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Vision and Mission of the IJODeL

Vision

To be a leading international academic journal that publishes and disseminates new knowledge and information, and innovatives best practices in open 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 distance e-learning as alternative delivery mechanism for quality education.

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Articles

New Media Usage and Its Perceived Effects on Classroom Communication and Learning Behavior

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Abstract

The study delves on how new media tools have impacted classroom communication and learning behavior. Conducted at the Assumption College among college students and professors, the study showed that there is no relationship between new media tools usage with learning behaviors of self-efficacy and motivation. However, it was found that there's a strong relation between technological competence and motivation and self- efficacy. Further, it was also shown that the ubiquity of technology has not been fully utilized in classroom communication.

Keywords: New media tools usage, learning behaviors, classroom communication

Introduction

Learning is not a spectator sport. Students do not learn much just by sitting in class listening to teachers, memorizing pre-packaged assignments, and spitting out answers. They must talk about what they are learning, write about it, relate it to past experiences, and apply it to their daily lives. They must make what they learned as part of themselves (Chickering and Gamson, 1987, p. 3).

Education is probably the biggest single factor that influences the quality of life of an individual. Traditionally, an average student spends at least 12 years of his or her youth in school. The classroom is a significant setting for a student to develop reasoning and judgment skills, make friends, and more significantly, form character. That is, if what is passed on in the classroom is perceived to be relevant to them. For this reason, it is essential to keep on analyzing what makes this significant segment of one's life more interesting and productive and pertinent to their future endeavors.

With the rise in technology, however, a new challenge in the classroom has arisen. Observing the youth of today and their obsession with technological gadgets, a teacher is inclined to rethink his or her mode of instruction to adapt to the changing dispositions of the students and to provide an equally fascinating presence. The use of new media (e.g. blogs, mash-ups, websites, online collaboration tools, podcasts, social networking sites, mobile, photo and video sharing, QR codes, RSS feeds, webcasts, webinars, social bookmarking) which the youth has so willingly embraced can be viewed both as a friend or a foe. New media has provided easy and fast access to information, giving an up-to-the-second update to the tech savvy. In this aspect, it is an invaluable companion. However, its fangs appear when it starts to control the students' lives by serving as a replacement for face-to-face interaction and learning, hence replacing positive influence from teachers and mentors.

Objectives

Although there have been worldwide research directly relating technology use with improvement in students' academic performance, it is still unclear if these studies are indeed relevant in the Philippine setting. Does technology use further accentuate the digital divide between the developed countries and the developing countries? If the student is tech savvy, does this translate to their self-efficacy making them more confident and willing to actively engage in learning? Can classroom communication be updated to accommodate these technological trends? Are professors ready to adopt these technological updates and develop new modalities to be more effective in delivering their subject matters and stay relevant in the 21st century? Are they equipped to use new media and adjust to the changing learning environments with confidence? Is there a gap between student readiness, technological influx and teacher competence in the classroom communication?

Changes in society happen through a long process of adoption that involves educating different participants to break down barriers or resistance. The process is expedited if the target adopters are cooperative and are willing to embrace the change. Couple this with societal pressures and glaring benefits and the change becomes permanent.

In classroom communication, technology has changed the landscape. Those born to new media or those who we call the digital natives have embraced it and adopted it as their way of life. These digital natives, born in the mid-nineties to late 2000's, are those that we now call as Generation Z. On the other end of the room are the professors who have to learn and accept these technological changes. They were taught the traditional way and are thus passing on knowledge and conducting classroom communication in practically the same manner.

This paper intends to address these issues on classroom communication. The researcher would like to find out the usage level of new media tools among students to what extent they have brought this to the classroom, and if such classroom instruction has any relation to improving learning behavior of the students and the classroom communication between students and professors. Specifically, it aims to answer the following questions:

1. What is the usage level of new media tools of students?
2. What do students perceive about professors' use of new media tools?
3. What is the relation between students' new media usage and their learning behavior?
4. What is the usage level of new media tools of professors?
5. What do professors perceive about the students' use of new media tools?
6. What is the relation between the students' and professors' new media tools usage and classroom communication?
7. What trainings are professors willing to undertake to enhance classroom communication?

Furthermore, it is to the interest of the researcher to discover if the professors and instructors have coped with these changes to bridge this seeming communication gap between them and their students. With meaningful learning as the ultimate goal of teacher- student interaction in the classroom, the study hopes to tackle also the effects of these technological adoptions to the learning behavior of the students.

Theoretical Framework

New Media Tools

With the ubiquity of technology, demands and requirements for effective communication have drastically changed. The effects of this technological burst have affected communications everywhere including the classroom. With the intention of creating meaningful learning and maximizing technological benefits, classroom communication needs to adapt to this change. PowerPoint presentations have been prevalent to deliver lessons to the students. Teaching-learning process in schools used ICT facilities which include "include radio, television, computers, overhead projectors, optical fibers, fax machines, CD-ROM, the Internet, electronic notice boards, slides, digital multimedia, and video/VCD machines" (British Educational Communications and Technology Agency, n.d.).

A listing of new media tools includes blogs, mobile, mash-ups, online collaboration tools, podcasts, photo and video sharing sites, QR codes, RSS feeds, social bookmarking, social network sites, video games, and webcasts/ webinars (Aids.gov, n.d.).

Blogs are websites usually initiated by individuals and consistently updated, who want to express their thoughts and comments about certain issues and trends or products. The main purpose is to engage their readers and encourage them to leave their footprint on the blog spot. Some of the more popular blogging platforms are Blogger, Word Press, and Tumblr.

Mobile is sending and receiving messages through the cell phone or other wireless devices. It includes mobile web, mobile applications, or texting. Messages may also vary from mere words (SMS or short service message) to pictures, video, or audio (MMS or multimedia messaging).

A mash-up is a combination of data from two sources or more for a single interface. An instructor can combine his or her source of lecture with a testing site for an immediate learning feedback. Online collaboration tools allow for people to work together via the internet (Aids.gov, n.d.). Wikipedia is one example where the reader can edit, modify, or contribute to the body of knowledge presented on the site. Popular wiki platforms are PBWorks and twiki. Cloud storage is another platform that allows individuals to back up their files on a server and not on a CD or a hard drive. It can be accessed by one person or be made accessible to multiple people. Email is an example of cloud storage. Dropbox, Box, SugarSync, and Microsoft SkyDrive are others.

Photo or Video Sharing Sites allow the uploading, storing, editing, organizing, and sharing photos and videos. One can comment or tag people in the pictures, too. Common sites include Youtube, Vimeo, Flickr, Shutterfly, Picasa, Photobucket, Twitter, or Facebook. Instagram is a mobile app that shares pictures as well.

Podcasts are audio or video files that can be accessed through the computer or any mobile device. They can be accessed through streaming or downloading. A directory of podcasts is listed in iTunes, Podbean or SoundCloud.

QR codes or quick response codes provide information through scanning of a barcode. It is meant to direct the scanner to a website that provides information, video file, or contact information. It is possible to track when, where, and how many people are using the QR code with Google

analytics. Phil. Daily Inquirer has this normally in their cover stories to access more pictures or details of a certain news item. Advertisers also use this to provide more information to interested consumers.

RSS stands for "Real Simple Syndication". You simply subscribe to a particular website and automatically receive updates via email or news reader (Aids.gov, n.d.). Newspapers and TV stations provide this to update their audience of the latest newsworthy events.

Social bookmarking is another new media tool that stores and organizes websites in an orderly manner for future use and sharing. Sharing may be done publicly or with specific networks. They are like folders which have name tags for orderly filing.

Social Network Sites are online communities that allow sharing of information, comments, pictures, or videos. Online communities are whoever you would like to share information with. Popular sites for this are Facebook, Google+, and LinkedIn.

Video and computer games are played on game devices like Nintendo, PlayStation or Xbox and computers. They can be played singly or in bigger numbers (MMO/ Multiplayer online games). When one participates in an online video game, there is more engagement among the players. Mostly, games are for entertainment purposes. But they can also have educational games.

Webcasts or webinars are conferences conducted on the net. It may be real time or pre-recorded; maybe interactive or one-way. Some of the vendors for webcast and webinar seminars are WebEx; Go to Webinar and Ready Talk. According to Bagui (1998) multimedia "may have unique capabilities to facilitate learning because of the parallels between multimedia and the natural way people learn," that is, through visual information and imagery. Mayer's Generative Theory of Multimedia Learning combines both images and speeches to boost up students' learning process. It is because delivering of information and elaboration has been separated into verbal and visuals that enable students to understand by listening and envisage by images (Macaulay, 2000).

Current Classroom Communication Practices

Traditional classroom communication involves a teacher with a lesson plan delivered to a group of students who are taking notes and are occasionally participating in the discussion. Understanding the prevalent learning disposition of college students helps the professors and instructors to adapt a teaching style that will enhance classroom communication and improve student-teacher interaction, resulting in a better classroom environment conducive to better comprehension, a deeper sense of self-fulfillment, and heightened confidence to discuss and relate concepts to the real world.

The Felder study (Felder-Silverman model 1996) as cited by Katsioloudis (2012) classified students under one of the four learning style dimensions:

- Sensing learners (concrete, practical, oriented towards facts and procedures) or intuitive learners (conceptual, innovative, oriented towards theories and meanings);
- Visual learners (prefer visual representations of presented material—pictures, diagrams, flow charts) or verbal learners (prefer written and spoken explanations);
- Active learners (learn by trying things out, working with others) or reflective learners (learn by thinking things through, working alone);

- Sequential learners (linear, orderly, learn in small incremental steps) or global learners (holistic, systems thinkers, learn in large leaps) (Felder,1996).

The same study mentioned that most people, college age and older, are visual learners (Katsioloudis, 2012), while most of the college teaching is verbal. This discrepancy can lead to an uninteresting, unstimulated classroom communication. While the study was done almost 25 years ago, it can be observed that very minimal changes have occurred in the teaching method in the Philippines. Professors tend to explain concepts verbally aided with the Powerpoint presentations. According to Katsioloudis (2012), most professors will teach the way they were taught, even to the detriment of student learning. The professor's failure to adapt to the changing educational landscape will not bring out the best in students, and this can be gleaned from their grades and attendance rates. Learners make the most out of information when they can select information and organize it into representations that make sense to Jonassen (1991).

Meaningful learning occurs when the students are allowed to construct knowledge for themselves. Use of technology in education has the potential to maximize meaningful learning when the student can make sense of learned concepts and apply and interpret them into unique understandings. In other words, the learning process is more efficient when it is built on previously acquired knowledge, and it will be more useful if the student is actively implicated in the learning process (Jonassen, 1991).

According to the constructivist theory, to promote student learning, it is necessary to create learning environments that directly expose the learner to the material being studied. It further elaborates that only by experiencing the world directly can the learner derive meaning from them. Since accessibility to information and subject matters can be had with online resources, then indeed, the student can make a more sensible connection between what she has actively pursued reinforced by the professor presentation or the other way around. As Nobel laureate Herbert Simon wisely stated, the meaning of "knowing" has shifted from being able to remember and repeat information to being able to find and use it (Simon,1996).

Schools can continue to employ traditional teaching methodologies and produce "satisfactory" (within the established assessment paradigm) learning outcomes as it has done so for many years. But in the light of technological development, an inconvenience arises when the different knowledge production and management skills that broader society demands are taken into account (Demetriadis, S. M. (2003).

Adoption of ICT in Classroom Communication

Information and communication technology (ICT) refers to technologies that provide access to information which includes new media tools. According to studies on ICT literature, such convergence has great potential to enhance student achievement and teacher learning. Technology can be a great tool in the classroom since they are interactive and can be used to create environments in which students can learn by doing, receiving feedback, continually refining their understanding, and building new knowledge. It was pointed out, however, that its mere presence does not simply enhance student learning and achievement. Unless properly utilized, resources spent on ICT are just going to be money and time wasted.

In the BECTA research, it is stated that ICT learning could prosper in schools when there is adequate resourcing, ICT leadership, ICT teaching, school leaderships, and general teaching. It further elaborates that progress will vary depending on curriculum place, class, and the various ways on how it is applied. Balanskat (2006) also found that limitations on ICT knowledge make teachers feel anxious about using ICT in their classrooms. In the research, it was mentioned that the use of ICT in education and training has been given priority in most European countries during the last decade, but progress had been uneven. There were considerable differences of 'e-maturity' within and between countries, and between schools within countries. A small percentage of schools in some countries have embedded ICT into the curriculum, and have demonstrated high levels of effective and appropriate ICT use to support and transform teaching and to learn across a wide range of subject areas. Most schools in most countries, however, are in the early phase of ICT adoption, characterized by the patchy un-coordinated provision and use, some enhancement of the learning process, some development of e-learning, but no profound improvements in learning and teaching.

It is noteworthy to say that progress can be achieved if infrastructure was in place. With infrastructure comes accompanying costs. All EU countries have invested in ICT in schools: equipment, connectivity, professional development, and digital learning content. Some recent studies have begun to provide evidence of the return on investment.This study, carried out in the framework of the European Commission's ICT Cluster work, addresses the question of what have been the results or impact of ICT investment and integration in schools in two major areas, namely the learning outcomes and learners, and teaching methodologies and teachers.

In a survey of ICT and Education in Africa: A Summary Report (Farell, 2007), based on 53 Country Surveys over a 3-month period starting January 2007, states that the process of adoption and diffusion of ICT in education in Africa is in transition. Macro trends include multi-partnerships that involve private companies (usually ICT-based), one or more government ministries, educational institutions, donor and development agencies, and civil society organizations working together to garner resources and set priorities for ICT in education projects. The study is mostly based on projects and initiatives and good financing models which should be in place to make this necessity a reality for the progress of the nation.

Martins, de Carvalho, & Carrapatoso (2008) cited the use of Adaptive Hypermedia to adapt its contents, navigation, and interface to the user needs. Consisting of user model components and the Domain Model, the purpose of this system is to deliver courses over the web. Through the user model, they can identify the information, knowledge, and preference levels of the user to extract conclusions on the user characteristics so the system can be customized according to these characteristics. The Domain Model, on the other hand, represents individual topics and concepts. The first version of the framework was already implemented, tested, and evaluated in learning processes in higher education. According to the research, the collected evaluation data has shown a very high degree of interest and motivation from students and teachers alike, resulting from its use. It further stated that students also perceive this tool as very relevant for their learning, as a self-operating application to be integrated into a more global learning strategy that also includes tutoring (direct contact with the teacher) and peer learning.

