The Impact of Learning Management System in Federal College of Forestry, Jos - A Case Study

Orewere Emmamoge,[1] Hassan Bilkisu[2] , Kauthar Yahya[2] and Muhammad Isa Ahmed[3]

[1]Department of Horticulture and Landscape Technology,
Federal College of Forestry, Jos, Plateau State.

[2] Department of Architecture, College of Environmental Studies,
Kaduna Polytechnic.

[3] Department of Urban and Regional Planning
University of Jos.

emmamoge3603@gmail.com

ABSTRACT

Learning management systems are actively used by instructors, students, and institutions in order to provide better learning environments for teaching, learning, and administration in higher education. The main thrust of this paper is to assess the impact of Learning Management Systems (LMSs) on students from Department of Horticulture and Landscape Technology, Federal College of Forestry, Jos. Field survey by questionnaire was the main tool of data collection while Secondary data were collected from relevant literatures. A total of 30 questionnaires were distributed to respondents. Only 27 of the questionnaires were retrieved representing 90%, 2 not clearly filled and 1 was not retrieved. Findings from the study revealed that the effect of Learning Management Systems on Students was higher when compared to those who were conducted using traditional method. Also students are able to explore new concepts in the course and on task in a way that helped learning and communicate important dates/time frames for learning activities. Based on these findings, it is recommended that more training and guidance for students and lecturers using the LMS be adopted.

KEYWORDS: *College, Impact, Learning Management System (LMS), Lecturers, Students*

1.0 INTRODUCTION

Nowadays, computers are being used in all areas of our lives and the use of the Internet in courses is increasing. The interaction between the teacher, the student and the course material is often facilitated or supplemented by the Internet in these courses. Due to the use of technological tools and the Internet, greater continuity in education can be ensured and the connections between both individuals and the course materials can be strengthened in the online environments of the digital revolution (Sulun, 2018).Technology has made it possible to provide frameworks which can help in conventional education system. These frameworks are commonly known as learning management systems (LMS) (Kulshrestha. et al., 2013).

The Learning Management System (LMS) has been established in a number of universities worldwide to help connect students and lecturers without the confines of the traditional classroom. (Adzharuddin, et al., 2013). LMS, a software designed to assist administrative activities and facilitate how the students participate in e-learning materials, was developed. The software application is used in tailoring content, e-learning programs, classroom and online events, tracking and reporting online programs, and documentation (Abdullah, 2018).

Contextual to this paper, Learning management systems are computer software that offers a comprehensive set of tools for educators to manage learning resources, administrative functions, assessments, and scoring (Kumar, 2015). LMS is a server-based or cloud based software program. It holds data about users, courses and content. A learning management system provides a blank space to read and teach without depending on the time and space limits (Kumar, 2015). Additionally, a LMS can provide support for instructors to use the curriculum to achieve learning goals, plan class activities for course delivery, as well as to monitor, analyze and report student participation. Some of the best known commercially available LMS systems are *Blackboard*, *WebCT*, and *Desire2Learn*. There are also many open-source and free LMS systems, such as *Moodle*, *Segue*, *Interact*, *Course Work*, *Atutor*, *KEWL* and several others (Nadire, et al., 2006).

From the standpoint of students, an LMS can help them to plan the process of their learning according to their individual progress, communicate with their friends and classmates, and collaborate together on the assigned tasks (Ellis, 2009).The history of the use of learning management systems in education dates back a few decades. Learning management systems were first introduced in the late 1990s, and their adoption has been accelerated by the development of multimedia and the expansion of the Internet (Sulun, 2018). With each passing day, these systems become even more developed and are adopted by many universities around the world. According to Abdullah, (2018), Synchronous communication is where participation occurs at the same time, while in asynchronous communication, participation does not occur at the same time; some examples are e-mail and discussion boards. Today, learning management systems are used for both synchronous and asynchronous delivery methods in educational settings. Additionally, LMSs have been used in the following different course types and course delivery types such as, Lecture, lab, lecture and lab, practicum. Course Delivery Types: Synchronous, Asynchronous, Hybrid (Sulun, 2018).

