

Utilization and Efficiency of eLearn Functionalities in a University

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Abstract: *This study determined the utilization, satisfaction and perceived efficiency of the eLearning portal in a university known as eLearn. It is a web-based learning management system to aid classroom instruction that fosters self-directed learning. The mixed method of research was used in this study and utilized the researcher-made questionnaire as the main instrument. This employed the quota sampling procedure. A total of 376 out of 9,130 college students were the participants of this study. The statistical tools utilized in the study consisted of Descriptive Statistics such as mean, standard deviations, frequency and percentages to describe the variables. Spearman's rho (ρ) was also utilized to determine the relationship of the variables under study. The findings revealed that the majority of the participants used eLearn, found it beneficial to their studies, were satisfied with the eLearn functionalities and perceived the functionalities as highly efficient. The students' utilization of eLearn and satisfaction with the system's functionalities were not significantly associated with their perceived efficiency of the system. This implies that mere utilization of the eLearn does not predict their perception of efficiency. The study concludes that eLearn in the university can be an effective tool in the teaching and learning processes and in the delivery of information resources. However, there is a need to encourage more teachers to maximize the utilization of this E-Learning portal. Furthermore, the study recommends that the findings be revealed to the administrators, Computing and Information Services Office, faculty and librarians so that through their combined efforts there would be more use of the eLearn.*

Keywords: Web-based Learning Management System, eLearn, E-Learning, E-Learning portal, utilization, satisfaction, efficiency to E-Learning

INTRODUCTION

The rapid development of the digital revolution has significantly impacted the academe. Its realities and alarming effects are undeniable and inevitable, and this transformation is happening and continues to happen every day.

Moreover, as the wired and wireless world advances, the integration of Information and Communication Technology (ICT) has become a vital component of the educational system. ICT serves as an essential tool for the delivery of instruction, revolutionizing how students learn and how teachers impart knowledge.

Furthermore, the continuous emergence of advanced technologies has introduced innovative ways of teaching and learning, making knowledge and resources more accessible than ever before.

As a result, e-learning platforms, such as online portals in higher education institutions, have reshaped traditional teaching and learning approaches. At the same time, the speed and scope of how information is distributed and disseminated have undergone significant changes.

For many years, teachers at the university under study have incorporated technological tools into their teaching methodologies. This integration has provided students with enriched educational resources, interactive activities, and effective channels for student-teacher communication.

Similarly, the university library has been subscribing to various online databases to support the academic and research endeavors of the university under study, most especially for students and faculty. However, it was a challenge before to access all subscribed electronic resources of the library because it could only be accessed within the library premises using the computers provided for such databases. As time passes by, the electronic resources can be accessed within the IP perimeter of the university using different usernames and passwords of the databases. With all of these, teachers and students have difficulty in memorizing usernames and passwords of the library's subscribed databases.

Today, the university is using the Moodle E-Learning platform to foster self-directed learning. It replaces the tools used by most of the teachers in the past to have an all-tools-in-one-place approach. It is named as eLearn. It is a web-based learning management system to aid classroom instruction. It features course materials like syllabi/course pages, online activities of the instructors and students' quizzes, assignments, PowerPoint and lecture notes, online databases and online catalog of the library. More so, this E-Learning portal is a more personalized form of support. Every student and teacher has his or her own personal account having one username and password. Having this, it avoids multiple sign-on by the students and teachers when accessing online databases. They have now the ease to access electronic resources of the library remotely.

The eLearn was installed in the university in 2010 and the university continues to spend amount of money for the maintenance and its operations. Since its implementation, eLearn has not undergone evaluation and feedback has been few and intermittent. Thus, the researcher found it appropriate to

make a study on the utilization and efficiency of eLearn, particularly the functionalities of the Moodle, which is supported by a web proxy software that enables the library users to gain remote access to subscribed electronic resources. Hopefully, this study will provide valuable information that will promote and further enhance the use of the functionalities for the success of the online teaching-learning process in the university.

