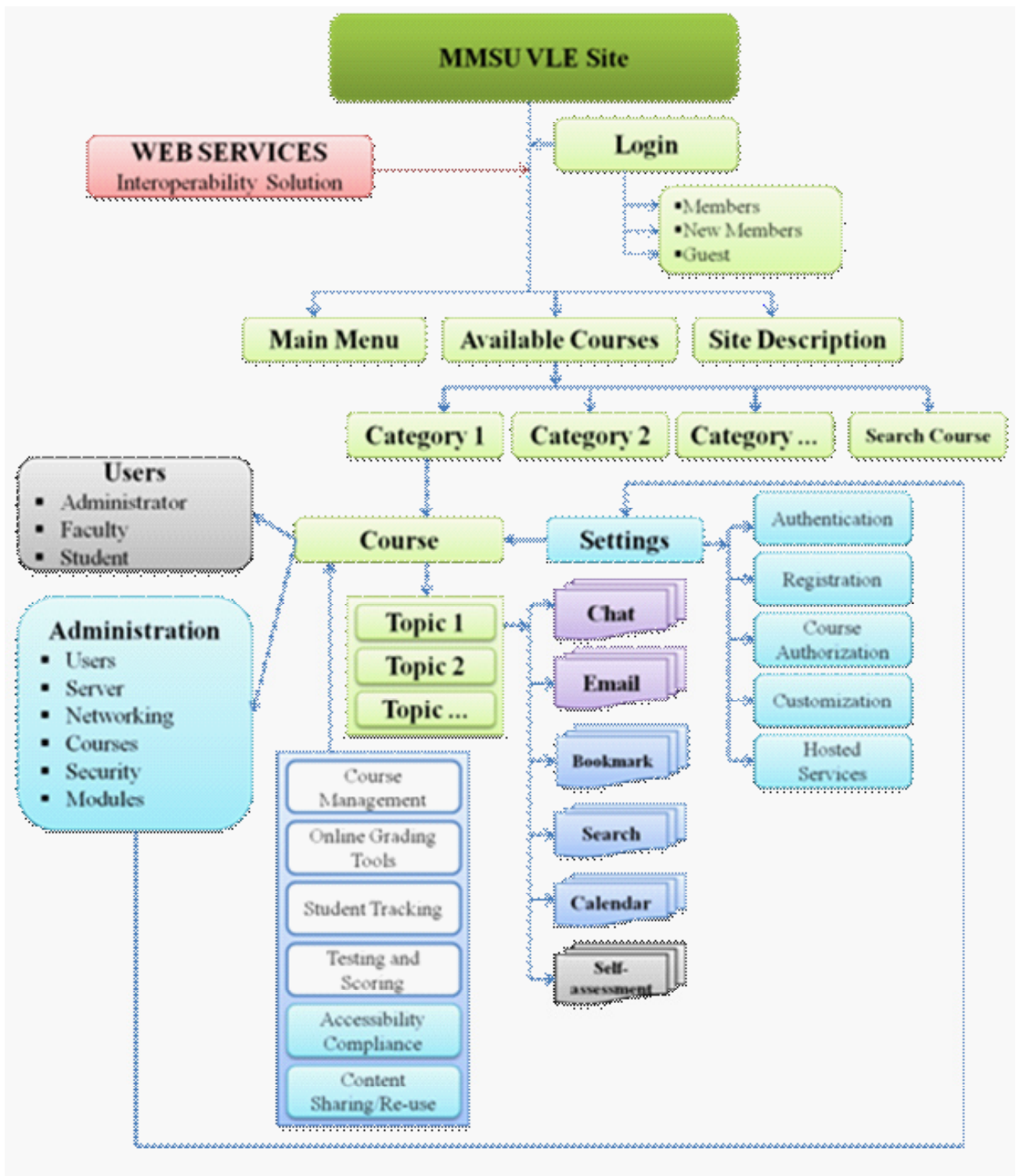
Chat allows both teacher and student to have a synchronous (or real time) conversation, as happens in a real classroom situation. The chat is conducted by the exchange of text based messages and where appropriate, the messages can be subject to a small time interval to enable moderation. Also, access to chat rooms can be controlled by allowing access to members of a course group.

Bookmarking is an item that a teacher can use to support learning, such as a file, link, folder, label or page. A teacher can add resources via a single link with an icon in front of it that represents the type of resource. The searching feature allows users to navigate through the system using a built-in search engine of resources, groups, and courses.

The calendar feature of the VLE displays the following events: Site (event viewable in all courses - created by admin users); Course (event viewable only to course members - created by teachers); Groups (event viewable only by members of a group - created by teachers); and User (personal event a student user can create - viewable only by the user).

The self-assessment module in Moodle allows the conduct of online quizzes or exams in various exam types such as multiple choice, essay, matching type, true or false and short answer type.

Figure 3. MMSU VLE Site Architecture



### Support Tools

The administration has many tools related to course. An administrator can control the course through the administration tools but can only control these tools by the permission granted. Categories in the MMSU VLE site architecture enable the administrator and faculty to arrange their courses in levels of categories. Whereas, the login page enables all users to access their account.

An administrator can set the authentication method for the VLE site. Any authentication plug-in can be used to find a username or password match. Once found, a user is logged in and alternative plug-ins are not used. Therefore the plug-in which handles the most logins should be moved to the top of the page so that less load is put on authentication servers. The email-based self-registration authentication method enables users to create their accounts through the login page. They then receive an email at the address they specified in their account profile to confirm their account.

Hosted services feature allows server setting. An administrator can check that their site meets all system requirements for the current and future versions of Moodle. This feature also includes system paths, session handling, HTTP, maintenance mode, cleanup, environment and site registration. Courses are the spaces on the VLE where teachers add learning materials for their students. Courses are created by administrators or teachers. Teachers can then add the content and re-organise them according to their own needs. Course management feature allows teachers to add a new course, course categories, course settings, course formats, course homepage and course FAQ.

Teachers can set their preferences for the grader report via a grade book. The settings can be applied to all courses of each teacher. Students' performance can be tracked using the activity completion module which allows the teacher to set completion criteria in a specific activity's settings. Another module for student tracking is course completion. This module shows if a course has been completed. It also shows the progress of a student is making towards finishing the course according to specific criteria.

It is important to make the VLE-based materials accessible for a wider range of users. Accessibility compliance deals with the areas of navigation, keyboard dexterity, audio content, language, screen magnifiers, screen readers, and color. Customization of the look and feel considers the front page and themes. The front page is the initial page seen by users reaching a site. Typically, students see courses and some blocks of information displayed in a theme. A combination of site policies, user authentication, and front page settings determine who can get to the front page. Once they get there, they can see and what they can do. Themes provide a skin to completely change the look and feel of the site or even an individual course.

There are several ways to reuse a course or parts of a course. Most of them involve or are similar to a backup and restore process. Activity backup allows a copy or backup of individual activities in the VLE course and then re-use these activities in a different site or a different course on the same VLE.

### **Implementation Requirements**

This element of the framework is divided into three components: users, environment, and architecture. As to users, an improved faculty ICT profile on the different areas of ICT skills should be considered. Among the areas of skills include basic computer operation, file management, word processing, spreadsheet use, database use, graphics use, internet use, telecommunications use, ethical understanding, information searching, video production, presentation skills and technology integration.

At the same time, a sustainable ICT infrastructure to fully support the implementation of VLE should be taken into consideration. The ICT infrastructure takes account of computers, network and the Internet, display screen technologies and peripherals, and software and information systems.

Lastly, to adopt a VLE, the VLE functional requirements, components, features and capabilities, the Moodle system and its technical requirements were carefully reviewed and evaluated.

### **Conclusion and Recommendations**

The overall assessment of the faculty ICT profile marked intermediate. The status of MMSU faculty ICT profile is inadequate enough to engage them in VLE. This implies that faculty members still have room for improvement in terms of their ICT skills. The MMSU's ICT readiness status in terms of its ICT infrastructure manifests moderate level. This means that the University is capable of implementing VLE to support online learning.

The comparative study between Moodle and other VLE systems were based on features and capabilities of VLE tools, and another comparative study was based on the technical aspects of VLE systems. From these studies, Moodle turned out to be the best and most suitable choice of VLE platform that meets the requirements of MMSU. In this, Moodle has a great potential in providing an excellent and optimal VLE platform that could support online learning suitable to MMSU.

The designed MMSU VLE implementation framework can support MMSU needs. The framework consists of the four elements namely users, ICT infrastructure, MMSU VLE architecture and implementation requirements.

The following are the recommendations based from the findings:

1. Faculty members of the university must have a sufficient level of ICT skills to be able to engage with the system, or a development plan must be implemented to raise these skills to the required degree. It is recommended that a skills audit is carried out to identify the level of skill that each individual holds, allowing the university to identify development requirements. It is also recommended that a long-term program of faculty development focuses on raising all faculty members to a minimum level of ICT readiness and that a second-stage development plan focuses entirely on VLE skills development.
2. There should be a VLE system administrator in charge of the system. The administrator is responsible for administering the implementation and maintenance of the VLE system.
3. The university should allocate a budget for the implementation of the VLE. Wherein, this will be used for the purchase or improvement of ICT infrastructure needed to support the VLE. Also, this will be used to finance the faculty ICT skills training and development.
4. The university should ensure that the physical network is capable of handling the increasing demands that will inevitable occur.
5. Interoperability issues on the existing Information Systems of the University should be resolved to align the VLE system's resources.
6. The university should devise an implementation policy or plan on VLE implementation and utilization as part of the Information Systems Strategic Plan (ISSP) of the University.



7. On the other hand, this study could be used by other state universities as a basis in crafting their VLE implementation plan. Also, this could serve as reference material for other researchers for them to develop their studies about educational technology thereby helping in the refinement of the educational profession.

### Acknowledgement

Special thanks to the Commission on Higher Education (CHED) for funding this research.

### References

Addom, Benjamin Kwasi. (2004).E-readiness assessment of seven higher education institutions in Ghana. Retrieved from [http://depot.gdnet.org/newkb/fulltext/Addom\\_Education\\_Institutions\\_in\\_Ghana.pdf](http://depot.gdnet.org/newkb/fulltext/Addom_Education_Institutions_in_Ghana.pdf)

JISC infoNet. (n.d.).Creating the statement of requirements. Retrieved from <http://www.jiscinfonet.ac.uk/InfoKits/system-selection/ss-define-1.4>.

Mankato Staff IT Competency Scale. (n.d.). Retrieved from <http://www.schoolnet.org.za/edict/evaluate/mankato.htm>

Mokhtar, S. A. et al. (2006).Rubric for assessing ict infrastructure in Malaysia higher education. Retrieved from [http://eprints.utm.my/3115/1/Rubric\\_For\\_Assessing\\_ICT\\_Infrastructure\\_in\\_Malasia\\_Higher\\_Education\\_2006.pdf](http://eprints.utm.my/3115/1/Rubric_For_Assessing_ICT_Infrastructure_in_Malasia_Higher_Education_2006.pdf)

Mokhtar, S. A. et al. (2007).Academic computing at Malaysian colleges.International Journal of Education and Development Using Information and Communication Technology(IJEDICT), 2007, 1(2), 30-56. Retrieved from <http://ijedict.dec.uwi.edu/include/getdoc.php?id=2380&article=312&mode=pdf>

Stiles, Mark. (2000).Pedagogy and virtual learning environment (VLE) evaluation and selection. Retrieved from [www.jisc.ac.uk/uploaded\\_documents/bp5.pdf](http://www.jisc.ac.uk/uploaded_documents/bp5.pdf)



## Social Presence among Distance Learners: Portrait of Online Communication at Universitas Terbuka\*

Irsanti Widuri Asih

Universitas Terbuka, Indonesia, irsanti@ecampus.ut.ac.id

### Abstract

*One of the main challenges faced by both distance education institutions and distance education students is how to maintain the spirit of students' learning processes which is often felt solely. In providing services to students, Universitas Terbuka (UT) develops a variety of online services which are summarized in the facility of UT Online. Through this facility, students can communicate with UT and with other students, both for academic and non-academic purposes. Social presence, the ability to relatively feel proximity and intimacy in online interaction, becomes an important factor in disposing of the solitude sense of distance education students. This study explores various social presence indicators articulated by UT students in online interaction. By using the qualitative approach and implementing discourse analysis method, this study shows that social presence is quite minimum occurs in academic online interactive activities. As for the non-academic online interaction, social presence is more visible articulated. Social presence indicators emerging in online interactions are in the form of sharing stories and personal experiences, using informal hail, using emoticons, putting pictures as personnel identity, using informal everyday language, and motivating each other. One finding that should be highlighted is that distance learners are extending their online communication through social media.*

**Keywords:** social presence, distance learners, online communication, social media

### Introduction

In Indonesia, distance education system employing a new self-learning concept has been recognized since the establishment of Universitas Terbuka (UT) in 1984. Introducing a self-learning culture applied in UT is incredibly challenging. Puspitasari and Islam (2003) found that self-learning readiness of high school students in the final year was average yet tended to be low.

Although Darmayanti (1994) revealed that UT students possessed the average readiness of self-learning, on the other hand, Kadarko's research (2000) reported the data that most of UT students have not been able to implement self-directed learning that underlies the application of self-learning concept in distance learning. This indicates that many students at the beginning of their enrollment at UT do not have an adequate understanding of the concept of self-learning which is the basic principle for distance learners.

Indonesians are known as a socialized or communal community. Indonesians prefer to do many activities together rather than individually. Indonesians recognize many concepts of gathering for the purpose of socializing.

In Indonesia, with the characteristic of socialized community, the development of information technology today increasingly enlivened by the presence of a variety of social media. The utilization

---

\*The original version of this paper was presented at the 30th Annual Conference of the Asian Association of Open Universities held at Crowne Plaza Manila Galleria, Manila, Philippines on 26 October 2016.

of social media in Indonesia grows significantly. The ability of various social media as if it were still able to meet the needs of the Indonesian people to socialize, interact, chat, “huddle” despite it is virtual evidenced by the high number of users of various social media. In January 2015, out of a total of 255.5 million the population of Indonesia, 72.7 million of them are active internet users. 72 million of the active Internet users possess active social media accounts. Among those who possess accounts with active social media, 62 million of them access social media via their mobile phones. Of the 72.7 million active internet users, 14% are actively utilizing social media, such as Facebook, WhatsApp, Twitter, Google+, LinkedIn, and Instagram (id.techinasia.com).

Distance learners often feel that they are alone, since all along the process of learning, they only interact with the learning materials. However, as social creatures, distance learners also have to conduct social relations with others, such as lecturers and other students to efface the feeling of isolation, since indeed social interactions, relationships, and communicate with other learners affect the learning process in distance learning (Duffy and Kirkley, 2004: 186).

Moore and Kearsley (2012: 132) distinguishes three types of interactions that occur in distance learning, namely the interaction between students and teaching materials (learner-content interaction), the interaction between students and lecturers or tutors (learner-instructor interaction), and the interaction among students (learner-learner interaction). In UT, the interaction between students and teaching materials occurs when students learn the subject matter from the printed learning materials. The interaction between students and lecturers occur on tutorial activities, either face-to-face or online. Interaction among students can occur in face-to-face tutorial activities as well as on Internet-based communication media which are provided by UT.

Moore and Kearsley (2012: 133) identify interactions among students (learner-learner interaction) in two types. First is the interaction occurs within groups and between groups that can be found in for instance teleconference where students are in one or some different places at the same time. The second type is the interaction between students in the form of online communication, where they do not meet face-to-face. In this type of interaction, they form a virtual group.

As a distance learning institution, UT makes the most of the Internet-based information technology as a medium of learning in the form of various learning support services such as ITV, self-contained exercise, dry laboratory, web supplements, digital library, virtual reading room, and online tutorials.

In addition to the facilities in the form of learning support services, UT also provides Community Forum; a facility that can be used by the students to interact with UT. Most topics discussed in this forum are related to the administrative, academic issues. Community Forum has the second and third kind of interaction character as stated by Moore and Kearsley, namely the online interaction between students and lecturers, as well as the interaction among students where students do not meet physically in the form of face-to-face, but in the virtual world.