Most university students nowadays also have access to the internet as their university provides internet access, and usually there are internet cafes within a walking distance from the university's campus, catering to students. Some also have internet access within their own home as they subscribe to an internet service provider (Adzharuddin, et al., 2013).University students are mostly independent in their learning as lecturers usually give out lecture notes, and further information are left for the students to discover on their own, as it is not a one-way learning process which is practiced in the primary and secondary school system. The learning process at the university level is a two-way process, lecturers share their knowledge and students give their opinions or thoughts in return a topic in a class discussion. Therefore, university students need to constantly broaden their knowledge by searching for information (Adzharuddin, et al., 2013).

Learning management system basically uses three types of networks internet, university network or corporate computer network (Kulshrestha. et al., 2013). LMS is emerging as a potential delivery medium for education and training. This is evident from the increasing number of

educational institutions and organizations adopting e- learning (Kulshrestha. et al., 2013).In Federal College of Forestry,Jos, there has been an upsurge in the number of students going for e-learning education. The study is aimed at assessing the impact of learning management system in the Department of Horticulture and Landscape Technology, Federal College of Forestry, Jos. The specific research objectives are to: (1) investigate the benefits of LMS in the education, (2) examine factors promoting internet usage for information gathering, (3) identify barriers to the use of LMS in education

In realizing this goal, the following research question was raised:

i. What is the effect of Learning Management Systems on Students?

LMSs are widely used in different kinds of organizations. However, we delimit the research to higher institutions, particularly the lecturers/Instructors and (Higher National Diploma) HND students of the Department of Horticulture and Landscape Technology, Federal College of Forestry, Jos.

2.0 LITERATURE REVIEW

2.1 Benefits of LMS in Education

According to Kulshrestha. et al., (2013), Learning Management System (LMS) works as central repositories to address all type of educational needs. The major areas addressed by LMS deployment are Curriculum Planning, Instant Evaluation, Learner Engagement and Content Management (see Figure 1) below

i. **Curriculum Planning**: The word curriculum planning means what courses of study to teach and within a specified course what topic to teach in a particular semester/year in a college system. Generally, faculties of Technical Educational Institutions (TEI) are involved in curriculum planning and are done by making a course plan and lecture schedule before starting the course work. Course plan is detailed structure of course clearly stating chapter description and reading resource (page number, website, handouts etc.) and lecture schedule states total number of lecture hours required for completion of course and amount of course coverage in a particular class.

ii. **Instant Evaluation**: All LMS supports instant evaluation for multiple choice questions asked during test/exam. As soon as student click submit button, all multiple choice questions are evaluated simultaneously and grading is displayed on screen. This tool is helpful in removing students result anxiety. As result is shown without time delay, student gets more time for their improvement and using LMS we can increase frequency of conducting test/exam in a semester.

iii. **Content Management**: Course content management is a serious issue for faculties as well as students. Many faculties repeat same course in consequent semester/year. So, there is need for teaching resource management and for this LMS provides unique login ID to create, manage and store contents for future use. Similarly, for students during placement they need revision of class notes. As, they are generally in last semester/year of study, managing notes of first year seems impossible. Here also LMS, provides a tool “private files” to store all previous notes.

iv. **Learner engagement**: Learner engagement means engaging today’s students for academic success. Students learn more in a group as they imitate behavior of other students from different cultural backgrounds. This also helps in building strong student

relationship like getting to know each other, building strong teams, effective communication, and so on. LMS support several tools for collaborative learning like chats, messages, forum, wiki, etc. where students learn easily topics which they found difficult in offline mode of learning.

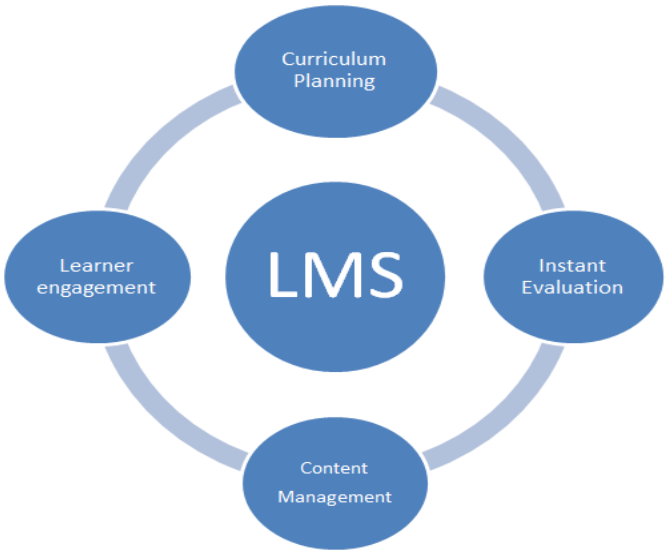

Figure 1: LMSs Features
Source: Adapted from Kulshrestha. et al., 2013.