THEORETICAL AND CONCEPTUAL FRAMEWORK

The study assumes that students are fully utilizing the university's in-house E-Learning platform in its broadest sense. In today's educational landscape, learning is a combination of both face-to-face classroom instruction and online approaches, which influences how students construct their ideas and make connections. The use of E-Learning or collaborative learning tools, such as Moodle, plays a vital role in enhancing their learning environment.

This study is anchored on the Constructivism theory by Jerome Bruner and Connectivism theory promoted by Stephen Downes and George Siemens. According to Bruner (1966), instruction should focus on addressing four key aspects: (1) predisposition towards learning; (2) the ways in which a body of knowledge can be structured so that it can be most readily grasped by the learner; (3) the most effective sequences in which to present material; and (4) the nature and pacing of rewards and punishments. The theory further suggests that effective methods of organizing knowledge should simplify complex concepts, facilitate the generation of new ideas, and enhance the ability to process information. Through this process, learners actively select and transform information, formulate hypotheses, and make decisions, guided by their cognitive structure.

In addition, constructivism highlights how individuals build their understanding and knowledge of the world by engaging with experiences and reflecting on them. This process may lead them to change their beliefs or reject new information if they find it irrelevant. Therefore, to actively create their own understanding, learners need to ask questions, explore, and critically evaluate what they already know.

Moreover, this theory emphasizes the use of tools such as problem-solving and inquiry-based learning activities, particularly in an e-learning setup. These tools enable students to formulate and test their ideas, draw conclusions and inferences, and share their knowledge within a collaborative learning environment. By reflecting on their strategies and questioning themselves, students develop into knowledgeable learners who acquire the skills needed to learn effectively, both online and offline, using computers. Consequently, they gain the tools required to become lifelong learners.

Furthermore, in recent years, there has been a growing focus on the Constructivist use of technology, which offers students opportunities to build their own understanding. The principles of Skinner's Behaviorism, Piaget's Cognitive Constructivism, and Vygotsky's Social Constructivism can all be applied in an e-learning environment. Additionally, Tam (2000) provides a comprehensive overview of how technology can be harnessed to support Constructivist learning approaches.

To further explain the theoretical scope of the study, a discussion of Stephen Downes and George Siemens' theory on Connectivism is important. Their literature emphasizes that Connectivism is a learning theory that explains how internet technologies have created new opportunities for people to learn and share information across the World Wide Web and among themselves. These technologies include web browsers, emails, wikis, online discussion forums, social networks, YouTube, and other tools that enable users to learn and share information with others.

Similarly, Connectivism serves as a theoretical framework for understanding learning. It also bears some similarity to Bandura's Social Learning Theory, which proposes that people learn through social contact. Additionally, the add-on phrase "a learning theory for the digital age," which appears in Siemens' paper, indicates the special importance placed on the effect technology has on how people live, communicate, and learn.

Moreover, Connectivism applies network principles to define both knowledge and the learning process. While knowledge is understood as a specific pattern of relationships, learning is described as the creation of new connections and patterns, as well as the ability to navigate existing networks and patterns. Therefore, this theory emphasizes the integration of technology as a crucial component in the distribution of cognition and knowledge. In Connectivism, knowledge resides in the connections one forms—whether with other people or with information sources, such as databases.

Furthermore, technology plays a vital role in performing cognitive tasks such as creating and visualizing patterns, extending and enhancing our cognitive capabilities, and storing information in easily accessible formats such as search engines and semantic structures. This idea can be traced back to tool-focused discussions in Activity Theory. In addition, Connectivism builds on this concept by recognizing the importance of tools as mediating elements in an activity system.

In Connectivism, learning begins when a learner activates knowledge by connecting to and contributing information within a learning community. Siemens (2004) states, "A community is the clustering of similar areas of interest that allows for interaction, sharing, dialoguing, and thinking together." Consequently, this concept underscores the importance of collaboration in fostering a shared understanding and mutual growth within a community of learners.