Sediyarningsih, Asih, and Limbong (2013) identified that from several types of learning support services provided by UT, online tutorial becomes the favorite one for most students. This is due to the contribution of 30% of activity online tutorial for students' final grades. However, students also complained about the low rate of feedback given by their tutors. The low level of feedback given by tutors is very possible due to the big capacity of online tutorial class that must be managed by one tutor. One class consists of three hundred students and one tutor must manage

four classes in one semester. Ideally, an experienced tutor only handles 20—25 students in online learning activities (Palloff and Pratt in Simonson, Smaldino, Albright, and Zvacek 2012: 179). It means that the tutors of UT handle 12 times of the ideal number of students. The low level of this interaction ultimately could also be correlated with the trend of declining levels of active participation of students in the activities of online tutorials every semester. The decreased level of active participation of students was indicated by the tendency of decreasing of students who submitted assignments in online tutorials.

Meanwhile, many studies have revealed the high correlation between the quality of online learning with students' satisfaction (Richardson and Swan, 2003; Leong, 2011; Cui, Lockee, and Meng, 2012; Nazari, Nazari, and Motlagh, 2013; Sorensen, 2014; MacKenzie and Ballard, 2015). Specifically, Zimmerman and Nimon (2017) found that instructors/tutors play a very important role in building students' engagement in the online learning by encouraging them to be actively participating in the learning process while they also have to interact actively in the discussions.

As seen from the content, online interaction in the learning process at UT, can be categorized into two types: academic and non-academic. The academic online interactions occur in online tutorials. The non-academic online interactions occur in the Community Forum facility or through social media which are officially provided by UT; Facebook fan page and twitter.

Social presence is a condition in which the communication process has media (non-face-to-face). For instance, in internet-based communication, the parties involved in the communication process are still able to feel the presence and intimacy among them even though they do not exist in the face-to-face context. Social presence certainly has significance in distance learning, particularly for Indonesians with a very tight socializing character.

### **Objectives of the Study**

Because of the importance of social presence for distance learning, this study explores how social presence is articulated in online interaction for both academic and non-academic contents. For academic online interactions, this study takes a look at the interaction of online tutorial activity. As for the non-academic interactions, this study examines the interaction among students that occur in the Community Forum.

### **Related Studies**

#### **Social Presence**

The theory of social presence emphasizes the ability of mediated communication to continue giving a sense of the presence of parties physically or psychologically involved in communication activities (Short, Williams, and Christie 1976 in Moore and Kearsley 2012: 90). Each medium has different capabilities in delivering information about the various expressions that are common in face-to-face communication, such as facial expression, posture, gaze, clothes, and other various nonverbal expressions. However, Moore and Kearsley stressed that these capabilities do not entirely lie in technology to accommodate the types of the nonverbal expressions, but they lie in the quality of instructional design (2012: 91).

In further studies regarding the social presence, Gunawerdana and Zittle (in Aragon, 2003) proposed two important concepts emerge in social presence, namely the intimacy and immediacy. Intimacy relies on nonverbal factors, such as physical distance, eye contact, and smile. The immediacy is interpreted as the measure of psychological distance that a communicator puts between himself or herself and the object of his/her communication. Gunawerdana and Zittle believe that immediacy can be accommodated nonverbally, such as through physical closeness, how to dress, and facial expression likewise expressed verbally.

Sung and Mayer (2012) defined social presence as the degree to which a learner feels personally connected with the instructor and also with other students in an online learning environment. Meanwhile, Tu and McIsaac (2002) found that three dimensions of social presence; social context, online communication, and interactivity, were the prominent facets in building a sense of community among distance learners.

Aragon (2003) argued that social presence created in various types of the learning process, whether online or face to face, will provide a sense of comfort and ease among students or between students and tutors. Aragon offered a strategy that can be developed to create a climate of social presence in online learning for the three parties involved, namely the course designers, lecturers or tutors, and students. For lecturers (tutors) and students, to create the climate of social presence in the conducive online interaction, they can perform the following strategies.

1. They should be actively involved in the discussions that occur in online learning that will build social relationships with all participants, both tutors and students. However, Rovai (in Aragon) stressed that the instructors (tutors) did not have to respond all students who submitted the post, though students should feel confident that their posts were read by the tutors.
2. Tutors must be able to ensure and allow all participants (other students) to be able to respond immediately to the posting of other students.
3. Chattering about little things that they commonly discussed when they are in the context of face to face situation, such as about weather, residence, family, and other little things that serve to better know each other and break the ice.
4. Sharing stories and personal experiences. Based on the experience of Aragon, to share stories and personal experiences were significantly able to accommodate social presence on online activities.
5. The next strategy is to tuck humor on the sidelines of online interaction by utilizing emoticons to express nonverbal cues that will help participants interpret each message more accurately.
6. Lecturers/tutors are strongly advised to call students by name informally to create closeness psychologically.
7. Lecturers/tutors should also give students the freedom to call as they want as long as still along with the ethical corridor.

## Learning in Distance Education

Learning is essentially a process of formation of oneself, both in knowledge and/or skills and values, attitudes, and/or emotional reactions. The process of learning the knowledge and skills is much more easily transformed than the attitudes, values, and emotions of a person. Learning can be seen in three parts (Ormord, 2012). The first is learning as a process of long term change, for example, how we inform the house or telephone number so that someone will remember it in the long term. The second is learning that includes mental representation, namely how someone puts knowledge or anything else obtained in their thought processes. The third is the result of learning from experience; this can be seen from many things past experiences or the experiences of others. Most people will learn from what is of interest to them, and with the reward will make people more active in the learning process.

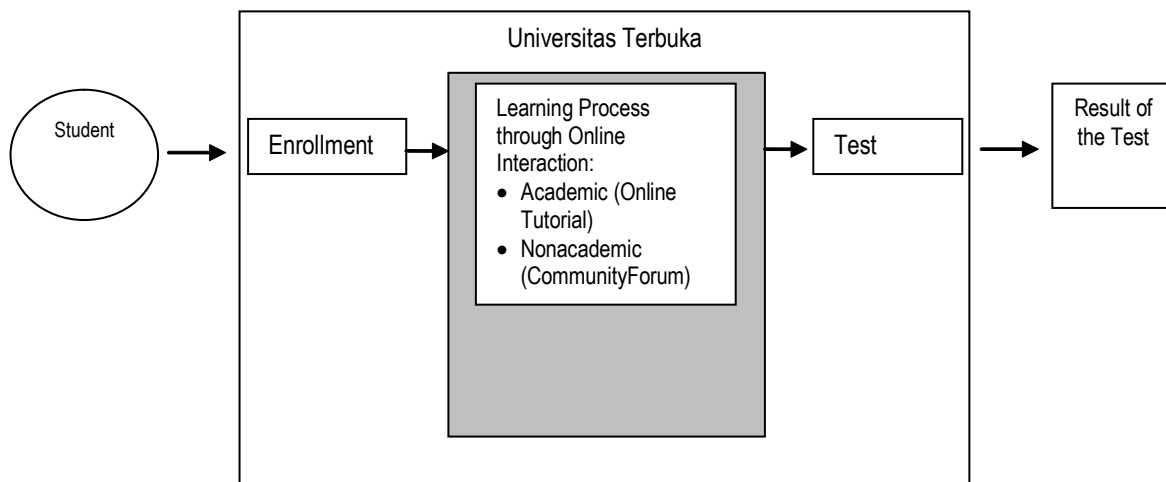
At the beginning of learning theory, we know the perspective of structuralism of Wilhelm Wundt and functionalism of John Dewey. The emphasis is more on the learning process rather than looking within one self or introspection, seen as a weakness by the school of behavior or behaviorism. Behaviorism sees the learning process occurs due to seeing the environment or they are the response of the environment in which the learning process takes place. Hence, this perspective contributes how we understand the learning process. However, there is still another theory that gives more understanding of the learning process to us, i.e. the broader social learning theory looks at the learning process does not only imitate the actions or behavior of others but also observe what happens around us. In its development, learning is not merely an observation, but it is necessary to the process of cognition as the human thought process, so it gives birth to social cognitive theory (Ormord, 2012).

Social Cognitive Theory of Bandura (1977) gives priority to the process of viewing and interaction in learning. Here are some basic ideas of social learning theory.

1. People will learn from seeing and observing others and accept the consequences. At this level people will experience trial and error process, from seeing, observing, and then having courage to try or imitate consciously against the consequences.
2. The process of learning can occur without a change in behavior. This is caused by the process of seeing and observing making people can accept a learning process without changing his/her principle or behavior.
3. Cognition plays an important role in learning. Everyone possesses the ability to think so that there is consciousness or awareness and expectations accompanied with attention and retention in seeing or experiencing a learning process. Therefore, the learning process will occur when there is awareness and expectations growing attention so that it can easily be remembered and understood.
4. People possess control in every action and environment. It is shown that people do not necessarily accept or respond reactively to what he/she sees, but in social cognition theory emphasizes that there is a process to create something for receiving or responding to the environment, and for Bandura (2006), it is called the personal agency.

From some concepts of social presence and theories about learning process, this paper examines the articulation of social presence in UT's online interactions with the frame of work as follows.

Figure 1. Framework of Social Presence in UT's Online Interactions



### Methodology

This study identifies and describes indicators of social presence articulated by UT's students and tutors in online tutorial activities and in Community Forum discussions. This study naturally sees the social presence indicators. Therefore, it uses constructivism paradigm with qualitative approach.

Discourse analysis is employed to analyze the online interactions. In analyzing social presence articulated in online tutorials activities and in Community Forum discussions, the early indicators of social presence proposed by Aragon (2013) as described in the literature review, are used. Those indicators can be seen in Table 1. However, modifications were made since new indicators appeared in the process of data collecting.

Table 1. Indicators of Social Presence

No	Indicators
1.	The involvement of all parties actively
2.	Chattering about small things
3.	Tucking in humors along the conversations
4.	Sharing stories and personal experiences
5.	Informal calling or addressing

This study elaborates indicators of social presence into two types of online interactions in the learning process at UT. For the interactions of academic content, the object of study is the interactions that occurred in online tutorial activities in the second semester of 2015. This study elaborates online tutorial classes with several different characteristics; tutors come from inside and outside UT (insource or outsource tutors), tutors with different gender (male or female), classes with a different number of students (small, medium and large). For that purpose, this study elaborates online interactions in classes of Livestock Product Process, Library Psychology, Semantics, Organizational Communication, Public Speaking, and Techniques in Finding and Writing News (Table 2).



Table 2. Lists of Analyzed Classes

No	Class/Subject	Insource/Outsource Tutor	Gender of Tutor	Number of Students
1	Livestock Product Process	Insource	Male	3
2	Library Psychology	Insource	Female	47
3	Semantics	Outsource	Male	101
5	Organizational Communication	Outsource	Male	190
6	Public Speaking	Outsource	Female	141
7	Techniques in Finding and Writing News	Insource	Female	80

For non-academic interactions in the Community Forum, this study analyzes the interactions in Community Forum discussions occurred in May to October 2015. The objective is to reveal the trend topics that become students' interest to be discussed in one semester, starting from registration process to the announcement of the final exams results.

Data processed in this study were collected in two phases. First, is by documenting interactions occurring in online tutorials and Community Forum which become the object of research. Second, the data were inserted into a coding sheet, which corresponds the predetermined indicators of social presence. As supporting data, researchers conducted a Focus Group Discussion (FGD) conducted in two UT's Regional Offices in Surakarta (Central Java) and Pekanbaru (Sumatra). The selection of two regional offices is based on interviews with coordinators of UT Learning Support Services in the two Regional Offices. To that end, researchers explore the causes of the low rate of student participation in online tutorial activities in both Regional Offices.

### **Social Presence in Online Interactions at Universitas Terbuka**

In accordance with the preliminary design, the classes taken as the objects of research were Livestock Product Process, Library Psychology, Semantics, Organizational Communication, Public Speaking, and Techniques in Finding and Writing News.

From observations of the interactions that took place on the subjects of this study, the results can be seen in Table 3.

Table 3. Social Presence in Online Tutorials

No	Indicators	Results
1	The involvement of all parties actively	Overall, we can say the activeness of tutors is still relatively low. This happens in both large classes and small classes. In the class of Livestock Product Process with three students, the tutor did respond to all comments/posts from students. However, the interaction that occurred in quantity is not high. In average of every week, both participants and tutors only sent one to two posts. The response rate of tutor was high because the tutor responded each student's post. However, the quantity of interaction is low.
2	Chattering about small things	Indicators of social presence "chattering about small things", did not occur in all interactions that were analyzed. In general, when both tutors and students posted their responses, they always wrote directly to the issues.
3	Inserting humors along the conversations	Both tutors and students, almost never inserted humor to interactions. Except in the class of Semantics, some students inserted humor in the interaction.
4	Sharing stories and personal experiences	Sharing stories and personal experiences, almost never occurred in online tutorial discussions. If any student told his/her personal experience, it was correlated to the issues discussed. For instance, in Public Speaking class, students who had experiences in doing public speaking activities, shared his/her experiences in the discussion. In Organizational Communication class, when they were discussing about the materials relating to the organization, students who had experiences related to conflict in the place where they works, shared their experiences on it.
5	Informal calling or addressing	For indicator of informal call or form of address, this did not happen in online tutorial discussions. Communication that occurred in the online tutorial activities tended to be formal. Most tutors called students in a formal way, such as Saudara or Saudara Mahasiswa. In the middle of a conversation, tutors called students with Anda which literally and politely means 'you'. Even amongst fellow students also eventually used the same call with a tutor to greet other students; Saudara and Anda (both are the formal way for YOU since in Indonesia, we recognize several types in representing YOU). However, there were tutors who called students with informal calls and forms of address, like teman-teman literally meaning 'friends', teman-teman mahasiswa 'student friends', as well as calls and forms of address of Mbak literally meaning 'elder sister' and Mas literally meaning 'elder brother'. Interestingly, the informal calls and forms of address were used by female tutors. The male tutors called students more formally.

In addition to indicators of social presence as revealed by Aragon (2003) which were used to analyze interactions in online tutorials, this study also found other indicators of social presence that emerged in online interactions as summarized in Table 4.

Table 4. New Social Presence Indicators in Online Tutorials

No.	Indicators	Results
1	Using emoticons	<p>The use of emoticons seems to have become part of the text-based interactions. Although it occurs in interactions at online tutorial as an academic forum, it turns out a lot of emoticons appear along the discussion, especially used by students. They are mostly used emoticons for smile and laugh.</p> <p>These emoticons were used both by male and female students. However, tutors did not use emoticons when they delivered the learning materials. Students usually wrote emoticons when they responded to postings from other students.</p>
2	Inviting participants/ students to further their relationship outside online tutorial forum via other social media	As one of the countries with enormous social media users in the world, social media also penetrates in interaction in the online tutorial activities. In the discussion forum, there are students who invite other students to make friends in facebook by mentioning their facebook accounts.
3	Attaching profile pictures	For all tutors, they have to set their profile pictures as stated in the guidelines of online tutorials. The goal is to allow students to get to know their tutors and it was expected to increase students' involvement in online tutorial activities. Compared to a few years ago, in the current online tutorial activities the number of students who set their profile pictures increased significantly.
4	Using informal language	<p>Although online tutorial is an academic forum, in the interactions there is the use of informal language. The informal languages tended to be used by female tutors. Male tutors tended to use formal language and speak directly to the point without using salutation, such as Hi...</p> <p>The use of informal language by students was very slightly, especially when the students commented postings from other students.</p>
5	Motivations from tutors	Tutors often motivated students by stating some expressions like "be success..." and "be enthusiastic..."

For nonacademic category of online interaction, the indicators of social presence that can be analyzed are in Table 5 as follows.

Table 5. Social Presence in Community Forum

No	Indicators	Results
1	The involvement of all parties actively	In Community Forum which was divided based on faculties and study programs, the response for the students' posts was very minimum. The authorities from UT; the Third Vice Dean, The Head of Study Program, as well as the Academic Supervisor, they were very slightly responded the posts from students, even for the academic ones.
2	Chattering about small things	For small things relating to personal matters, it was not revealed in the discussions of the Community Forum. Things discussed always concerned with the study at UT.
3	Inserting humors along the conversations	Sometimes humor was given among students.
4	Sharing stories and personal experiences	Sharing stories and personal experiences occurred only in the related issues. This Community Forum actually serves as a medium for sharing experiences of students related to their studies at UT, such as pleasant, pathetic, annoying, frustrating, or amusing experience, i.e. successful in getting a good grade or successful completion of the studies with a high GPA.
5	Infomal calling or addressing	They tended to use informal addressing, such as mas, mbak, bro, gan 'bos' (all are representing the informal calls in Bahasa Indonesia which mean brother, sister, and boss).