2.2 Factors Promoting Internet usage for Information Gathering.

The internet is a useful tool for searching information since it is user-friendly and available for research at any time of the day, depending on the student's needs. But there are also other factors that influence a person to use the internet to search for information (Adzharuddin, et al., 2013) as listed below

i. **Age**: Age often indicates generational gaps. Report from the Pew Internet and American Life Project conducted in 2003, the most connected age group among Internet users is the segment of those between 18 and 24 who are in school, with 86.7% online in 2003. Hargittai and Hinnant cited in Adzharuddin, et al., (2013), asserts those who are between the age of 29 and 59 tend to use the Internet more than the younger people to perform job research and to use government sites

ii. **Educational level:** Educational level measures individuals" intellectual development. Households headed by someone with a university degree were far more likely to use the internet, and people in all age groups were more likely to be connected, regardless of the location of use.

iii. **Income:** Income distinguishes people according to their economic power.

iv. **Graphic Images:** The existence of drawings and pictures available on the Web complements the almost constant flux of written information in textbooks. Also, Web resources allow for animations showing processes that otherwise are very difficult to describe in a textbook or in the classroom.

v. **Short Video Clips:** Short Video Clips can provide complementary information, thus enhancing the learning experience.

2.3 Barriers to the use of LMS in Education

The benefits of LMSs have already been confirmed. However, some of these benefits are either limited or require significant effort in order to achieve them. The presence of specific barriers can create difficulties that prevent students and teachers from reaping the benefits of the systems (Abdullah, 2018) as listed below

i. **Poor Internet connectivity:** Poor Internet connectivity is a major barrier to students given that LMSs only work online, the Internet is a necessity. Poor connectivity slows down learning processes and tampers with features such as online conferencing, which only work with strong networks (Abdullah, 2018).

ii. **Instructors' Attitude:** Instructors' attitude toward students is also a barrier that affects the adoption of LMSs, such as when instructors are working with students who are not conversant with ICT usage (Kyei-Blankson, 2016 cited in Abdullah, 2018). Teachers do not consider LMSs' effective tools in teaching; instead, they utilize traditional strategies, which have been shown to be less efficient than innovative systems. For instance, instead of an instructor encouraging a student to use ICT in order to improve their knowledge, they demean the student or avoid helping them (Kyei-Blankson, 2016 cited in Abdullah, 2018). The author notes that this is a difficulty that most students face. In addition, some teachers also lack technological skills, inconveniencing the students.

iii. **Computer illiteracy:** Students who have been using the traditional way of learning in schools do face difficulties in adopting online systems (Abdullah, 2018). This is attributed to the fact that students believe in face-to-face teaching; they have misconceptions about using the learning system. According to Abdullah, (2018), many students feel that the traditional classroom style of learning is of higher quality in terms of interactions rather than checking the material in the LMS, thinking that an online facility cannot provide adequate data about the course; this has led to students not appreciating the LMS mode of learning. Kats, (2010), cited in Abdullah, (2018), reported that students complained that the LMS was confusing and slow, and it focused more on administration than on the students. The authors also added that students complained that the use of LMS interfaces was rigid and dull as compared to other social environments, like Facebook, YouTube, and Myspace, which are engaging and fun.

iv. **Lack of or inadequate training and support facilities:** Inadequate training and support facilities, software issues that disrupt classroom teaching, blocked websites, and infrastructure failure in the universities.

v. **Lack of Government Thrust:** Most of the institutes that are government aided do not have enough budgets to afford e-learning. As there is a cap on the maximum fee that may be charged by these institutes, this extra cost of e-learning cannot be passed on to the students. Such institutes shall be able to adopt e-Learning only if there is enough thrust from the Government towards the same (Kumar, 2015).