According to Connectivism, knowledge is distributed across an information network and can be stored in various digital formats. Furthermore, learning and knowledge are said to "rest in diversity of opinions" (Siemens, 2008). As such, learning occurs through the integration of both cognitive and emotional domains; cognition and emotions both play significant roles in the learning process.

Finally, Forster (2007) upholds that for Connectivism to be recognized as a learning theory, the theory's limitations and the full range of contexts in which learning can take place must be accounted for. Otherwise, Connectivism's implementation by teachers may be insufficient and misguided. More importantly, Connectivism represents the first theoretical attempt to radically re-examine the implications of the internet and the explosion of new communication technologies for learning (Bates, 2014).

It is from this framework, that the study has been conceptualized. The study attempted to determine the participants' extent of utilization, level of satisfaction, perceived efficiency and assessment of the benefits, issues, challenges and the implications in using eLearn, which is a tool for E-Learning used in a university.

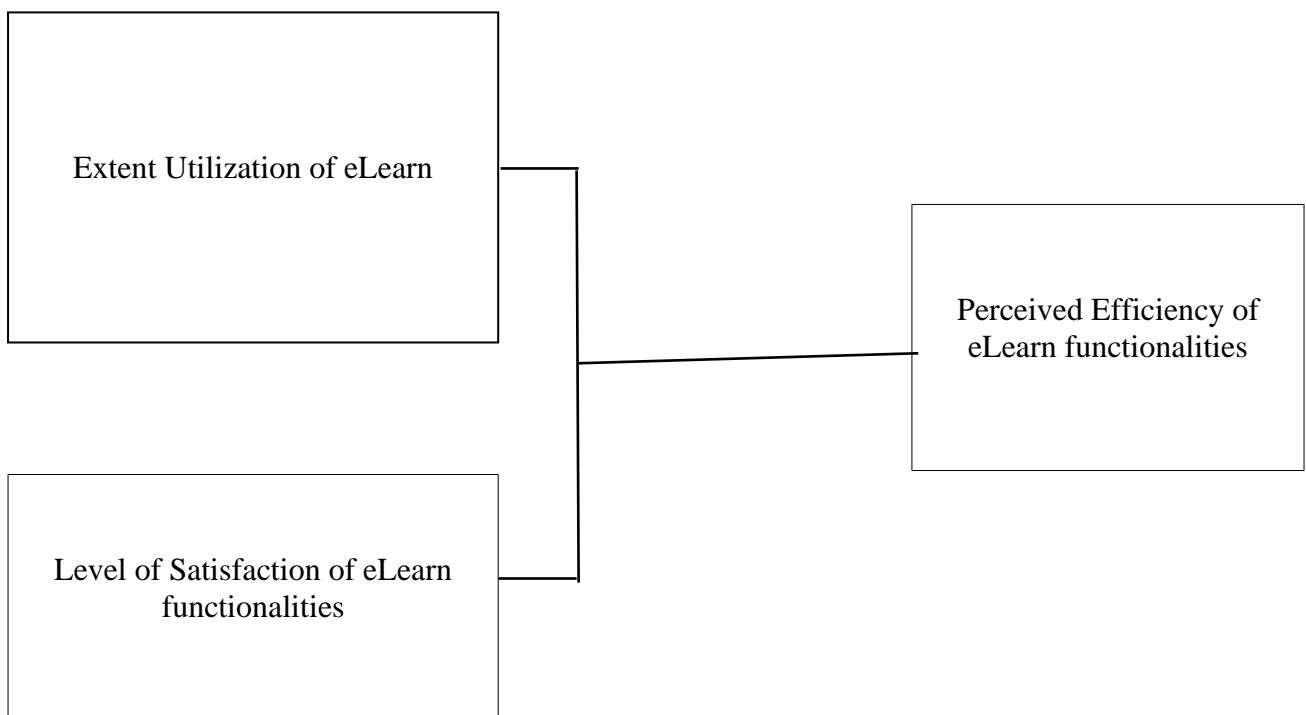


Figure 1 –Schematic Diagram of the interplay of the variables of the study

Objective of the Study

This study aimed to determine the utilization, satisfaction and perceived efficiency of eLearn, its functionalities and the implications of its use.

