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Accessibility and Effeciency of Developed Online Learning System

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ABSTRACT

The paper examined the accessibility and efficiency of developed Online Learning System (OLS) of Surigao del Sur State University-Main Campus. It based from waterfall model in which descriptive research was applied to non-computer program students. Data from the pre-assessment survey and interview were treated by using the weighted mean to determine the level of accessibility and efficiency of developed online learning system. The accessibility and efficiency to information from web, posting message and attend synchronous discussion is evident that users can manage to use the developed system, even a low rated experience in uploading files can be developed while using the system. Thus, the developed system is important in maintaining teaching and learning that online interaction can be used to enhance learning, especially for student who tend to kept in the learning process.

Keywords: Online Learning System, accessibility, efficiency, synchronous Discussion, files and resources

INTRODUCTION

Online Learning (OL) is applying the benefits of internet to teaching and learning. The system helps the educators to perform their duties more efficiently and enhances the students' learning experiences by making a wider range of resources accessible (Obringer, 2015). The study attempts to break through the borders of classroom experiences classes through integrating the Online Learning System (OLS).

OLS have important roles at recent time and this been cited by different studies; Bashiruddin, et.al (2010), Arinto (2013), Marcial (2013), Arimbuyutan, et.al. (2007), PUP (2015), and Yekyung & Yeo (2014). Online learning emerged as a new and modern educational approach that increased the use of internet and educational technologies in delivering instructions and providing training is evident in academic and non-academic institutions (Bashiruddin, et.al. , 2010) because it organized web-based resources that makes course contents more dynamic through creating synchronous and asynchronous online collaborative activities (Arinto, 2013). The use of ICT in education and training provides equitable access to opportunities that empowered and improved lives of every Filipino (Marcial, 2013). Hence, e-Learning

systems for remote education environment equip learners to keep contact with their teachers (Arimbuyutan, et.al., 2007). It consistently provides ongoing measurable outcomes to substantiate legacy of quality open and distance education (PUP, 2015). As the search for methods or tools that motivate learners to learn is always be important for educators that influence academic self-efficacy, still needs to be examined (Yekyung & Yeo, 2014).

The aforementioned studies cited the roles of OLS in modern trends that need to deepen its understanding. Particularly, the frequent travel of the faculty members in attending their trainings and seminars outside the university, and the frequent activities and events held in the university which compromise the teaching and learning processes between the students and teachers are one of the issues of the students of Surigao del Sur State University. This scenario tends the students' focus on the subject matter to be interrupted and lower the momentum of their learning process. As a results students failed to grasp key ideas and concepts because sometimes the faculty will not give them assignments and requirements while they were on travel.

The Development of Online Learning System (DOLS) makes tracking of subject course efficient. Perhaps the most important aspect why instructors use online learning system for instructions is to contribute to the students' progress. This could be a popular method of teaching that improves the awareness and interest of the learners. Despite of unknown schedule interruption, the instructor can provide online discussion which the traditional classroom cannot offer. Thus, this study employed to examine the level of efficiency and accessibility of developed online learning system of Surigao del Sur State University, Main Campus.

Theoretical / Conceptual Framework

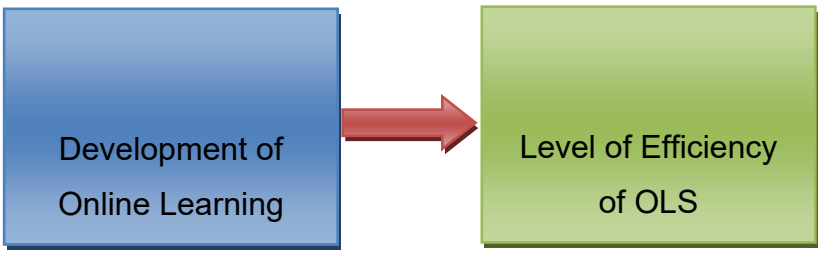

Figure 1 The schema of the Study

The schema of this study explains the development of online learning system. An Online Learning System (OLS) is a web application intended for e-learning services, such as the synchronous or the online chatting provided by OLS. This enables the teachers and students to communicate using internet even outside the classroom environment. It is unique because the teacher and students will be connecting in different areas even without