Professors' Level of Technology

"Teachers seem to have totally accepted the necessity of ICT use in teaching" (Demetriadis, 2003) Although such belief has been acknowledged, it is worth finding out if teachers' acceptance is indeed backed up with a proficient working skill on the mediums. If teachers lack the confidence to carry out instruction that targets such skills, they will not be very likely to use such skills in their classrooms (Farah 2011).

In the including interviews, focus group discussions, and a document analysis, the two factors on how to increase teacher self-efficacy turned out to be 1) to utilize more targeted and specialized teacher training on instructional technology and 2) increased knowledge of and access to instructional technology tools and resources(13). This maintains that when teachers are asked to use technology to facilitate learning, some degree of change is required in (a) beliefs, attitudes, or pedagogical ideologies; (b) content knowledge; (c) pedagogical knowledge of instructional practices, strategies, methods, or approaches; and (d) novel or altered instructional resources. This further means that a support system has to be in place for ICT adoption to be smoothly implemented. Teacher acceptance of technology is also strongly influenced by perceived usability and self-efficacy (Holden & Rada, 2011). Unless technology is perceived to make a difference in the learning behavior and self-efficacy of students, the resistance to adoption is high. "Technical barriers impeded the smooth delivery of the lesson or the natural flow of classroom activity" (Sicilia, 2005,p. 43). These technical barriers may include lack of knowledge and working skills that professors need to be able to match students' abilities and ease in using the mediums. Becta's survey of practitioners (Fullan, n.d.) shed light on the fact that lack of confidence was the problem most participants identified. These teachers require extensive training and support systems to be able to acclimate themselves to the new technology. The study indicated that teachers do not have sufficient effective training opportunities in the use of ICT in the classroom environment.

Social Media and Digital Stats in the Philippines

Internet penetration in the Philippines increased from 44% in 2015 to 46% in 2016 despite the fact that Philippine internet connection speed remains to be low at an average of 2.8 mbps as compared to the global average of 5.1 (Castro, 2016) .

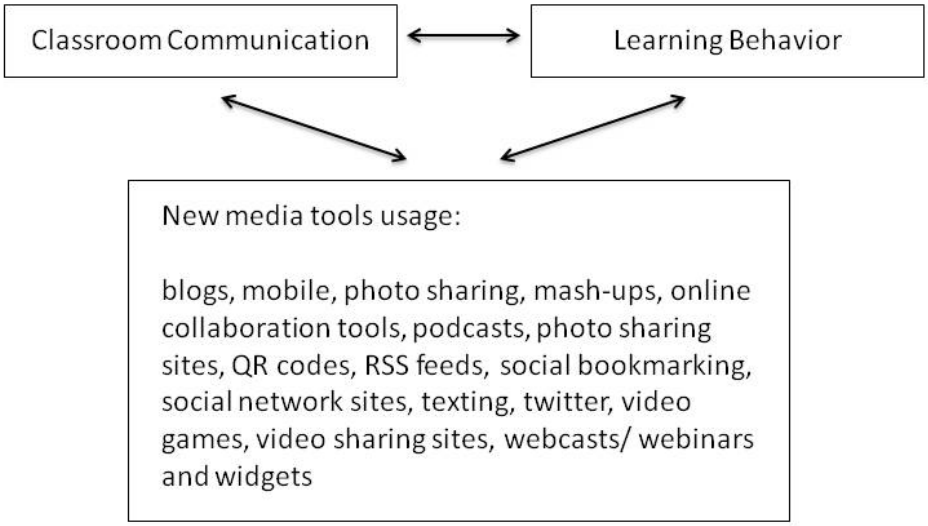
Said research reveals that there are 3.42 billion internet users or 46% global penetration suggesting that the Philippines is at par with worldwide statistics. There are 2.31 billion social media users equaling 31% of global penetration. In terms of unique mobile users, there are 3.79 billion users suggesting that there is 51% global penetration. Mobile social users are registered at 1.97 billion or 27% global penetration. The Philippines registered as having the highest incidence of social media usage at an average of 3.7 hours per day. This is in comparison with other countries such as Japan which registered a usage of less than 30 minutes per day and Singapore which registered at 1.6 hours a day. Mobile internet users likewise have increased from 32% in 2015 to 35% in 2016. This can be attributed to the various promotional efforts of mobile phones offering mobile data bundle.

According to Bandura (1986), individuals develop a sense of self-perception that become instrumental to the achievement of the goals they want to pursue. It is like an internal reinforcement that makes one believe that they are capable of achieving because they believe they can. This concept of self-referent belief states that individuals are proactive and self-regulating more than reactive and products of environmental influences. In fact, according to Bandura, how people

behave can often be better predicted by the beliefs they hold about their capabilities, which he called self-efficacy beliefs than by what they are actually capable of accomplishing. This is because self- perceptions help determine what individuals do with the knowledge and skills they have (Schunk, 2001).

This paper is anchored on this theoretical concept (see Figure 1). In this study, we tested the students' and professors' new media usage and competence in relation to classroom communication and learning behavior of the students. Classroom communication refers to the openness of both the students and the professors to engage in active discussions and idea exchanges. Learning behavior of the students is measured in 3 domains, namely technological competence, self- efficacy, and motivation.

Figure 1. Albert Bandura's Social Cognitive Theory



Methodology

Sampling

A convenience sample of 97 students and 22 professors from the various academic departments of the college were the respondents for the study. All those having classes in school at the time the research was conducted were requested to participate, but only 97 consented. The students came from both the business and the liberal arts courses. Professors with varying levels of years teaching and number of preparations were also surveyed. The intention was to take all the full-time professors but only 22 were present in the faculty room at the time of the survey.

Design/ Research Tool/ Instrument

Two sets of structured quantitative questionnaires were developed and distributed to the respondents. For the student questionnaire, there were three sections. Section A measured their usage level where 13 new media tools were enumerated, and usage level indication ranged from

1 (representing 0 hours) to 5 (representing more than 40 hours).Section B of the questionnaire asked the respondents how they perceived their professors' usage level of the 13 media tools. Section C is a 20-item self-constructed questionnaire which is based on learner empowerment scale version done by Weber, Martin, and Cayanus (2005). It used a 5-point Likert scale with headings from Strongly Disagree to Strongly Agree. It intended to measure the perceived effect of the use of these media tools in the students' learning behavior in terms of efficacy, motivation, and technological competence. For technological competence, these were questions 1, 2, 4, 9, and 20. Reverse statements for technological competence are 13 and 15. Statements to measure self-efficacy were 3, 6, and 11,14,16,17 with 18 on the reverse. Motivation was measured in statements 5, 8, and 19, all on the reverse with 7, 10, and 13 positively stated. The questionnaires for teachers had the same format as that of the students' questionnaires for Section A and B. Instead of Section C, however, they were administered a Section D which measured their openness to learn the new media tools which can help them in their classroom communication.

Data Gathering Procedure and Analysis

A five-point Likert scale was used for Sections A, C, and D to measure usage level, its perceived effect on student learning behavior and the openness of the professors in learning how to use new media tools. Frequency tests were ran to analyze the data on the usage level. Pearson's r was used to determine the correlation between technological competence, motivation, and efficacy. A significant level of p is established at .05. The range for Section C and Section D is 1.-1.8 as strongly disagree, 1.81-2.6 Disagree, 2.61-3.4 neutral,3.4-4.2 agree, and 4.21-5 as strongly agree.

Results and Discussions

New Media Usage of Students

Table 1 shows that the frequently used new media tools among students are mobile, social networks and video sharing sites. QR codes and mashups are the least used. Mobile and Social network use is almost at par with an average rating of 3.59 which means that usage is between 4-5 hours a day.

Table 1. Mean Ratings of New Media Usage of Students

Type of New Media	N	M	SD
Mobile (SMS, MMS)	97	3.66	1.368
Social Network (Facebook, Twitter)	97	3.52	1.316
Video Sharing Sites (You Tube)	97	2.92	1.382
Social Bookmarking	97	2.08	1.152
Online Collaboration Tool	97	1.90	1.150
Video Games	97	1.89	1.266
Blogs	97	1.82	1.041
Photo Sharing (Flickr)	97	1.76	1.078
RSS Feeds (Website subscription)	97	1.76	1.058
Webcasts/ Webinars	97	1.57	0.923
Podcast	97	1.44	0.777
Mashups	97	1.40	0.731
QR Codes	97	1.27	.638

Scale used: 1 = Never (0-9 hours/wk), 2 = (10 – 19 hours/wk), 3= (20-29 hours/ wk) 4= (30-39 hours/wk) and 5 = > 40/hrs

Students' and Professors' Perceived Usage of New Media Tools

Table 2 shows that students perceive that their professors do not use new media tools as efficiently and as they should. On the other hand, professors perceive their students to be extremely active at the same level on mobile, social networking, blogs, and video sharing tools at .73.

However, for mobile and social networking sites, both professors and students perceive that they use these tools with the same regularity.
Students further perceived that in addition to mobile and social networking sites, their professors use video sharing (YouTube) as frequently.

Table 2. Perceived Usage of New Media Tools

	Student M	Professor M
Mobile (SMS, MMS)	3.66	3.27
Social Networking	3.52	3.14
Video Sharing Sites (You Tube)	2.92	3.0
Social Bookmarking	2.08	1.77
Online Collaboration Tool	1.9	1.59
Video Games	1.89	1.36
Blogs	1.82	1.86
Photo Sharing (Flickr)	1.76	1.64
RSS Feeds (Website	1.76	1.91
Webcasts/ Webinars	1.57	1.77
Podcast	1.44	1.68
Mashups	1.40	1.23
QR Codes	1.27	1.18

Scale used: 1 = Never (0-9 hours/wk), 2 = (10 – 19 hours/wk), 3= (20-29 hours/ wk), 4= (30-39 hours/wk) and 5 = > 40/hrs

Students' Learning Behavior

Table 3 uses data extracted from the "agree and strongly agree" ranges. The highest of the learning domains with an average of 3.84 is technological competence followed by motivation. Students believe that they are technologically competent.

Table 3. Percentage Scores on Students' Learning Behavior Domain

	% who agreed	M	SD
Technological Competence (M= 3.84)			
My exposure in social networks helps me to cope with the requirements of the class.	76.3	3.99	.98
I have a choice in the methods I can use to perform my work.	72.2	3.98	.94
I have the qualifications to succeed in this class.	66.0	3.92	1.05
Alternative approaches to learning are encouraged in this class.	60.8	3.71	1.22
I feel I can do more complex assignments because of technological advancements.	57.7	3.69	.88
The work I do in this class is a waste of my time. (R)	19.6	2.12	1.36
I don't think that I can do the work in this class. (R)	18.5	2.29	1.22

Self-Efficacy (M = 3.68)			
I believe in my ability to do well in this class.	74.2	3.97	1.03
I have what it takes to do well in this class.	70.1	3.91	1.04
I feel confident that I can satisfactorily perform my duties.	69.1	3.80	.90
I have faith in my ability to do well in this class.	68.0	3.82	1.09
I can influence what happens in this class.	43.3	3.40	.91
I feel very competent in this class.	38.2	3.27	.94
I don't have the confidence in my ability to do well in this class. (R)	20.7	2.42	1.19
Motivation (M = 3.74)			
This class will help me achieve my goals in life.	65.9	3.77	1.04
I have the power to create a supportive learning environment in this class.	46.4	3.40	.97
The work I do for this class is valuable to me.	19.6	3.99	.94
This class is not important to me. (R)	19.6	2.11	1.38
My participation in this class makes no difference. (R)	15.4	2.56	1.11
The tasks required in this course are a waste of time. (R)	14.4	2.05	1.23

Scale used: 1.-1.8 as strongly disagree, 1.81-2.6 Disagree, 2.61-3.4 neutral, 3.4-4.2 agree, and 4.21-5 as strongly agree

Relationship Between New Media Usage and the Dimensions of Learning

The relationship between new media usage and the dimensions of learning behavior was investigated using Pearson product-moment correlation coefficient. There was a strong positive correlation between technical competence and students' efficacy (r = .712, n = 97, p = .000), with high technical competence associated with high level of self-efficacy. There was a moderate relation between motivation and self-efficacy (r=.558, n=97, p=.000). Although it is possible that the students have self-efficacy and motivation to start with as the research did not measure this, what is salient in this table is the relationship between motivation and efficacy which is closely linked with their technological competence. Table 4 further indicates that there is no relation between new media tools usage with the attendant dimensions of student behavior which are self- efficacy and motivation.

Table 4. Correlation between New Media Usage and Dimensions of Learning Behaviors

	New Media Usage	Technical Competence	Efficacy	Motivation
New Media Usage	1	.045	.059	-.054
Technical Competence		1	.712**	.403**
Efficacy			1	.558**
Motivation				1

***. Correlation is significant at the 0.01 level (2-tailed).*

Mean Differences in Professor's Openness to Training

With regards to professors who have varying years on the job, with 6 years as the median, the study looked into their readiness to embrace the use of new media tools for classroom communication. As shown in Table 5, professors who have taught for more than six years ranked training in online collaboration as the highest at 3.86. The other media tools that they are also interested in are mobile, blogs, and video sharing at 3.79 level. Professors with less than six years on their job prefer training on webinars at 4.25 %. The other tools they are interested in training in are video sharing and online collaboration.

Table 5. Mean Differences in Professor's Openness to Training According to Number of Years Teaching

	Years Teach	N	M	SD
Blogs	>= 6	14	3.79	0.699
	< 6	8	3.13	1.642
Mashups	>= 6	14	2.71	0.825
	<6	8	2.88	1.356
Mobile (SMS, MMS)	>= 6	14	3.79	1.122
	<6	8	2.75	1.488
Online Collaboration Tool	>= 6	14	3.86	1.231
	<6	8	3.75	0.707
Photo Sharing (Flickr)	>= 6	14	3.36	1.277
	<6	8	3.38	1.302
Podcast	>= 6	14	3.21	0.893
	<6	8	3.75	0.886
QR Codes	>= 6	14	2.71	0.914
	<6	8	2.75	1.035
RSS Feeds (Website subscription)	>= 6	14	3.14	1.406
	<6	8	3.38	1.188

Social Bookmarking	>= 6	14	3.07	0.917
	<6	8	3.38	1.302
Social Network (Facebook, Twitter)	>= 6	14	3.64	1.151
	<6	8	2.75	1.389
Video Games	>= 6	14	2.07	0.730
	<6	8	2.25	1.282
Video Sharing Sites (YouTube)	>= 6	14	3.79	0.893
	<6	8	3.75	1.488
Webcasts/ Webinars	>= 6	14	3.29	0.914
	<6	8	4.25	0.707

Discussion and Implications

Involving students in a more meaningful learning requires more than just listening to the teacher and responding to his or her questions after. An ideal classroom communication is one wherein an environment is conducive for better comprehension, a deeper sense of self-fulfillment, and the confidence to discuss and relate concepts to the real world. Nothing is more real now than the presence of technology. Integrating technology in classroom communication will thus help achieve this purpose where instructional materials will be redesigned to adapt to the rapidly changing times. This study used a self-constructed questionnaire based on the study of Weber, Martin and Cayanus (2005) which measures self-efficacy and motivation in relation to learning behavior of students. Distributed to 97 college students and 22 professors of an exclusive college in Makati City, Metro Manila, the objective was to find out the usage level and effects of these technological innovations to the learning behavior of the students and classroom communication between student and teacher.