METHODOLOGY

The mixed method of research was used in this study. Mixed methods research as a methodology for conducting research involves quantitative and qualitative approaches (JW Creswell, 2007). Thus, the information generated from the data gathered in this research is not barely rooted to a single pattern of interpretation data. It needs to be examined quantitatively and qualitatively.

This was the most appropriate method in the generation of the relevant data from the first-hand users of the system – the students, as specified in the scope of this research. The data were interpreted in both quantitative and qualitative approaches. The number of responses to each category was given consideration in quantifying the information reflected in each questionnaire before any interpretation was formulated. Meanwhile, the general quantitative data each category was interpreted accordingly. The measurement tools included in each category were the bases in giving interpretation except for the parts that directly gathered the general impression of the students of the eLearn system which were written freely and without restrictions, but with high relevance to the guide questions.

Specifically, the survey is the main design employed in this particular study, which is a systematic approach of collecting data to find out participant's opinion. In this study, the utilization, satisfaction and efficiency of eLearn functionalities were determined.

The participants of this study were the undergraduate students from the College of Agriculture, College of Arts & Sciences, School of Business & Management, College of Computer Studies, School of Education, College of Engineering and College of Nursing of the university. In this study, the desired number of participants was computed through Slovin's formula. Out of the 9130 population of the seven (7) undergraduate colleges in the university, 384 was the computed total number of participants of the study.

This study employed the quota sampling procedure. It is a type of non-random sampling sometimes referred to as a non-probability sampling method. The main purpose of using this sampling procedure is to only get the specific number of participants in each undergraduate college in the university. Questionnaires were then given randomly to the computed number of participants in each undergraduate college. The computation of the number of participants was done using the Slovin's formula. This is the most appropriate formula to use because the population size in each college was the only consideration to get the number of participants to the survey and no other factors were identified such as gender, age and others. Furthermore, the application of quota sampling ensures that sample group represents certain standard of population chosen by the researcher which he found great interest to the study.

In the implementation of the survey, only 376 returned the questionnaire and among the actual participants, 30 of them reported that they did not use eLearn. The instrument utilized in this study was the researcher-made questionnaire. It was developed and conceptualized based from the readings of the related articles and studies about the utilization and efficiency of E-Learning portal. The items in the questionnaire were structured (closed ended) and unstructured (open ended). The structured questions measured the participants' extent of involvement to the eLearn system while the unstructured questions measured the participant's general and/or other experiences with the eLearn system that were not included in the questionnaire to enhance the formulation of recommendations of the study.

Descriptive statistics such as mean, standard deviations, frequency and percentages were used to describe the variables in the study. The frequency and Percentage were used in describing the demographic profile of the participants. Moreover, weighted mean was employed in determining the level of satisfaction with the eLearn functionalities, efficiency and utilization.

Spearman's rho (ρ) was also utilized. It is a non-parametric test used to measure the strength of association between two variables whether there is a perfect positive or perfect negative correlation. There was a need to use Spearman's rho in order to identify the correlation of the variables cited in this research. The data on utilization were not normally distributed, although satisfaction and efficiency were normally distributed. The trends of the results were used as bases for formulating analysis and findings, conclusions and recommendations for the study.

RESULTS/FINDINGS

The tables below present the findings of the study with their analysis and interpretation. Also, the findings herein are contextually discussed and theoretically linked to the ideas of the experts in the field. The presentation flows according to the order of the problems in the earlier chapter.