meeting face-to-face. Web-based technology has noticeably transformed the learning and teaching environment. Proponents of online learning have seen that it can be effective in turning traditional teaching experience into a unique experience of teaching and learning process (Ya Ni, 2013) that evaluate the level of efficiency of the developed system and level of performance that describes a process that uses the lowest amount of inputs to create the greatest amount of outputs (Investopedia, 2015). Thus, efficiency relates to the use of all inputs in producing any given output, including personal time and energy (Investopedia, 2015). This Online Learning System aims to provide aid to the instructors with difficult schedule between class and seminars/trainings of the university. The system enables the professors and instructor to attach class materials and conduct a synchronous discussion even when they are on official travels and official leaves. This is convenience to the professor and instructors to finish their syllabus on time. The system enables the students to access synchronous discussion and download class materials from their professors and instructors from the convenience of their homes, or internet shops.

It is the claim of Information Systems Design Theory (ISDT) for E-learning to offer an answer to the problem of how to design, implement and support information systems into effective and efficient support e-learning (Jones, 2011). Hence, problems are increasingly common to the operation of universities. It is also a problem where existing solutions are limited in terms of variety, quality and explicit theoretical guidance. The ISDT is formulated using an iterative action research cycle that encompasses the design, support and evolution of the Webfuse information system. It recognizes the diversity and rapid on-going change for a number of reasons. As a result, it specifies both process and product models that enable the e-learning information systems to be emergent. In particular, the ISDT proposes that emergent e-learning information systems will encourage and enable greater levels of e-learning adoption in terms of quantity, quality and diversity; as well as providing a level of differentiation and competitive advantage for the institution (Walls, et.al., 2004).

RESEARCH DESIGN AND METHODS

The study used descriptive research in which pre-assessment survey of questionnaire and interview was applied to fifty-six (56) students of non-computer program of Surigao del Sur State University-Main Campus to find out the level of accessibility and efficiency after the utilization of the online learning system. The survey instrument was adopted from Blended Learning Evaluation in University of York (2011).

The study was based from a specific software process model called Linear Sequential or commonly called the Waterfall model (Rouse, 2015). It suggested a systematic, sequential approach to software development that begins at Requirement Gathering and Analysis level and progresses through System Design, Implementation, Testing, Deployment and Maintenance.