Besides indicators based on Aragon's (2003) employed to measure the social presence, the study also finds some other indicators which can be categorized as indicators of social presence emerging from the discussions in the Community Forums used by the students to interact with UT and other students. The indicators are summarized in Table 6 below.

Table 6. New Social Presence Indicators in Community Forum

No	Indicators	Results
1	Using emoticons	Most emoticons that emerge are smile and laugh. These emoticons are used both by male and female students.
2	Inviting participants/ students to further their relationship outside online tutorial forum via other social media	Students invite other students to make friends outside the Community Forum through social media such as Whatsapp group, the exchange of Black Berry Messenger (BBM) Personal Identification Number (PIN), BBM Group, and facebook.
3	Attaching profile pictures	More students set their profile pictures.
4	Using informal language	The use of language in Community Forum tended to be informal and more relaxed. They use many short sentences, spoken language, and a lot of punctuation, such as dots (...), abbreviated texts, and emoticons. For laughing, it was expressed with laugh emoticons and texts, such as "hahaha" or "hehehe".
5	Motivations amongst students	Many expressions are used to motivate each other amongst students. Those phrases included "Be successful, be enthusiastic, thanks, good luck, keep fighting, keep the spirit high, OK guys, keep ur spirit, hope it can help and useful, good luck for the final exams, I hope the results of the tests will be great, success for the final projects, it was only one step away !!! :) :) Regards for success.... Go ahead and be successful... Hopefully successful and get the best grade amin... OK, guys, those who began preparations, please keep on studying and studying, hopefully you'll get great grades..."

For the topics discussed in Community Forum, this study sees the emerged issues as topics of discussion starting from May to October 2015. Six months is a cycle of academic activities for students from their registration to the announcement of final examinations. The top issues arising for six months are the results of the test, checking the grade of final examinations, re-enrollment, final projects, getting friends, asking about tutorials, accreditation of study program, sharing experiences, online tutorial, online examination system, online book store, and composing academic writing.

Of all topics emerged for six months of interaction in the Community Forum starting from May to October 2015, the trending topics were related to the results of the final examination, online tutorials, and academic writings. Some of the topics were indeed in line with academic activities that took place at UT, starting from the completion of the final test in which many students inquire about the test results, the topic of registration emerging in the period of registration, the topic of online tutorials appeared at the beginning period of online tutorials, and the topic about composing academic writing arose when the period of uploading academic writing came. Some other topics emerged unrelated with academic activities were looking for friends (being the trending topic most expressed almost all the time), inquiring the accreditation of study program, online bookstore, and sharing experiences.

## **Social Presence from Students' Perspective**

Besides analyzing the interactions occurring in the online tutorial activities and the Community Forum, to enrich the results of the study, researchers also conducted Focus Group Discussion (FGD). The purpose of this focus group is to explore the aspects of social presence of students. This FGD was undertaken in two Regional Offices (ROs), namely Surakarta and Pekanbaru.

Here are the results of FGD in UPBJJ-UT Surakarta. Eight students of Surakarta Regional Office joined the FGD, six students were from Communication Studies, and two students were from Management Studies. They all were the grantees of the Ministry of Research, Technology and Higher Education scholarship who enroll in UT with a particular scheme which was designed with face-to-face tutorials and equipped with training for special skills which are expected to enhance their academic ability. Scholarship recipients do have the necessity to obtain a GPA with certain standards. These factors may contribute to high average GPA of students receiving scholarships. In terms of age, scholarship recipients are still relatively young, at their early 20s. The designed scheme with face-to-face tutorials seemed to give a very significant contribution to their achievements. They were more highly motivated in reaching high grades.

For these students, since they met other students more intensively in face-to-face tutorials, they also created a group-based social media, such as Whatsapp (WA) group. The intensity of meeting face-to-face with this group of students occurred not only in the face-to-face tutorial forum but they also occasionally meet up outside face-to-face tutorial forum for discussing assignments of tutorials. Based on FGD results, the students do not take part in UT Online Communication intensively, both in online tutorials and the non-academic, discussions such as the Community Forum. For online tutorial activities, the very low feedback from tutors often demotivates students to persistently join the online tutorials. For the Community Forum, they considered sharing stories of other students was useful in enriching their information about the study at UT. It also motivates them to continue and improve their academic achievement.

Meanwhile, the results of the FGD held in Pekanbaru Regional Office are as follows. In Pekanbaru Regional Office, there were five students who participated in the FGD; 3 students of Communication Studies, one student of Biology Education, and one student of Governmental Studies. In terms of student characteristics, they are regular students who in the learning process did not rely purely on any mode of tutorials, whether online nor face-to-face. They also did not join any study groups. In other words, they were independent students. These five students have worked, and they admitted the difficulty in setting learning time. As they were the working students, then it was very hard for them to obtain good grades.

They also very rarely access the UT Online Communication both for the online tutorial and Community Forum. The reasons because of the very low response from the tutor and the UT authorities. For those who ever accessed Community Forum, they admitted that this forum was able to give them information related to the learning process in the UT and motivate them.

In the end, they felt alone because they did not know other friends who were at the same study program. They learned blindly because they were also busy with their work. For them, online communication at the UT did not give a contribution to their learning process.

## **Social Presence from Tutors' Perspective**

Some information was obtained from interviews of three online tutors. They primarily recognized the importance of social presence for UT students as distance learners. They sought to empathize with students. In the process of online tutorials that they managed, they made every effort to elicit social presence for students among others by giving motivation to the students to keep their spirit and their persistence in joining the online tutorials. However, they admitted that the bustling with other activities remain as an obstacle for them to be able to maximize their interaction with the students in the activities of online tutorials.

## **Conclusion and Recommendations**

### **Conclusion**

1. Social presence is quite low in online tutorials as an academic-based activity at UT due to the formal sense of the interactions. Both tutors and students rarely use indicators that show the social presence.
2. Social presence is more articulated in Community Forum which is non-academic interaction. Conversations tend to be more relaxed, more informal, students are free to express their feelings. Unfortunately, the response from UT in Community Forum is still minimum. In solving the various problems faced by the students expressed through this forum, they often get the solutions from other students. Interestingly, there are students who can act as role models, such as students who are successful in the study the and volunteered to be a resource for other students in solving their problems.
3. In addition to the five indicators of social presence, other indicators that emerged from the results of this study are: using emoticons, inviting participants/students to further their relationship outside online tutorial forum via other social media, attaching profile pictures, using informal language, giving motivations from tutors to students and amongst students.
4. Social media plays an important role for distant learners in bringing out social presence.

### **Recommendations**

1. Maximizing the role of tutors in online tutorials by articulating social presence more intensively. The ability of tutors in articulating social presence in online communication should be included in the guidance of online tutorials for tutors.
2. Maximizing the function of Community Forum as the medium for communicating between students to UT. Each study program should make a regular schedule for every lecturer as academic advisors for students. The Vice Dean for Student Affairs in each faculty should supervise this Community Forum.

## References

- Aragon, S.R. (2003). Creating social presence in online environments. *New Directions for Adult and Continuing Education*, N100, 57-68. Wiley Periodicals.
- Bandura, A. (1977). *Social Learning Theory*. Englewood Cliffs: Prentice Hall.
- Bandura, A. (2006). Toward a psychology of human agency. *Perspective on Psychological Science*, 1(2), 164-180.
- Cui, G., Lockee, B., & Meng, C. (2012). Building modern online social presence: A review of social presence theory and its instructional design implications for future trends. *Education and Information Technologies*, 18(4), 661-685.
- Darmayanti, T. (1994). Readiness for self-directed learning and achievement of the students of Universitas Terbuka (The Indonesian Open Learning University). Victoria, BC: Unpublished Postgraduate Thesis for University of Victoria.
- Duffy, T.M., & Kirkley, J.R. (Eds). (2004). *Learner-Centered Theory and Practice in Distance Education*. New Jersey: Lawrence Erlbaum Associates.
- Kadarko, W. (2000). Kemampuan belajar mandiri dan faktor-faktor psikososial yang mempengaruhinya: Kasus Universitas Terbuka. *Jurnal Pendidikan Terbuka Jarak Jauh*, 1(1).
- Leong, P. (2011). Role of social presence and cognitive absorption in online learning environments. *Distance Education*, 32(1), 5-28. Routledge Taylor & Francis Group.
- MacKenzie, L., & Ballard, K. (2015). Can using individual online interactive activities enhance exam results? *MERLOT Journal of Online Learning and Teaching*, 11(2). Retrieved from [http://jolt.merlot.org/Vol11no2/Ballard\\_0615.pdf](http://jolt.merlot.org/Vol11no2/Ballard_0615.pdf).
- Moore, M.G. & Kearsley, G. (2012). Distance education: A systems view of online learning. *MERLOT Journal of Online Learning and Teaching*.
- Nazari, H., Nazari, S., & Motlagh, F.S. (2013). Proposing a model for evaluation of effective electronic learning strategies on students' achievement: A case study in virtual universities. *European Online Journal of Natural and Social Sciences*, 2(4), 631-637.
- Ormord, J.E. (2012). *Human Learning*. 6th Ed. London: Pearson.
- Puspitasari, K.A. & Samsul, I. (2003). Kesiapan belajar mandiri mahasiswa dan calon potensial mahasiswa pada pendidikan jarak jauh di Indonesia. *Jurnal Pendidikan Terbuka Jarak Jauh*, 1(2).
- Richardson, J.C., & Swan, K. (2003). Examining social presence in online courses in relation to students' perceived learning and satisfaction. *Journal of Asynchronous Learning Networks*, 7(1).



- Sedyaningsih, S., Asih, I.W., & Limbong, A. (2013). Analisis Difusi-Inovasi Model Komunikasi“Transactional Distance”dalam Layanan Bantuan Belajar Online.Unpublished Research.Universitas Terbuka.
- Simonson, M., Smaldino,S., Albright, M., & Zvacek, S. (2012). Teaching and Learning at a Distance: Foundations of Distance Education (5th Edition). Foundation of Distance Education, Pearson Education, Inc.Boston MA 02116
- Sorensen, C.(2014). Classrooms without walls: A comparison of instructor performance in online courses differing in class size.MERLOT Journal of Online Learning and Teaching, 10(4). Retrieved from [http://jolt.merlot.org/vol10no4/Sorensen\\_1214.pdf](http://jolt.merlot.org/vol10no4/Sorensen_1214.pdf)
- Sung, E., & Mayer, R.E. (2012). Five facets of social presence in online distance education. Computers in Human Behavior, 28 (5), 1738-1747.
- Tu, C.H., & Mclsaac, M. (2002). The relationship of social presence and interaction in online classes. The American Journal of Distance Education, 16(3), 131-150. Lawrence Erlbaum Associates, Inc.
- Zimmerman, T., & Nimon, K. (2017). The online student connectedness survey: Evidence of initial construct validity.International Review of Research in Open and Distributed Learning, 18(3). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/2484/4139>



## Smart Lecture Video Production: A Case Study with Philosophy and Media Literacy\*

Tomotsugu Kondo

Professor, Director of Center for Online Education, The Open University of Japan, Japan, tkondo@ouj.ac.jp

### Abstract

*This paper describes a case study of a method of creating video lectures while reducing cost and improving quality. Since 1985, the Open University of Japan (OUJ) has provided TV and radio broadcast lectures, as well as face-to-face lectures. As an additional lecture style, full online courses were launched in 2016. I was appointed start-up project manager, so I developed the Smart Lecture Video Production method to prepare the online courses. Our mission was to develop six undergraduate courses and two graduate courses within a year. Because hiring a video crew is generally expensive, we decided to try the entire development process ourselves. However, the project faced many problems, such as a limited budget, tight deadlines and lack of staff. To solve these problems, I created the following philosophy: we will achieve this project for all learners, for lecturers and staff. In accordance with this philosophy, we also developed production tools and media literacy instructional materials. As a result, the project mission was accomplished. Currently, the Smart Lecture Video Production method is applied to not only online courses but also some TV broadcasting productions.*

**Keywords:** philosophy, development environment, media literacy, staff development, video shooting technique, non-professional

### Introduction

This paper details a practical case study of online course development at the Open University of Japan (OUJ). The OUJ opened two online courses on a trial basis in April 2015 and launched eight full online courses in April 2016. In the full course, students are not required to go to an accredited exam center to take an exam. Instead, they watch video lectures, read documents, submit reports, participate in discussions, etc. This learning method is vastly different than those used at the OUJ for classroom and TV lectures. Therefore, we needed to drastically alter the course development process as well as produce the six undergraduate courses and two graduate courses within a year.

I was appointed start-up project manager to prepare the full online courses in March 2015. The development team consisted of eight members in total: three full-time administrative staff and three part-time technical staff including a project manager and a general manager. However, the project faced many problems, such as a limited budget, tight deadlines and lack of staff. Because hiring a video crew is generally expensive, we decided to attempt the entire development process ourselves.

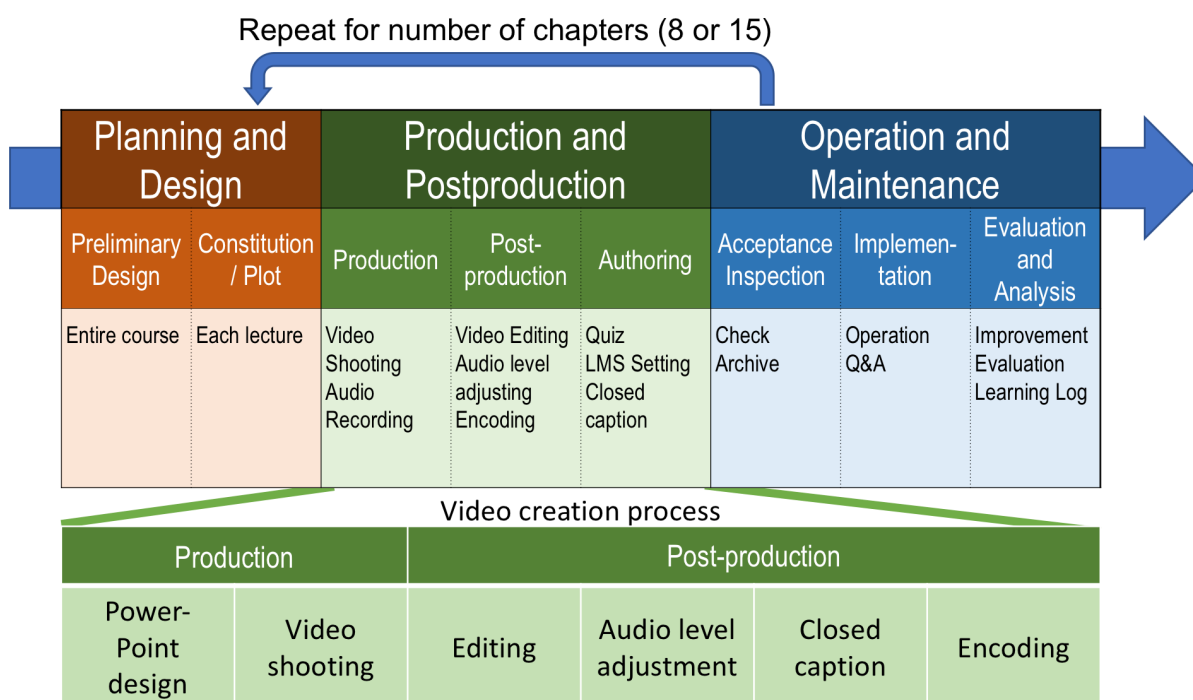
---

\*The original version of this paper was presented at the 30th Annual Conference of the Asian Association of Open Universities held at Crowne Plaza Manila Galleria, Manila, Philippines on 27 October 2016.

Figure 1 shows the online course production process. It can be divided into three stages: “Planning and Design,” “Production and Postproduction” and “Operation and Maintenance”. The steps from “Constitution / Plot” to “Acceptance Inspection” are repeated for each lecture in the series. I think this process is virtually universal.

The development stages included the following: instructional design, video shooting, narration recording, slide design, editing, encoding, authoring, closed caption, copyright license application and proofreading. Because our technical staff was made up of non-professionals, on-the-job training was required at each development stage. This paper describes how we, as non-professionals, created the broadcast-quality e-Learning courses.