Table 1. Mean Distribution of Participants' Perception of the Efficiency of eLearn Functionalities (n=346)

	Indicators of Efficiency of eLearn Functionalities	M	SD	Description
1	Logging in the eLearn is easy	4.02	0.94	Highly Efficient
2	Changing the password is hassle-free	3.42	1.05	Inadequately High Efficient
3	The instructions are simple, clear and easy to follow	3.82	0.92	Highly Efficient
4	Accessing Library Online Databases anytime and anywhere enables me to do my study more efficiently	3.31	0.95	Inadequately High Efficient
5	Using Library Online Catalog is easy and makes my searches fast.	3.26	0.98	Inadequately High Efficient
6	Viewing / downloading course materials (syllabi, lecture notes, instructions on assignments, quizzes) is easy and fast	3.78	0.95	Highly Efficient
7	Asynchronous access (24 hours a day, 7 days a week) increases my productivity in studying	3.44	1.04	Inadequately High Efficient

8	Availability of eLearn site news makes my updates fast and easy	3.54	0.98	Highly Efficient
9	Availability of course materials makes it easier for me to learn	3.69	0.91	Highly Efficient
10	Sharing knowledge with classmates, asking questions and getting responses make my study efficient and effective	3.40	1.00	Inadequately High Efficient
	OVERALL MEAN	3.57	0.72	Highly Efficient

Legend: 1 – 1.50 = Very Low Efficient 2.51 – 3.50 = Inadequately High Efficient
1.51 – 2.50 = Low Efficient 3.51 – 4.50 = Highly Efficient
4.51 – 5.0 = Very High Efficient

Table 1 shows the mean distribution of participants' perception of the efficiency of eLearn functionalities. As indicated in Table 3, the majority of the students ($m = 4.02$) perceived the efficiency of eLearn functionalities "logging in the eLearn is easy" as 'highly efficient'. This is attributed to the simple feature of the computer. The item 'using the library online catalog is easy and makes my searches fast' had the lowest mean ($m=3.26$) with a description of 'inadequately high efficient'. One of the problems in the use of eLearn within the University is the limited number of computers vis-à-vis the student population. The results further revealed that most of the participants were satisfied with the efficiency of eLearn functionalities as indicated in the overall mean of 2.89.

Table 2. Spearman's rho (ρ) Values Showing Relationship of the variables.

Variables	Utilization (M= 2.35, SD = .80)		Satisfaction (M= 2.89, SD = .93)	
	ρ	p	ρ	P
Efficiency (M= 3.57, SD = .72)	.285 **	.000	.502**	.000

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

Table 2 presents Spearman's rho (ρ) Values Showing Relationship of the variables. Data show that the participants' assessment of the efficiency of the eLearn functionalities are significantly associated with their utilization ($\rho = .285$, $p=.000$) and satisfaction ($\rho=.502$, $p=.000$). These findings imply that participants who utilized the eLearn were more satisfied with the eLearn functionalities also assessed the efficiency of the eLearn more highly.

This can be attributed to the fact that students who used the portal more often have discovered its potential in helping them learn more efficiently. This finding can be supported by the comments of the student users who expressed satisfaction of the eLearn because it helped them improve their productivity to work on their assignments and activities.

Table 3. Frequency and Percentage Distribution of the Benefits Gained from eLearn (n=346)

	Benefits Gained	F	%
1	With 24x7 access, I can learn at my own pace and review course material as often as needed.	198	57.23
2	Library online databases and online catalog can be accessed remotely anytime and anywhere.	183	52.89
3	It helps me to develop computer skills and knowledge of internet	209	60.40
4	It facilitates access to existing knowledge and skills.	210	60.69
5	It helps to improve my retention.	152	43.93

Table 3 shows the frequency and percentage distribution of the benefits gained from eLearn. The result showed that the students found eLearn system services beneficial to their studies. The percentage was based on the total number of students who gave their qualitative responses. More than sixty percent (60.69 %) mentioned that the best benefit derived from the eLearn is that eLearn “facilitates access to existing knowledge and skills” followed by “eLearn helps develop their computer skills and knowledge of internet” (60.40 %).