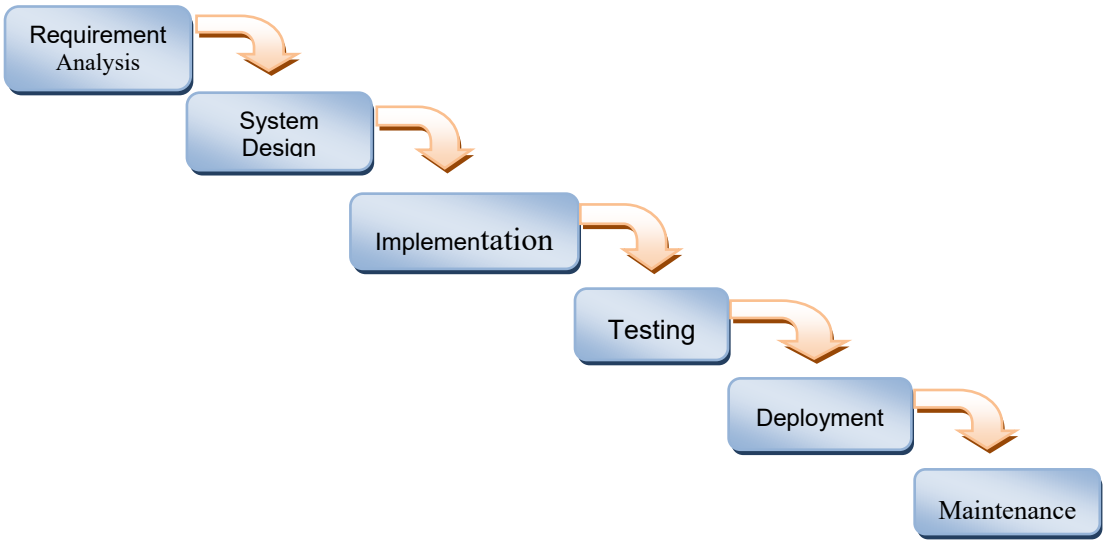

Figure 2. Waterfall Model

Phase I – Requirement Gathering and Analysis

The researcher conducted a pre-assessment and interview into two (2) different subjects in two (2) different Colleges. The Study applied to the non-computer undergraduate students to measure the accessibility and to measure how easily to use the developed system that even non-computer students will learn to use the developed system in short period of time.

The researcher did a profiling on the respondents of the study in terms of: program enrolled; year level; and internet access. After the pre-assessment and interview to the student were conducted, the researcher found out that many students are interested with the proposed study. During the interview, students revealed that their find classroom instruction to be boring and monotonous. The researcher also found out that most of these students are interested with e-learning but are not given the opportunity to utilize the computers. Others also revealed that they have not experienced e-learning yet.

To support the needs of the student for advanced technology education, the researcher ask permission to the Dean to conduct the study about the Development of Online Learning System.

Phase II – System Design

Based on the findings of the pre-assessment and interview conducted, the researcher will develop an Online Learning System. The system compose of the following features: Upload class materials; download class materials; upload requirements of the students; download file requirements of the students and chatting or synchronous discussion.

Upload class materials, the instructor has the access to upload requirement instruction and files in terms of .doc, .xls, .ppt and .pdf etc. format files in the assigned subject; Download class materials, the student

has the access right to download the uploaded files and instruction of the assigned instructor to their subject; Upload requirements of the students, there is no need to meet your instructor to comply the requirements assigned to you, the system provide upload for requirements; Download file requirements of the students, every instructor assigned to a certain subject will receive his/her student requirements submission according to the assigned subject; Chatting, students and instructor will have an synchronous discussion or a chatting.

Phase III – Implementation

The researcher makes use of the cascading style sheet to describe the look and to format the document easily. By the combination PHP as the main language in the development, this language helps the system dynamically. JAVASCRIPT helps PHP to make a research pop-up model of searching files in the database along with AJAX. The developed system is using a free web hosting at 000webhost.com with the URL www.d-ols.net16.net for internet deployment.

User access rights were tested during the development of the system. Filtering of access right is necessary to break down different users with different access rights. Administrator, Secretary, Instructor and Student are the different users of the system.

Phase IV – Integration and Testing

The system will be checked and tested for the faults and errors by the panelists. The researcher will gather the suggestions and if necessary, the users themselves shall be invited to do the test driving. After the system testing, the researcher will ask the approval of the panelists to fully deploy the system. The system will be integrated to the class.

Phase V – Deployment of the System

Once the faults and errors testing are done, the system is ready to be deployed or released. The study aims to measure the level of efficiency of the developed automated system.

Phase VI – Maintenance

There are some faults and errors that can be found only by the end user. With the concern of the researcher, contact will be available in the web application to report such faults and errors. The researcher will act accordingly to the users' reports and concerns. There is no perfect program / system, not even if it is tested by the users himself, there will be a set of problem that will be encountered in the long process, some in the database or in the program itself that will read data from the database. Considering the risk, the researcher will conduct a monthly check up of the system to insure that it is properly managed by the end user.

RESULTS AND DISCUSSIONS

Table 1 Level of Internet Access

Indicators	Mean	Adjectival Rating
1. How frequent are you in accessing information from the web?	2.61	Regularly
2. How frequent are you in posting messages to a discussion forum (like comments in Facebook etc.)?	2.57	Regularly
3. How frequent are you in participating in synchronous discussion (like chatting in Facebook etc.)?	2.66	Regularly
4. How frequent are you in uploading a file / resource to a web site (like uploading photos and attach files in Facebook etc.)?	2.50	Occasionally
Grand Mean	**2.59**	**Regularly**

Legend: 3.26-4.00 – Daily, 2.51-3.25 – Regularly, 1.76-2.50 – Occasionally, 1.00 – 1.75 - Seldom

The table shows respondents' level of accessibility in internet. It reveals that
Students have regular accessibility in internet. Hence, the mean for the student frequency in accessing information from the web and posting message to a discussion forum like Facebook are in "regularly" level. It explains that students expose regularly in accessing information from the web because of its participation synchronous discussion like chatting. This is evident nowadays that social media interaction have vital role in modern development. Thus, uploading file / resource to a web site is occasionally access. It finds that students occasionally upload or access web resources because they are not particular in that competency.