Other barriers that the authors reported include incompatibility of IT systems, poor management of technology implementation, poor internet access and networking in the institutions and a lack of high-quality technical support staff (Abdullah, 2018).

3.0 RESEARCH METHODOLOGY

3.1 Research Locale

The study area is Federal College of Forestry, Jos located along Bauchi road and opposite Bauchi Motor Park. The college is bounded by University of Jos staff quarters along Bauchi road by the east and with Department of Fisheries by the west, while Bauchi road that leads to University of Jos main campus passes the college from south-north. The college is in the city of Jos in Jos North Local Government Area of Plateau State (see Figure 2). Jos plateau, is located in the central part of the country between latitude 8° 30' and 10º30' N and longitude 8° 20' and 9° 30'E, with a surface area of about 9,400km^2. It has an average elevation of about 1,250 metres above sea level and stands at a height of about 600 metres above the surrounding plains (Archives of Library and Documentation Unit FCF, Jos, 2018).The population of Higher National Diploma (HND) students in the College for the 2018/2019 academic year stands at 94 comprising 67 male and 27 female (Annual NBTE Data Capture Update FCF, Jos, 2018).

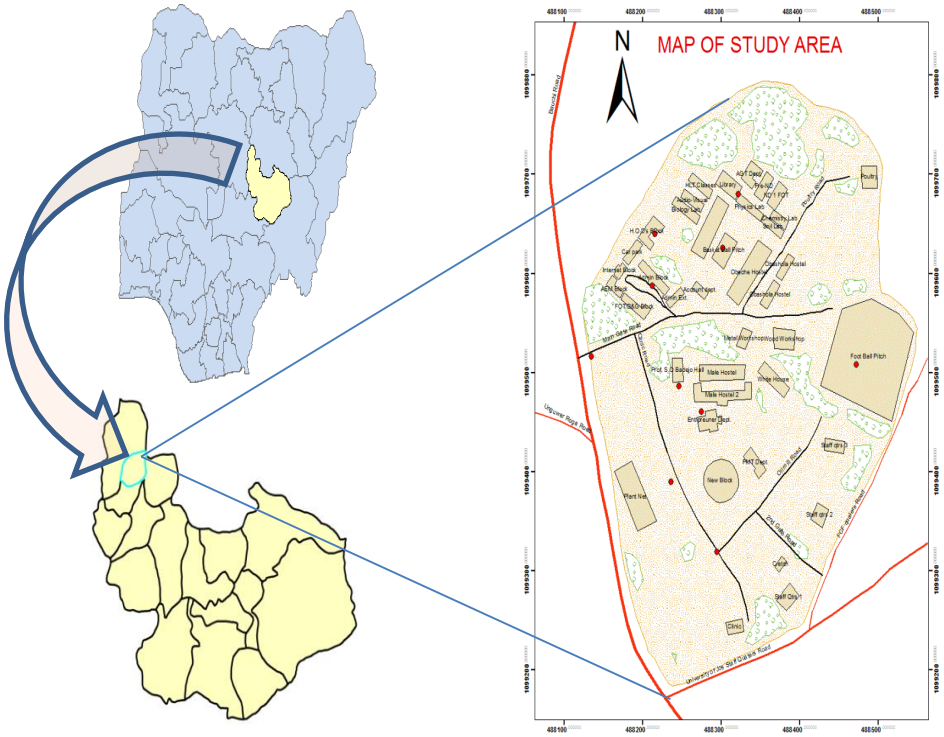

Figure 2: Plateau State in National context and Jos North Local Government Area in State context leading to the study area in Local context.
Source: Archives of Library and Documentation Unit FCF, Jos, 2018

The land use of Federal College of Forestry, Jos can be classified into two broad types which are built up areas (developed) and the forest area (undeveloped). The forested area include all the vegetative areas of the College which include forestry and wood technology plantation/nursery site, teaching and research farms including livestock section, natural forest, pig/poultry farm, bee hive, and fish pond among others. The developed areas include academic area, administrative area, residential area, commercial area, communal facilities area including religious area, parking and sporting areas among others (Archives of Library and Documentation Unit FCF, Jos, 2018).