This study identified 13 new media tools, namely mobile, social networking sites, video sharing sites, social bookmarking, online collaboration tool, video games, blogs, photo sharing, RSS Feeds, Webcasts/Webinars, podcast, mashups, and QR codes which may be used to enhance classroom communication and understand its relation to students' learning behavior.

Results revealed the three tools cited as highly used for academic requirements, which were mobile, social network, and video sharing sites. There were also some tools that were unfamiliar to both professors and students. The lowest usage was on QR codes and mashups which had an average usage of 1.3%. The results of the study were compatible with the study of Castro (2016) in terms of frequency of engaging in various Internet activities. With the ubiquity of technology, one would be inclined to think that this would pervade all facets of life, including one of the most important disciplines which is education. However, from the scenario painted in this study, it doesn't appear as technology and education have truly fused for an engaging classroom communication. As shown in various research studies and experiential observations, many of the digital natives have only superficial experiences with technology. Many students lack a deeper understanding of how technology works or even extend such technological ability to academic requirements.

Technology has been closely linked with entertainment and socialization. Its application in the field of education is limited to the new media tools that are popularly used. To establish closer bonds among the student, teacher, and learning, a support system that pushes beyond

comfort zones is required. It needs a new mindset that recognizes the need to adapt to the new modalities of thinking and doing for one to survive in this ever changing world. With this realization come more tangible provisions for hardware and software development. Hardware would include infrastructures to wire the country and software will include investments on redesigning skill sets for those who facilitate learning. The presence of technological gadgets is not a guarantee of better classroom communication. As the study showed, no relation was established between usage of new media tools to student learning behavior. It showed, however, that the higher the technological competence, the more self-efficacy, and motivation are shown. Adoption of technology is prevalently manifested in the acquisition of upgraded technological gadgets. Tech-savvy people are excited about the launch of upgraded phones and laptops. Such adoption behavior is too superficial. The opportunity to improve and raise the quality of lives is not maximized. Since the study showed that technological competence is directly linked with self-efficacy and motivation, one can imagine how much more can be achieved with a more appropriate adoption behavior.

The professors perceived that the students use new media tools much more frequently than they do. From the students' point of, they sensed that their professors do not use these tools as much. Research further reveals that such perceptions are partly true since both students and professors use mobile and the social networking sites with almost the same regularity. The media tools which professors think the students are most adept with are blogs and photo sharing. On the other hand, there was not a single media tool which the students felt the professors used more than they do.

It is common practice to put people in boxes, labelling them with names, ascribing to them certain attributes which might not be correct at all. Such approach helps one determine the proper reaction. However, it can also be the beginning of miscommunication. With the perception that the student is more knowledgeable about technology, the professor may feel a sense of intimidation and inadequacy. Since they are major players in developing and enhancing students' skills, it now becomes imperative for them to be equipped with the 21st century technological competence. An effort to erase that insecurity will help greatly in carrying out their tasks. There is a significant difference in the preferences of media tools that professors would like to be trained in. Professors with over six years of experience chose the new media tools that they felt are widely used by the students (i.e. mobile, blogs and video sharing). The professors with lesser number of years of experience, and consequently much younger, on the other hand, felt that they don't need further training on the new media tools that they already use. Their choices included more sophisticated ones like webinars and online collaboration.

It is of utmost importance and interest to everyone, not only for those engaged in education, to maximize the new tools brought about by technology. It will define our willingness, readiness, and competence to join the global village.

It is to the interest of the educational system, a very basic service to humankind, to know what must be done to maximize meaningful learning in this era of new media. Specifically:

1. Professors will benefit from this study because it will give them an insight on how to improve students' academic performance. Hopefully, in the course of that discovery, it will also point out their strengths and weaknesses so that they too can be attuned to the changing needs of the students.
2. Gone are the days when professors will be talking above the heads of their students. Use of new media instructional materials will engage students more and make learning as interesting as they want to make it. With the design of updated instructional materials, classroom communication will become more attuned to the 21st century challenges.
3. The Society benefits from a productive, efficient, and effective population of students and teachers. Effective Professors develop achievers and inspired students who will eventually comprise the working class of society. Productive people make for a happy society.

Conclusions and Recommendations

One of the limitations of this study was that it was conducted only in an exclusive school in Makati. Such limitation might not be reflective of students' new media tools usage from other public and private schools. For future studies, the researcher recommends that study be conducted more extensively to include other educational institutions in the country to measure how technology has impacted classroom communication. From such an extension, it is possible to establish educational quality and discrepancies between private and public schools and among various socio-economic classes. It can also measure the preparedness level of professors and others who are involved in passing on knowledge.

Depending on the results of a further study, necessary measures will have to be undertaken to fully adopt the implementation of K2-12. At the least, this study will crystallize an inventory of the "pedagogic" stocks, both hardware and software. For inadequacy in both infrastructure and training, financial and institutional support might have to be put in place.

Education is a privilege that should be accorded with every human being to realize their full potential. The integration of technology is a painstaking challenge but worth looking into as it might provide the answer. For today, its presence in education further accentuates the digital divide between the developed countries and the developing countries. As is prevalently practiced, resource materials, whether online or hard copy, are exclusive to those who can afford them. But with dynamism, ubiquity, and enthusiasm which accompanies technology, the future of education lies in its access. The adoption of the global village concept, where there is an "anywhere and anytime" access to information, learning and collaboration can break the barriers. A genuine desire to share, uplift, and liberate the information-hungry soul is a mindset and heart set that needs to be assumed as the great balancer.

Specifically, in the light of the ASEAN economic integration where there is a freer movement of goods, services, investment, skilled labor, and flow of capital, those who are better prepared will experience more success. One of the ways to achieve this preparation is a clear cut policy on technology and education. Adopting technology as the new culture for teaching not only in the private schools but also in the state ran public schools makes the Filipino more competent and ready for global survival.

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Indispensable Innovations in an English Listening and Speaking Class at an E-Learning Training System at Ho Chi Minh Open University (HOU)

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Abstract

The core value of the e–learning training system at Ho Chi Minh Open University (HOU) is being open to all learners who are interested in developing their knowledge, sharpening their practical skills under flexible learning conditions, and following quality training procedures. In some learning environments, e-learning courses using web-based learning, online exercises, media broadcast lectures, and the like are applied to encourage learners to access knowledge and promote improved learning performances. However, in English listening and speaking classes, learners with strong preferences, interests, determination, and personalization mechanisms can attain great achievements, but the rest do not perform at a high level. Hence, to improve the quality of this training model and meet the preferences and requirements of the learners, a survey questionnaire was administered to 120 sophomores in two listening and speaking classes at HOU. The results show that most learners expect some indispensable innovations, including increasing the class time to help learners gain more confidence and sociolinguistic competence in speaking in the target language; providing supplementary online exercises to support learner autonomy and improvement of listening skill; and maintaining the teacher-learner relationship to provide learners with opportunities for consultation and assessment.

Keywords: e-learning, indispensable innovations, sociolinguistic competence, consultation and assessment

Introduction

Chiefly recognized in various models of the modern university training system is the terminology "e-learning." Wu Bing (2008) described the model of e-learning as the way of investigating the online interaction of learners. Suratinah (2009) strongly proposed that e-learning is an education system which encourages the demands of qualified high education in distance. Gervacio (2011) expressed that e-learning is the way of exploring the working effectiveness of online tutor and learners in various online learning activities. In 2013, in the paper of Subramaniam, e-learning was defined as "web-based learning" including four models of interaction as "student-student", "student-instructor", "student-content", and "student–interface". Moreover, Yanhui (2015) viewed e–learning as the form of online teaching and learning which is mostly based on massive records. In general, e-learning perspectives seem to be completely different in the eyes of educators and experts in diverse training contexts.

In the setting of Ho Chi Minh Open University (HOU), e-learning is known as distance learning, Internet-based learning, and "open learning" which mean learning opportunities are open to all people who are interested in accessing and improving knowledge, developing the profession, and changing social status. Due to this e-learning concept containing the meaning of distance learning and opened chances for learning at HOU, plenty of people interested in making improvement have signed up to numerous programs in this training system. Hence, the faculties, departments, and training centres in HOU have to think of ways to develop this e-learning training system. Designing or setting this up depends on the unique professional characteristics, and the various

electronic appliances (i.e., including online exercises, web-based learning, teaching videos, social network and more).These learning sources chiefly support learners in their autonomy knowledge accessing.

In the environment of an English listening and speaking class at an E-learning System (Distance Training System) at HOU, the model of applying technology is completely ineffective. This is due to three factors: 1) individual characteristics in listening and speaking skills of English majors (e.g., communicative requirements, confident expression and language competence); 2) significant limitations of technology (e.g., inexperienced and newborn online system, a shortage of program designers); and 3) cultural influences (e.g., unwillingness of using technology in teaching and learning activities and the habits of face to face English classes, etc.). Evidently, the development of listening and speaking skills in the large international communicative environment (i.e., native and non-native speakers, learners and instructors, and peers and peers in particular fields) was admitted by numerous scholars. Boonkit (2010) however stated that lacking confidence and language competence are the greatest barriers of non-native English speakers. A series of solutions were suggested to help them improve, such as taking part in various classroom activities, seeking opportunities to expose ideas in a real situation, and carefully getting comments from other peers and instructors. Moreover, most Vietnamese learners have been deeply influenced by traditional culture as seen in the Vietnam proverb, "Nothing can succeed without the help of the teacher." Most cannot expect to succeed in an online environment where learner's autonomy is necessary, hence a consideration for face-to-face listening and speaking class.

The online training model in HOU has series of problematic issues that need to be solved, such as designing more professional and engaging online classroom activities, raising learners' awareness in online autonomy, teaching learners the technique of applying technology in an online system, setting up the appropriate online assessment strategy, etc. A long-term and efficient e-learning training systems in HOU are required to solve these serious problems. Therefore, to ensure the high quality of HOU's e-learning training system, to meet the requirements of the learners, and to satisfy the current condition of HOU's e–learning system, indispensable innovations are needed. These include increasing more hours of class attendance, providing supplementary online exercises, and maintaining the close relationship between the teacher and learners should be taken into account in an English listening and speaking class at an e-training system in HOU. Thus, this research was necessary to be undertaken.

This research was carried out to understand the perspectives, attitude, perceptions, and expectations of English major learners in HOU e-learning system through some suggested essential innovations that benefit the learners in particular and HOU in general.

The research questions mainly focus on the following problems:

1. Which training model would learners with major in English in HOU rather take part in an English speaking and listening class online learning model or face-to-face model?
2. What benefits in language skills and social communicative skills can learners with major in English in HOU get when participating in a face-to-face English listening and speaking class?
3. What innovative expectations would learners with major in English in HOU like to get from the e-learning training system at HOU?

Objectives

This research aimed to gather personal information such as age, gender, living area, and learning motivations from the distance learning participants to draw out the general picture supportive of planning training strategies for the E-learning training system at HOU. Furthermore, the research was set to understand learners' perceptions in the process of learning to evaluate the qualified training criteria in this training system and to propose some positive adjustments. In addition, the research aimed to collect learners' attitudes, perspectives, and expectations to project some appropriate improvements and indispensable innovations for HOU's e-learning training system.

Literature Review

Previous studies strongly supported the benefits of applying technology in e-learning training system. According to Thurmond & Wambach (2004), "a new form of interaction" mostly "depends on the increased processing power of computers". Yanhui (2015) viewed e-learning as "a form of online teaching and learning," wherein activities are "mainly based on massive records." This training model has been widely used in numerous HOU majors such as Economics, Finance and Banking, and Economics and Laws. However, in an English Listening and Speaking class at the E-learning training system, the "recording teaching and learning model" is not yet applied due to the complexity and difficulties of the Listening and Speaking skills. Shumin (1997) acknowledged that the effectiveness of speaking skill involved other elements like listening skill, social cultural factors, linguistics and social linguistics, and competence (i.e., grammatical, discourse sociolinguistic, and strategic competence). Boonkit (2010) recognized "confidence, creativity of topics, and speaking competence" as "the key aspects of improvement when speaking to the audience." He also suggested "an action study in a regular course employing a task-based approach."

Access, content, and technology are the three core values of e-learning, but HOU experienced limitations on these due to the complicated characteristics of listening and speaking skills, and their new experience with distance training. The English-speaking classes at HOU E-learning training system are maintaining traditional training through a face-to-face class. This model was shown to be extremely effective after Walker, Davies, & Hewer (2012) clarified the weaknesses of using technology with Skype to interact with partners. Although Skype provided opportunities for development of listening and speaking skills for learners who have few opportunities to practice their oral skills, and benefit from practice with peers from other countries (Blake, 2008), its inconveniences include time zone differences, and problems with computer equipment or internet connection. Similarly, Patil (2008) asserted that to eliminate the learners' fear of making errors, it is important for the teacher to consider making the learners feel comfortable in language usage. A "face to face class" is integral to encourage them to overcome their fears and get more confidence in their speaking skill.

The speedy development of technology has great influence on various training systems. A great number of scholars and educators take advantage of this advanced technology by applying it in a variety of teaching methods and learning models. The student-student, student-instructor, student-content, and student-interface are the four modes of interactions that can be easily carried out and developed in a web-based learning environment (Thurmond & Wambach, 2004). Wu Bing (2008) was grateful that learning and communicating are perfectly convenient for learners through the online mode. Similarly, Blake (2008) highly recommended applying technology with Skype to provide excellent opportunities for development of L2 listening and speaking. This is because L2

learners have a few opportunities to practice oral skills, and even fewer opportunities to practice with peers from other countries. As an example,common handicaps are easily solved by the implementation of socio-constructivist activities through Skype (Blake, 2008). Noon-ura (2008) stated that to enhance the speaking ability of participants especially in out–of-class conditions, applying technology to some activities which use various English materials (i.e. listening to music, watching movies, listening to the radio, watching television programs, and accessing multimedia websites) is encouraged.

