The Effectiveness of the Online Learning Management System in delivering Engineering Education in select Private Higher Education Institution in Pampanga, Philippines

Jan Glenndale Punsalan[1], Raul Ramiro Silva[1], Rick Donald Manzon[2]

Ryan John De Lara[2]

[1]Student, Graduate School, Nueva Ecija University of Science and Technology, Nueva Ecija, Philippines.

[2]Subject Adviser, Department of Engineering Management, Graduate School, Nueva Ecija University of Science and Technology, Nueva Ecija, Philippines.

Corresponding Author: glennpunsalan@gmail.com

Abstract: - The COVID-19 Pandemic greatly impacted the education sector. Majority of the schools around the world including the Philippines transitioned into the online mode of learning. This proposes a new challenge to educators and students to adapt to the new mode of learning. The schools here in the Philippines adapted to the situation by means of an online learning management system (LMS). This paper tackles about the effectiveness of the online LMS of select private higher education institutions in Pampanga, Philippines in delivering engineering education. The researchers wanted to know if the online LMS of these schools are effective in terms of delivering quality engineering education to students. The researchers used a descriptive method of quantitative research through the use of survey questions. There were three major factors that were considered in the questionnaire and a bar graph has been utilized to analyze the gathered data. Based on the result of the survey, the researchers discovered that students who are motivated to learn and study every component of the course being discussed in an online class arrangement will benefit from online classes or distance learning. A different approach to learning has been introduced due to the existing global pandemic, one that requires greater attention and adaption to fully exploit the online platform and employ online learning as a simple but effective means to teach and convey knowledge to students from around the world.

Key Words: — ***Learning Managements System, Higher Education Institutions, COVID-19 Pandemic.***

I. INTRODUCTION

Learning Management Systems (LMS) reinforce the learning process through online classroom environments. A standard LMS supports an inclusive learning environment for academic progress with interceding structures that promote online collaborative-groupings, professional training, discussions, and communication among other LMS users (VM Bradley, 2021).

Manuscript revised May 25, 2022; accepted May 26, 2022. Date of publication May 28, 2022.
This paper available online at www.ijprse.com
ISSN (Online): 2582-7898; SJIF: 5.59

Learning management systems (LMSs) may provide learners with resources in various formats, such as videos, quizzes, and forum discussions to support their learning, but having access to an LMS does not necessarily mean that learning has occurred effectively. Despite its apparent usefulness, whether the use of the LMS can indeed help learners learn more effectively remains an interesting matter for course providers, LMS vendors, and learners (Lee Yen Chaw, Chun Meng Tang, 2018).

Institutions use LMS software to plan, implement, facilitate, assess, and monitor student learning. The software centralizes course preparation; educational content and resources; the delivery and tracking of student activities, such as discussion and collaboration; the administration of assessment activities; and the accumulation and presentation of marks and grades (C. R. Wright, et. al., 2014). The recent advancements in

information and communication technologies have altered instructional contexts and re-shaped them into smart learning environments. One of the most common practices of these environments are learning management systems (LMS) where the learners and instructors utilize a software platform to fulfill, support and manage instructional activities around predefined objectives (Hasan Tinmaz & Jin Hwa Lee, 2020). As users could be seen as the key stakeholders who impact the system's survival, their attitudes toward system are put in high consideration (NT Nguyen, 2021).

Nowadays, the internet plays a big role in our daily lives. Before the pandemic, the education sector partly relies on the internet for conducting classes. But when the pandemic hits, everything changed and the education sector has to adapt in order for the students to continue their learning amidst the pandemic. Many students were not able to enroll on the school year 2020-2021 due to lack of resources and requirements needed by the online classes.

The Department of Education implemented a new mode of learning which is the online learning or the distance learning. Face to face classes were not allowed for almost two years because of the situation, schools all around the Philippines adapted to the online learning and have adapted an online learning management system (LMS) to help students and educators cope up with the current situation. A huge adjustment was made to the whole education sector including the students, online classes are a very different environment and the online learning management system helps ease and bridge the gap of the online learning.

Many things are to be considered when taking up online classes, this includes devices or gadgets that are capable of executing the online LMS, good internet connectivity, software or applications needed and accessibility to uninterrupted electrical supply. Learning modules are provided to the students by the school, these modules serves as the tool for instructors to discuss lessons and give activities or quizzes. These modules are within the online LMS of each school. The researchers considered three private higher education institutions in Pampanga that offers engineering courses, these schools are as follows: Holy Angel University (HAU), Angeles University Foundation (AUF), and Our Lady of Fatima University (OLFU). These universities adapted to the pandemic and have different online LMS to execute the online learning.

