

Effects of Utilization of Learning Management System on Students' Academic Performance

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Abstract: *The primary aim of the study was to assess the teachers' utilization of learning management system on students' academic performance. This study made use of the descriptive-correlational method of research which utilized standardized questionnaires as primary data gathering technique and a documentary analysis. For the teacher-respondents, the study involved 105 teachers from college, 15 from senior high school, and 228 from elementary school. In summary, there were 370 students and 348 teachers who participated in this study. The results were processed using the Statistical Packages for Social Sciences (SPSS), and the data were presented using appropriate tables and texts. The results were analyzed and interpreted using statistical tests such as weighted mean procedures on determining the level of utilization of learning management system and frequency and percentage procedure for the students' academic performance, and multiple correlations and regression analysis to determine the effects of teachers' utilization of learning management system on students' academic performance. Results of the regression analysis indicate that all the three (3) variables of utilization of learning management system affect the students' academic performance to varying extent as shown by the non-zero coefficients. However, a closer look at the obtained B coefficients, one could deduce that all variables yielded B coefficients of 1.373 (teachers' literacy), 0.713 (teachers' skills), and 0.449 (teachers' implementation) with associated probability greater than the significance level set at 0.05. This means that all sub-variables mentioned affect the students' academic performance, that for every unit improvement in variables mentioned, students' academic performance can be expected to increase by 1.373, 0.713, and 0.449, respectively, but not to a significant extent. Findings suggest implementing ongoing training sessions and workshops to enhance teachers' proficiency in LMS utilization. Emphasize not only technical literacy but also effective integration into teaching practices. This ensures that teachers are well-equipped to leverage the full potential of the LMS.*

Keywords—Learning management system, students' academic performance, descriptive-correlational study

1. INTRODUCTION

Technology is progressive as change occurs. Teachers and learners need to keep up with what is happening in order to be part of the innovation education process. Atkinson and Lim (2019) mentioned that students and teachers play different roles and thus have different perceptions about the effectiveness of assessment including structure, feedback, consistency, fairness and efficiency. In addition to that, integration of Information, Communication, and Technology (ICT) will assist teachers to the global requirement to replace traditional teaching methods with a technology-based teaching and learning tools and facilities (Ghavifekr and Rodsy, 2020). While the world is changing so as the school needs to accept the reality that technology is one part of this change. Technology has been a widespread and the fact that it can be used in the school set-up is a big factor to consider by the educational institutions and stakeholders. Currently, there are still few research in the Philippines about the impact or advantages of using ICT in the field of education and student learning. Therefore, it is interesting to note how students and teachers perceived learning environments especially when it comes to their comprehension, retention and learning motivation and satisfaction.

2. RELATED WORKS

As reported by Sudhaus (2021), technology has become an integral part of the educational experience for many students and teachers, and institutions of higher education have invested heavily in its acquisition. In the Philippine setting, the implementation of ICT to 21st century learners should be purposeful and not just a mere existing add-on to the curriculum. (Willis et.al, 2021). In the same study it was emphasized that it is a must to firstly enforce encouragement towards the implementation of ICT inside the classroom, comes second the encouraging purpose design of ICT integrated inside the schoolroom then comes the distributed access of modern technologies to the learners as such to have tendencies to learn (H.Y. Hsu, Wang, & Rungco, 2021).

According to Petko (2022), with respect to ICT implementation, it isn't just the question of how but of whether the teacher supports the ICT benefits in teaching and learning or whether they believe that ICT benefits to create relevance to modern skills, the direct result would be positive beliefs and influence as predictable result.

Embracing technology in education is a very challenging thing, and before technology can be used effectively it takes effort, understanding and mastery to both teachers and learners. Significantly, technology in educational process in

the country fights for their place and importance. Although there are so many issues show off about technology inside the classroom, positive feedback competes tremendously to those issues and negativities. Assuming that it will be of help to the teaching-learning process may be influenced by the process of implementation.