Gervacio (2011) supports the working effectiveness of online tutor and learners in online learning activities. This online tutor–learner activity is evaluated on global managing and tutoring communities, describing the strategy and positive practices as planning, implementation, monitoring and assessment, etc. A new form of interaction which is student interface interaction mostly depends on the increased processing power of computers and the advancement made in the field of artificial intelligence (Thurmond & Wambach, 2004). In general, technological interference seems to be greatly supportive to all training systems and it has more significant influence on e-learning training system in the world. Although this e–learning training system contributes positively to learners when it comes to accessing knowledge, attaining confidence, improving autonomy, developing critical thinking, improving social cultural background, widening social relationships, achieving social linguistics, etc., it still has some problems in definite training conditions such as problems of school facilities, special characteristics of various professions or typical subjects, and issues on technological appliances not being applied in an effective manner.

The negative examples of technology in training system, as Walker, Davies, & Hewer (2012) investigated the limitations of using technology with Skype in partner interaction, are time difference, computer equipment, or internet connection. In the context of the e-learning training system at HOU, some limitations in the three core values of e-learning training (i.e. access, content, and technology) existed (AAOU, 2016). Thus, manyof the subjects related to business, finance professions and others which encourage the autonomy of learners seem to have a perfect design and establishmentof applying technical appliances with plentiful online exercises, web-based learning, teaching videos, and social network media etc. In contrast, with listening and speaking classes, the preference of face-to-face learning model is taken into consideration due to special variables of confidence, sociocultural background, sociolinguistic competence, social relationship, and numerous sharpened skills of self-studying, assessment and correction. These concepts and perspectives are utilized by experts such as Patil (2008) who asserted that to build up the confidence of learners and eliminate the fear of making errors, the teacher should prioritize making learners feel comfortable in using the language. This point of view gives strong admission that language learners need to have direct face-to-face interaction with the instructors, so that learners have more opportunities to express feelings through eye contact and facial expression to solicit practical appreciation and encouragement from the teacher.

Similarly, learners get benefits through immersing in the host country. They also get the chance to develop their confidence through practicing the target language at all times (Iglesias, 2016). This also leads to the confidence of learners brought about by direct experience. Plus, Bailey (2005) & Songsiri (2007) said that learners could obtain confidence and competence in speaking skill if the appropriate syllabus design, teaching methods, sufficient tasks and materials are fully provided and developed. In the paper of Iglesias (2016), "a student-teacher ratio of one-to-one does not

often yield the same results as those deriving from a more crowded class." This perspective emphasized that the class size greatly affects the quality of interaction and learning. Evidence shows that a great number of UK language schools currently employ mini-group classes of two to four students to assure enhanced interaction. In reality, larger groups also allow for fruitful outcomes, except the class size alone does not give efficiency in language competence. This implied that having direct communicative environment among members is the best solution in language learning. Generally, speaking skill is a productive skill in output process; it has key criteria which are appropriate in face-to-face class. As Shumin (1997) pointed out, the effectiveness of speaking skill could not be excluded from some elements such as listening skill, social cultural factors, linguistics and social linguistics competences including grammatical, discourse, sociolinguistic, and strategic competence. These significant criteria strongly support the interaction function and training objectives in English listening and speaking class in an e-learning system at HOU. The questionable issue taken into consideration is the interactivity of face-to-face or online class.
Indeed, to satisfy responses and to attain the appropriate and innovative English training model, survey questionnaire were administered to second year learners who have attended English speaking and listening classes.

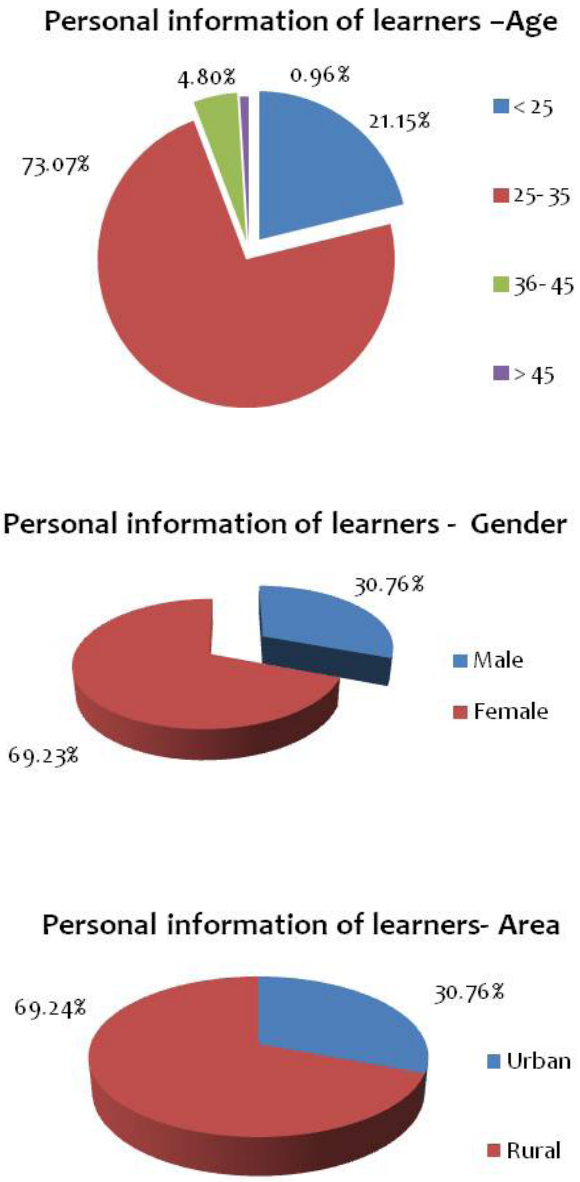
Methodology

This research is descriptive and qualitative. The research variables are the perspectives, attitude, perceptions, and expectations of learners with major in English at the e-learning training system of HOU. The perspectives of learners were mostly analyzed in the form of general information and point of view of taking part in the e-learning English training course. The attitude and perception of learners in terms of their feelings and thinking during the learning process were evaluated through questionnaire responses. Learner expectation, based on the learners' contributive spirit, is checked to make valuable future changes with the aim of enriching the learning program and giving more benefits to the learners of this e-learning system. The population of this research is urban and rural second year students, males and females, who have attended listening and speaking classes. The respondents of this research are 104 students from the 120 sophomore students majoring in English in HOU in 2014. Interviews and survey questionnaires were used in data gathering. The collected data were applied in the research and the data analysis was based on descriptive simple analyses.

Results and Discussions

Understanding personal information of learners as age, gender, and living area helps to recognize the practical motivations, great learning attitude, real perceptions, and expectation of learners. The following tables show the results from the answers of the respondents.

Figure 1. Personal Information of Learners



In Figure 1, it is shown that 73.07 % of the respondents are of ages 25-35 years old, 21.15 % of the respondents are under 25, 4.8% of the respondents are between the ages 36- 45 years old, while .96% of the respondents are over 45 years old. This number shows that the respondents who are of the working age are more mature in terms of selecting their profession, are more responsible for their learning, and are more dedicated in obtaining more progress and achievements.

In addition, the, number of female learners is as twice as much as male learners. This demonstrates that more females are interested to pursue a degree in English at HOU e-learning system. Through short and informal interviews, female learners who participated in this training revealed their motivations, such as teaching their children English, improving their performance in the workplace, or getting to communicate more effectively. . On the other hand, data showed that 30.76% of the

respondents reside in the provinces while 69.23% live in Ho Chi Minh.This clearly states the demand of learning andusing English in the city is higher than in the provinces. This makes attending face-to-face classes in city more convenient

These data show that the respondents do not hesitate to reveal their own perspectives, express attitudes and perceptions, give positive or negative feedbacks, or even show their privilege to expect better condition or training quality. Hence, some essential innovations of HOU's e-learning training model need to be taken into account.

Table 1. Perspectives of the Learners

1. Enjoy English speaking and listening skill	%
Yes	99.03%
No	0.98%
2. Reasons of taking part in e –learning training system	%
Less time in class attendance	21.15%
Taking in knowledge to support major	63.46%
Getting degree	15.38%

Table 2 shows that majority of the learners commute to work on weekdays. Thus, the available distance training courses offered to learners on weekends are completely appropriate. In such a strict learning condition, learners must have strong determination and motivation to take part in these courses. In fact, 63.46% of the learners express their desire to access knowledge to support their major, while 21.15% of the learners claim to attend this training course because it requires less of their time. 15.38% of the learners enjoy this learning model to get their needed degree. Besides, one more question is carried out to check the passion of learners in listening and speaking skills, and 99.03% of them expressed strong interest in these skills.

In summary, according to the data presented in Figure 1 and Table 1, the learners with the major in English language in HOU's e-learning training system are mostly females aged between25 to 35 years old who lives in HCMC. This means that HOU's e-learning model is perfectly designed to offer active working people who enjoy taking more opportunities and spending time to improve themselves, particularly their English skills.

Table 2. The attitude of learners

Attending in English L & S class	Fully attend (61.53%)	Regularly attend (34.61%)	Sometimes attend (3.84%)	Not regularly attend (0 %)	
Learning methods in distance training system	Mainly learn through internet (online, websites.) (9.61%)	Autonomy in Reading & Writing skills (67.30%)	"Face to face" in Listening & Speaking Class (76.92%)	Set up various online listening exercises (66.34%)	
Getting more benefits in a "face to face" speaking class	Fully agree (71.15%)	Quite agree (11.53%)	Agree (13.46%)	Disagree (0%)	Fully disagree (0%)

The result shows that 61.53% of the respondents fully attend the class, 34.61 % of them regularly attend the class, and 3.84%. of the learners sometimes participate in class=This shows that the learners are more attentive and interested in learning English. Furthermore, 76.92 % respondents believe that the e-learning training system should have face–to-face English speaking class, while 66.34% of the respondents indicated that HOU should set up more online listening exercises to improve listening skill. Besides, the attitude of learners are also clearly expressed, as 71.15% of them have agreed to getting more benefits when learning from a face-to-face speaking class. Take an observation of Table 2, it is no doubt to give conclusion that learners seem to have good attitude in attending an English listening and speaking class though they have to put more investment in this training model.

Table 3. Perceptions of learners

Getting English language skills & Social communicative ability in a "face to face" speaking class

Improving English pronunciation (69.23%)	Getting confidence in public (72.11%)
Improving fluent expression ability (65.38%)	Creating good relationship between teachers & learners (62.5%)
Improving listening ability (various accents) (61.53 %)	Having self-correction (65.38%)
Learning from various peers' expression styles (48.07%)	Developing team work ability (48.07%)

One of the most practical factors that make e learners feel more interested in learning English from a face-to-face listening and speaking class is their perceptions of the courses. Data show that 71.15 % of the learners fully agree that they can obtain language skills and social communicative ability when learning English in face-to-face listening and speaking classes. Specifically, the learner claimed that they improved in the following: English pronunciation (69.23%), English fluency (65.38%), and listening skill (61.53 %). They also claimed to: get more confident in public (72.11%), establish good relationship between teachers and learners (62.5%), and correct their language (65.38%).

In summary, the data show that it is essential to take these benefits into consideration in order to have innovation in HOU's e-learning training system

Table 4. Expectations of learners

Question: Do you have any suggestions to innovate in our teaching and learning activities of e –learning training system? (please clearly write down your proposals)	
1. Increasing the periods of learning face to face in English Listening and Speaking classes	67.30 %
2. Setting up various online listening exercises from simple to complicated	65.38 %
3. Maintain teachers and learners relationship	61.53 %
4. Keep balance between English and Vietnamese	28.84%
5. Give more time for final test preparation	38.46 %

Table 4 shows the data obtained through an open-ended question regarding the learners' expectations. Data show that the top three suggested criteria include: increasing face-to-face learning hours in English listening and speaking class, designing more online exercises from lower level to higher level listening skills, and keeping contact between teacher and learners. The percentages of this result in Table 4 support the basic requirement of the research.

Conclusions and Recommendations

The e-learning training system at HOU has special characteristics, especially the English listening and speaking class. Listening skill is required in all levels, from beginning to advanced, to help learners practice their listening skill in an effective way. However, with the English speaking skill, almost all learners expressed their wish to take part in a face-to-face English speaking class. They believed that learning face-to-face in class help them to have strong social linguistic competence in terms of pronunciation, fluent expression, and listening skill. Besides, learners can develop their social communicative ability in a face-to-face class. Also, more listening exercises in various levels should be designed and set up online to encourage learners' online autonomy and to improve their own listening skill. Together with e-learning condition, maintaining the relationship between the teacher and learners is a good suggestion because learners do not have enough time to attend class. Moreover, from the point of view of teachers, they get to more efficiently support.

It can't be denied that advanced technology can be applied in the e-learning training system. However, it depends on the condition, context, and the special major or subjects. Other models such as a face-to-face English listening and speaking class is recommended in order to have

essential innovations. The study is conducted to understand the information, perspectives, attitude, perception, and expectation of learners in HOU's e-learning training system. The findings also showed the innovative expectations of learners. Hence, it is recommended that the results of this study be taken into consideration in order to benefit learners and the e-learning training system to increase income and strengthen the reputation of HOU.

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Identification of User-Friendly Bioinformatics Tools for Courses in Open and Distance Learning

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Abstract

Bioinformatics has become a vital offspring of biology with a wider spectrum of applications. Many fields of biology now rely on the analysis and interpretations of observations through the genomic scale data using bioinformatics. There is a considerable demand to learn bioinformatics, which can be easily offered in open and distance (e)learning (ODL/ODeL) systems due to its total reliance on information and computer technology (ICT). Generally, course design and content development for new courses in ODL demand substantial resources and time. Use of existing bioinformatics software tools and allied documents can drastically reduce these resource demands and time factors in course designing and updating. Given a large number of proliferating bioinformatics software tools available on the Internet, it requires comprehensive criteria to identify software tools and documentation that are user-friendly for open and distance learners, and needs multidisciplinary knowledge in ODL, Biology, and Bioinformatics. A criteria-based software evaluation was adopted in this study to evaluate the user-friendliness of bioinformatics software, particularly the plant genomic analysis software which was available in the Internet for free usage. Two main criteria used in this selection: Usability and Maintainability. These main criteria consisted of several sub-criteria such as understandability, documentation, installability, learnability, etc. A wider spectrum of Bioinformatics software tools designed for different stages of genomic data analysis, from simple sequence analysis to genome wide analysis, were used in this evaluation process. Based on the criteria, a series of user-friendly bioinformatics tools that can be used at different stages of genomic data analysis were identified. In addition to the criteria of selection, these tools and allied documentation can effectively be integrated with development of a comprehensive ODL-based bioinformatics courses. Further, this outcome facilitates offering hard science concepts through the minimum commitment of resources and time to meet the escalating demand for capacity development in Bioinformatics.