This study aims to provide the researchers evidences to conclude whether the online LMS of these universities are effective in delivering engineering education to students. Continuous learning is important especially to the students, the education sector adapted to the new mode of learning to provide quality education to the students. It is important to determine the effectivity of these learning management systems of each school because this will have a direct impact on the learning of the students.

II. Method And Procedures

2.1 Research Design

The researchers decided to use a survey research design in this study. This was chosen by the researchers because it is an effective and fast way of getting results from the respondents. Survey research is about collecting data from the respondents that is measured quantitatively. The purpose of this study is to see if the online learning management systems of the chosen schools are effective in delivering engineering education to students. Each school has a different approach to online learning, having these platforms is very important ion delivering online classes to students. The online LMS is also an assessment tool being used by instructors and professors to know whether students are coping up properly with the new mode of learning.

A questionnaire will be used by the researchers to gather data from the respondents. A series of questions designed by the researchers will be used I order to assess the effectiveness of the online learning managements systems. In this way, the researchers may conclude from the data gathered and analyzed from this study. The respondents of the study will be the engineering students of Holy Angel University (HAU), Angeles University Foundation (AUF), and Our Lady of Fatima University (OLFU). The data gathering will be distributed to the students of each school via an online survey. An online survey will be effective in this study since there are still safety protocols to follow and it is much a faster way of distributing the questionnaire to gather sufficient data.

2.2 Locale Of the Study

The study will be conducted in three different private higher education institutions in Pampanga and the respondents will be the engineering students from these schools. The study will be conducted in the following schools:

Holy Angel University (HAU), Angeles University Foundation (AUF), and Our Lady of Fatima University

(OLFU).

2.3 Samples and Sampling Procedure

The sampling procedure that will be used in this study is the volunteer sampling method. This type of sampling method is a form of non-random/purposive sampling in which the data will be from the students who are willing to volunteer for the purpose of this study. The survey was distributed to the engineering students, this is regardless of their current year level, the data collected will be useful in determining the effective of the online LMS of each school.

2.4 Respondents Of the Study

The respondents of the study are engineering students from Holy Angel University (HAU), Angeles University Foundation (AUF), and Our Lady of Fatima University (OLFU). The researchers will gather data from 30 respondents per school, a total of 90 respondents will answer the survey. The researchers will gather data from the survey based on the individual answers of each respondent that will be analyzed and used in the results and discussion part of this study.

2.5 Research Instrument

The data gathered in the study composes of the primary and secondary data. Primary data consists of the results from the data gathered in the survey, while the secondary data was gathered from other research journals and articles. Microsoft Excel and Microsoft Word were used to compile the data gathered and these tools are used in analyzing the data.

2.6 Data Gathering Procedure

The data used in this study was gathered by means of a questionnaire. The questionnaire used composes of three categories which are: Access to internet and electricity, time management and work load, reliability of the online learning management system. Per category is composed of 5 questions and a total of fifteen questions in the questionnaire. These questions are devised by the researchers to analyze if the online learning management system of the schools are effective or not. The questions are designed to supply information to the researchers to conclude an output.

The survey was distributed via Google forms, in this way, the researchers distributed the questionnaire to different respondents faster. Google forms is also an effective way to conduct a survey, especially in this time of the pandemic, limiting the interaction to different people is a must. The students can conveniently answer the questions at the comfort of their homes and by using their gadgets. The study gathered a total of 90 responses, 30 responses per school. These data will be used and analyzed by the researchers to conclude an answer.

2.7 Data Analysis

The data was gathered through a survey questionnaire that was distributed via Google forms. The data gathered by the researchers were analyzed and were represented using a bar graph. The bar graph is a graphical representation of the data gathered, in this way, the data will be easily understood. The bar graph also represents the difference between the categories used in this study. The height of the graphs is related to the values that they represent, by just looking at the bar graph, the researchers can make an analysis for the conclusion.

III. RESULTS AND DISCUSSION

When it comes to measuring the effectiveness of remote learning, there are three aspects to consider. Each aspect is made up of five positively crafted questions. The following graphs show the students' responses to each question.