3.2 Database Description

The research made use of both primary and secondary data. While primary data was gotten through instrumentality of structured questionnaires administered to respondents.The secondary data include documented information from textbooks, theses, magazines, journals, maps and information from the net. The research population comprises all Higher National Diploma (HND I & II) students of the Department of Horticulture and Landscape Technology.

3.3 Population of the Study

Population of a research is defined as the people whom appeal to the interest of the researchers in generalizing the outcomes of the research (Al Kindy, et al., 2016).The total number of students admitted in the department of Horticulture and Landscape Technology (HLT) for the 2018/2019 academic year is 23.With a Total number of 7 staff in the department (Annual NBTE Data Capture Update FCF, Jos 2018).

3.4 Data Collection Tool(s)

The instruments that were used for this study were the questionnaire designed by the researchers. A total of 30 questionnaires were distributed out to respondents. Only 27 of the questionnaires were retrieved representing 90%, 2 not clearly filled and 1 was not retrieved. The questionnaire was divided into sections and questions were asked and expected response was either Yes or No. The other section anticipated response which were measured on a five-point Likert scale format which ranges from Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A) and Strongly Agree (SA). The scale is assigned numerical value of 5, 4, 3, 2, and 1 respectively from positive expression to negative opinion. The Statistical Package for Social Sciences (SPSS) 23 software was used to analyse the collected data.

4.0 RESULTS AND DISCUSSIONS

This section gives in detail information gotten from data analysis in order to achieve the aim of the research. Findings from this study are as follows:

4.1 Distribution of Respondents

4.1.1 Sex of Respondents

The socio-economic result shows that out of the 27 respondents that participated in this exercise, 51.9% were males while 48.1% females as seen in Table 1. It shows clearly that more male respondents took part than female respondents.

4.1.2 Age of Respondents

Results from Table 1 below shows that in age distribution, 59.3% falls between the ages of 26-40 years, 22.2% falls between ages of 18-25 years while 18.5% falls between ages 41-60 years.

4.1.3 Profession of Respondents

The results in Table 1 below also reveals that majority 48.1%, of the respondents are students, 11.1% landscape architects, 7.4% horticulturist, 3.7% are soil scientist while 29.6% of the respondents falls under other type of professions

Table 1: Distribution of Respondents

Respondent n = 27 Characteristics	**Variables**	**Frequency (F)**	**Percentage (%)**
Sex	Male	14	51.9
	Female	13	48.1
	Total	**27**	**100**
Age(Year)	18-25	6	22.2
	26-40	16	59.3
	41-60	5	18.5
	> 60	0	0
	Total	**27**	**100**
Profession	Horticulturist	2	7.4
	Soil Scientist	1	3.7
	Landscape Architects	2	11.1
	Students (HND I)	13	48.1
	Students (HND II)	9	29.6
	Total	**27**	**100**

Source: Field Survey, 2018.

From Table 1 above, result on personal knowledge shows that 51.9% of the respondent agreed to the fact that they have idea about learning management system while 48.1% do not have such ideas.

4.2 Personal knowledge of the respondents

Out of the respondents that agrees to having ideas on LMS gave their different knowledge ranging from LMS seen as an effective tools of communication between staff and students (53.8%), as a medium where knowledge is acquired and shared among people and where information's are sourced pertaining a study (15.4%) respectively, as a medium that eases effective communication and expression of oneself and also enhances distant learning (Online degree) with 7.7% respectively (see Table 2).

Table 2: Personal knowledge of the respondents

Respondent n = 27 Characteristics	**Variables**	**Frequency (F)**	**Percentage (%)**
Having idea about learning management system	Yes	14	51.9
	No	13	48.1
	Total	**27**	**100**
Knowledge about LMS resources	Effective tools of communication between staff and students.	7	53.8
	Medium where knowledge is acquired and shared among people.	2	15.4

	Medium where information's are sourced pertaining a study.	2	15.4
	Medium that eases effective communication and expression of oneself.	1	7.7
	Enhances distant learning (Online degree).	1	7.7
	Total	**13**	

Source: Field Survey, 2018.

4.3 Student Mentorship

The result in Table 3, reveals that 59.3% of the respondents have not taught online courses using LMS, while 18.51% said they have taught online courses using LMS once and 22.22% said they have taught online courses using LMS twice. Out of the respondents that have taught online courses, 14.8% said they have used the E-learn, 11.1% used module and 3.7% have used whiteboard.