Keywords: Bioinformatics, ODL, ODeL, user-friendly, genomic data, software tools, data analysis

Introduction

Advances in computation technologies and high throughput experimental data analysis methods have created a deluge of biological data, which eventually shaped a new multidisciplinary field of science, called Bioinformatics. Biology and computer sciences are the key fields merged in Bioinformatics, but it requires substantial inputs from the fields of mathematics, statistics, information technology, physics, and chemistry as well. This relatively new field of science has unveiled exciting new potential for advanced research in biological systems. Many fields of biology now rely on analysis and interpretations of observations using genomic scale data of DNA, RNA, protein, and metabolites. Curating, organizing, analyzing, and making this large volume of biological data available to public usage requires intensive computational infrastructure and knowledge. Applications of bioinformatics are varied from fundamental biology experiments to advance medical sciences. Bioinformatics analysis is as complex and diverse as the biology of life.

The field of bioinformatics is expanding at an enormous rate and is playing an increasingly central role (Brooksbank, Cameron, & Thornton, 2010). The bioinformatics infrastructure consists of a set of publicly available databases, software tools to analyze data, and integrated bioinformatics platforms (IBP). These databases are specialized according to the type of data (DNA, Protein sequence and structure, phylogenetic, etc.) they curate and so are the software tools and integration platforms for various analysis requirements. The National Center for Biotechnology Information (NCBI) and European Bioinformatics Institute (EMBL-EBI) are the most versatile integrated bioinformatics platforms (IBP) that offer excellent teaching and learning material. They have integrated an array of software tools to mine data from literature to genomic and proteomic information. A list of bioinformatics databases can be accessed at Nucleic Acid Research Database Summary Paper Category List (https://www.oxfordjournals.org/our_journals/nar/database/cat/1), and a list of software tools are available at the Expasy bioinformatics resource portal (https://www.expasy.org). Most of these listed tools are freely available online.

Bioinformatics courses were initially available for the graduate courses. Due to increasing applicability of Bioinformatics over a wider spectrum of biology, it has been introduced to undergraduate education in conventional university systems over the last couple of decades (Counsell, 2003; Ditty et al., 2010). The interdisciplinary nature and computationally intensiveness of bioinformatics pose challenges in adopting it into undergraduate learning, in general (Koch & Fuellen, 2008). There is also a wider set of efforts geared to formulate instructional curriculum from multidisciplinary teams to integrate concepts of bioinformatics into the undergraduate teaching (Dinsdale et al., 2015).

Open and Distance Learning (ODL) is the most favored system of learning at present due to many reasons (NCES, 2015). Teaching science subjects in ODL has always been a challenging task due to their practical orientation that demands access to substantial infrastructure. Unlike most of the life science subjects, bioinformatics needs limited physical resources such as access to a computer and the Internet. There is a significant complementarity between Bioinformatics and the ODL and dependence on technology assisted learning with many open source online tools and learning material. Moreover, learning outcomes of Bioinformatics are often customized according to the application domain which can be achieved in the flexible learning characteristics of ODL.

The introduction of ODL courses demands considerable resources and time, as it requires course design, content development, and delivery. Updating such courses also need considerable engagement in comparison to the conventional systems. However, the inclusion of bioinformatics software tools and allied documentation in course contents of the ODL can significantly reduce the resources and time spent on course development. Further, it makes these courses more amenable to include rapid changes in the field of bioinformatics. However, the most challenging task is to select the compatible software tools, which are conducive to include in ODL. However, there are no recorded criteria to evaluate these bioinformatics software tools for their compatibility for ODL. General software evaluation criteria contain some key parameters that can be adopted in developing criteria for evaluating compatibility for ODL.

Software tools of bioinformatics are numerous and diverse according to their application. This article evaluated a selected set of bioinformatics software tools, which are used in the main steps of bioinformatics analysis for their compatibility to adopting to undergraduate ODL programs. Of the hundreds of Bioinformatics software tools available for microbiological, animal, human, and plant subjects, particular attention was given to those specialized for plants due to the author's expertise in Plant Sciences.

Objective

This study aimed to develop evaluation criteria for bioinformatics software to be included as ODL material. Based on these criteria, series of bioinformatics software tools that could be directly integrated with course development as learning material was identified.

Methodology

Bioinformatics software tools that are available on the Internet (particularly listed in https://www.expasy.org/resources) and cited commonly in published literature were chosen for the analysis. Authors experience in using bioinformatics tools for plant research and designing ODL courses in bioinformatics was useful in shortlisting a large number of tools. Commonly cited software tools in the published research articles were first chosen for the study. Besides, a selected group of bioinformatics software tools listed in https://www.expasy.org/resources was also studied. This study, conducted in September 2016, included more than 40 software tools and IBP. The analysis criteria mainly consist of usability and maintainability guidelines in Table 1 adopted from the Software Evaluation Criteria (Jackson, Crouch, & Baxter, 2011). A score of 1 was given for every compliance to each criterion and 0 was given when there was no compliance. Total percentage of the score was used in determining the user friendliness for ODL.

Table 1. The Criteria adopted to evaluate the user-friendliness of Bioinformatics software tools for inclusion in ODL Programs on Bioinformatics.

	Usability
Understandability	**Easily understood?** What the software does and its purpose? The software's basic functions? The software's advanced functions? High-level description of how the software works are available. Case studies of use are available. Step by step input guide available in GUI
Documentation	**Comprehensive, appropriate, well-structured user documentation?** Completeness of the documentation in describing the functionality? Clarity of descriptions? Lists resources for further information. Is task-oriented. Consists of clear, step-by-step instructions. Gives examples of what the user can see at each step (e.g. screen shots or command-line excerpts.) Documentation on the project website makes it clear what version of the software the documentation applies to.

Learnability	**Easy to learn how to use its functions?** How straightforward is it to learn Basic functional tasks? Tool tip indicators present A getting started guide is provided outlining a basic example of using the software. Instructions are provided for many basic use cases. Instructions are provided supporting all use cases. Audio visual guide is available.
Installability	**Straightforward to install on a supported system?** Available online only. Install the software onto a target platform? Configure the software following installation for use? The website has instructions for installing the software.
Copyright/Licensing	**Adoption of appropriate license?** Has an appropriate license been adopted? The software has an open source license.
Community	**Evidence of current/future community?** To what extent does/will an active user community exist for this product? The website has list of important partners or collaborators. Users are requested to cite the project if publishing papers based on results derived from the software. Email newsgroup. Frequently ask questions (FAQ).
	Maintainability
Supportability	**Evidence of current/future developer support?** The website has a page describing how to get support. User doc has a page describing how to get support. The project has an e-mail address. E-mail archives are publicly readable. The website has a search facility. Project resources are hosted in an organization/institution/ Bioinformatics resource platform.
Evolvability	**Evidence of current/future development?** The website describes project roadmap or plans or milestones (either on a web page or within a ticketing system). The website describes how the project is funded/sustained.
Interoperability	**Interoperable with other required/related software?** Uses open standards.
Portability	**Usable on multiple platforms?** User-friendliness of the software can be used on other platforms? The application can be built on and run under MacOSX. The application can be built on and run under Windows.

Results and Discussions

Open and distance learning programs, in general, require considerable time and effort in adopting the contents to suit the ODL learner. This process of course development sometimes becomes a bottleneck for the development of ODL programs and is particularly challenging for the rapidly developing courses in science that need to be continuously updated. There are many methods adopted to successfully overcome this challenge, such as by integrating open source courses and deviating from conventional print-based media to online content, etc. This study presents two aspects to meet the challenge in developing bioinformatics courses. Evaluating criteria can be employed to select the course content while a set of bioinformatics software tools used for allied documentation can be directly integrated as course content in ODL programs. All these recommended courses are freely available online. There are only a few studies done on these aspects of integrating bioinformatics software tools in ODL systems (Ditty et al., 2010; Dinsdale et al., 2015). The software evaluation criteria adopted in this study target the undergraduate bioinformatics courses in ODL but can also be extended to graduate courses as well.

The score assigned in Table 2 is proportional to the user-friendliness of ODL learning. This score was computed by deriving the percentage obtained from a total of 42 criteria used in the evaluation. Bioinformatics software tools were categorized according to the stage of analysis in which they are designed for. With increasing complexity, sequence similarity search, multiple sequence comparison, phylogenic and genomic analyses, and proteomics are the main stages of categorization according to work. Besides those, software tools and few general IBP were also listed for their versatile functionality. These IBP provide open-sourced learning material designed for self-learning.

Usability criteria mainly consist of three sections, namely: understandability, documentation, and learnability. The presence of well-structured information on functionality, variables, and results is very important, particularly for the ODL user, to understand the functionality of the tool. Almost all software evaluated provided an indication of its function but only 60% of the software had user manuals. Availability of data for case study significantly supports students' self-learning of the software tool. Citing resources for further study is equally important for the learner to get comprehensive knowledge and experience. Almost all software carried description on its functions, but only 60% of them had step-by-step guidelines for users, while 44% provided descriptions with screenshots. NCBI, EBI sequence search, Phylip, MEGA, uniprot, ugene provided step-by-step guidelines. Nearly 15 % of software tools which were mainly IBPs had supplemented audio-visual resources with tutorials.

Open and distance learners rely heavily on peer assisted-learning (Bandarage, et al., 2015). Therefore having a space for the users and incorporating a link for frequently ask questions (FAQ) in the website which is associated with the software tool can enhance learning and problem-solving skills. Only 40% and 42% of the software tools have space for users and link to FAQ, respectively. NCBI-blast, MUSCLE, Primer-blast and MEGA are examples of tools which have an active user community. Only 12% of the software, including GENE and NCBI-blast, had email groups.

Maintainability of the software indicates if it can easily be used in the personal computer (PC) environment and whether there is continuous support or updating. The rapid development of data analysis techniques in Bioinformatics warrants continuous support by the software developers to update the tools and user awareness equally. More than 75% of the software tools and IBP provide updated versions routinely and are compatible with a variety of PC software platforms. Only 40%

and 8% of software tools studied had FAQ and publicly readable email archives, respectively. More than 80% of software tools meet the evolvability and portability criteria. It is noteworthy that most free Bioinformatics tools which are particularly designed for handling large volumes of data are inclined to LINUX-based systems. As such, it is recommended for the aspiring bioinformatician to be familiar with LINUX systems.

Nevertheless, the lack of descriptive user documents or low score (Table 2) does not undermine the software tool. Some of the highly used software tools (e.g., Aramemnon and TMHMM) have user manuals with few information, as they are intended for experienced users. But novel users tend to learn about them through intuition, peer interaction, or studying use-cases published elsewhere. There are many technical social media forums which can be used to share and enrich the learning experience. In the case of software tools that have a low score, ODL facilitators also require providing more learning support to make them more conducive for the ODL.

Table 2. Bioinformatics software tools and Integrated Bioinformatics platforms for Open and distance learning courses. Score indicates user-friendliness in adopting into learning material for ODL

Function	Software	Location	Score
Similarity search	NCBI-BLAST	http://blast.ncbi.nlm.nih.gov/Blast.cgi	9
	EBI Sequence Similarity Search	http://www.ebi.ac.uk/Tools/sss	6
	BLAT Search Genome	http://genome.ucsc.edu/cgi-bin/hgBlat?command=start	7
Multiple sequence alignment	Clustal Omega	http://www.clustal.org/omega/	9
	MUSCLE	http://www.drive5.com/muscle/manual/	4
	Kalign	http://msa.sbc.su.se/cgi-bin/msa.cgi	9
	SeqTool	http://www.sanger.ac.uk/science/tools/seqtools	3
Primer design	Primer-BLAST	http://www.ncbi.nlm.nih.gov/tools/primer-blast/	3
	Primer3Plus	http://www.bioinformatics.nl/cgi-bin/primer3plus/primer3plus.cgi/	3
Molecular phylogeny	MEGA	http://www.megasoftware.net/home	6
	PHYLIP	http://evolution.genetics.washington.edu/phylip.html	8
	PAML	http://abacus.gene.ucl.ac.uk/software/paml.html	7

Protein Motif/ Function	UniProt	http://www.uniprot.org/uniprot/	8
	MEME	http://meme-suite.org/doc/meme.html	9
	SMART	http://smart.embl-heidelberg.de/help/smart_glossary.shtml	4
	TMHMM	http://www.cbs.dtu.dk/services/TMHMM/	5
Sub-cellular localization	TargetP 1.1	http://www.cbs.dtu.dk/services/TargetP/	5
	Aramemnon	http://aramemnon.uni-koeln.de/	5
Protein Interaction	iCn3D Structure Viewer	http://www.ncbi.nlm.nih.gov/Structure/CN3D/cn3d.shtml	4
	uMage	http://kinemage.biochem.duke.edu/	6
	3D View (JSmol and Jmol)	http://www.rcsb.org/pdb/staticHelp.do?p=help/viewers/jmol_viewer.html	8
	Swiss-PdbViewer	http://spdbv.vital-it.ch/	8
Data integration and analysis Platform	Ugene	http://ugene.net/	8
	Galaxy	https://galaxyproject.org	7
	NCBI	http://www.ncbi.nlm.nih.gov/	9
	EMBL	http://www.ebi.ac.uk/	9
Genome viewers	Integrated Gnome viewer	http://software.broadinstitute.org/software/igv/log-in	9
Genome viewers	Integrated Gnome viewer	http://software.broadinstitute.org/software/igv/log-in	9

Use of resources in IBP is more favorable for learning as they provide comprehensive documents for the usage of software tools. Many of these sites harbour tutorials, including audio-visual guidance that is favorable for ODL. It is also important to count the data usage in using these online learning resources. Open and distance learners mostly rely on their network connectivity at a cost. IBP, such as Ugene that can be installed on personal computers, may save the cost of data usage but may also require Internet connectivity to run some of the analyses.