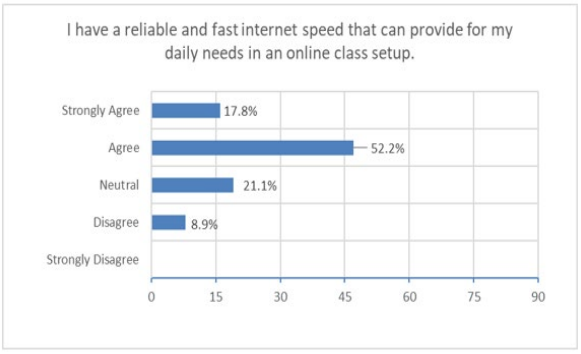


Fig.1. Results from question no. 1

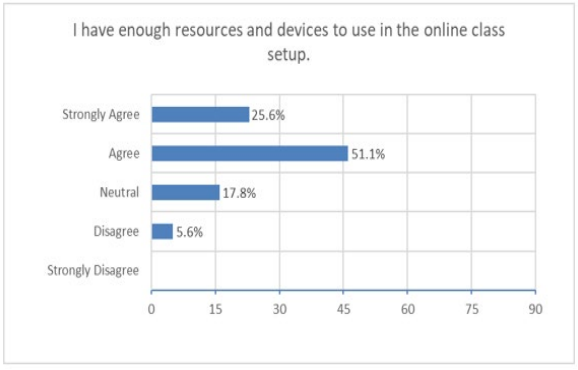


Fig.2. Results from question no. 2

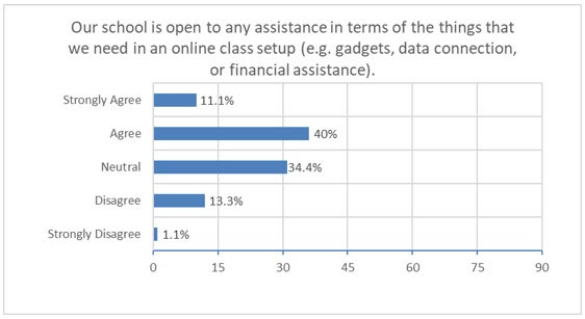


Fig.3. Results from question no. 3

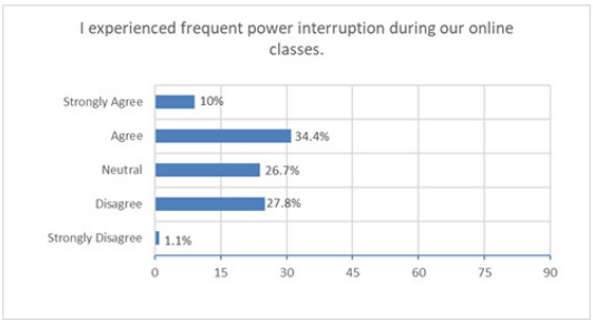


Fig.4. Results from question no. 4

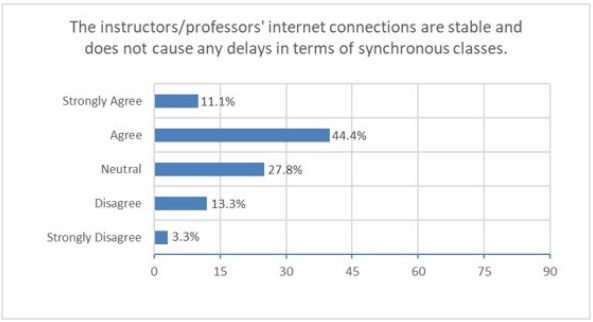


Fig.5. Results from question no. 5

The first aspect consists of questions concerning the student's internet connection as well as feedback on their speed and availability. On the first question, majority has agreed that they have fast and reliable their internet connection for their online schooling and few has disagreed. The following question, majority responded that they have the resources and devices required for the online class setup. On the third question, 36 students agreed that their school provides assistance in their online schooling whereas 31 of them responded Neutral and 22 of them believed that their school is not helping them. The fourth question revealed that 31 students experienced frequent power interruption during their online classes, whereas 25 students beg to differ. The fifth question majority of the respondents has agreed that the connection of their instructor is stable and conducive for learning.