Figure 1. Online Course Production Process

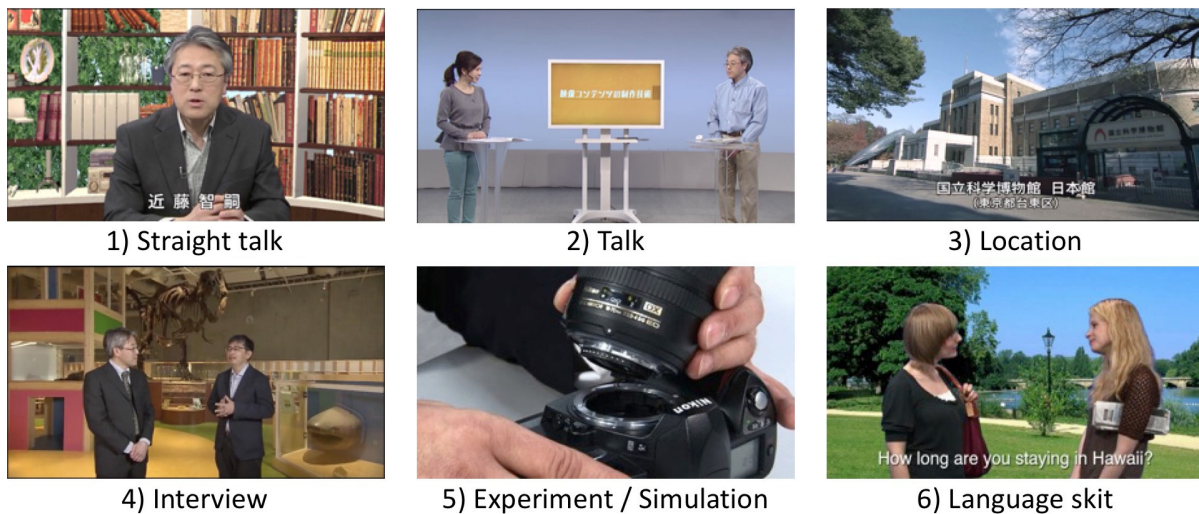


### Problems and Objectives

#### History of Video Lectures at the OUJ

This paper focuses on video lectures, among others, in e-Learning elements. This choice of focus results from the history of the OUJ. The OUJ started testing television broadcasts in 1972, and regular lectures have been aired since 1985. Currently, over 170 TV lecture series is being broadcast. A lecture series consists of 15 45-minute lectures. Video lectures can be classified as 1) Straight talk, 2) Talk, 3) Location, 4) Interview, 5) Experiment / Simulation, and 6) Language skit (Figure 2). They can be divided lectures such as in 1) and 2), and can insert video such as in 3) - 6). Both types can be effectively incorporated in the e-Learning materials. In this paper, these are collectively defined as video lectures. The Japanese name of the OUJ is “Hoso-daigaku,” which means “broadcasting university”. Therefore, for faculty and learners of the OUJ, video lectures are the preferred style.

Figure 2. Classification of Lecture Videos



### Problems of Video Production

It is difficult to create video content even for faculty of the OIJ. Not only knowledge of the content, but also video skills such as camera, audio, editing, etc. are necessary to deliver a high-quality production. Normally, to produce video content, we outsource the job to a video production agency. However, the high cost is a major bottleneck.

### Objectives

Before beginning the project, I asked myself, “For whom does this project exist?”. Immediate answers were “for the university: to reduce the cost burden” and “for students”. However, I felt this was not enough. Then, I received inspiration, and created our philosophy: we will achieve this project for all learners, for lecturers and staff. This means high-quality content for learners, including people with disabilities, a comfortable studio environment for natural lecturing, and a streamlined skill improvement process for staff. The purpose of this philosophy is to make the objective clear to staff and to help in decision making. In this paper, I describe the production tools and media literacy instructional materials we developed in accordance with this philosophy. This method is titled Smart Lecture Video Production.

### Measures

In this chapter, the tasks carried out in this project are presented. As categorized in the above philosophy: for all learners, for lecturers, and for staff.

## For All Learners

### Closed caption

The act prohibiting discrimination against persons with disabilities was enacted in Japan in April 2016. Because of this, closed captions were added into all video lectures.

#### 1. Development of a Closed Caption Function for Moodle Video Player

Online courses run on Moodle as an LMS (learning management system), and learners can access them via the Internet using a Web browser. Although video lectures can be embedded on the Web page, closed captions cannot be displayed using the standard Moodle video player. Therefore, we developed a closed caption display function for the video player that we are using (Figure 3). Closed captions are displayed in 23 characters and three lines at the bottom of the video frame. Default character size is 16-point, and it can increase to 20 points or 24 points. Character color can be switched to white, yellow, green or light blue, to differentiate two or more speakers. There are two major formats of closed caption in streaming video on the Web: SubRip and WebVTT. The function can read both formats. Also, not only personal computers but also tablets such as iPad can display closed captions.

Figure 3. Sample of Video Lecture with Closed Caption



#### 2. Closed Caption Preparation Using Automatic Speech Recognition

The OUJ collaborates with Kyoto University to produce closed captions (Kawahara, 2012). Closed captions of online courses are generated using an automatic speech recognition system that was developed by the University. Closed caption data for online courses consists of in-point and out-point time of the video, and speech text. Because the automatic speech recognition system

generates the formatted data with both in-point and out-point time, synchronization with the lecturer's lip movements is easy. However, it is necessary to do manual corrections in the event of a typo. For improving efficiency, I use a closed caption editor that comes with Vimeo. It allows the creation of closed captions in collaboration with a remote staff.

### Instructional Designer (IDer)

The unique feature of the OUJ is that the instructional designer (IDer) is selected from the faculty. Furthermore, an online course team must have an IDer from a different field's faculty for peer review in addition to the lecturing professor. This rule is to ensure easy-to-understand lectures.

### Audio Level

After opening the trial online courses in 2015, some inquiries were received from students. Many of the issues related to video production were about audio level. At that time, no criteria existed concerning such issues on the Web. When I became the project manager, I established the criteria compliant with broadcasting. In broadcasting, loudness level is the audio level criteria. The average loudness level should be within  $-24\text{LKFS} \pm 1\text{dB}$ . Methods for checking the level are the hardware loudness meter and specialized software such as NUGEN Audio LMB (NUGEN Audio Ltd., 2016) and Adobe Audition (Adobe Systems Incorporated, 2016).

### For Lecturers

#### Studios

The OUJ has three TV studios. Figure 4 depicts one of them, and Figure 5 shows its sub-control room. A large staff is necessary to man these studios, as evident from Figure 6. As in a live broadcast, the reason for a large staff is that separate tasks must be done at the same time. The advantage of this method is that the video content is almost complete when the shooting is finished. Unfortunately, in online course production, it is impossible to adopt this method because of a small staff. Instead, the editing is done in the time after the shooting. This method is the same used during a location shooting, such as for a documentary. This method can possibly reduce the burden on the lecturer, although it takes time to complete. With a small staff, it is possible to keep tension at a minimum, and also to discuss fine-tuning (Figure 6). We received some comments from professors, saying they can lecture easier in this environment than in a TV studio. As a sidenote, the studios that are now being used to produce online courses were created from a renovated warehouse (Figure 7).

#### Prompter Tool

A prompter is a half mirror monitor device (upper left of Figure 8 and Figure 9) that allows lecturers to read material while looking into the camera, like newscasters do. If the lecturer wants to read a printed script placed on the table, a video camera on the ceiling shoots the script and displays it on the prompter. Nowadays, the majority of lecturers use PowerPoint, in which it is difficult to simultaneously change slides and turn the pages of a paper script. Therefore, I developed a tool that enables scripts to be displayed in the PowerPoint note area on the prompter by using PowerPoint macro. The script displayed on the prompter is not only in synchronization with the

slide, but the beginning of the next slide script is displayed simultaneously as well. Thus, when switching slides, it is possible to continue speaking fluently. Most of the online courses were shot using this tool. PowerPoint 2010 or later for Windows can run this function.

Figure 4. TV Studio



Figure 5. Sub-control Room for TV Studio



Figure 6. Studio 714

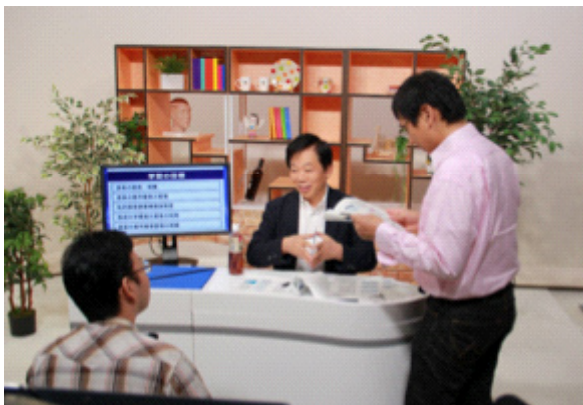


Figure 7. Studio 518



Figure 8. Monitors from Lecturer's View

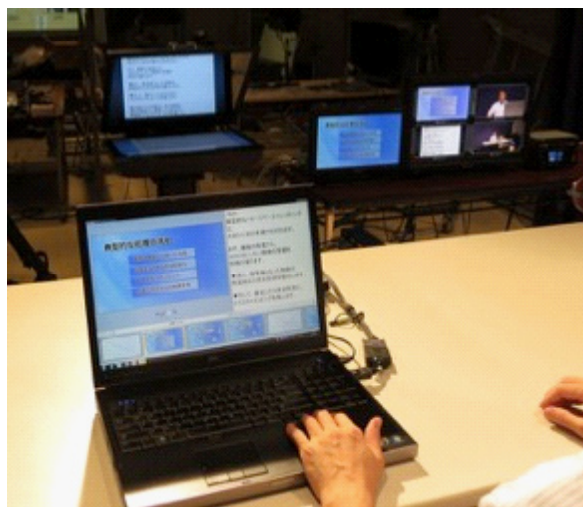


Figure 9. Prompter





## For Staff

I believe one of the most important aspects of such a project is that the staff is motivated to refine their skills and continue to improve the team. To this end, the staff can participate in workshops at television stations. In this chapter, a useful tool for staff and visual instructional materials are introduced.

### Script Sheet Generating Tool

When shooting video, preparing a script sheet is common so that the entire staff will have a full awareness of the project. The script sheet includes not only the lecturer's script but also detailed information such as screen images, camera work, telop, etc. To create the script sheet, so far, a director had to prepare it manually, with considerable effort. To facilitate the process, I developed a script sheet generating tool, as most lecturers and directors are familiar with the operation of PowerPoint. Like the prompter tool, I developed this tool using PowerPoint macro. Users embed tags into the note area of PowerPoint, and the required information will be input to the adequate column of the sheet according to the type of tag. Figure 10 is a screenshot of PowerPoint; scripts and tags are shown in the note area at the lower right. Figure 11 is a sample of a script sheet that has been output in MS Word format. For multiple lecturers, the scripts can be automatically color-coded. The other important feature is that the tool has a time prediction function. In my case, I speak about 250 characters per minute in Japanese. If the lecturer sets the number of characters per minute, the predicted time required will be put into each section automatically. This function is extremely useful. For example, if a shooting has gone over time, staff can immediately determine how much should be cut. Or, to insert some video or intermission, staff can input the tag below:

`<Intermission type="video">60</intermission>`  
The tool will add 60 seconds in total. Other tags are summarized in Table 1. This tool is also used in shooting most online courses.

### Video Manual on the Web

For technical staff, we prepared a video manual of our studio and equipment (Table 2). In this video manual, the target equipment is the same as usual. It is also used for new employees.

### *Television lecture series "Creative Technologies for Digital Content"*

For technical staff and general learners, we developed a television lecture series (15 45-minute lectures). The title is "Creative Technologies for Digital Content" (Table 3). This lecture series is for beginners to advanced. As it includes professional suggestions, we feel that technical staff motivation will increase.

Figure 10. PowerPoint

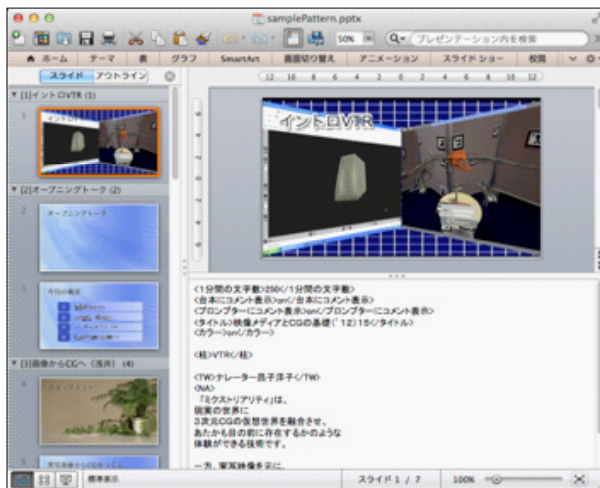


Figure 11. Generated Script Sheet



Table 1. Tag Specification of Script Sheet Generating Tool

Initial settings	<numberOfCharacterPerMin>	Number of characters in one minute: 250 (default)
	<comment4script>	Comment in script sheet: on / off
	<comment4prompter>	Comment on prompter: on / off
	<title>	Title at header of script sheet: (character string)
	<color>	Color print: on / off
Camera Work	<scene>	Scene information: (character string)
Content information	<tw>	Telop: (character string)
	<C>	Camera work: (character string)
	<!-- comment -->	Comment: (character string)
Intermission	<intermission>	e.g.: <Intermission type="BGM"> 30 </ intermission>
	<fixedTime>	Fixed time: sec / min'sec" e.g.: 90 / 1'30"
Speaker	<speaker>	e.g.: <NA>, <Kondo>

Table 2. Video Manual Contents

1	Camera operation	4	Sound equipment (Fig. 13)	7	Appendix <prompter, crane>
2	Tripod operation	5	Shooting <studio>	8	Example of use
3	Lighting (Fig. 12)	6	Shooting <location>	9	Tools

Fig. 12 Studio Light Control

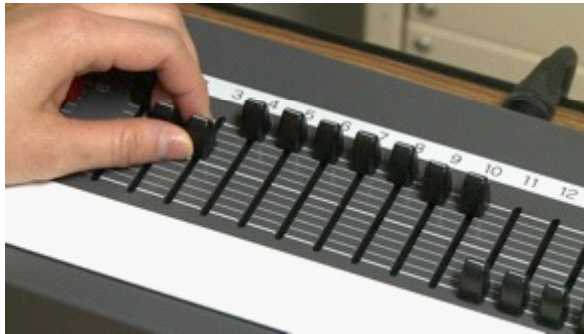


Fig. 13 Audio Settings of the Video Camera



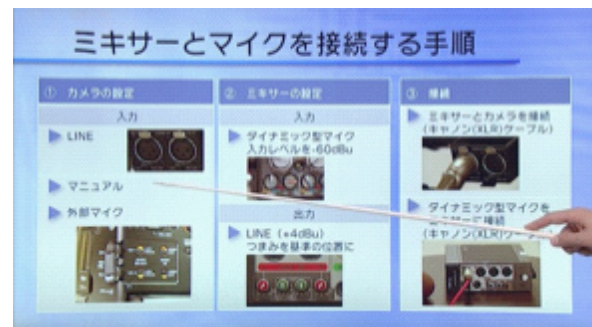
Table 3. Contents of “Creative Technologies for Digital Content”

1	Principle of the video	6	Composition and imaginary line (Fig.14)	11	Scenario
2	Montage	7	Lighting	12	Shooting practice
3	Basic functions of video camera	8	Microphone	13	Editing practice
4	Adjustment of brightness	9	Sound (Fig.15)	14	Computer Graphics
5	Camera work	10	Preproduction / Post-production	15	3D video

Figure 14. Imaginary Line



Figure 15. Audio Mixer



## Results and Conclusions

In April 2016, eight full online courses were launched (Table 4). A cumulative total of over 4,000 people enrolled in the first semester. There have been no major difficulties so far, although there were a few modifications. Therefore, I believe this project was successful.

After finishing video production, the video lectures are embedded in the LMS (Figure 16). The videos were encoded as follows: the resolution is 640 x 360 pixels, and the overall bit-rate is 1Mbps and under.