With a seemingly endless stream of biological data being generated across sectors of life science, there is an escalating demand for professionals who are competent in the analysis of these data (Levine, 2014). Given the extensive reliance of both ODL and bioinformatics on information and communication platforms, there is a need for ODL institutes to offer academic programs in Bioinformatics to meet this demand. The flexibility and openness of ODL will facilitate those who missed the opportunity to learn Bioinformatics in secondary and undergraduate education or those mid-career developers who need to develop their knowledge and skills in Bioinformatics while working.

Conclusions and Recommendations

To be current in the rapidly changing field of bioinformatics requires continuous updating of bioinformatics programs. Effective integration of software tools and allied open learning resources facilitate Bioinformatics ODL courses to be more responsive to changes, easy to update, and conducive to lifelong learning. Software evaluation criteria provide a foundation to screen bioinformatics software for their ODL-friendliness. Software tools with a score higher than six may directly be integrated into ODL courses. Rest of the tools with score less than six can be integrated into ODL, provided that they need more effort and time in adopting into ODL requirements. On the whole, the outcome of this study presents an approach to offer courses based on hard science concepts in ODL with a minimum commitment of resources and time to meet the escalating demand.

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Using Facebook Metrics to Measure Student Engagement in Moodle

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Abstract

Facebook uses engagement rates as a metric for social media managers and marketers to measure how effectively a page, a post, a comment, a brand, or a topic is able to engage the target audience. Studies have proposed the use of these metrics for other types of online measurements in applications and industries other than social media. This concept paper proposes the use of a modified Facebook engagement rate formula to (i) measure students' engagement with forum posts using virtual learning environments such as Moodle and (ii) get data from students regarding which topics or posts engage them more in the learning process. While virtual learning environments have their own logs and learning analytics software, and studies have explored the use of Facebook as a discrete and supplementary platform to traditional learning management systems, this paper fills the research gap by applying Facebook's engagement rate formula to Moodle itself. Applying an existing social media audience engagement formula to an online course may provide instructors and educational institutions valuable feedback on what types of posts, comments, or topics make students interact and engage more in online learning sessions. Such an exercise may lead to new metrics which distance learning institutions could use to calibrate their content with the objective of improving students' interaction and engagement with instructors, fellow students, and the online course in general.

Keywords: Facebook, Moodle, social media, engagement rate, learning analytics

Introduction

Virtual learning environments like Moodle and Blackboard—sometimes referred to as online course platforms or learning management systems—come with their own analytics and reporting tools either as built-in features or as plug-in software. Alternatively, instructors also use external software such as Microsoft Excel to derive learning analytics for their courses (Konstantinidis and Grafton 2013). Data logs have also been studied in an effort to help instructors interpret Moodle usage data and analyze student behavior in online courses (Casey et al. 2010).

Meanwhile, studies have explored the use of Facebook to supplement or complement learning analytics gathered from data logs of online courses (Junco 2012). Junco examined the relationship between the frequency of Facebook use, participation in Facebook activities, and student engagement. He concludes:

"Higher education administrators, faculty and staff have an opportunity to help students use Facebook in ways that are beneficial to their engagement and, by extension, to their overall academic experience. Given that Facebook continues to be popular among college students, and that universities are interested in engaging and retaining students, it is important for those

DISCLAIMER: This is a conceptual paper. Those who are interested to test it may communicate with the author.

working in higher education to … design and support interventions that meet students where they are in order to help them get to where they are going."

Studies have also examined the use of course-specific Facebook pages that had been integrated into several university courses (Irwin et al. 2012). Irwin et al. evaluated the efficacy of these pages as a course learning tool using student perceptions. Their findings indicate that "Facebook may be an appropriate addition to traditional e-learning tools, providing an integration of technology that is well received and used by today's students with an application that can be adapted to deliver content in a similar way to conventional learning management systems."

However, while Facebook has long been used as a complementary yet separate learning platform side-by-side with Moodle, the use of Facebook's own calculations for engagement are not used to analyze data generated by logs from learning management systems.

Social media such as Facebook and Twitter allow users not only to interact with one another but also to express their approval or disapproval of posts, content, or pages they find in their social networks.

To derive meaningful information from such data, Facebook has developed its own metrics to gauge the efficacy of content based on the interactions such content receives. The primary metric Facebook uses is called the "engagement rate," or "the percentage of people who saw a post that reacted to, shared, clicked or commented on it." The engagement rate becomes useful when content creators want to measure the level of engagement and interaction a piece of content receives from the audience through comments, "Likes," and "Shares." This thus becomes an indicator of impact the content had on the audience.[1]

Facebook's post engagement rate is calculated thus:[2]

$$PER=\frac{(CL+C+S+L)}{R}$$

Where:
PER = Post engagement rate
CL = Clicks
C = Comments
S = Shares
L = Likes
R = Reach (# of people who saw the post)

The Facebook post engagement rate numerator thus becomes the number of "Clicks," "Comments," "Shares," and "Likes" on a particular Facebook post. The denominator becomes the number of people that particular post reached, or the number of people who actually saw the post (as opposed to counting the total number of "Fans" or "Friends," some of whom may not have even seen the post).[3]

[1]Facebook. (2016). Help Center: How is engagement rate defined? Retrieved 20 June 2016 from https://www.facebook.com/help/178043462360087
[2]Smitha, N. (2016). Simply Measured. Facebook Metrics Defined: Engagement Rate. Retrieved 20 June 2016 from http://simplymeasured.com/blog/facebook-metrics-defined-engagement-rate/#sm.0001srq731egmefaxe01fnrz0fhib
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Studies have also used social media data to derive meaningful information in applications other than determining engagement rate. For example, Hall compares a scientist or academic's social media profile against the citation indexes of their scholarly work (Hall 2014). To help quantify this, Hall proposed the creation of the "Kardashian Index" or "K-Index," a measurement of "discrepancy between a scientist's social media profile and publication record based on the direct comparison of numbers of citations and Twitter followers."

Hall believes that Hollywood and television celebrity Kim Kardashian is famous simply for being famous, and that the same phenomenon might apply within the scientific community—that scientists and academics are renowned simply because they are already renowned.

The K-Index is a calculation of an academic's number of Twitter followers divided by the number of followers that particular academic is expected to have based on his or her citation record. Hall plotted the number of scientists' and academics' Twitter followers against the number of scientific citations they have received to calculate their K-Index. The study found that some scientists and academics had inflated numbers of Twitter followers versus the number of citations their works have received. A high K-index may be interpreted as undue scientific fame while a low K-index suggests that a scientist is being undervalued. According to Hall, a researcher, scientist, or academic whose K-index is greater than 5 can be considered a "Science Kardashian."

There is also a study by Asur and Huberman who created an equation in an attempt to predict which movie would become a box office hit using Twitter comments (Asur and Huberman 2010). They derived the Tweet rate by dividing the number of Tweets about a movie by the number of hours such a movie was being discussed, and factored in subjectivity by dividing positive and negative Tweets by the number of neutral Tweets.

Edwards et al. also studied the use of aggregated social media metrics like the online service called Klout which measures social media influence through the Klout Score (Edwards et al. 2013). Klout uses more than 400 of what it calls "signals" from eight different social networks to update a person's Klout Score on a daily basis. The Klout Score is calculated through these signals that are derived from combinations of attributes, such as the ratio of reactions a person generates compared to the amount of content that person shares.

Klout explains it thus: "For example, generating 100 retweets from 10 tweets will contribute more to your Score than generating 100 retweets from 1,000 tweets. We also consider factors such as how selective the people who interact with your content are. The more a person likes and retweets in a given day, the less each of those individual interactions. Additionally, we value the engagement you drive from unique individuals. One-hundred retweets from 100 different people contribute more to your Score than do 100 retweets from a single person."[4]

After measuring multiple pieces of data from several social networks, Klout then applies the data to the Klout Score algorithm, and then shows the resulting number on the person's Klout profile. The higher a person's Klout Score, the harder it becomes to increase. The Klout Score is the accumulation of a person's influence across all of his or her social network memberships, not the average. Adding social media networks adds to the person's ability to share expertise, and that helps increase the Klout Score. [5]

[4]Klout. (2015). The Klout Score. Retrieved 14 June 2016 from https://klout.com/corp/score
[5]Ibid.

In short, social media metrics have been used to measure and even predict phenomena in other industries apart from social media, such as the next box office hit, a person's online influence, or an academic's online fame. Perhaps social media metrics could also be used in the distance learning sector, specifically to measure student engagement in online courses.

This concept paper proposes the use of social media engagement calculations, Facebook engagement rates in particular, to determine student's engagement with content found in Moodle. Moodle data logs can be used to derive student engagement rates patterned after Facebook's engagement rate calculations. Why use social media metrics as a feedback mechanism and data collection vehicle? Studies have shown that it has become an effective platform for both purposes.

Asur and Huberman concluded thus: "We show that social media feeds can be effective indicators of real-world performance." (Asur and Huberman 2013).

Leskovec et al. noted that with proper research, one can build models to aggregate the opinions of the collective population and gain useful insights into their behavior, while predicting future trends (Leskovec, et al. 2006). Such a practice using social media could be useful in certain industries, and as concluded by Huberman et al. in their study using Twitter to analyze consumer behavior, gathering information on how people converse regarding particular products can be helpful when designing marketing and advertising campaigns (Huberman et al. 2009). Or, in the case of Hall's study, to determine the popularity of scientists and academics based on their Twitter followers and number of citations (Hall 2014).

Esteves in 2012 explored the use of Facebook side-by-side with a Moodle course on web design and publishing at the University of the Philippines Open University (Esteves 2012). Her objective was to see if Facebook would augment the learning process and increase student engagement. However, in her case study, Facebook and the Moodle course were treated as two separate platforms.

This concept paper deviates from Esteves' approach by integrating Facebook-like functionalities into Moodle and by using Facebook-like metrics to measure the engagement rate of forum posts in Moodle courses. This paper proposes the use of Moodle data logs as primary research data that would be fed into Facebook's engagement rate calculation.

While Moodle data mining is already being done to study student behavior (Casey et al. 2010), feeding such data into a social media calculation has not yet been fully explored. Marrying the two (Moodle data logs and Facebook's engagement rate formula) may produce meaningful data for the improvement of learning management system courseware engagement using metrics for a current tool in which students are already active and adept—social media (Facebook in particular). While there are data logs that can be mined, Facebook's engagement rate formula to measure student interaction in Moodle has not yet been utilized. This leads us to the question:

What results would we get if Facebook's engagement rate equation were used to analyze student interaction with Moodle forum posts?

Objectives

The objectives and methodologies of this concept paper are similar to those of the previously mentioned studies, namely (i) aggregating data using social media formulas, (ii) gaining insights and measuring content interaction from such social media inputs, and (iii) predicting a trend or a behavior using the social media data collected. In this case, the trend or behavior being predicted is the type of content that would effectively engage students enrolled in online learning courses, specifically Moodle.

This paper proposes the:

- modification of Facebook's engagement rate calculation for the purpose of this study,
- modification of Moodle to incorporate Facebook-like features,
- mining of Moodle data logs specific to the factors needed in the modified engagement rate calculation,
- application of the gathered data to the modified equation, and
- use of the resulting engagement rate to measure student engagement with Moodle posts.

Such an exercise may allow us to determine if:

- Facebook's engagement rate calculation can be modified to measure student engagement in posts found in online courses;
- data logs from existing learning management systems can be applied to the modified engagement rate calculation; and
- such a measurement could predict student interaction with or active engagement in future course topics, posts, or activities.

Ultimately, such an exercise could help educational institutions improve course and content design by discovering which types of content achieve higher student engagement rates in learning management systems. This exercise is not meant to measure student performance (grades) in the course. It is intended to measure only student engagement in certain topics or posts in the course.

Methodology

As shown earlier, Facebook's engagement rate is calculated thus:[6]

$$PER=\frac{(CL+C+S+L)}{R}$$

The post engagement rate shows how the audience interacts with a certain post on Facebook. The audience performs such interaction in four ways. First, they click on a post. Second, they might comment on that post. Third, they might "Share" that post. Finally, they might "Like" that post. [7]

[6] Smitha, N. (2016). Simply Measured. Facebook Metrics Defined: Engagement Rate. Retrieved 20 June 2016 from http://simplymeasured.com/blog/facebook-metrics-defined-engagement-rate/#sm.0001srq731egmefaxe01fnrz0fhib

[7] Center for Rural Enterprise Management. (2016). Facebook Analytics Tips. Kansas State University. Retrieved 6 July 2016 from http://www.k-state.edu/cree/Facebookanalytics.html

Moodle has log and usage reports that track student activities similar to the numerators indicated in the above formula (CL = Clicks, C = Comments, and L = Likes) except for "Shares" as public external "sharing" of content is limited in self-contained online courses (virtual classroom content is usually confined to class members). Moreover, there is no "Like" feature in Moodle, but there are third-party widgets that allow administrators to add a "thumbs-up" button which students can click on to "like" a forum post. Facebook itself has a "Like" widget code that can be added to Moodle. [8]

While there is a "Rating" feature in Moodle which allows students to "rate" a forum post, the use of a "Like" or "thumbs-up" button similar to that of Facebook is proposed as an indicator of a student's approval of a forum post. This method is proposed in lieu of the "Rating" feature to more closely mirror Facebook's engagement rate formula to see its applicability in Moodle.

Meanwhile, the denominator of the Facebook engagement rate formula is "R" or "Reach," the number of people who saw the post. Again, this is not the total number of Facebook "Fans" or "Friends" as it is possible that not all of those people actually saw the post. Similarly for Moodle, "R" would not be represented by the total number of students in the class or course but rather the unique number of students who actually saw the Moodle forum post.

"Reach" alone, or counting the number of students who saw the Moodle forum post, will not give an indicator of whether or not that particular post engaged the student. The interaction of the student with that post is also important (clicking, commenting, or liking). This interaction divided by the number of people who saw the post would show if the audience is engaging with the content. [9]

The modified Moodle post engagement rate calculation could thus be expressed as:

$$MPER = \frac{(CL+C+L)}{R}$$

Where:

MPER = Moodle post engagement rate
CL = Clicks
C = Comments
L = Likes
R = Reach (# of people who saw the post)

To get the engagement rate of a particular forum post in Moodle, we need to get (i) the number of clicks generated by that post, or how many times that forum post was clicked on or visited by a member of the course (note that it is possible that students may click that post again or revisit that post); (ii) the number of comments generated by that post (multiple comments from a single student may occur); and (iii) the number of "Likes" generated by that post (after installing the "thumbs-up" widget, students can only "Like" a post once).