Learning management system (LMS) is a software application for the administration, documentation, tracking, reporting, automation, and delivery of educational courses, training programs, materials or learning and development programs. The learning management system concept emerged directly from e-Learning. Learning management systems make up the largest segment of the learning system market. Learning management systems have faced a massive growth in usage due to the emphasis on remote learning.

Learning management systems were designed to identify training and learning gaps, using analytical data and reporting. LMSs are focused on online learning delivery but support a range of uses, acting as a platform for online content, including courses, both asynchronous based and synchronous based. In the higher education space, an LMS may offer classroom management for instructor-led training or a flipped classroom. Modern LMSs include intelligent algorithms to make automated recommendations for courses based on a user's skill profile as well as extract metadata from learning materials to make such recommendations even more accurate.

3. STATEMENT OF THE PROBLEM

The main goal of this study was to evaluate the effects of the extent of the utilization of learning management system on students' academic performance. Specifically, the study seeks to answer the following.

1. How may the utilization of learning management system be described in terms of:
 - 1.1. teachers' literacy in using learning management system;
 - 1.2. teachers' skills in using learning management system; and,
 - 1.3. teachers' implementation of learning management system?
2. What is the level of students' academic performance?
3. Does the utilization of learning management system significantly affect students' academic performance?
4. What intervention may be drawn from the findings of the study?

4. METHODOLOGY

The researcher used the descriptive-correlational method of research since this method is concerned with the description of the independent and dependent variables. According to Creswell (2019), a correlational research design comprises collecting data to determine whether, and to what extent, a relationship exists between two or more variables. Specifically, this study aims to know if the learning management system significantly affect the students' academic performance or not.

Guided by the raosoft sampling technique, the study consisted of 123 college students and 4 senior high school students in a college in the Province of Bulacan, and 243 elementary students from Schools Division of Caloocan City during the school year 2023-2024. Furthermore, for the teacher-respondents, the study involved 105 teachers from college, 15 from senior high school, and 228 from elementary school as guided by the universal sampling technique. In summary, there were 370 students and 348 teachers who participated in this study.

To gather necessary information for this study, the researcher will use standardized questionnaires to evaluate the utilization of learning management system. The independent variable is composed of 93 questions focusing on Teachers' Literacy and Teachers' Integration, and Teachers' Competency. This questionnaire was part of a study of Lorenzo (2020), to assess the Effectiveness of the Learning Management System Literacy Project in Public High Schools of Tarlac Province, Philippines. Meanwhile, the students' academic performance was assessed using documentary analysis.

The step-by-step procedures followed in conducting this study are chronologically enumerated as follow:

1. A letter was sent to the College President, and to the Schools Division Superintendent, and to the school administrators, in order to seek permission to conduct the study.
2. With their approval, the researcher then distributed the questionnaires to the respondents personally.
3. The researcher collected the questionnaires from the respondents and checked whether all questions are answered.

5. RESULTS AND DISCUSSIONS

Utilization of Learning Management System

Teachers' utilization of learning management system got a competent rating as evidenced by mean score of 4.24, 4.23, and 4.15 on teachers' literacy, skills, and implementation, respectively.

Level of Students' Academic Performance

The table showed the frequency distribution of the level of students' performance. One could deduce that the majority of the students or 138 over 370 got a very satisfactory rating 37.3 percent while 106 students were able to get the outstanding performance with 28.6 percent. Furthermore, there were 99 students who got a satisfactory rating with 26.8 percent while 27 of them were unsatisfactory with a very minimal percent of 7.3. Meanwhile, no one got the did not meet expectation rating.

Table 1. Level of Students academic performance

Indicators	Frequency	Percentage
90 – 100 (Outstanding)	106	28.6
85 – 89 (Very Satisfactory)	138	37.3
80 – 84 (Satisfactory)	99	26.8
75 – 79 (Unsatisfactory)	27	7.3
Below 75 (Did not meet expectation)	0	0.0
Total	370	100.0

So much so, Cigdem and Ozturk (2021), provided a study about factors that affect their behavioral intention of students at secondary vocational school to use Learning Management Systems (LMS) for example, and discovered that multimedia instructions were directly helpful to influence such interactivity, ease of use and satisfaction suggesting that the higher the multimedia foreground and interactivity, the higher the supposition of ease of use, directly implied on the learner's satisfaction to engage in learning process.