The pre-assessment and interview of the researcher point out the mean of upgrading the teaching strategies, by implementing the use of internet by means of distance education. This is supported by EMC (2010) that education today is undergoing a great deal of change. The convergence of information technology (IT) and teaching methodologies will revolutionize the way students learn and will drive both students and faculty to higher levels of creativity, performance, and interaction. Universities and other higher education institutions are moving toward more unified, integrated systems that support greater levels of collaborations, communication, and service delivery (EMC, 2010; Arokiasamy, 2017). Students and educators both need to adopt technology to enhance to faster delivery of educational services and make academic resources more readily available. Thus, initiatives around distance learning, virtual classrooms, and educational software can change how students and faculty interact and collaborate more effectively all with the goal of achieving greater academic results and student preparedness

Table 2 Level of Efficiency of the Developed Automated System

Indicators	Mean	Adjectival Rating
1. The OLS supports ideas and experience sharing between students.	4.11	A
2. The OLS provides flexibility to learners in terms of their study needs (offering access resources when needed and the ability to choose).	4.00	A
3. The OLS makes individual students contributions more transparent to the instructor.	4.02	A
4. The OLS helps students to be more prepare before class sessions.	4.04	A
5. The OLS increases costs for individual students (e.g. through additional printing)	3.61	A
6. The OLS increases interaction level between students on the course outside classes.	3.71	A
7. The OLS helps the instructor to respond to individual learning needs.	4.05	A
8. The quality of the system met my expectations.	3.86	A
9. I would recommend this system to a colleague or friend.	4.00	A
10. I received value for my money.	3.46	A
Grand Mean	**3.89**	**A**

Legend: 4.21 – 5.00 –Strongly Agree, 3.41 – 4.20-Agree, 2.61-3.40-Neutral, 1.81-2.60- Disagree, 1.00-1.80 –Strongly Disagree

Table 2 shows level of efficiency of the developed automated system. It reveals that all indicators are in the level of "*Agree*". Thus, respondents agreed that all these indicators have an importance towards their active learning process. It implies that maintaining teaching and learning can be done through Online Learning System (Bakia, et. al, 2012; Poe, et. al., no date; Hanover Research Council, 2009). This result provides basis as solutions for higher education or in any academic institution that can help improve operations increase faculty effectiveness, accelerate student performance, and develop new methods for delivering educational services in the 21st century by Development of Online Learning System (Fishman & Sledge, 2014; Rainie & Anderson, 2017).

CONCLUSION AND RECOMMENDATION

This study gets the efficiency of the Development of Online Learning System, attempting to go beyond virtual class sessions and include an assessment of interaction, efficiency in achieving learning objectives, and student persistence. In developing online courses, course developers of such courses need to carefully analyze what are the specific subjects that may hinder persistence and supplement instruction with face-to-face consulting, advising, or tutoring. As claim by ISDT, to address the problems for e-learning, the concern individual must design and implement systems that deliver an efficient and effective information and technology system. Such as, the internet interruption that needs to address.

Finally, even an average user for the developed system is not a hindrance to fulfill this developmental and research study. With the internet access and the level of efficiency of the developed automated system, and a

feedback of poor internet connection inside the campus, these responses encourage to the future researcher to conduct an enhance study based on the study conducted. As the researcher continue to assess, improve, and therefore accumulate knowledge of teaching and learning efficiency in an online environment, the researcher hope that students/respondents, too, will achieve a greater understating and enjoy the benefits of the Development of Online Learning System.

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