[8] University of the Arts London. (2013) Moodle: Add a Facebook Like etc. Retrieved 5 July 2016 from http://elearningsupport.myblog.arts.ac.uk/files/2013/05/Create-a-Facebook-Like-box.pdf

[9] Center for Rural Enterprise Management. (2016). Facebook Analytics Tips. Kansas State University. Retrieved 6 July 2016 from http://www.k-state.edu/cree/Facebookanalytics.html

Let's take the hypothetical example of 30 students in a Moodle course (maximum possible "Reach" or "R" would thus be 30), where two forum posts—Post A and Post B—were made by two different students. However, let's say only a third or 10 members of the class became interested in Post A and actually clicked on and saw the post. In contrast, Post B gained more views, with all 30 class members clicking on and seeing the post. Post A thus "reached" 10 students while Post B "reached" all 30 students.

However, let's say that—even though it reached only 10 students—Post A received three clicks from each student (each of the 10 students visited the post three times, thus "CL" would be 10 x 3 = 30) and three comments each (thus "C" would be 10 x 3 = 30). This would indicate that the 10 students were repeatedly engaging and interacting with Post A. Further, let's say all 10 students "Liked" Post A (students can only "Like" a post once, so "L" becomes 10 x 1 = 10).

Meanwhile, let's say Post B—while reaching all 30 students—did not elicit any comments or "Likes" and was clicked on only once by all 30 class members (thus the maximum reach of 30). Both "CL" and "R" would be 30, but "C" and "L" would be 0.

Data for both Posts A and B would look thus:

	CLICKS	COMMENTS	LIKES	REACH
Post A	10 x 3 = 30	10 x 3 = 30	10 x 1 = 10	10
Post B	30 x 1 = 30	0	0	30

Feeding the data into the modified equation, the numerator and denominator for Post A would thus be:

$$\text{MPER (Post A)} = \frac{(30+30+10)}{10}$$

and further:

$$\text{MPER (Post A)} = \frac{70}{10}$$

$$\text{MPER (Post A)} = 7$$

Post A's engagement rate would be 7%.

Meanwhile, the numerator and denominator for Post B would be:

$$\text{MPER (Post B)}=\frac{(30+0+0)}{30}$$

and further:

$$\text{MPER (Post B)} = \frac{30}{30}$$

$$\text{MPER(Post B)} = 1$$

Post B's engagement rate would only be 1%.

Results and Discussions

Facebook post engagement rates average between 1% and 3%, but higher figures are found in some industries and popular brand pages with more successful rates of engagement using other social media platforms such as Twitter or Instagram. [10]

This shows that, with a higher engagement rate of 7% compared to Post B's 1%, it is possible that Post A may have been considered by students as more interesting or engaging than Post B, despite the fact that only 10 students reached Post A (because those 10 students clicked and commented on Post A repeatedly, and all 10 "Liked" the post as well). This repeated interaction of clicking and commenting on the post may indicate genuine interest in the post. Compare this with Post B which reached all 30 students in the course, and yet none of them revisited the post (re-clicking), commented on it, nor "Liked" the post.

This also illustrates why "Reach" alone or the number of students who saw the post is not a complete indicator of interest or engagement as no further interaction with the forum post occurs. Post A's 7% engagement rate is high, and may indicate that—based on the number of times the post was clicked on (viewed), commented on, and "Liked"—Post A may be more "engaging" to the course members due to the interaction it received despite the fact that only a third of the class actually viewed the post.

The use of social media metrics to measure phenomena outside social media have been explored before, like in the Twitter experiments of Hall and Asur and Huberman. Meanwhile, data mining has been used by the likes of Casey and Konstantinidis and Grafton to analyze user behavior in Moodle courses. Studies from Junco, Irwin, and Esteves have attempted to use Facebook as a separate platform to supplement the Moodle learning and communication experience.

[10]Robinson, J. (2014). Measuring Facebook Engagement. We Are Social. Retrieved 6 July 2016 from http://wearesocial.com/uk/blog/2014/07/measuring-facebook-engagement

This proposal, however, seeks to integrate Facebook-like functionalities and to adopt Facebook-like metrics within Moodle itself, melding Facebook within Moodle and without treating it as a distinct and separate platform. Based on the dummy data fed into a calculation derived from a modified post engagement rate formula based on Facebook's own engagement rate, the idea seems plausible.

Conclusions and Recommendations

Based on this study proposal's objectives and after feeding dummy data into the modified Moodle post engagement rate formula, we conclude that it is possible to aggregate data using an existing social media formula and then apply that to an online course. That collected data can be used to gain insights and measure student interaction and engagement with Moodle posts. In turn, the types of posts that received high engagement rate numbers may be used to predict student behavior for future posts.

It is recommended that the modified Facebook engagement rate formula be applied to an actual Moodle course for an entire term, for only then would the formula's true utility in analyzing student interaction and engagement with specific posts be manifested.

A possible next step could be content analysis of posts that receive high engagement rates among students to determine, codify, and even predict what types of posts would have a higher possibility of eliciting interaction and engagement among students in the future.

While this proposal is meant specifically for Moodle, it is possible for the same concept to be applied to other learning management systems as well.

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Open Educational Resources and Cost Savings Efforts: Lessons from WOU

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Abstract

As is the case with many open universities, Wawasan Open University relies on course development of custom-designed course materials with self-instructional properties using commissioned writers. These course materials are usually developed as adaption of textbooks or licensed course materials from other institutions. This eventually took a toll on the finances of the university as it was becoming costly to develop course materials using this model. As it is, proponents of open educational resources (OER) claim that significant cost savings are possible when OER replaces traditional course development collaterals. With the increasing costs of content creation, there was a need to re-evaluate the course development model that WOU employs as well as define a more prudent financial management approach in dealing with escalating costs of course material development and delivery.

In the last four years, attempts were made to replace textbooks and licensed coursewares with OER in the course development process to minimise the cost of the development of course materials and make them more accessible to all. There were obvious challenges as the acceptance among academics were low in the use of OER for course development or revision purposes. This paper is an account of the experiences of the School of Business and Administration in their efforts to re-develop (revise) all the courses, on offer, by using OER. There were two significant contributions of this effort; a refinement of the course development model used in the university as well as the tremendous savings in the cost of course development. This little project saved the university a total of RM1.4 million (approximately US$350000) by mid-2016.

Keywords: open educational resources, distance learning, cost savings, course development.

Introduction

Wawasan Open University (WOU), being one of the youngest and smallest open and distance learning (ODL) institutions in Asia, has always held its belief that education should be accessible to all. With that in mind, any hindrance to access need to be ironed out so that learners are not disadvantaged in any way.

One of the many challenges that WOU faces is the escalating cost of educational resources and course development. A lot of resources go into creating course materials for needs of learners in delivering quality education to the masses. Course content comes from textbooks or references that need to be purchased, writers need to be paid, graphic designers and editors don't come cheap, and instructional designers are not easy to come by.

It is now becoming quite obvious that Open Education Resources (OER) is available at zero cost and under open copyright licenses or in the public domain which offers an alternative to traditional textbooks and resources. As is the case, one of the most often cited benefits of using OER is that it bears no cost (Millard, 2014). This is not entirely true. Though OER is free, the adaptation work that is needed may involve costs.

Background of Course Development in WOU

For a university that was set-up in 2006 and started recruiting students in 2007, the course modules had to be quickly developed without any compromise in the quality of the curriculum. To facilitate this, course materials were developed using a wrap-around a textbook method, adaptation of proprietary course materials (licensed) from other institutions or creation of stand-alone course materials. In some instances, both the wrap-around and licensed material were combined which doubled the cost.

Wrap-around a textbook requires the writers to write the course content with references to the textbook. The advantage of this method is that the need to use multiple reference books becomes unnecessary, quickening the development process. However, the downside is that the course guide and the textbook must be used together for it to be effective. The cost of a textbook can be quite expensive depending on the nature of the subject and the location of the publisher. As part of the student-centered service, WOU took it upon itself to purchase the textbooks and provide it to the students for free.

Adaptation of proprietary materials was a lot easier as the curriculum and content usually follow the mainstream needs of the course. The only additional effort from the adapter would be the localization of the content to meet regional needs. Creating a stand-alone course material takes a little bit more effort as the material does not make any reference to textbooks or references. Occasionally, textbooks are provided as supplementary to the stand-alone module. Unfortunately, this is also time consuming as it usually takes anywhere from 12 to 18 months to complete the entire course development process.

In the last four years, the model of course development has been improved and revised to fit the changing distance learning environment. OER which have begun to play a more significant role in ensuring resources are readily available are being utilized in the development of courses and programs. Not only OER are used in the development, but they are also included in the delivery of the courses in the form of videos, podcasts, and supplementary materials. It was noted that these additional resources do improve the comprehension of learners in meeting the learning outcomes of the courses (Arumugam, 2015).

Objectives of the Study

The intent of this paper is twofold: (i) to share the experiences of the School of Business and Administration of Wawasan Open University in developing/revising courses by using open educational resources and (ii) to realign the course development/revision process which contributed to the cost-saving efforts of the university. The costs demonstrated here would only cover the savings from January 2014 semester until July 2015 semester (4 semesters) for a single course.

It is to be noted that the currency of knowledge that is implemented in WOU is five years. Every five years, the faculty members would start revising the content of their respective courses. This is a university-wide exercise in tandem with the ever-changing creation of knowledge and befitting the needs of society and the industry.

This study was carried out to look at the possibility of revising the current courses using a more economically feasible method. At the moment both course development and course revision carry the same process, the need to re-design the course development/revision model arises.

Review of Relevant Literature

Most research and studies related to cost savings focus on the impact of OER in saving textbook costs. According to Allen (2010), OER provide substantial cost savings to students without negatively impacting student learning. Obviously, other researchers tend to agree to Allen (2010). For example, Connexions have shown remarkable potential to harness technology and OER to reduce textbook costs for students (Baker, et al., 2009). Two universities in Africa and North America managed to contain educational costs in the health sciences at both universities without compromising quality by combining OER expertise across institutions (Donkor and Tagoe, 2010).

Not many researchers pay attention to the needs of distance learning institutions which depend a lot on self-instructional course modules developed to meet the needs of distance learners who study remotely. Ravid et al. (2008) identified how Wiki textbooks could assist student learning both by employing digital technologies and lowering costs. Needless to say, though one can depend on non-traditional courseware such as open textbooks, there is still a need to customise these books to achieve the desired learning outcomes of the respective courses.

Proponents of OER are well aware that by sharing and reusing, one can cut the costs of content development significantly, thereby making better use of available resources (Wyles, 2007). The quality of resources would also improve as opposed to creating something from scratch. Additionally, the openness of the resource means that it is now possible to offer it to more users, thereby significantly reducing the unit costs (Butcher and Hoosen, 2012; Hilton and Wiley, 2011).

In the pursuit of reducing costs, some places have introduced a regional level project such as the State of Washington's community and technical colleges which have created an open course library intended to help lower educational costs for students throughout the state (Caswell, 2012). To reiterate, most studies have shown that student learning is not negatively impacted when OER are substituted for traditional learning materials (Wiley et al., 2012). This benefit of OER would be left for a different discussion.

Some studies have indicated that a growing number of OER are becoming available for use in the classroom (McKerlich, et al., 2013) although these do not involve any form of adaptation work which is different from the model which WOU uses. The adaptation of OER incurs minimal additional costs as all adaptation of the original resource is expected and allowed, befitting the OER philosophy. This means that the end price for learners of an updated OER is negligible (Senack, 2014)

Researchers and practitioners have invested significant financial and intellectual resources into developing and distributing OER (Fleming & Massey, 2007; Baker, et al., 2009). At the moment, WOU is relying on existing OER in the market, though the OER Policy of the University clearly allows for the creation of OER for sharing (Kaushik, M, 2016). This makes OER the most effective way to keep educational content up to date (Sliwowski and Grodecka, 2013).

The re-use and re-mixing of OER takes time and effort in any institution. The upside is that it decreases the amount of time and money spent on course development, while also increasing the overall quality of coursework, as it allows teachers and learners to reuse and remix content (Hylen, et. al., 2012).

Methodology

This paper is not to be seen as an empirical treatise on the course development and cost savings efforts within the OER environment. This paper merely outlines the efforts taken thus far by the university and the effects of these actions. This is descriptive in nature and employs a case study methodology that looked at the case of one course that was revised using OER. Therefore, the methodology section is divided into two sections which look at the course development/revision model and the costs involved in course revision.

The author analyzed the course development process by looking at the various components of the process. The critical aspect of the analysis involves evaluating the roles played by different stakeholders and the significance of these roles in ensuring a quality-assured course development process. The evaluation resulted in a revised course development model which re-designed the roles of these stakeholders so that quality is maintained, but the cost is minimized.

For the second part, the author evaluated the costs of revising a typical course by looking at all the items that go into the course revision process. Some of the items involved external parties (or resources) who (which) have to be paid on prevailing market rates, and some are internal costs that have been included in the operating cost of the university. The number of students enrolled in the respective courses is also an indicator of the effectiveness of the cost saving efforts.