In reference to perceived satisfaction, according to Liaw and Huang (2021), perceived satisfaction determines an e-system's failure or success and is an essential indicator of instructional methodologies' effectivity executed under online component systems and could turn as a barrier towards the successful implementation of the system itself. Thus, teachers' competence to integrate ICT is of critical role here.

However, a study conducted by Xiaojun Wang and Jiří Dostál in 2021 draws a difference plotting their studies from teacher's perspective with regards to ICT use integration. It has been suggested that there are many factors to consider upon ICT execution. Though teachers' behavioral attitude on ICT integrative competence is considerable to take influence on the extent of ICT effectivity, there are other factors to tackle such as the intrinsic and extrinsic factors.

Effects of Teachers' Utilization of Learning Management System on Students' Academic Performance

In this study, it was hypothesized that utilization of learning management system does not exert significant effects on students' academic performance. To determine this, the data were performed using multiple correlation and regression analysis, and this was summarized in Table 2.

Table 6. Regression analysis of Learning management system of Students Academic performance

Variables	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
(Constant)	89.6	3.78		23.6	0.0
	46	5		87	00

Teachers Literacy in Utilizing Learning Management System Skills in learning management system Learning management system implementation	1.37	1.34	0.1	1.01	0.3
	3	8	7	8	11
	0.71	1.38	0.0	0.51	0.6
	3	6	83	4	08
	0.44	0.76	0.0	0.58	0.5
	9	5	72	8	58
r-square = .018					
f-value = .381					
R=.0411					
p-value = .767					
alpha = .05					

Results of the regression analysis indicate that all the three (3) variables of utilization of learning management system affect the students' academic performance in varying extent as shown by the non-zero coefficients. However, a closer look at the obtained B coefficients, one could deduce that all variables yielded B coefficients of 1.373 (teachers' literacy), 0.713 (teachers' skills), and 0.449 (teachers' implementation) with associated probability greater than the significance level set at 0.05. This means that all sub-variables mentioned affect the students' academic performance, that for every unit improvement in variables mentioned, students' academic performance can be expected to increase by 1.373, 0.713, and 0.449, respectively, but not to a significant extent.

Results of the analysis of variance of the teachers' utilization of learning management system on the students' academic performance revealed an F-value of .381 with a p-value of 0.767. Since the associated probability of the obtained F-value is greater than alpha (0.05), the null hypothesis is accepted. This means that the variables of teachers' utilization of learning management system exert significant combined effects on students' academic performance.

Furthermore, the R able to denote multiple correlation coefficient between the different variables as a predictor of the dependent variable. It could be noted that the R is .0411 which indicates a level of prediction while R-square figure is a statistical measure on closeness of the data in regression line as the coefficient of determination or simply the coefficient of multiple determination for multiple regression. It can be indicated that the explanatory powers of the dependent variable of 0.018 implies that only 2% of the variation in utilization of learning management system is accounted by changes in students' academic performance.

Intrinsic factors are uncontrollable factors categorized as the demographics of the teacher be it age, gender, grade level competence, teaching practice, school location and experience longevity alongside with the extrinsic factors also called as the controllable factors such as computer knowledge, computer anxiety, administrative support and teaching related theories (Wang & Dostál, 2021). Therefore, the assumed conclusion of the study is that these factors are

overruled by traditional teaching principles inside run out by traditional teachers yet the upgrade in the technological facilities and electronic based curriculum does not meet upon the capacity of teachers to perform such because the educational institution does not engage on the progress and changes itself due to lack of funding source, urban location of the academe, maintenance and such.