In this project, we produced many types of video lectures. Fig. 3 depicts an on-location interview of ‘Sensibility Engineering’, Fig. 6 shows a straight talk lecture of ‘Media and Intellectual Property’, Fig. 16 is of a talk lecture of ‘Problems and Exercises in Physics’, and Fig. 17 is of a hand-drawn explanation of ‘Problems and Exercises in Physics.’ Although some parts of this project were outsourced, many parts were able to be developed by us. We accomplished the original objective.

Recalling my experience as project manager, I feel the most important thing was the philosophy I mentioned before. The technical aspects such as video shooting could be done with sufficient training. However, without a trust relationship between lecturers and staff, technological ability alone cannot motivate staff to develop a good production. I believe working together is the way that both professionals and non-professionals can create high-quality content.

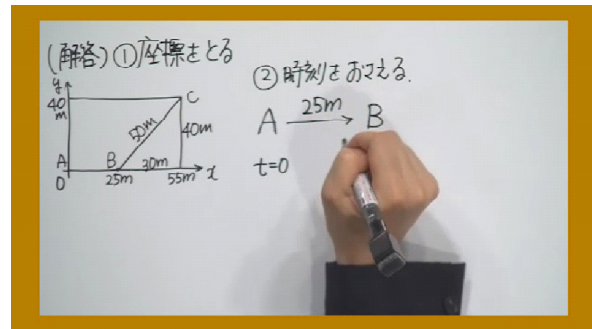
Table 4. Online Courses Opened in 2016

	<b>Title</b>	<b>Number of chapters</b>	<b>Title</b>	<b>Number of chapters</b>
Undergraduate	Understanding Cancer in Japan	15	Sensibility Engineering	8
	Introductory Course on Women's Career Design	8	Media and Intellectual Property	15
	Introduction to Java Programming	8	Problems and Exercises in Physics	8
Master	Methods for Analyzing Species Composition Data	15	Theories and Practices of e-Learning	15

Figure 16. Screenshot of LMS



Figure 17. Explanation by Hand Drawing



## References

- Adobe Systems Incorporated. (2016). Audition. Retrieved from <http://www.adobe.com/products/audition.html>
- Kawahara, T. (2012). Transcription system using automatic speech recognition for the Japanese Parliament (Diet). In Proc. AAI/IAAI, pp.2224-2228
- NUGEN Audio Ltd. (2016), Loudness Management Batch processing, Retrieved from [http://www.nugenaudio.com/lmb-loudness-management-automatic-batch-processing-file-application\\_21](http://www.nugenaudio.com/lmb-loudness-management-automatic-batch-processing-file-application_21)



## Special Report on Technology Application

**Design and Development of an Online Repository System for Thesis and Special Problem Manuscripts****Armacheska R. Mesa**Instructor, University of the Philippines Mindanao, Philippines, [armesa1@up.edu.ph](mailto:armesa1@up.edu.ph)**Abstract**

*It is vital to keep track of all the scholarly works undertaken by the students in research universities. As a premier research university, The University of the Philippines (UP) Mindanao has produced several scholarly works made by its students, such as thesis or special problem manuscripts. Similar to typical residential universities in the Philippines, UP Mindanao students submit both hardbound and digital copies of their thesis and special problem manuscripts to their respective departments. Problems such as duplication of work and missing manuscripts are rampant with the current method. This is because printed and electronic copies stored in optical discs can easily be misplaced and are difficult to track when borrowed. This paper describes the development of the UP Mindanao Manuscript e-library and Repository System (UPMERS), which is a web-based information system that provides administrators a tool to monitor and manage records of manuscripts by graduates of the University. This paper also describes the system's user acceptance using the Technology Acceptance Model (TAM). Furthermore, the study also discusses the result of the System Usability Scale survey.*

**Keywords:** Manuscript, Repository, TAM, e-Library, Theses, SUS**Introduction**

Theses and special problems (SP) are the intellectual output of a research university. They reflect the research skills of students in the university and how they have applied the knowledge that they have learned in the institution. Levy (2012) cited that theses are intellectual assets that an academic institution should recognize and manage as such. As a premier research university in the country, the University of the Philippines (UP) Mindanao has produced several scholarly works undertaken by its students, such as theses or special problem manuscripts.

Similar to typical residential universities in the Philippines, UP Mindanao students submit both hardbound and digital copies of their theses and Special Problem manuscripts to their respective departments. Every department has its manual method of storing these documents. Printed copies of manuscripts are stored in libraries by different departments and colleges. These submitted manuscripts have remarkable roles in the reputation and credibility of the libraries (Khanipoor, 1999). Students and other stakeholders of the university access past researches through libraries to gather information for research-related endeavors.

However, when printed copies of the thesis or special problem manuscript are submitted, the research study often fades into obscurity or tends even to be forgotten by faculty members and students (Levy et al., 2012). Often, the hardbound copies of manuscripts are lost, misplaced or not returned by borrowers. Several problems on optical discs that pertain to reliability, longevity, and durability as storage media were also identified in past studies (Bradley, 2006; Finch and Webster, 2008). These issues are what UP Mindanao scholars have been struggling with. Therefore, it was suggested that a centralized storage for electronic formats of manuscripts be developed through

the University's repository system. A repository system can be a shop window for stakeholders of the university (Gutam et al., 2010). Its function is to store or catalog scholarly content such as research papers and journal articles. It can also be intended to collect and preserve the research output of universities in digital form (Eke, 2011) such as theses and special problems. Furthermore, Schopfel et al. (2012) observed that in a research university, there is a need for access to scholarly works since scientific communities require access to scientific information for research and teaching activities. A thesis repository system provides several opportunities for advanced learning because it can aid students in widening their interests in research.

### **Review of Related Literature**

McCutcheon (2011) cited in his paper that one of the most effective steps for universities to increase the use of their scholarly works such as theses is to switch from print to electronic systems.

Several universities have already developed repository systems of their intellectual properties. Sheeja (2012) discussed the different theses repository systems in India. East Tennessee State University (ETSU) has also made their undergraduate theses available to the campus community and general public through an electronic repository system as described in the study by Levy et al. (2012). Several universities in Nigeria have switched to the digitization of their library materials such as theses and dissertations as reported in Alhaji's (2007) paper. Ghosh (2009) examined nine thesis repositories in India and proposed on creating a national e-theses repository. University libraries in Korea have developed and utilized online bibliographic databases, which provides users access to electronic publications such as theses (Park et al., 2007).

### **Open Source Systems**

As an attempt to address the problem without reinventing the wheel, several open source systems for journal management and document storage were reviewed. The following are the most commonly used systems:

Open Journal Systems (OJS) is a journal management and publishing software system, which provides a venue for submission to online publication and indexing. Thus, it supports a refereed publishing process. It offers not only the online presentation of journal articles but also an entire editorial management workflow, which involves submission, as well as multiple rounds of peer review. OJS also features various system roles such as the journal manager, editor, reviewer, author, reader, etc. (Da Fonseca, 2004).

Open Conference Systems (OCS) is another open source web publishing tool that creates a web presence for a scholarly conference. OCS has many features, such as creating a conference website, sending a call for papers, allowing paper and abstract submissions, posting conference proceedings, registering participants and integrating post-online discussions (Open Conference Systems, 2016).

Allen Track is another online manuscript submission and peer review system similar to OJS. It enables referees to access the articles online and submit reviews online. Through this system, users can enter the details of all participating authors, update addresses, upload the manuscript and figure files, add updated files, and view the electronic manuscript page proofs (Br J Gen Pract, 2006).



E-journalis a powerful production publishing system that allows users to create and control their own electronic or possibly printed journals in Drupal. Users can set up many journals, and it has functions for adding authors and editors. E-journal has modules, which allow users to manage basic user and access control, vocabularies and archives (Drupalorg, 2016).

Editorial Manageris another manuscript submission and tracking system that provides a suite of customizable manuscript tracking and reporting tools for authors, reviewers, editors, and journal office staff. This system also allows submission, peer review and production process (Ariessyscom, 2016).

Despite the existence of open source software for storing and managing theses, the special requirements of stakeholders in UP Mindanao called for the development of a bespoke system.

### **Objectives**

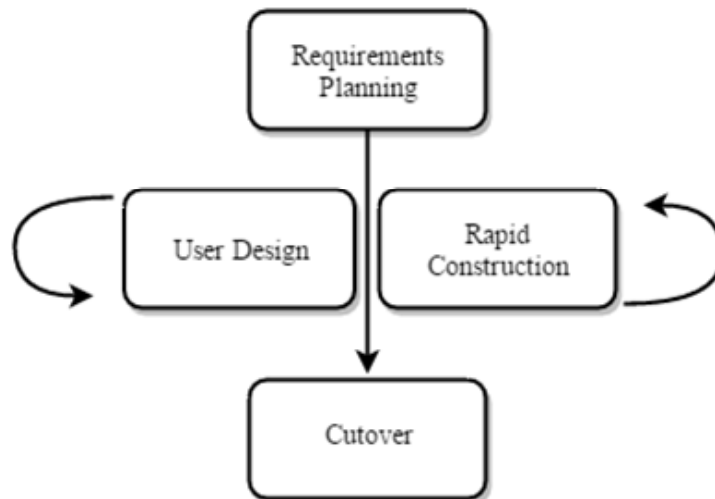
This study aimed to develop a web-based information system that provides administrators a tool to monitor and manage records of manuscripts submitted by graduates of the University. The System, coined as UP Mindanao Manuscript e-library and Repository System (UPMERS), allows storage of digital copies in the database. It is an archiving web system that can be accessed by teachers, students, researchers, and all stakeholders of the University. Titles, abstracts, and even the whole theses or special problem manuscripts in various file formats can be retrieved using the system. The access to a certain manuscript is in compliance with its Intellectual Property Rights page, which specifies if the content of a manuscript can be made available to the general public or only to specific users. Moreover, this study measures user acceptance using the Technology Acceptance Model.

### **Research Design and Methods**

#### **Software Development Framework**

The framework used in developing UPMERS is the Rapid Application Development (RAD) structure in System Development Life Cycle. RAD was used for a faster development of the application, considering that project duration approximately took five months. RAD consists of four phases, namely: (1) Requirements Planning; (2) User Design; (3) Rapid Construction; and (4) Cutover. The phases followed in the traditional Software Development Life Cycle (SDLC) are also followed in RAD, but the phases are combined to produce a more streamlined development technique (Boehm, 1988). Figure 1 illustrates the sequential order of the model's main phases.

Figure 1. Rapid Application Development Model (Watkins, 2009).



### Requirements Planning Phase

This is the first stage in the development of the system. The objectives of this stage were: to establish a general understanding of the system, to become familiar with existing systems, and to identify the processes that will be supported by the system. On this phase, an outline of the system area and definition of the system scope were developed. The Requirements Planning stage began with series of meetings and interviews, between the developer and the primary user (administrative staff). These meetings initiated the development process by establishing a mutual understanding of the objectives of the development project in general and the system in particular. The developer was also part of the institution and a user of the system, so communication regarding the system was not difficult. This stage lasted only a short period because its goal was to determine the initial requirement function, information, performance, and interface for the web-based system. This phase was divided into two parts: (1) user requirements; and (2) software requirements phase.

### User Requirements

This web-based information system required input requirements such as manuscripts. Data encoded in the System was taken from manuscripts submitted by graduate students of the previous academic year. It was just a small portion of data encoded by one department. The data contains a list of manuscript titles submitted to the department during the Academic Year 2014-2015. These data were used for testing. The system needed to support five types of users of the System: system administrator, department chair, dean, faculty, and students, with specific functionalities for each.

### Software Requirements

The key features of any DBMS application are data capture, query, and application development. For this project, some of the tools used were PHP, MySQL, HTML, CSS, and Javascript. Laravel 5.2 was used as the Model View Controller (MVC) framework of the system while Bootstrap was implemented as its front-end framework.

## **User Design Phase**

In this phase, initial modeling and creation of prototypes were completed. Feedback from the main user, which is the administrative staff of the department, were gathered. The process was repeated as often as necessary during the duration of the development of the System.

## **Construction Phase**

This is the phase for actual coding, testing, and integration of the modules of UPMERS. Similar to the User Design Phase, this phase was also repeated as often as necessary since there were several alterations needed to meet the demands of the user. This lasted for about three months.

## **Cutover Phase**

In RAD, the cutover phase includes the installation of the system, user testing, and evaluation. The primary user utilized the system for detection analysis, correction of software faults, interface modifications, functional expansion, and performance improvement. This was needed to evaluate if the system will be ready for release and deployment to the intended end users. Upon the completion of the final prototype of this system, it was put through a series of black-box testing to ensure that each component of the system, as well as the complete system, performs according to user requirements.

## **Technology Acceptance Model**

In order to describe how the stakeholders of the university use the system, the Technology Acceptance Model (TAM) was used in this study. TAM is one of the most widely used models for user acceptance of information systems. Proposed by Davis in 1986, it was used to evaluate the acceptance of a web-based repository of health education materials (Wynn et al., 2012). Park (2009) proved TAM to be a useful theoretical tool to examine learners' acceptance of e-learning. Furthermore, TAM was used to measure the acceptance of domestic technologies (Calvin, 2008). According to Chen et al. (2013), the most important factors in the technology acceptance model are Perceived Ease of Use and Perceived Usefulness. This study focuses on these two factors.

### **Perceived Ease of Use**

Perceived ease of use according to Davis et al. (1989) is the degree to which a prospective user expects a proposed system to be free of effort. An information system will most likely be used if prospective users find the system user-friendly and easy to learn. To assess the user's perception of the system's ease of use, a System Usability Scale (SUS) was used. The survey employed in this study is the most commonly used tool in testing usability. It is composed of ten statements with level of responses ranging from 1 (strongly disagree) to 5 (strongly agree). The responses from the survey are converted using a scoring scheme: the scores of the odd-numbered items are subtracted by 1 and the scores of the even-numbered items are subtracted by 5. The computation of the overall SUS score is the sum of the computed scores multiplied by 2.5 to convert the overall score from 0 to 100.

This survey was used to determine how the prospective users found the System; if the System was easy to learn; if it was clear and understandable; and if it was easy for the users to become skillful in using the system.

SUS 10-item survey questionnaire (Brooke, 1996):

1. I think that I would like to use this system frequently.
2. I found the system unnecessarily complex.
3. I thought the system was easy to use.
4. I think that I would need the support of a technical person to be able to use this system.
5. I found the various functions in this system were well integrated.
6. I thought there was too much inconsistency in this system.
7. I would imagine that most people would learn to use this system very quickly.
8. I found the system very cumbersome to use.
9. I felt very confident using the system.

Perceived Usefulness. Perceived usefulness, according to Davis et al. (1989) affects the probability that using a specific application or system will increase the employee's performance. A survey was formulated to determine the system's benefits to the prospective users. The statements in the survey are significant benefits that the users may gain from using the System. They are based on a study by Davis (1989) but were customized for UPMERS. The statements also pertain to the productivity of the stakeholders in terms of research output and management of the manuscripts. There are five response options ranging from 1 (strongly disagree) to 5 (strongly agree). The average scores of every item were recorded. In order to test the reliability of the survey, the Cronbach alpha was computed using SPSS software.