Table 3: Student Mentorship

Respondent n = 27 Characteristics	**Variables**	**Frequency (F)**	**Percentage (%)**
Online courses taught using LMS	1	5	18.51
	2	6	22.22
	3-10	0	0
	None	16	59.3
	Total	**27**	**100**
LMS(s) used to teach online	Blackboard	1	3.7
	E-learn	4	14.8
	Module	3	11.1
	None	19	70.4
	Total	**27**	**100**

Source: Field Survey, 2018.

4.4 Effect of Learning Management Systems on Student

The results of the effect of learning management systems on student are represented in Table 4 below. From the response sourced, it revealed that average of 4.26 agrees that the major effect of LMS is that it encourage students to explore new concepts in the course, about (4.00) shows that the effect of LMS keep the students on task in a way that helped the students to learn, (3.81) responses shows that it enables student to clearly understand and communicate important outstanding dates/time frames for learning activities. Other effects of LMS on students as reported by the respondents' ranges from LMS enable students focus discussion on relevant issues in a way that helped students to learn (3.78), LMS enable student to provide clear instructions on how to participate in course learning activities and LMS aided to keep course students engaged and participating in productive dialogue (3.74), LMS enable students to guide the class towards understanding course topics in a way that helped clarify their thought pattern and also aided to provide feedback that helped students understand their strengths and weaknesses relative to the

course's goals and objectives (3.70), LMS enabled me to clearly understand and communicate important course topics and enable student to identify areas of agreement and disagreement on course topics that helped students to learn (3.67) and LMS enable student to clearly understand and communicate important course goals with the average of 3.48.

Table 4: Effect of Learning Management Systems on Student

Factors (n = 27)	**SA (5)**	**A (4)**	**N (3)**	**SD (2)**	**D (1)**	**Total**	**Mean**
LMS enabled me to clearly understand and communicate important course topics	3	16	5	2	1	**99**	**3.67**
LMS enabled me to clearly understand and communicate important course goals	2	16	4	3	2	**94**	**3.48**
LMS enabled me to provide clear instructions on how to participate in course learning activities.	5	15	4	1	2	**101**	**3.74**
LMS enabled me to clearly understand and communicate important outstanding dates/time frames for learning activities.	6	15	3	1	2	**103**	**3.81**
LMS enabled me to identify areas of agreement and disagreement on course topics that helped students to learn.	6	12	5	2	2	**99**	**3.67**
LMS enabled students to guide the class towards understanding course topics in a way that helped clarify their thought pattern.	6	14	3	1	3	**100**	**3.70**
LMS aided to keep course students engaged and participating in productive dialogue.	6	13	5	1	2	**101**	**3.74**
LMS enabled to keep the students on task in a way that helped the students to learn	9	12	4	1	1	**108**	**4.00**
LMS enabled me to encourage students to explore new concepts in this course.	11	13	2	1	0	**115**	**4.26**
LMS enabled students focus discussion on relevant issues in a way that helped students to learn.	6	14	4	1	2	**102**	**3.78**
LMS aided to provide feedback that helped students understand their strengths and weaknesses relative to the course's goals and objectives.	6	14	2	3	2	**100**	**3.70**

Note: SA= Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree (Mean score > 3.0 = high determinant factor)
Source: Field survey, 2018.

4.5 Effect of Learning Management Systems on Social Interaction on Campus

The results of the effect of learning management systems on social interaction on campus are represented in Table 5 below. From the response sourced, it revealed that average of 4.07 perceived that the major effect of LMS is that it aid students feel comfortable communicating through online medium, about 3.96 agrees to the fact that the effect of LMS is that it aid online discussions that helped students to have a sense of association, other effects are online or web-based communication is an excellent medium for social interaction (3.70), LMS aid students to student's relationships thereby creating comfortable interacting with each other (3.67) and also LMS's aid lecturer to student's relationships with an average of 3.19.