Several studies were conducted in the name of ICT integration in education most especially in Libya. The demographical status of Libya in terms of their educational ground precede on their economic growth; given the poor funding system which resulted on lack of facilities, lack of equipments, and lack of infrastructures does fail to supplement the highspeed integration of ICT on their country because they are under developing it as far as adaptation distends (Mohamad, Idrus & Ibrahim, 2021).

Proposed Intervention Plan Based on the Findings of the Study

Context and Rationale

The integration of Learning Management Systems (LMS) in educational institutions has become increasingly prevalent, aiming to enhance the learning experience for both educators and students. However, a comprehensive assessment of the current state at our institution revealed areas for improvement in the utilization of the LMS, particularly among teachers, and a potential gap in translating this utilization to enhanced student academic performance.

The competent rating in teachers' literacy, skills, and implementation suggests that while there is a foundation, there's room for improvement. By enhancing teachers' proficiency and utilization of the LMS, one can unlock its full potential as a tool for effective teaching and learning.

While a majority of students received a very satisfactory rating in their general point average, there is an opportunity to further elevate academic performance. Targeted interventions, such as personalized tutoring and academic support programs, can provide the necessary support for students to excel.

Although the study indicates that the current level of LMS utilization among teachers does not exert significant effects on students' academic performance, it's crucial to optimize this relationship. Monitoring and evaluating the impact of LMS integration will help identify areas for improvement and ensure that the system contributes positively to student learning outcomes.

Objectives

Improve teachers' literacy, skills, and implementation of the LMS.

Enhance students' academic performance, particularly in the general point average.

Monitor and evaluate the effectiveness of LMS integration in teaching practices.

Key Improvement Area	Objectives	Strategy	Person/s Involved	Timeliness	Resources	Success Indicator
Problem 1: Level of Utilization of Learning Management System	Improve teachers' utilization on skills and literacy in the learning management system	Provide training sessions and workshops on LMS literacy and skills enhancement	School administrators, IT department, external LMS experts	6 months	Training facilities, materials, and LMS expert fees	Increase in mean scores on teachers' literacy, skills, and implementation in the follow-up assessment. Target: Mean score > 4.5
Problem 2: Students' Academic Performance	Enhance students' academic performance	Implement personalized tutoring sessions, study groups, and academic support programs	Teachers, academic support staff, students, parents	Ongoing throughout the academic year	Tutoring resources, study materials, communication tools	Increase in the percentage of students with a very satisfactory rating in their general point average. Target: > 90% of students achieving a very satisfactory rating
Problem 3: Effects of LMS Utilization on Academic Performance	Optimize the impact of LMS on students' academic performance	Monitor and evaluate the effectiveness of LMS integration in teaching practices	School administrators, teachers, IT department	Continuous assessment throughout the academic year	Evaluation tools, LMS analytics tools	Positive correlation between the level of LMS utilization and students' academic performance. Target: Pearson correlation coefficient > 0.7 with a p-value < 0.05

6. CONCLUSIONS

Based on the results of the study, the following conclusions were drawn:

1. The competent rating in teachers' literacy, skills, and implementation suggests a solid foundation, but there is a clear opportunity for improvement.

2. Despite a majority of students achieving a very satisfactory rating in their general point average, we recognize the potential to further elevate academic performance.

3. The study indicates that the current level of LMS utilization among teachers does not exert significant effects on students' academic performance, emphasizing the need for strategic interventions.

7. RECOMMENDATIONS

Based on the results and conclusions of the study, the following recommendations are offered:

1. Implement ongoing training sessions and workshops to enhance teachers' proficiency in LMS utilization. Emphasize not only technical literacy but also effective integration into teaching practices. This ensures that teachers are well-equipped to leverage the full potential of the LMS.

2. Expand personalized tutoring sessions, study groups, and academic support programs to cater to the diverse needs of students. This targeted approach aims to provide additional resources and assistance, fostering an environment conducive to academic excellence.

3. Establish a systematic process for monitoring and evaluating the correlation between LMS utilization and students' academic performance. Implement evaluation tools and leverage LMS analytics to track progress over time. This continuous assessment will enable timely adjustments and improvements.

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