Six-item survey used to measure user's perception on UPMERS usefulness:

1. UPMERS will help faculty monitor approved manuscripts (advised and paneled).
2. UPMERS will help faculty administrators monitor students and faculty in terms of manuscript output.
3. UPMERS will help students in acquiring titles to propose.
4. UPMERS will solve problems of unreturned copies of manuscripts.
5. UPMERS will help in proper storage of digital copies of manuscripts.
6. UPMERS will

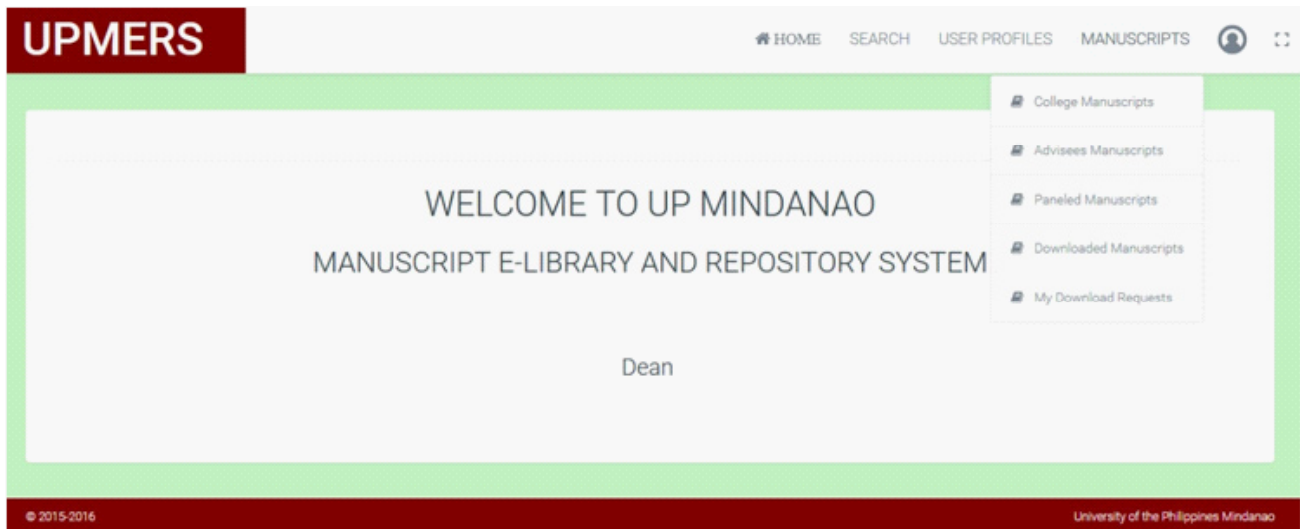
## Deployment and Assessment

In this study, the target users of the system are stakeholders of the University, consist of the students, faculty members, research staff and alumni. After the system development phase, the system was uploaded on the university's server last May 4, 2016. The system's URL was then placed on the university's website for easier access. The two surveys, survey for usability and usefulness, were then conducted after deployment to determine information system's user acceptance. There were twenty (20) respondents for the two surveys. These were the department chair of DMPCS, (Dept. of Math, Physics, and Computer Science) administrative staff, faculty members, and fourth-year students from the College of Science and Mathematics. The users of the system were also interviewed regarding their impressions on UPMERS. They were also asked about how they thought the system could be beneficial in the monitoring of manuscripts and the quality of the students' research output.

## Results and Discussion

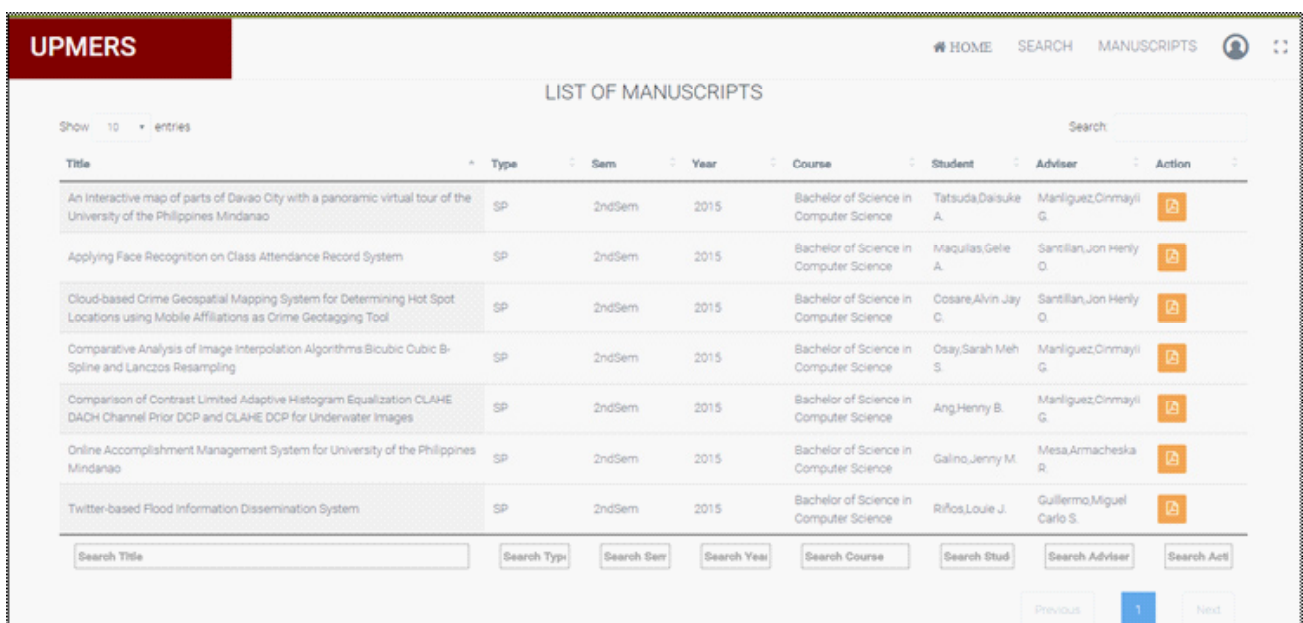
After following the methodology framework, the system was developed according to the needs of the intended users. A screenshot of the menu items exclusive to deans is shown in Figure 2.

Figure 2. Screenshot of the UPMERS Menu Items and Functionalities for Deans.



After testing the System, the results of the surveys and interviews conducted in the study showed that the retrieval of records became faster, and the storage of manuscript data was more secure and centralized. When the System was launched via the UP Mindanao website, the stakeholders were able to access the System anytime and anywhere, provided that their accounts were encoded. Users were able to search for and view manuscripts by specifying titles, keywords, and other metadata. Figure 3 shows a screenshot of the page where users can search for manuscripts uploaded to the system.

Figure 3. Search Functions for Student and Faculty Member Types of Users



Based on the interviews conducted, the administrative staff agreed that implementing the system would eliminate the problems spawned by borrowing hard copies of manuscripts. Faculty members who tested the System stated that monitoring manuscripts would be easier, storing them would be more secure, and accessing them would be faster once UPMERS is in full swing. Students who tested the system reiterated the benefits realized by the administrative staff. Furthermore, they also recognized the potential for the System to allow them to generate new ideas in their future research endeavors.

Results showed that the SUS score was 85.5, which means that the system's usability is above average (Sauro, 2011). According to Thomas (2015), an SUS score of 80.3 and above is interpreted as the system being more than satisfactory and loved by the users. This means that the prospective users perceived the System as easy to use. For the perceived usefulness survey, all six statements on the average received a score greater than 4. This supports the interview results stating that users believed that UPMERS would aid faculty and administrators in monitoring research output of the students; UPMERS would be helpful to students in acquiring research titles; UPMERS would also be a centralized storage of digital copies of manuscripts; Duplication of research can be eliminated using UPMERS; and UPMERS will lessen, if not eliminate, the problem of unreturned copies of hardbound manuscripts.

As for reliability, the Cronbach alpha obtained was 0.78, higher than the 0.70 cutoff value for being acceptable (George and Mallery, 2003).

### **Conclusion and Recommendation**

Based on the study, it can be concluded that UPMERS will be beneficial not only for administrators who can monitor and securely store digital copies of manuscripts but also for students and other stakeholders of the University. Using the System, users would be able to have knowledge or background on the research studies by UP Mindanao graduates. In general, results showed that UPMERS in its entirety is relevant, helpful and favorable to its users, and is adequately effective in carrying out its functions. The System was user-friendly, hence, learning all the features was not a problem. Furthermore, based on the survey and interviews, users were satisfied with the functionalities and performance of the web application.

However, the great challenge here is not on the use of the system, but on populating the database. The task of adding records of manuscripts on the System must be required for every department so that every manuscript will be stored in the database. As cited by Andrew (2003), various open-source packages are now in use that permits individual institutions to manage their digital research output. However, the problem is not about finding the appropriate software to use, but about gathering the content for these services. An impact study of the system is still yet to be conducted. Furthermore, a post-implementation survey on how the System has helped students in acquiring titles for their research and how the System has assisted the students in writing their theses and special problems can be undertaken as an extension of this study.

## References

- Alhaji, U.A. (2007). Digitization of past question papers, dissertations, and theses. *The International Information & Library Review*, 39 (3-4), 228–246.
- Andrew, T. (2003). Trends in self-posting of research material online by academic staff. *Ariadne: Web Magazine for Information Professionals*. 37. Retrieved 20 May 2016 from <http://www.ariadne.ac.uk/issue37/andrew/>.
- Aries systems. (2016). Editorial Manager. Retrieved 20 May 2016 from <http://www.ariessys.com/software/editorial-manager/>
- Boehm, B. (1988). A spiral model of software development. *IEEE Computer*.
- Bradley, K. (2006). Risks associated with the use of recordable cds and dvds as reliable storage media in archival collections - strategies and alternatives. Paris: Memory of the World Programme.
- Br J Gen Pract. (2006). Introducing Allen Track. Retrieved 20 May 2016 from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1839030/>
- Brooke, J. (1996). A quick and dirty usability scale. *Usability Evaluation in Industry*.189 (194), 4-7.
- Chen, Y., Lin, Y., Yeh, R., & Lou, S. (2013). Examining factors affecting college students' intention to use web-based instruction systems: towards an integrated model. *Turkish Online Journal of Educational Technology*, 12(2). Retrieved 20 May 2016 from <https://library3.hud.ac.uk/summon/>.
- Colvin, H.M. (2008). The acceptance of domestic technology: TAM as applied to a proposed classification scheme. *Retrospective Theses and Dissertations*. Paper 15664.
- Da Fonseca, R.M.S. (2004). *Open Journal Systems*. Paper presented at the ICC 8th International Conference on Electronic Publishing. Brasilia.
- Davis, F. D. (1986). A technology acceptance model for empirically testing new end-user information systems: Theory and results. Doctoral dissertation. Cambridge, MA, MIT Sloan School of Management.
- Davis F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–39.
- Davis F.D., Bagozzi, R.P., & Warshaw, P.R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Manage Science*, 35(8), 982-1003.
- Drupal.org. (2016). Drupal.org. Retrieved 20 May 2016 from <https://www.drupal.org/project/ejournal>

- Eke, H.N. (2011). Digitization of resources for University of Nigeria Repository: Process and challenges. *Webology*, 8(1).
- Finch, L. & Webster, J. (2008). *Caring for CDs and DVDs*. London: The British Library.
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference*. 11.0 update (4th ed.). Boston: Allyn & Bacon.
- Ghosh, M. (2009). E-theses and Indian academia: A case study of nine ETD digital libraries and formulation of policies for a national service. *The International Information & Library Review*, 41(1), 21-33.
- Gutam, S., Mishra, A.K., Pandey, P.S., Chandrasekharan, H., & Aneja, G. (2010). Need of open access repositories for NARS in India. *Commentary Current Science*, 98(12).
- Khanipoor, R. (1999). An introduction to manuscript cataloguing. *Faslname-ye Ketab*, 40, 37-48.
- Levy F., Pyles R., Szarejko C., & Wyatt L. (2012). Developing an electronic repository for undergraduate theses. *Honors in Practice – Online Archive*. Paper 160.
- McCutcheon, S. (2011). Basic, fuller, fullest: Treatment options for electronic theses and dissertations. *Library Collections, Acquisitions, & Technical Services*, 35 (2-3), 64-68.
- Park, E., Young-joon, N., & Sanghee, O. (2007). Integrated framework for electronic theses and dissertations in Korean contexts. *The Journal of Academic Librarianship*, 33(3), 338-346.
- Park, S.Y. (2009). An analysis of the technology acceptance model in understanding university students' behavioral intention to use e-learning. *Educational Technology & Society*, 12 (3), 150-162.
- Public Knowledge Project. (n.d.). Open conference systems. Retrieved 20 May, 2016, from <https://pkp.sfu.ca/ocs/>.
- Sauro, J. (2011). *Quantifying the user experience: Practical statistics for user research* (2nd ed.). Morgan Kaufmann-Elsevier. Cambridge: United States.
- Schopf, J., & Soukouya, M. (2012). Providing access to electronic theses and dissertations: A case study from Togo. *D-Lib Magazine: The Magazine of Digital Library Research*, 19 (11/12).
- Sheeja, N.K. (2011). The development of an Indian electronic theses and dissertations repository: An overview.
- Thomas, N. (2015). How to use the system usability scale to evaluate the usability of your website. Retrieved 10 January 2017 from <https://usabilitygeek.com/how-to-use-the-system-usability-scale-sus-to-evaluate-the-usability-of-your-website/>.
- Watkins, J. (2009). Agile development and testing. In *Agile Testing: How to Succeed in an Extreme Testing Environment*. Cambridge: Cambridge University Press, pp. 19-28.



Wynn, Z.N., Winn T., & Syed-Mohamad S.M. (2012). Technology acceptance model for web-based repository of health education materials. Paper presented at the International Conference on Management and Education Innovation. Singapore.



---

## Special Report on Technology Application

### Measuring System Usability and Readiness of System Users for Basic Healthcare Awareness and Education: A Case Study

Cinmayii A. Garillos-Manliguez

Assistant Professor, University of the Philippines Mindanao, Philippines, cgmanliguez@up.edu.ph

#### Abstract

*Providing correct healthcare information, guiding the community in handling information in the most effective way, delivering healthcare services, and conducting educational activities are crucial in health literacy. This paper describes the development of an electronic healthcare information system to educate the community constituents about healthcare awareness and to help improve the efficiency of a health center in a community located in the southern island group of the Philippines, Mindanao. The system enables staff users to manage and monitor patient health records, and integrates eLearning with user interaction and engagement through an interactive learning module. Furthermore, the paper discusses the results of the system usability scale survey to system users. Finally, the results of the Test of eLearning Related Attitudes (TeLRA) for the assessment of the attitudes of health workers towards using the system for health literacy and their acceptance were also presented.*

**Keywords:** TeLRA, Information System, e-Learning, Education, Healthcare

#### Introduction

As emphasized by the World Health Organization (WHO), developing a strong health information system (HIS) for every country is needed to provide reliable and immediate high-quality health information. This will help health workers in making timely and accurate decisions (WHO, 2012). The use of information and communications technology (ICT) tools for healthcare promotion can contribute significantly to public health because these enable the mind to filter useful information from large quantities of health facts and use them on a given situation (Kwankam, 2004). These remove the gap of geographical constraints and can promote interactivity and patient engagement, which is a key to successful therapy (Novák, 2015). In Africa, 80% of the children could have been saved if they have been informed about the solution (Kwankam, 2004).

Considering the healthcare in the Philippines, the persisting problems include the difficulty in maximizing the use of gathered information in decision-making (Cervantes, 2014), and the challenge in educating community constituents with necessary healthcare information. The Philippines is just at the early stage of its nation-wide development or implementation of different information and management systems to improve the quality of healthcare services and the sharing and exchange of information for effective planning, managing, and monitoring within the community or of the nation as a whole (Herbosa, 2013; Shainur, Casebeer, and Scott, 2012; Department of Health (DOH), 2015). Several attempts have been made to develop health information systems for effective use in the Philippines. However the availability of affordable information technology (IT) resources, huge capital outlay (Marcelo, 2014), higher level decision-makers, and the attitudes of users towards the system still create hindrances in the full adoption of the system (Shainur, Casebeer, and Scott, 2012).

In the study of Anshari, Almunawar, and Low (2012), the functional health literacy of the patient have a strong correlation with the support and availability of the health system. E-learning is also considered as a new trend in professional healthcare education (Walsh and Dillner, 2003). It is a practical solution for training staff in patient-care settings because it helps them to keep updated with the latest technology, information, and regulations without being away from work (Nelson, 2003). Most of the studies involved development of health information systems while there are only few which integrates health literacy or healthcare education to increase patient engagement in a system (Anshari, Almunawar, and Low, 2012; Gephart and Effken, 2013). There are also limited studies in the Philippines that focus on this aspect, thus, this study would help in addressing this gap as well as contribute to the body of knowledge.

At present, the operations of most community or barangay health centers (BHC) in the southern part of the Philippines are done manually, i.e. pen-and-paper. The current system is very inefficient and time consuming most especially when searching for a patient record, writing a monthly report, and monitoring a patient's status. Furthermore, the latest technologies are not being fully utilized in healthcare education. The weekly immunization and/or prenatal orientations are often being done verbally without the use of visual aids. This might lead to relaying inconsistent or incomplete information to the patients.

To address these pressing concerns in the community, an effective tool for health information management integrated with multimedia contents like modules, games, videos, among others in e-learning would be helpful to aid in proper information dissemination, promotion, and healthcare education in the community.

### **Objectives**

This study aimed to develop and implement an electronic healthcare awareness system, named "eHICAP", using open source technologies. It also aimed to measure the usability of the developed system using the System Usability Scale, and determine the learning attitudes of target users in the community using the Test of e-Learning Related Attitudes (TeLRA) scale. This can be seen as a case study as this system was used in one barangay health center located in the Barangay Sto. Niño, Davao City.