Table 5: Effect of Learning Management Systems on Social Interaction on Campus

Factors (n = 27)	SA (5)	A (4)	N (3)	SD (2)	D (1)	Total	Mean
LMS's aided lecturer to student's relationships.	4	10	4	5	4	**86**	**3.19**
Online or web-based communication is an excellent medium for social interaction.	6	12	4	5	0	**100**	**3.70**
LMS aided students to feel comfortable communicating through online medium.	10	11	4	2	0	**110**	**4.07**
LMS aided students to student's relationships thereby creating comfortable interacting with each other.	6	11	7	1	2	**99**	**3.67**
LMS aided online discussions that helped students to have a sense of association	5	17	4	1	0	**107**	**3.96**

Note: SA= Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree (Mean score > 3.0 = high determinant factor)

Source: Field survey, 2018

4.6 Effect of Learning Management Systems and usage on Campus

Table 6, 7 and Figure 3 below, reveals that overall satisfaction is witnessed on LMS courses with a mean score of 3.89, a mean score of 3.70 attests that LMS enabled students to describe ways to test and apply the knowledge created in the course and while the mean score of 3.52 aid problem solving and increased students' interest in course issues.

Table 6: Learning Management Systems and usage on Campus

Factors (n = 27)	SA (5)	A (4)	N (3)	SD (2)	D (1)	Total	Mean
LMS aided problems to be posed that increased students' interest in course issues.	3	12	9	2	1	**95**	**3.52**
LMS enabled students to describe ways to test and apply the knowledge created in this course.	3	17	4	2	1	**100**	**3.70**
Overall, I am satisfied with this LMS course	4	18	3	2	0	**105**	**3.89**
LMS as a way of communicating in teaching is difficult a tool to adopt in effective teaching.	4	6	7	4	6	**79**	**2.93**

Note: SA= Strongly Agree, A=Agree, N=Neutral, D=Disagree, SD=Strongly Disagree (Mean score > 3.0 = high determinant factor)
Source: Field survey, 2018

Table 7: Learning Management Systems and usage on Campus

Respondent n = 27 **Characteristics**	**Variables**	**Frequency (F)**	**Percentage (%)**
Like using LMS	Yes	23	85.2
	No	4	14.8
	Total	**27**	**100**
Think LMS is difficult to comprehend hence the difficulty in the effective implementation of this program	Yes	5	18.5
	No	22	81.5
	Total	**27**	**100**