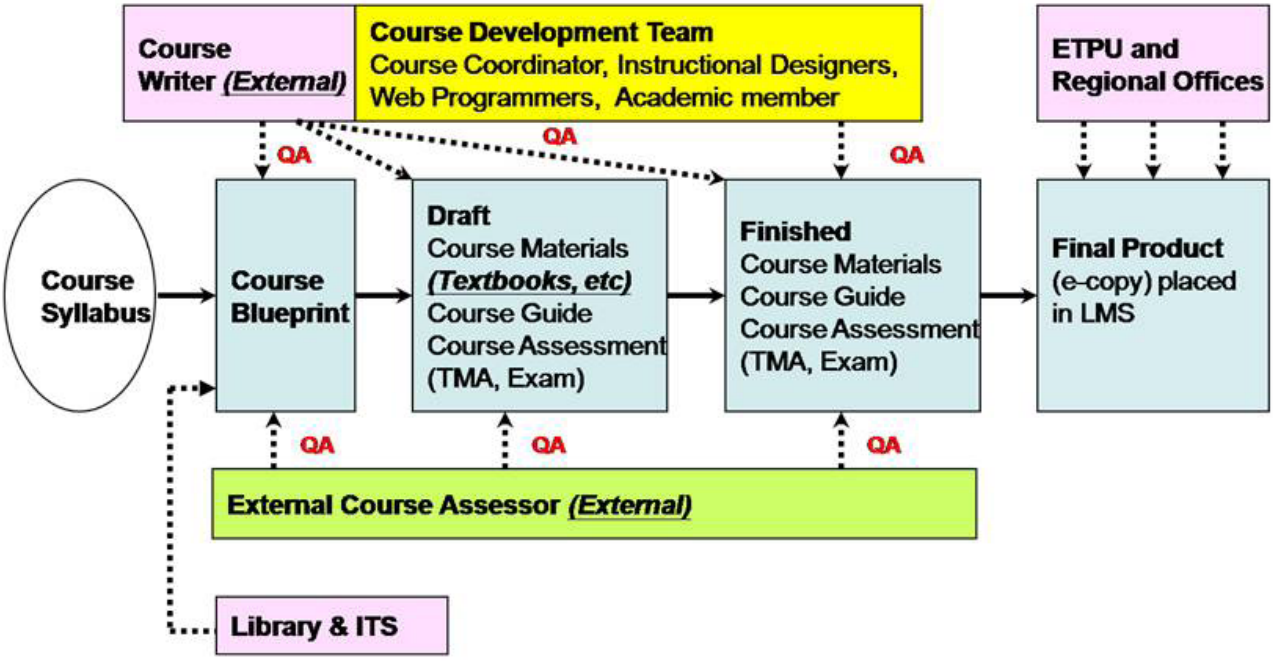
Discussions and Recommendations

The premise behind this paper was to provide an overview of the cost saving effort in WOU with regards to course development/revision by re-aligning the model. In doing so, there were significant savings in terms of resource creation as well as a more defined course development/ revision model. In the context of this paper, a particular course was used as a backdrop to the elaboration: Microeconomics. This course was used because it was the first course in the School of Business and Administration that went through an OER-based course development as part of the revision of the course. All the numbers that were used throughout this paper are actual figures that WOU has used for the revision/development effort. Subsequent discussion will be separated into these two areas: course development model and cost savings.

Course Development / Revision Model (current)

Figure 1 shows the course development process that the university currently employs towards using educational resources in the delivery of course content to the students. The same model is also used in revising the courses when the content gets obsolete. There are several key stakeholders involved in the entire process, starting from the Course Coordinator who prepares the course syllabus to the Educational Technology and Publishing Unit which publishes the finished product.

Figure 1. Course Development / Revision Model (Original)



The team usually commissions a course writer (from outside the university) to write the course content. The writer, in most circumstances, is a senior academic from another institution who has the necessary profile (e.g.academic qualifications, work experience, and research background). The course development team comprises internal staff employed by the university on a full-time basis. Should there be a need for an external language editor or graphic designer, the university will appoint one on a project basis.

Apart from that, the resources needed for the content to be created would also have to be factored in. In WOU, most of the resources come from published textbooks (print form), articles (journals and magazines) and the mass media (news reports). These involve costs as copyright fees would have to be paid for many of the resources. OER can help counter the rising costs of higher education by sharing investment for development of educational resources and content and allowing others to adapt these to their needs (Mackintosh, 2007).

As part of quality assurance efforts, a peer review system is put in place. An external course assessor (ECA) is appointed to assess the course content from the beginning of the process until the end product is ready. The ECA would comment on everything from the course blueprint to each unit (module) of the course, and one final report is given on the entire course material upon completion. The external course assessor is appointed based on the seniority in academia as well as the experience in the course content. At a minimum, the ECA must carry an associate professor title.

Course Development / Revision Costs (current model)

Analyzing the costs in the context of this paper was a tricky situation. There are no quick formulae that could be used to calculate the cost savings of creating educational content. There are too many variables involved in the process, and all contribute one way or another to the costs of course development.

To add clarity to the elaboration here, the author used an example of a course that saw significant savings when the revision process was switched from the traditional to the revised course revision model. Microeconomics is a basic major course in the Bachelor of Business programs offered by the School of Business and Administration (SBA). The course is offered in both (January and July) semesters. This course is taken by all students of SBA, and it is the first course in the stable of SBA courses that used OER as its main source.

Bear in mind that this course used both the wrap-around technique and adaptation of other resources in the original development in 2006. For this course, the main resource used was the course module, Introduction to Economics, licensed from Open University of Hong Kong (OUHK) and the Gregory Mankiw's Principles of Economics (4th Edition) as the main textbook. Though the course content and syllabus generally followed OUHK's module, a lot of Malaysian examples were added in our effort to localise the content. Table 1 shows the costs that would be incurred if the course was revised using the current model.

Table 1. Costs of Course Development

Items	**Costs (RM)**
Course Writer	10000
Textbook	59 per student
Licensing fee	40 per student
Graphic Designer	1750
External Course Assessor	1500

Note: USD1 = RM4.00 (approximately)

Based on the information in Table 1, the cost of course revision for Microeconomics would include a non-recurring cost and recurring cost. The computation is reflected in Table 2 which is based on a total of 847 students who have enrolled in this course from January 2014 until July 2015 semester. It is crucial for WOU to keep its costs low so that it does not compromise the founding philosophy of the university which is to make education accessible to all. Any form of an increase in expenditure would only translate to increased tuition fees which the university tries to avoid at all costs.

Obviously, the course writing, graphic designing, and external course assessor payments are non-recurring as it is based on the development stages of the course.

As the course is presented/delivered from semester to semester, the recurring costs kick in. As seen in Table 1, the royalty payment for the licensed material would be paid per student as long as we use the course content. The accompanying textbook would also be bought for every student in every semester as long as the book is referenced. Table 2 showcases the costs over a span of 4 semesters when all these costs are considered.

Table 2. Costs of Revision (Microeconomics)

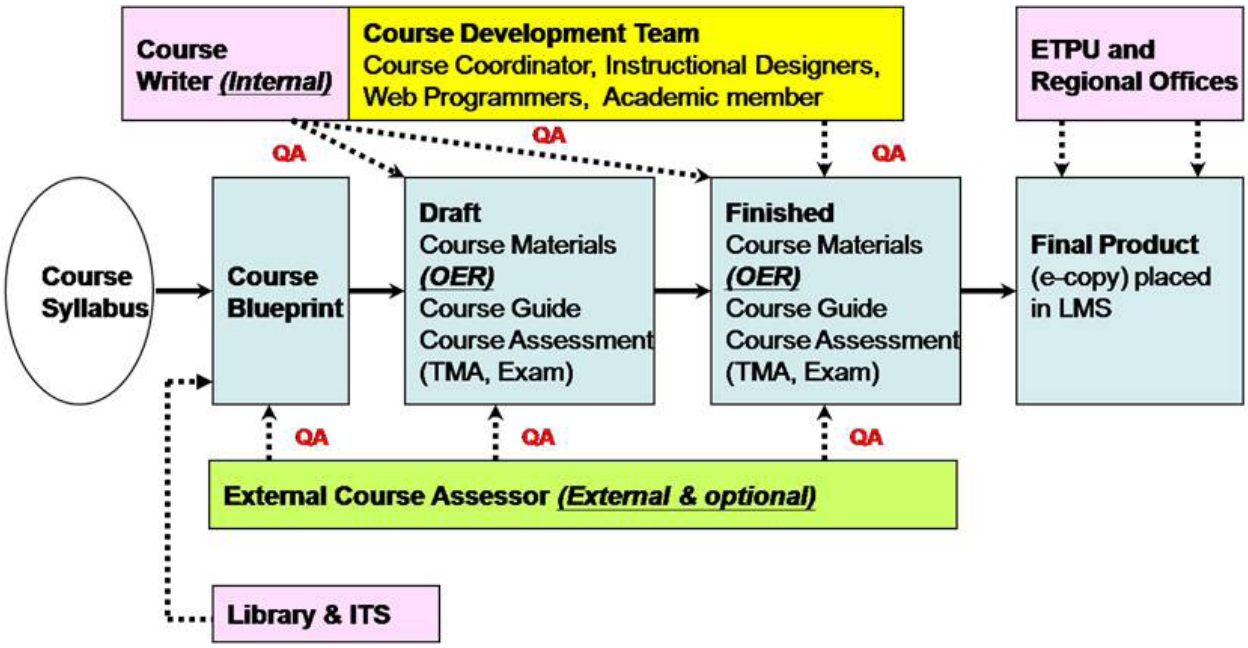
	Non-recurring costs (RM)	Recurring costs (RM)				Total
		Jan 2014	Jul 2014	Jan 2015	Jul 2015	
Course Writer	10000					10000
Textbook		10915	13334	14219	11505	49973
Licensing fee		7400	9040	9640	7800	33880
Graphic Designer	1750					1750
External Course Assessor	1500					1500
Total	13250	18315	22374	23857	19305	97103
		83853				

The total costs to revise and deliver this course based on the current model would be RM97103 (RM13250 + RM83853). Bear in mind that this is only for four semesters of delivery. The recurring costs of RM83853 would be similar for another four semesters and as long as this model is followed. When the time comes for subsequent revision exercise of the content to take place, the non-recurring costs will kick in, and another full-fledged course development process would follow suit.

Course Development / Revision Model (revised)

As the cost of course development can be high as the university would have to pay for the services of the writer, the resources, and the external course assessor, the entire process would have to be reviewed to enhance to the cost-effectiveness of the process without comprising on the quality of the end product.

Figure 2. Course Development Model (Revised)



In that context, the course development framework was revised to internalise many of the functions of members of the team which in turn minimizes the cost. The writer is now a full-time academic of the university which negates the need to pay for an external writer. The benefits are twofold here: the cost savings and the capacity enhancement of the academics.

The content of the course is now taken from OER and incorporated within the course material. There are plenty of e-books and free content available on the Internet or OER repositories that are licensed under a specific Creative Commons licensing. WOU's Policy on Open License stipulates that content created using a specific license must be made available using the same license. For example, when the OER used carried the Creative Commons Attribution + Non-commercial + Share-Alike (CC-BY-NC-SA) license, the revised and reused material must also carry the same license. Incidentally, this is also the licensing that WOU uses for all its OER collaterals. This minimized the cost in sourcing for content as there is no need to purchase textbooks or pay fees for copyrighted materials.

There shall be a library assistant who will assist the course development team to source for relevant and appropriate OERs. The sourcing is not done only for the development stage but also including resources needed for the delivery of the courses.

The need to employ an ECA has been put to question as some faculty members feel that if the OER material comes from a legitimate source with its own quality assurance, it should be trustworthy enough for use. The writer or the faculty would make a decision on whether the ECA is necessary, dependent on how much course adaptation activity needs to take place. As a rule, the university's policy is to appoint an ECA if the revision process involves more than 30% change in the content of the courses being developed or revised. For all intent and purposes, this aspect would not be debated here.

Course Development / Revision Costs (revised model)

The escalating costs of textbooks and course development were the main motivations behind the cost saving efforts of WOU. Hence, the way forward was to re-evaluate the course development model that we have employed to something that is more supportive of the cost reduction agenda of the institution. Based on the improved course development model, the revised cost of course development is now depicted in Table 3.

Table 3. Costs of Course Revision (OER Microeconomics)

Items	Costs (RM)
Course Writer	Nil
Internal academic (time spent)	4987.5
Textbook	Nil
Licensing fee	Nil
Graphic Designer	500
External Course Assessor	1500
Total	6987.5

Note: USD1 = RM4.00 (approximately)

There is no need to use a course writer as the internal academic would play that role. There shall be no textbook provided free, and the need to pay licensing fee has been removed. As the OER used contains enough graphics that are pertinent to the curriculum, the Graphic Designer did not need to do extensive re-designing. At this juncture it is important to note that OERs are usually available online in soft copies, making it easier to manipulate. This helped in reducing the cost.

For the development of this course, the faculty felt that ECA would still play a crucial role in tandem with WOU's commitment to delivering quality educational resources. The only additional cost is the time spent by the full-time academic in remixing and repurposing the content of the OER to meet the requirements of the curriculum. This came to about 115 hours of course development time over a period of one year.

There were no recurring costs in the revised model as only non-recurring costs were recorded here. All non-recurring costs were abolished with the move to a better model. Therefore, for this particular course, there were a textbook savings of RM49973 and savings on the licensing fee of RM33880. Though the additional time spent worth RM4987.5 could be factored in, this item does not have any accounting contributions to the cost saving efforts. Therefore, the real cost of the course revision was only RM2000 for a course which attracts approximately 200 students per semester.

This little endeavor has saved the university approximately RM1 million as of the end of 2015 through the efforts of the School of Business and Administration alone. This project is still an on-going project where the university would see savings exceeding RM1.5 million by the end of this year (2016).

Conclusions

It would seem that the use of OER in the development and delivery of courses have as much positive impact as with traditional resources. The additional benefit of OER is the lowering of the cost associated with the development of the courses. OER is also crucial at the delivery stage of the courses as other types of resources could be included, especially videos and podcasts.

There is no doubt that the costs of the course development can be significantly reduced in line with the philosophies of open distance learning institutions which is making education accessible to all. Using OER definitely, fits into the philosophy of ensuring the costs of course and program development are kept low so that tuition fees would not increase.

In the case of WOU, there was a significant reduction in costs when the faculty members moved from the traditional course revision process to one that uses OERs as well as internalizing the responsibility of the revision process rather than outsourcing them. The cost savings thus far hover at RM1 million and the university is expected to save another half a million when the entire process is completed.

Nonetheless, costs are not the only issue that makes using OER such an easy option to accept. Users of OER are faced with the challenges associated with determining the quality of the resources used. Though there are frameworks and rubrics available, none have captured the myriad of issues that come together with seemingly sub-standard content created. Many content creators tend to hold back on their contribution to OER as it is a source of income for some. Therefore there should be efforts made to create a quality assurance framework that can be readily implemented by all.

Most research on learner experience has focused on analyzing OER textbooks and its effects on learning. There are very few, if any, studies that have gathered feedback from students on their achievement of improved learning experience using fully localized OER. Impact studies on the effective use of OER and whether it has helped in improving the learning capabilities of learners must be done in the future to evaluate the sustainability and viability of OER in the educational environment.

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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 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.

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

Template Quantitatively Oriented Articles

Title of Article

Author 1[1]and Author 2[2]

[1]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 Qualitatively Oriented Articles

Title of Article

Author 1[1] and Author 2[2]

[1]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 UPOU-FICS Style Guide if that is available or 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 62)

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 64)

To submit an article, visit ijodel.com and follow the steps in the online submission system.