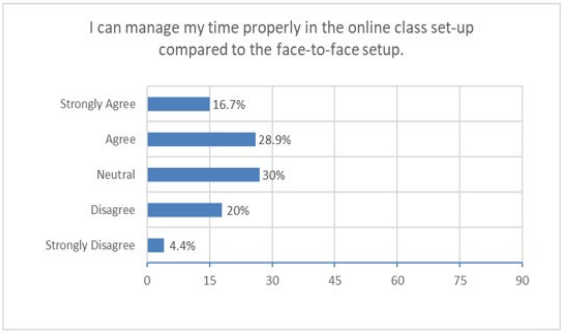


Fig.6. Results from question no. 6

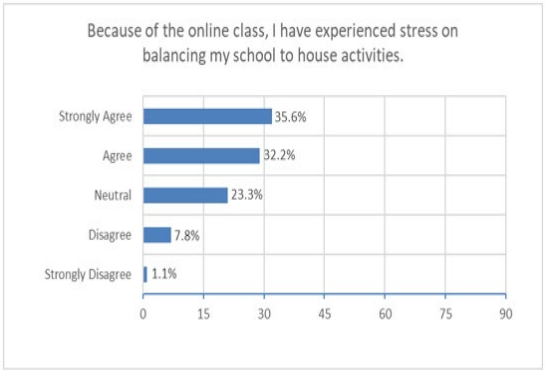


Fig.7. Results from question no. 7

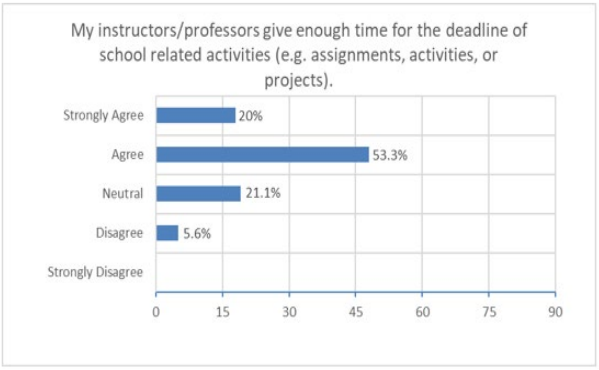


Fig.8. Results from question no. 8

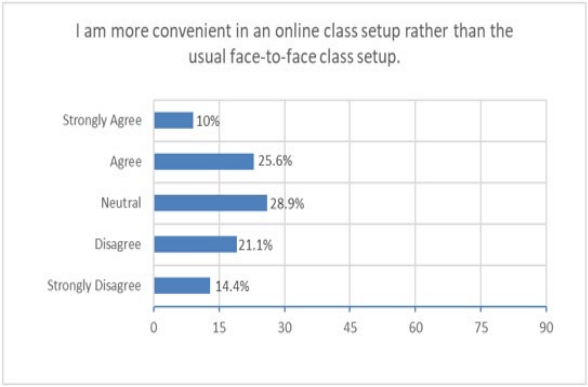


Fig.9. Results from question no. 9

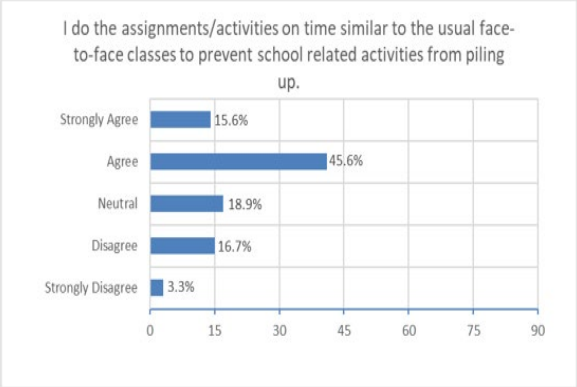


Fig.10. Results from question no. 10

The second aspect consists of questions concerning the student's activities and time management of students during the online classes. The result on question no 6 regarding the time management experienced during the online classes, with 27 students answered neutral and 26 of them agreed to the question, 18 of the students has disagreed. On the seventh question, majority of the respondents has strongly agreed that they have experienced stress in balancing school and home activity. On question 8, majority of the students has agreed that the time allotted by their instructors in submitting their online activity is enough while 5 of them disagree. The students have different point of view in answering question no. 9, regarding their preference between online set up versus face-to-face setup. 23 of the students agreed that they prefer online set up while 19 of them disagreed. the majority or 26 of them responded Neutral. And finally, the result for question no. 10, majority of the respondents or 41 of them agreed that they accomplished their assignment on time during the online classes.