Source: Field survey, 2018

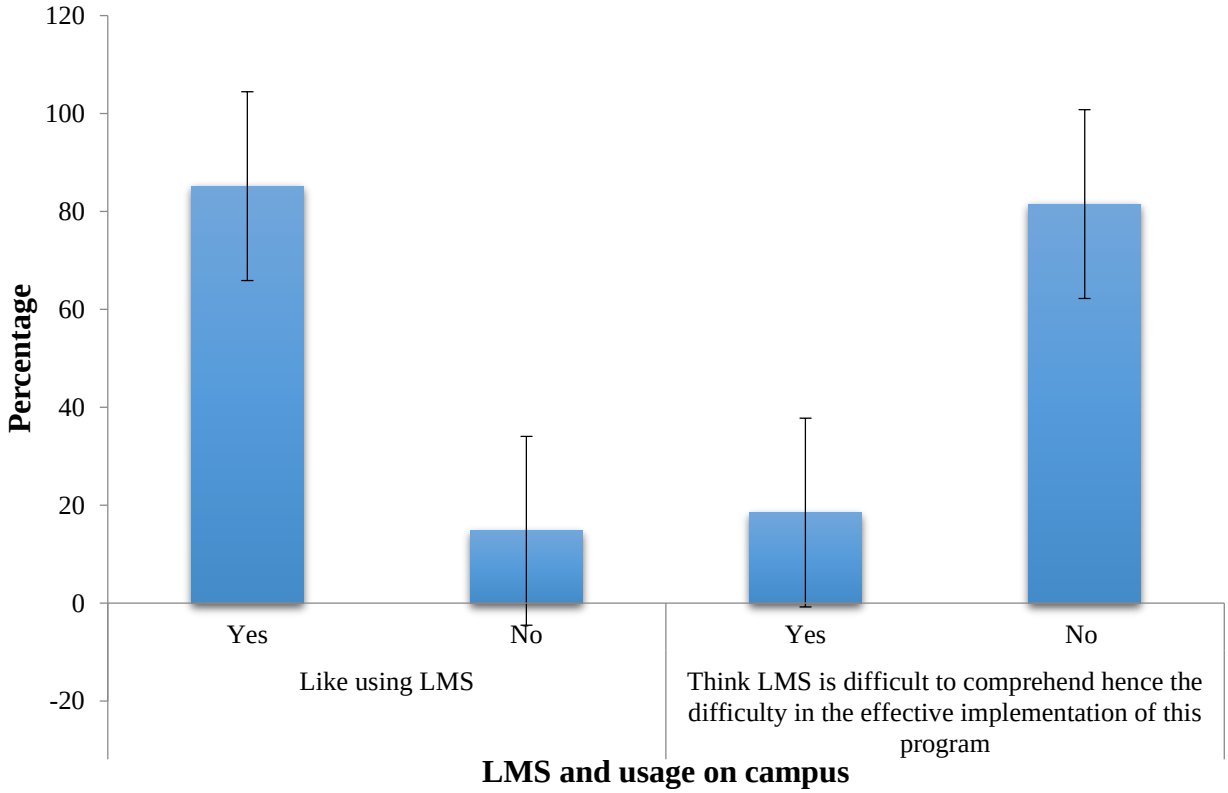

Figure 3: Effect of Learning Management Systems and usage on Campus
Source: Field survey, 2018.

5.0 IMPLICATION OF FINDINGS

Despite the positive attitude that the students within the department have developed toward LMS, the lack of adequate financial support from the college and poor accessibility to Internet negatively affect networking. However, the high availability of computers/laptops and the

presence of infrastructure in schools imply that learning institutions are catching up with the technological trends witnessed in Western countries.

6.0 CONCLUSION

Learning management systems are actively used by instructors, students, and institutions in order to provide better learning environments for teaching, learning, and administration in higher education. With the advancement of technology and information dissemination the LMS is an essential tool for university students and lecturers. Students are kept abreast with their coursework, while lecturers have an easier time reaching out to their students out of class hours and can instantly update them over the LMS about issues regarding their coursework. Challenges may abound with the use of LMS, as learning and using a whole new system altogether.

7.0 RECOMMENDATION

The study recommends that principal officers of the College provide more training and guidance for students and lecturers using the LMS, as well as have a team which is on-call at all times to solve any problems that may arise. Also more lecture hall spaces in form of lecture theatre and labs should be provided to avoid congestion in the present halls. The College can also partner with the Ministry of Information and Communication Technology to further boost her strength.

REFERENCES

Abdullah, A. (2018). Barriers to Participation in Learning Management Systems in Saudi Arabian Universities *Education Research International*. pp.1-8. https://doi.org/10.1155/2018/9085914

Adzharuddin,N.A., & Ling,L.H.(2013). Learning Management System (*LMS*) among University Students: Does It Work? *International Journal of e-Education, e-Business, e-Management and e-Learning 3*(3), 248-252. DOI: 10.7763/IJEEEE.2013.V3.233

Al-Kindy, A.M.Z., Shah, I.M., Jusoh, A.(2016).Consideration and Methodological Approaches in Studying Transformational Leadership Impact on Work Performance Behaviours. *International Journal of Advanced Research 4*(1), 889-907

Annual NBTE Data Capture Update, 2018. Federal College of Forestry, Jos.

Archives of Library and Documentation Unit Federal College of Forestry, Jos, 2018.

Ellis, R.K. (2009). *A field guide to learning management systems.* Alexandria, VA: American

Kulshrestha, T., & Kant, A.R. (2013).Benefits of Learning Management System (LMS) in Indian Education. *4*(8), 1153-1164. *International Journal of Computer Science & Engineering Technology (IJCSET)* ISSN: 2229-3345

Kumar, S. & Mishra, A.K. (2015). Social Learning through Learning Management System (LMS) in India. *International Journal of Scientific & Innovative Research Studies 3*(12), 1-11.

Nadire, C, Huseyin, U, & Dogan, I (2006).The Effectiveness of Using Learning Management Systems and Collaborative Tools in Web-Based Teaching of Programming Languages. *Paper presented at the 3rd International Symposium and Education on Electrical, Electronic, and Computer Engineering (ISEECE 2006),* 23-25 November, 2006, Near East University, Lefkoşa, Cyprus.

Sulun, C. (2018). The Evolution and Diffusion of Learning Management Systems: The Case of Canvas LMS.