### **Review of Existing Alternatives**

Since WHO has encouraged every country to invest in health information system, many countries have already created their own HIS, for example, Belize Health Information System (BHIS) in Central America, and Ethiopia (WHO, 2012). In the Philippines, there are only a few that can be found on the web as discussed in the following subsections.

## Barangay Sto. Niño Health Center

Barangay Sto. Niño Health Center (BSNHC) is located in Davao City, which is in the southern part of the Philippines. Similar to the rest of the health centers in the country, BSNHC also holds immunization and prenatal programs. However, recent technologies can be used to help improve the efficiency of the health center operations and impact on its community. The following shows a sample problem that can be encountered in the current setting of a program named as Expanded Program on Immunization (EPI), which is regularly held in the BSNHC. First, when managing records of a patient for the EPI in the BSNHC, each record of a patient will be hand-written and will be updated by filling out a form and will be kept in a brown envelope labeled with the patient's name and address. These envelopes will then be filed in cabinets. In the events of lost patient data, the patient is required to fill out the EPI form again. Second, when doing weekly/monthly reports, Barangay Health Workers (BHWs) will check the forms and gather the necessary information (e.g. number of vaccines given, etc.) which will then be submitted as numerical data to the head office. With an operations-based information system, there will be better management of records and faster operations (adding a new record, searching, updating information, and keeping of records).

When it comes to health care awareness and promotion campaign, the BHWs need to walk around the whole barangay to disseminate flyers, brochures, etc. Facilitating decision making may also be difficult given the current setting. For instance, if there will be free vitamins and medicines to be distributed among pregnant women active in the Prenatal Program, the BHWs need to sort out the files per purok or area, then sort again the active and inactive records. The abovementioned efforts and operations can be very tedious and inefficient, thus this system was developed. Furthermore, when conducting these immunization and prenatal programs, it is very vital to educate the patients/guardians/parents on the information about vaccines, vitamins, minerals, and very importantly the actions to take whenever they are in a situation that concerns their health after visiting the health center. This is why health literacy or health education should become an essential part of the system.

## Unified Health Management Information System (UHMIS)

The UHMIS is a very large system of different health systems (e.g. National Health Data Dictionary, Kontra-Paputok Reporting System, etc.) that is being developed until 2017. This project is spearheaded by the Department of Health (DOH) in coordination with different agencies such as Philippine Health Insurance (PhilHealth), National Nutrition Office, among others. One of the objectives of the project is to have a Central Database Warehouse of all health-related information in the country (DOH, 2015). This will help them find an immediate and reliable source of information whenever a health crisis occurs.

One system that is related to this study is the Health Clinic Information System, which uses a Client/Server architecture. This will be used for gathering patient's information and the health services done in rural health units and barangay health stations. Based on the DOH website, the status of the system is already under the testing phase (DOH, 2015).

## Open Source Systems

There is a number of open source software for electronic health record system available for use in different hospitals, clinics, health offices, among others. Some of these are discussed in the following subsections.

### Community-based health information tracking system (CHITS)

CHITS is an open source electronic health record system for local government centers in the Philippines. The main objective of CHITS is to use generic, reusable, and open-source framework for the system (Tolentino, 2005). This system has three vertical programs implemented which are Maternal and Child Health, Immunization, and Notifiable Diseases (CHITS, 2011). An important learning from their methodology is that the developers worked with the health center staff so that they will have a full awareness of the environment where the system will be used (Tolentino, 2005). This idea helped the researcher in selecting the best development model for this study, which was Scrum Agile Development Model.

### GNU health

GNU Health is an open source system developed for medical practitioners and health institutions. GNU Health is a very comprehensive information system that is more appropriate for hospital or clinic use. The system can be downloaded from this link: <http://health.gnu.org/index.html>. While GNU Health should be used in a Linux environment, eHICAP was developed to be used in any operating environment (desktop, mobile, etc.).

### DHIS 2

DHIS 2 is another open-source information system which has a capability of visualizing different types of data using appropriate graphs/charts e.g. line graph, bar graph, pie chart, and even GIS maps. Although DHIS 2 provided a lot of options for data analysis and visual representation, the outputs are for health workers consumption only unlike eHICAP which also allows patients to monitor their own health status. The system can be downloaded from this link: <https://www.dhis2.org/>.

### OpenMRS

Another promising system is the OpenMRS which is an open medical record system. The mission of OpenMRS is also to improve the status of health care delivery especially in financially-challenged community by providing an open source technology. Based on its demo, the interface is simpler compared to the DHIS 2 because there are only few fields shown in the form to get the basic information of the patient. The system can be downloaded from this link: <http://openmrs.org/>.

The systems mentioned previously are focused on the efficiency that the information systems would bring to the health center staff in terms of operations-based management, and on managing, monitoring, and integrating the data entering the system. Although having an integrated system would be helpful, it might also overwhelm the health workers.

In this study, aside from creating a health information system (HIS), eHICAP also includes interactive tools (e.g. slideshow, videos, games, etc.) to promote health care awareness. Several studies have already proven that there is a relationship between health awareness and gaming (Riley et al., 2011; Kato, 2010). Games can be very powerful tools to engage patients in a therapy (Kato, 2010).

### Research Design and Methods

The electronic health information system was developed using Scrum Agile methodology framework through open-source technology e.g. PHP, Yii 2.0, Bootstrap, and XAMPP 7.0.4. Agile software development prioritizes the needs of the customer by delivering solutions even at the early stage of development. This is possible because of the iterative approach in developing every increment of the software. The code is also created as simple as possible which helps enhance agility and adapt to changing system requirements and technologies (Principles behind the Agile Manifesto, 2001). One of the ways to implement the agile development is to follow the process framework of Scrum. It started with a story of specifications, which composed the product backlog, provided by the health center head. Then a small development team planned the sprint backlog, which composed of time-bounded (about a month or less) activities or tasks for the product increment. Each sprint included sprint planning, daily scrum meeting, sprint review, and sprint retrospective before the final submission of the product increment. In the Scrum, when the product is deployed to the client, their feedback will be recorded and added to the product backlog and the Scrum cycle goes on until the end of the project duration or until the client is satisfied with the results.

After following the methodology framework, the system was developed and a screenshot of the Home page is shown in Figure 1. The developed system allows users to: manage and monitor patient records and health status, auto-generate weekly/monthly reports including production of visual representations such as charts and graphs, and promote health care awareness in the community and educate the constituents through the e-learning module. This module can be used in the weekly orientation or seminar of the BHC to their patients or guests. This module is important to enable the health care workers relay consistent information to different people in their weekly programs/services. Currently, computerized/electronic health information system is non-existent in Barangay Sto. Niño Health Center. Based on an interview conducted last November 4, 2015 with the head officer of the health center, (Ms. Mary Ann Lanticse) and other BHWs, no system has been made for them so far.

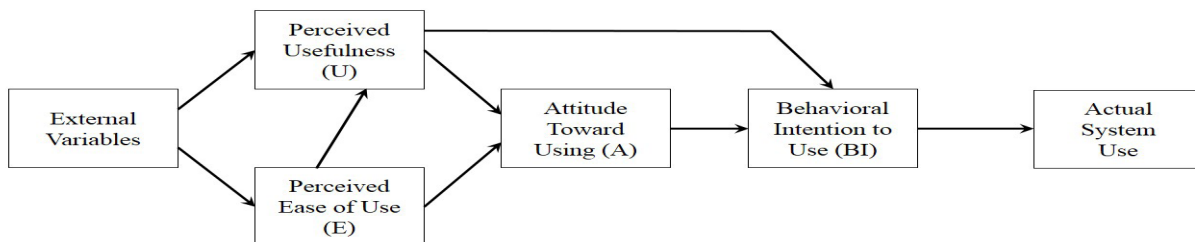
The attitudes of users towards the system is an important factor in the successful implementation of the system (Shainur, Casebeer, and Scott, 2012). In order to fully understand and explain how the health center staff and other community constituents use the system, the Technology Acceptance Model (TAM) was used in this study. TAM, introduced by Davis (1986), is a theoretical model that aimed to explain the determinants of information system's user acceptance. Figure 2 shows that the actual usage of the system is determined by the acceptance behavior, which is affected by the perceived usefulness and the attitude towards using the system. A secondary determinant to the user's intention in using the system is the user's perceived ease of use, which also affects the user's perception on the system's usefulness (Davis, Bagozzi, and Warshaw, 1989). TAM is one of the most influential and robust models that help predict the acceptance, adoption, and use of information system (Chen, Li, Li, 2011).

Figure 1. Screenshot of the electronic health information system with buttons that link to its modules.



Aside from being used for information systems, TAM can also be used in e-learning. In the study of Park (2009), TAM was used to understand the behavioral intention of university students towards e-learning in Korea and results proved that it was a good theoretical tool for this.

Figure 2. Technology Acceptance Model (lifted from Davis, Bagozzi, & Warshaw, 1989).



Furthermore, the factors such as teachers’ perception and their preparedness to use e-learning in their classes will highly determine the success of adopting and implementing e-learning in an educational institution (Kisanga and Ireson, 2016). In the dissertation of Kisanga (2015), he developed a scale named Test of e-Learning Related Attitudes (TeLRA). He then tested and validated the scale in Tanzanian higher learning institutions. TeLRA is a tool that can help an institution to identify opportunities and threats that affect the attitude of the teachers’ towards e-learning. According to Kisanga and Ireson (2016), the TeLRA scale can also be used in investigating the attitudes of people from other sectors besides educational institution. The TeLRA scale is composed of 36 questions measuring four factors/themes: challenges of e-learning, benefits from e-learning, attitude towards using computer systems, and leisure interest on e-learning innovations and use of computers. Although TeLRA is a 4-point scale, it can be reduced to two points (i.e. agree or disagree) for the purpose of analysis (Kisanga, 2015, p.234), and this was also done in this study.



To effectively evaluate the usage of the system on the target organization or the health center, a preliminary survey was conducted after the development of the system. A survey was developed based on the key result areas that were identified: (1) improved efficiency in terms of improved records management, and report submission using the system; (2) increased awareness in and promotion of healthcare through the system especially its interactive learning module; and (3) improved decision making especially in choosing focal areas for conducting healthcare programs/activities. User acceptance testing was done through the System Usability Scale (SUS) of Brooke (1989) to determine the acceptance level of the system to its target users.

In this study, the target users of the system were the community constituents including the barangay health workers (BHWs) and the probable patients. The preliminary survey and SUS were conducted separately from TeLRA because the former needs more time presenting and using the system while the latter needs a thorough explanation about e-Learning. There were two batches of survey sessions conducted last May 2016 for the preliminary survey and SUS, the first session was for the BHWs while the second was for the community constituents because these people are the expected main users of the system. Before the evaluation survey was given, the system features was first introduced to the users and a demonstration on the usage of each module of the system was also done. The users were given about 30 minutes to one hour to use/test the system, and then the survey questionnaires were given. The first batch was conducted in the Barangay Sto. Niño Health Center (BSNHC) and nine female BHWs with ages ranging from around 42 to 56 years old participated in the survey. After conducting the survey, two short group discussions was done on May and June 2016 to gather feedback from the health workers on the challenges that were encountered during the implementation and some possible future improvements of the system. On the second batch, the temporary URL of the system was given to six possible future patients of the health center with age ranging from 20 to 30 years old and, again, all were female.

For the TeLRA scale, the eLearning module of the system was first presented to the BHWs followed by the discussion on eLearning before the survey was distributed last June 2016. Each statement in the scale was explained during the survey and a translation to the vernacular language was also included in the survey form to help the respondents understand the statement so that the appropriate responses would be given. For this session, 21 female BHWs whose ages ranged from 33 to 64 years old responded to the survey. Their years of experience in the health center ranged from two to 27 years, which means that they already have the knowledge on the operations and health literacy/education practices of the health center.

Most of the statements in the SUS can be categorized to be under the perceived ease of use factor in TAM, while the questions in the preliminary survey addressed the perceived usefulness factor. These factors were used to determine the acceptance of the health workforce to the new technology being introduced in this study. The TeLRA scale was used to identify the factors that affect the BHWs general attitude towards e-learning for health literacy.

## Results and Discussions

### Usability of the System

Table 1 shows the mean and mode of the ratings of the SUS. Most users strongly agreed to use the system frequently. They found it easy to use, and that most functions in the system are well integrated. They did not find the system as complex, inconsistent, and cumbersome to use, which are still positive views of the system. They also believed that most people would be able to learn to use the system very quickly. Thus, in terms of the attitude, they felt confident using the system.

However, some of them thought that they still need to learn a lot from that system and would also need the support of a technical person before they could get started with the system. A suggested solution to this is to conduct training and follow-up sessions to assist the users in using the system. A good documentation, specifically a user manual or a multimedia user guide, should be available and accessible to the users anytime.

Generally, the system gained very good points from the users. It even obtained an average of 74 points which is above the recommended system acceptance rating of 68 points.

Table 1. Mean and mode of the system usability ratings of the respondents for each question.

Questions	Mean	Mode
1. I think that I would like to use this system frequently	4.8	5.0
2. I found the system unnecessarily complex	2.1	1.0
3. I thought the system was easy to use	4.5	5.0
4. I think that I would need the support of a technical person to be able to use this system	3.2	5.0
5. I found the various functions in this system were well integrated	4.5	5.0
6. I thought there was too much inconsistency in this system	1.9	1.0
7. I would imagine that most people would learn to use this system very quickly	4.3	5.0
8. I found the system very cumbersome to use	1.8	1.0
9. I felt very confident using the system	4.4	5.0
10. I needed to learn a lot of things before I could get going with this system	3.8	5.0

### Initial Impression of Users

Based on the results of the preliminary survey, all users had an initial impression that the system will improve records management through fast searching of records, and they believed that the records will be more organized, less prone to being lost, and more accessible. Another impression is an improved report generation and submission of the healthcare programs in the community through automatic computation of statistics, reducing human error, and providing visual representations.

Users also believed that through the mapping function of the system, the decision making of the supervisor will be improved especially in choosing focal areas for conducting programs/activities e.g. feeding program, maternal care orientation, distribution of medical kits, etc.

They also had a good impression on the learning module which they believe would help in educating people in healthcare awareness and promoting proper healthcare in the community. For instance, they found that through the learning module the parents would be educated on proper ways of taking good care of their health especially the pregnant women.

### **Attitudes of Health Workforce on E-learning**

There were 21 health workers who responded to the TeLRA scale. Figure 2 shows their responses on each theme of TeLRA. The results for each theme are discussed in the following paragraphs.

Figure 2. Health worker's average percentage of agreement/disagreement to the themes of TeLRA scale (N=21).

#### **Benefits of e-learning**

Health workers had a very high positive response to e-learning as shown in the average percentage of agreement that was obtained which is 94.7% while an average of 4.2% disagreed. All of them agreed that "e-learning is very economical for the health center to adopt". They also believed that "e-learning will improve the quality of their work", and "will provide them with better learning opportunities than traditional means of learning."

#### **Leisure interest on e-learning innovations and use of computers**

This theme received an average agreement response of 77.8% while 22.2% for disagreement. The statements with the highest percentage of 95.2% included "I like reading magazines on new technology innovations", "Working with computers is exciting", and "I like discussing about new e-learning innovations".

#### **Challenges in the implementation of e-learning**

The health workers responded with only 57.9% average agreement on this theme, while 41.3% for disagreement. Some statements from this theme that obtained a percentage of above 80% included "I feel uncomfortable reading a text book on a computer screen than a physical text book", "E-learning increases learner's social isolation", and "Using computer systems requires a lot of mental effort."

#### **Attitude towards using computer systems**

Based on Figure 2, the average agreement response of the health workers on this theme is almost equal to the average disagreement percentage with a difference of approximately 0.8%. The statement with the highest agreement percentage of 81% is "using e-learning technologies will allow me to accomplish more work than would otherwise be possible." On the other hand, the statements "I find computer online interaction unexciting" and "communicating through electronic mails is annoying" obtained the highest disagreement percentage of 71.4%.