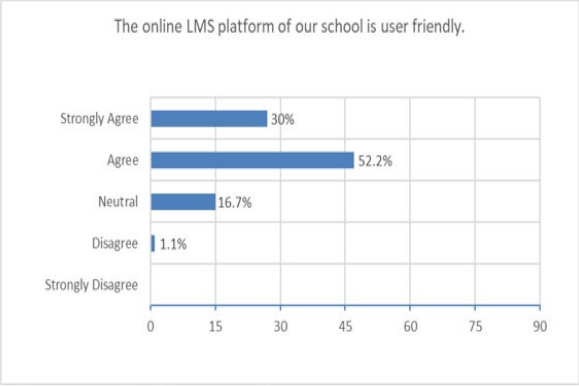


Fig.11. Results from question no. 11

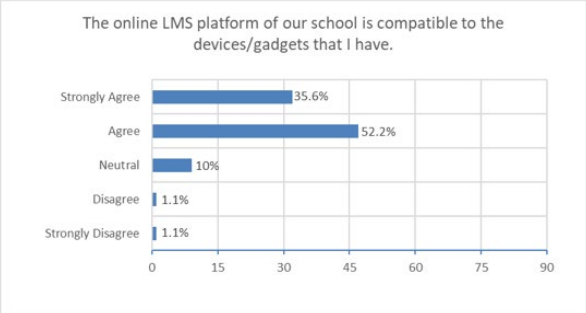


Fig.12. Results from question no. 12

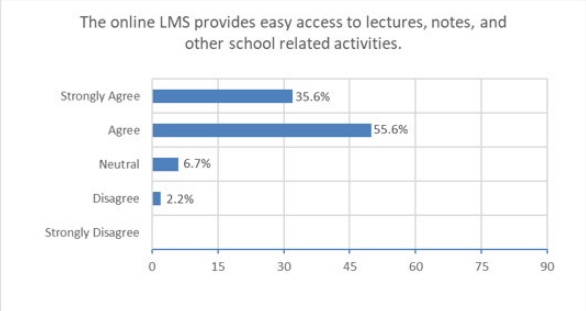


Fig.13. Results from question no. 13

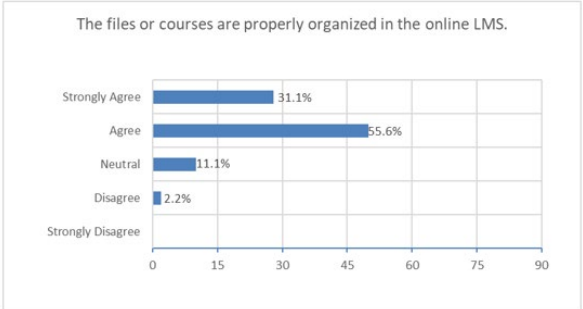


Fig.14. Results from question no. 14

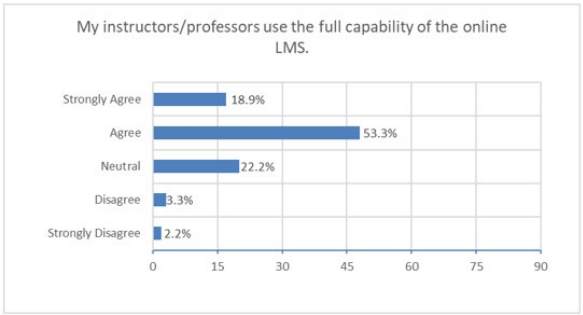
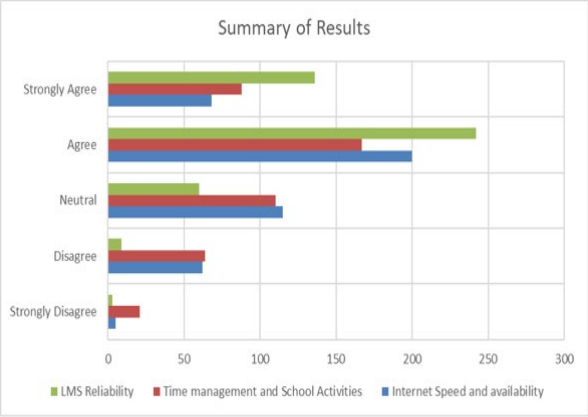


Fig.15. Results from question no. 15

The third aspect is about the reliability of the learning management system used by the students. For question 11, majority of the students agreed that their learning management system is user friendly. The following question, majority of the students find that the platform used by their school is compatible with their existing devices. The response of the

student for question 13 also shows a positive result, having the majority agreed that the they have easy access of their learning materials. Same as the previous response, for question no. 14, majority of the respondent also agreed that the course is properly organized in the learning management system. And finally, for question no. 15, majority of the result agreed that their instructors are capable in delivering the lessons in the online platform scheme.