It can be observed from the item on ‘library online databases and online catalog can be accessed remotely anytime and anywhere had the lowest rating (52.89 %). This result was almost the same with the result in Table 8 where the item was rated low.

Table 4. Frequency and Percentage Distribution of the Challenges Encountered with eLearn (n=346)

	Challenges Encountered	F	%
1	Lack of skill to use the eLearn	85	24.57
2	Inadequate Internet/Intranet Access	179	51.73
3	Low Internet Bandwidth	187	54.05
4	Lack of Awareness of having eLearn	82	23.70
5	Ineffectiveness of the use of eLearn	83	23.99
6	Some teachers are not using eLearn	298	86.13
7	No problem encountered	22	6.36

Table 10 shows the frequency and percentage distribution of the challenges encountered in the course of using eLearn. The results showed that the majority of the challenges encountered with eLearn is that “some teachers are not using eLearn” (86.13%). This was followed by (51.73%) “Inadequate Internet/Intranet Access”, while the item on “lack of awareness of having eLearn” obtained the lowest (23.70%) It can be concluded that the results are almost the same with the eLearn utilization and satisfaction reflected from the previous tables.

It is worth noting that 24.57% of the students lack skills in using eLearn which calls for the need of an orientation for the users. The “low internet bandwidth” that the 54.05 % of the participants experienced may be due to the number of portals that the university is using. Their weak monitors make it hard for

them to follow the Course Management System and their learning experience becomes problematic. Some of them did not even own computers and sought help from Learning Resource Centers for technical assistance. This finding is in consonance with the investigation of Capricho (2011) when he discovered that internet speed gives either fulfilment or disappointment among its clients relying on the exercises they mean to do.

The following are the findings as revealed in the study.

1. The majority of the participants used eLearn. The functionalities often used by the participants when grouped by college or year level were downloading course materials and uploading assignments. The least used functionalities were asking questions and getting responses and using the online catalog.
2. The majority of the participants was satisfied with the functionalities of the eLearn, especially downloading course materials and uploading assignments. The participants were least satisfied with such functionalities as asking questions and getting responses, sharing knowledge with classmates and using the online catalog.
3. The majority of the participants perceived the functionalities of the eLearn as highly efficient, especially on “logging in” and “simple, clear and easy to follow instructions” but found accessing the library online databases and searching the online catalog as the least efficient among the functionalities.
4. The students' utilization of eLearn and satisfaction with the system's functionalities were not significantly associated with their perceived efficiency of the system.
5. The students find the eLearn services as beneficial to their studies. They primarily see the use of eLearn as a help in developing their computer skills and knowledge of the internet and facilitates access to existing knowledge and skills. However, the major challenges of students were low internet bandwidth, the inadequate internet and intranet access and low utilization by some faculty.

CONCLUSION

Based on the findings of the study, some conclusions are drawn:

The study concludes that eLearn in the university can be an effective tool in the teaching and learning process and in the delivery of information resources. Its functionalities have great impact to the information needs of the students who consider them as invaluable tools and sources of information especially for assignments and course materials. These were well supported with the result of the responses in the survey. Rates were highly efficient and satisfied.

On the other hand, certain functionalities have been found to be less efficient and less utilized, especially those pertaining to slow internet access, and access to certain library services. If only it is supported, enhanced or required by to teachers and students, the eLearn system in the university might be utilized as an instrument to enhance teaching-learning process and the academic programs in general.

RECOMMENDATIONS

Based on the findings and conclusions generated in the study, the following recommendations are offered: that

1. the administration provides higher bandwidth for increased internet speed;
2. the deans and chairpersons encourage their faculty to integrate eLearn into their courses;
3. the Computing and Information Service Office conducts more promotional activities to improve the utilization of eLearn and to provides training to teachers in utilizing the eLearn system;
4. the Library considers the use of marketing strategies to maximize the utilization of the online databases and the online catalog and to enhance its library instruction program;
5. the university continues using eLearn as the basis for an efficient and effective learning system; and
6. future research studies be made considering other variables not included in this current investigation.

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