The average score of the SUS which is 74 means that the system usability is above average and thus, it has a percentile rank of 70%. This can be interpreted that the system has higher perceived usability than 70% of other systems tested (Sauro, 2011). However, this score also mean that there are still aspects of the system that can be improved to get a higher score of 80.3 which is the top

10% of scores. This and the results of the preliminary survey mean that the overall functions of the system is acceptable and generally usable by the users. All users had a positive initial impression of the system. This implies that even upon introduction of the system to the user or just at the early stage of implementation, the users were able to find the importance of the system in improving their operations. With these perceptions on system usability and ease of use, users or the health workers have high chance of adopting the system quickly given the infrastructure and resources.

In the assessment of their e-learning preparation using TeLRA, it is found out that the health workforce still need an adjustment period in using ICT especially for health literacy. This challenge could be due to the media used in learning. According to Akahori's (2014) study, the paper is the best learning medium especially for memorization and comprehension while using personal computers as a learning tool can induce fatigue to the learner. This could be one reason for their rating, while another possible justification is the age-related digital divide because most of them are already of the age 40 above where some, if not all, are less likely to explore the tools in IT to learn new things (Niehaves and Platfaut, 2014).

### **Conclusions and Recommendations**

The findings in this study showed that the developed electronic health information system is perceived to be very useful and easy to use by the main users of the system. Based on the results of TeLRA, it was found out that the challenges of implementing e-learning (e.g. lack of infrastructure) and the users' attitude towards using computer systems are the main factors that may influence the users' willingness to be e-learning teachers and students in the barangay health center.

For future direction of this study, it is recommended to fully implement other improved technology acceptance models that will consider factors e.g. the appropriateness of the technology, to include the demographics and the depth of users' knowledge about the technology in the analysis of results, and to conduct a thorough impact study after several months of usage of the system. This would help provide more concrete results on the assessment of the system and the attitudes of the health workforce.

A learning management system for massive community-based online courses (MCOCs) for healthcare awareness can also be a good extension of the system. With this, the system will not only be able to offer multimedia interactivity but also content delivery that is very similar to what massive open online courses (MOOCs) can offer.

### **Acknowledgements**

The information dissemination part of the paper, which is the paper presentation in the International Conference on Media in Education (ICoME) 2016 in Kyoto, Japan, is funded by the University of the Philippines System through the Research Dissemination Grant.

## References

- Akahori, K. (2014). Do digital devices work better than paper materials for learning? *International Journal for Educational Media and Technology*, 8(1), 4-10.
- Anshari, M., Almunawar, M.N., and Low, P.K.C. (2012). CRM 2.0 within e-health systems: Towards achieving health literacy and customer satisfaction. *The Journal of Development Informatics*, 1(1), 2012.
- Brooke, J. (1989). SUS – A quick and dirty usability scale. Redhatch Consulting Ltd. Retrieved from: [http://cui.unige.ch/isi/icle-wiki/\\_media/ipm:test-suschapt.pdf](http://cui.unige.ch/isi/icle-wiki/_media/ipm:test-suschapt.pdf).
- Cervantes, H.M.J., Chua, C., Ronquillo, M., Tolentino, I.J., and Magpantay, L.A.K. (2014). Community-based decision support system for the Manila health department. De La Salle University Research Congress 2014, Manila, Philippines.
- Chen, S., Li, S., and Li, C. (2011). Recent related research in technology acceptance model: A literature review. *Australian Journal of Business and Management Research*. 1(9). 124-127.
- CHITS. (2011). OpenClinical: CHITS – Community-based Information Tracking System. Retrieved from: [http://www.openclinical.org/os\\_chits.html](http://www.openclinical.org/os_chits.html).
- Davis, F.D. (1989), Perceived usefulness, perceived ease of use, and user acceptance of information technology, *MIS Quarterly* 13 (3), 319–340, doi:10.2307/249008
- Davis, F.D., Bagozzi, R.P., and Warshaw, P.R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), pp. 982-1003.
- Department of Health (DOH). (2015). Unified health information management system. <http://uhmis.doh.gov.ph/>
- DHIS 2. (2015). DHIS 2 overview. Retrieved from: <https://www.dhis2.org>
- Gephart, S. and Effken, J. (2013). Using health information technology to engage patients in their care. *Online Journal of Nursing Informatics (OJNI)*, 17 (3). Retrieved from: <http://ojni.org/issues/?p=2848>
- GNU Health. (2011). Home page. <http://health.gnu.org/>
- Herbosa, T.J. (2013). eHealth Philippines: Deliverables, 2016 and beyond. Department of Health. Retrieved from <http://www.pchrd.dost.gov.ph/index.php/downloads/category/75-plenary-morning-session?download=331:plenary-ehealth-philippines>.
- Kato, P. (2011). Video games in health care: Closing the gap. *Review of General Psychology*. [https://www.c-changeprogram.org/c-channel\\_issue33\\_sept2011](https://www.c-changeprogram.org/c-channel_issue33_sept2011)

- Kisanga, D.H. (2015). Investigation of Attitudinal factors towards the transition from face-to-face o e-learning in Tanzanian higher learning institutions: A mixed methods approach. Retrieved from: [http://irep.ntu.ac.uk/97/1/220969\\_Dalton.Kisanga-2015%2520excl.%25203rdparty material.pdf](http://irep.ntu.ac.uk/97/1/220969_Dalton.Kisanga-2015%2520excl.%25203rdparty material.pdf)
- Kisanga, D.H., and Ireson, G. (2016). Test of e-learning related attitudes (telra) scale: Development, reliability and validity study. *International Journal of Education and Development using Information and Communication Technology*. 12(1), pp.20-36.
- Kwankam, S. Y. (2004). Bulletin of the World Health Organization ISSN 0042-9686. Retrieved from [www.scielo.org](http://www.scielo.org)
- Marcelo, A.B. (2014). Health informatics in the Philippines <http://www.philmedinfo.org/health-informatics-in-the-philippines/>
- Nelson, E.A. (2003). E-learning: A practical solution for training and tracking in patient-care settings. Lippincott Williams and Wilkins, Inc.
- Niehaves, B. and Plattfaut, R. (2014). Internet adoption by the elderly: Employing IS technology acceptance theories for understanding the age-related digital divide. *European Journal on Information Systems*. 23: 708. <https://doi.org/10.1057/ejis.2013.19>
- Novák, D. (2015). Handbook of Research on Holistic Perspectives in Gamification for Clinical Practice. IGI Global. ISBN 1466695234, 9781466695238.
- Park, S.Y. (2009). An analysis of the technology acceptance model in understanding students' behavioral intention to use e-learning. *Educational Technology and Society*. 12, (3). Pp.150-162.
- Principles behind Agile Manifesto. (2001). Manifesto for agile software development. Retrieved from: <http://agilemanifesto.org>.
- Riley, W., Rivera, D., Atienza, A., Nilsen, W., Allison, S., and Mermelstein, R. (2011). Health behavior models in the age of mobile interventions: Are our theories up to the task? Retrieved from: [https://www.c-changeprogram.org/c-channel\\_issue33\\_sept2011](https://www.c-changeprogram.org/c-channel_issue33_sept2011)
- Sauro, J. (2011). Does prior experience affect perceptions of usability? Retrieved from: <https://measuringu.com/sus/>
- Shainur, P., Casebeer, A., and Scott, R. (2012). Implementing electronic health information systems in local community settings: Examining individual and organizational change experiences in the Philippines. *The Electronic Journal Information Systems Evaluation*. 15(2), 2012, pp.186-197. ISSN 1566-6379. Academic Publishing International Ltd.
- Tolentino, H., Marcelo, A., Marcelo, P., and Maramba, I. (2005). Linking primary care information systems and public health vertical programs in the Philippines: An open-source experience. *AMIA Annual Symposium Proceedings*; 2005: 311–315. PMID: PMC1560490.

Walsh, K. and Dillner, L. (2003). Launching BMJ Learning. *BMJ.* ; 327:1064. DOI: 10.1136/bmj.327.7423.1064

World Health Organization (WHO). (2012). Components of a strong health information system (Brochure).





### **Call for Articles**

We call on colleagues, such as academics, researchers, technology developers, and open distance e-learning experts to submit their articles for publication in the International Journal on Open and Distance e-Learning. The IJODeL is a semestral journal, hence it comes out every June and December of the year.

The preferred articles are those reporting original research, articles based on critical analyses of e-learning undertakings, book reviews, evaluation studies, and original think pieces such as concept papers.

Please visit the IJODeL website and familiarize yourselves with the process of submitting your articles online.

### **Call for Article Proposals**

Article proposals are those that still need to be developed and researched. They are just ideas. You may submit your proposals to the IJODeL for consideration. Send it to the Chief Editor. If your proposed article is found by the Board of Editors of IJODeL to be worth pursuing, we shall encourage you to proceed with your idea at your own expense. The commitment that IJODeL can make is to consider your article as priority article for publication provided it goes through the standard procedure for which articles go through at the IJODeL.

For both the articles and proposed articles, follow the templates for articles.

Template for Quantitatively-Oriented Articles

**Title of Article**

**Author 1<sup>1</sup>and Author 2<sup>2</sup>**

<sup>1</sup>Position, Institutional Affiliation, Country, Email address

**Abstract**

*Abstract in 150-250 words.*

**Keywords:** No more than five (5) keywords.

**Introduction (Center Heading 1)**

This section contains a clear historical background of the study, showing why the research had to be undertaken. In this section, the author(s) shall have the opportunity to expound on what the research says about the research problem, and show clear support for the need to undertake the research, through appropriate research gap analysis.

**Objectives (Center Heading 2)**

This section provides a clear statement of the goals and objectives of the research.

**Conceptual/Theoretical Framework (Center Heading 3)**

The conceptual or theoretical framework would be expected for research studies that dealt with empirical procedures and methodologies. A framework of this nature would provide for clear interrelationships and direction of interactions of variables which the researcher expects to show by his/her data and data interpretations. It should be noted that variable interactions may be easier to understand if they were to be presented in illustrated model formats.

**Methodology (Center Heading 4)**

This section includes brief discussions of data collection procedures and analyses. Data must be presented in appropriate tables.

## **Results and Discussions (Center Heading 5)**

Analytical discussions must present possible relationships of the results of the study and the findings from other studies specifically reviewed for this purpose. Post analysis data may be presented in both statistical tables and appropriate models and figures.

Include subheadings as are necessary.

## **Conclusions and Recommendations (Center Heading 6)**

Conclusions must be according to the objectives of the study.

Recommendations must reflect the objectives and conclusions of the study.

## **References**

General format must follow the suggestions for authors, but generally must follow the APA Style for publications.

**Template for Qualitatively-Oriented Articles**

**Title of Article**

**Author 1<sup>1</sup> and Author 2<sup>2</sup>**

<sup>1</sup>Position, Institutional Affiliation, Country, Email address

**Abstract**

*Abstract in 150-250 words.*

**Keywords:** no more than five (5) keywords

**Introduction (Center Heading 1)**

This section contains the historical background of the study, including specific reports and studies that provided direct support to the research problem. Some relevant part of the literature shall be included in the discussion of the research problem to establish more strongly the need to undertake the study.

**Objectives of the Study (Center Heading 2)**

This section contains both the research over-all goal and the specific objectives to be attained.

**Relevant Studies or Review of Related Studies  
(Center Heading 3)**

Review of studies that are highly related to the current study. After the relevant studies have been presented, a synthesis of these may be presented and the relationship of such synthesis must be related to the study under consideration.

Subheading may be determined as necessary. In these subheadings, specific observations may be noted and statistical tables presented as well as figures and models.

**Discussions (Center Heading 4)**

In this section shall be inserted full discussion of results and finding, discussed more deeply in relation to the related studies already reviewed. Subheads may be determined and included in the discussions.

### **Conclusions (Center Heading 5)**

The conclusions of the study must reflect the objectives of the research.

### **Recommendations (Center Heading 6)**

All recommendations must appropriately correspond to the conclusions, and therefore the objectives of the study.

### **References (Center Heading 7)**

Follow the APA Style Guide.

## Style Guide for Full Paper Submission

The paper should be 15-25 pages long (including tables, figures, and references) and prepared preferably in Microsoft Word format. The author(s) should provide a title, the name(s) of the author(s), position(s), institutional affiliation(s), institutional address(es), email address(es) and key words (no more than five). You may make use of the template for preparing your paper: Journal Article Template (Qualitatively-Oriented); Journal Article Template (Quantitatively-Oriented). Detailed guidelines are as follows:

1. **Font type**

The whole text should be in Arial.

2. **Margins**

The paper should be A4 size (21 x 29.7 cm). All margins (top, bottom, left, and right) should be 1 inch.

3. **Line Spacing**

The whole text should be single-spaced.

4. **Title**

The title of the paper should be 14-point, bold, in capital and lower case letters, and centered.

5. **Author Information**

Use 12-point and centered for the author name(s). The Western naming convention, with given names preceding surnames, should be used.

The author name(s) should appear below the title, with one blank line after the title.

Use 10-point for author(s)' position(s), institutional affiliation(s), country, and email address(es).

The author(s)' position(s), institutional affiliation(s), institutional address(es), and email address(es) should appear below the author name(s), with one blank line after the name(s).

6. **Headings**

- Heading font (with the exception of the paper title and the abstract) should be 14-point Arial and in bold.
- Headings should be centered and in capital and lower case letters [i.e. nouns, verbs, and all other words (except articles, prepositions, and conjunctions) should be set with an initial capital].
- There should be two blank lines before each heading and one blank line after it.

7. **Subthemes**

- Subtheme(s) should be 14-point Arial, in bold capital and lower case letters, and flushed left.
- There should be one blank line before and after each subtheme.

**8. Abstract**

- The abstract heading should be 14-point Arial, bold, centered.
- The abstract should be in 150-250 words.
- The main text of the abstract should be 12-point Arial, italicized.
- Alignment of the main text of the abstract should be justified, no indent.

**9. Key Words**

- Include at most five keywords.
- Use 12-point Arial. The keywords should appear below the abstract, with one blank line after the abstract.

**10. Main Text**

- In general, paragraphs should be separated by a single space.
- All paragraphs must be in block format.
- Text font should be 14-point Arial, single-spacing. Italic type may be used to emphasize words in running text. Bold type and underlining should be avoided.
- The first line of each paragraph should not be indented.

**11. Tables and Figures**

- Tables and figures should be numbered and have captions which appear above them.
- Graphics and pictures should not exceed the given page margins.
- Captions should be 14-point centered.
- The tables and figures of the paper should follow the APA citation style.
- There should be no space between the caption and the table/figure.

**12. Footnotes**

- Footnotes may be used only sparingly. A superscript numeral to refer to a footnote should be used in the text either directly after the word to be discussed or – in relation to a phrase or a sentence – following the punctuation mark (comma, semicolon, or period)
- Footnotes should appear at the bottom of the page within the normal text area, with a line about 5 cm long immediately above them.
- Footnotes should be 10-point and aligned left.

**13. References**

- The author-date method in-text citation should be used. Following the APA format, the author's last name and the year of publication for the source should appear in the text.
- All references that are cited in the text must be given in the reference list. The references must be in APA format and arranged alphabetically at the end of the paper.

**Sample:**

Surname, A. A. (year). Article title. *Title of Journal*, volume number(issue number), inclusive page numbers.

Surname, A. A. (year). *Title of book*. Publisher location: Publisher Name.

Surname, A. A., Surname, B. B., & Surname, C. C. (2000). Title of article. *Title of periodical*, volume number(issue number). Retrieved from URL/web address.

Surname, A.A. (Year, Month). *Title of paper*. Paper presented at name of conference, city, country.

**14. Length**

The paper should be 3,000-7,000 words including tables, figures, and references.



## Author Guide

The International Journal on Open and Distance e-Learning (IJODEL) welcomes original research articles, book reviews, theories, and best practices pertaining to ODeL worldwide. Articles should be 3,000-7,000 words including tables, figures, and references.

A publishable quantitatively-oriented paper should contain the following:

1. Abstract
2. Objectives
3. Conceptual/Theoretical Framework
4. Methodology
5. Results and Discussions
6. Conclusions and Recommendations
7. References

Go to: Quantitatively-Oriented Journal Article Template (page 74)

A publishable qualitatively-oriented paper should contain the following:

1. Abstract
2. Objectives of the Study
3. Relevant Studies or Review of Related Studies
4. Discussions
5. Conclusions
6. Recommendations
7. References

Go to: Qualitatively-Oriented Journal Article Template (page 76)

To submit an article, visit [ijodel.com](http://ijodel.com) and follow the steps in the online submission system.