The results of the internet speed and availability aspect showed most of the respondents have the necessary gadgets/devices as well as the adequate and internet availability needed in online learning platform. Concerns about power interruption and internet reception issues had been experienced by the respondents is inevitable due to the current state of the internet connections of our country.

In terms of time management, results show majority of the respondents agreed that the time provided to them to accomplish their online school activities are enough and that the students perform the same as the face-to-face set up. The respondents also felt a greater deal of stress during the online set up as evident by the result of the survey. Some of the respondent have difficulty balancing their work and school related activities.

The third aspect, reliability of the learning management system showed that most of the respondents agreed that is compatible and user friendly. Majority also agreed that the learning platform provides an easy access to their learning materials and the organization of the course. As well as how well their professors teach, majority agreed that the professors did their job properly, even trying different ways to engage the students in studying. In general, reactions given by the student are mixed, having most of them answering Agree and Neutral. This means that the respondent, although challenging, have adopted the new mode of learning platform in order to continue learning even these times of pandemic. However, in order for the online set up to succeed, improvement on the current internet connectivity issues, student performance management and support programs for online set-up are some of the issues that needs to be addressed.

The LMS is simply a means by which instructors can use to involve students and purposefully promote students' increased engagement with course material and discussion. The LMS is seen as complementary rather than as a substitute for face to-face lectures, the students and tutor may not be online at the same time to answer questions and queries (Irene Govender, Desmond W Govender, 2010). As college and university students highly value LMS use, it is paramount that an institution takes the time to select an LMS that is aligned with its educational plan and meets the needs of various stakeholders. Proper project management is also required to ensure a successful implementation. If an institution is seeking to make widespread improvements to an existing LMS, it must also ensure widespread stakeholder involvement and effective project management during this process (C. R. Wright, et. al., 2014). To be effective, LMSs need to be enhanced regularly to effectively support various activities, primarily, interactions between students and faculty providing students with advanced features such as video tutorials and Computer Assisted Assessment (CAA) (Yaron Ghilay, 2019).

IV. CONCLUSION

The study focuses on the effectiveness of the online learning management system in delivering the engineering courses by selected private higher education institutions in Pampanga. Based on the research and survey conducted by the researchers, majority of the students agreed and are neutral among the questions asked.

Based on the results of the research, the online classes need to be observed in a longer-period of time to see the adaptability of the students in the new mode of learning. The study needs to have greater number of respondents not just only for a certain school or department but also from different year levels and courses, because in the results of the conducted surveys, the researchers can see that a lot of students are neutral in position whether the online classes are effective. Students of todays' generation can easily cope up with the advancement of technology and there are different ways and methods to learn. So, in conclusion, learning management systems used in online classes or distant learning will be effective as long as the students are willing to learn and study every lesson or topics that are being discussed in an online class set up.

REFERENCES

[1]. VM Bradley (2021). Learning Management System (LMS) Use with Online Instruction.
[2]. Hasan Tinmaz & Jin Hwa Lee (2020). An analysis of users' preferences on learning management systems: a case on German versus Spanish students.
[3]. NT Nguyen (2021). A study on satisfaction of users towards learning management system at International University – Vietnam National University HCMC.
[4]. C. R. Wright, Valerie Lopes, Craig Montgomerie, Sunday Reju and Seb Schmoller (2014). Selecting a Learning Management System: Advice from an Academic Perspective.
[5]. Lee Yen Chaw, Chun Meng Tang (2018). What Makes Learning Management Systems Effective for Learning?
[6]. C. R. Wright, Valerie Lopes, Craig Montgomerie, Sunday Reju and Seb Schmoller (2014). Selecting a Learning Management System: Advice from an Academic Perspective.
[7]. Irene Govender, Desmond W Govender (2010). An Exploratory Study: The effectiveness of a Learning Management System (LMS) in the delivery of a face-to-face programming course.
[8]. Yaron Ghilay (2019). Effectiveness of Learning Management Systems in Higher Education: Views of Lecturers with Different Levels of Activity in LMSs.