



THE UTILIZATION OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AND LEARNING MANAGEMENT SYSTEM (LMS) IN EDUCATIONAL SECTOR

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Abstract: Information and Communication Technology (ICT) has become integral to our daily lives. From the way we communicate to how businesses operate. It refers to all communication technologies that enable users to access, retrieve, store, transmit, and manipulate information. It plays a huge role in driving innovation and transforming the society. This research explored the utilization of Information and Communication Technology (ICT) and Learning Management Systems (LMS) in educational sector, providing insight on the prevalent systems, their benefits, challenges, and strategies for effective implementation. Through a descriptive survey design, the research captured insights from both students and teachers, with a sample size of 89 respondents, consisting of 62 students and 27 teachers. Questionnaire was used for data collection. Four research questions guided the study. Mean, standard deviation, frequency, and percentage were used to analyse the research questions. It revealed popular LMS platforms like Canvas, Google Classroom, and Moodle. Additionally, this study sheds light on the transformative impact of ICT and LMS on traditional teaching methods, highlighting their role in facilitating flexible and accessible learning experiences. By identifying barriers and proposing strategies for effective integration, the study offers valuable insights for educators and administrators seeking to harness the full potential of technology in education in order to achieve their goals and objectives and enhance learning outcomes.

Keywords: Information and communication technology, Learning management system, Education

I. INTRODUCTION

The 21st century is characterized by an exceptional change in information and communication technology (ICT). The world has transitioned to an information society, an era where digital activities have become a universal culture. ICT is the use of systems, tools, and computing and communications technologies to facilitate the creation, collection, processing, transmission, and storage of information. It includes computing technologies such as computers, servers, software applications, and also the wired and wireless communication technologies, the Internet, the Internet of Things (IoT) and the metaverse [1]. It encompasses a variety of technologies that make information management and communication easier. These technologies include computers, software, networks, telecommunications equipment e.t.c. ICT has advanced significantly and is now affecting every facet of human life. It plays key roles in different areas like business, entertainment, agriculture, sport, medicine, education e.t.c. This advancement has led education institutions to begin to use some of the features that relay on ICT such as learning management system [2].

Learning management system (LMS) is a software used for the administration, documentation, tracking, reporting, automation, and delivering of learning and development programs, training materials and courses [3]. Learning management systems (LMS) function as centralized platforms that facilitate the management and delivery of educational content, assessment administration, student progress monitoring, and communication and collaboration. The LMS platforms provide teachers with powerful tools to create interactive course materials, present multimedia-rich content and engage students via discussion forums, assignments, and quizzes. The integration of ICT and Learning Management Systems has ushered in a new era of teaching and learning, characterized by flexibility, interactivity, and personalized instruction. It provides access to vast amounts of information through the internet, digital libraries, and online databases.



This enables students and teachers to access up-to-date resources from around the world. It also gives students opportunities to learn and apply the required 21st century skills [4] and also to develop their abilities and expose them to experiences outside of their immediate area. It makes the teaching and learning environment more interesting by letting the student's progress at their own pace while the teacher supervises them [5].

II. OBJECTIVES OF THE STUDY

The objectives of this work are to:

1. determine the learning management systems that are mostly used in education
2. determine the benefits of ICT and learning management system in education
3. determine the challenges and barriers to the successful use of ICT and learning management system in education
4. determine the strategies for effective use of ICT and learning management system in education

III. RESEARCH QUESTIONS

The following research questions are formulated to guide the study

1. What are the learning management systems that are mostly used in education?
2. What are the benefits of ICT and learning management system in education?
3. What are the challenges and barriers to the successful use of ICT and Learning management system in education?
4. What are the strategies for effective use of ICT and Learning management system in education?

IV. LITERATURE REVIEW

ICT involves all technologies that make it possible to create, share, and manage information as well as to communicate across a range of media and platforms. It plays a crucial role in driving innovation, enhancing productivity, and transforming industries and society as a whole. The use of ICT and Learning management system has completely changed teaching and learning, transforming conventional educational practices into dynamic and engaging experiences. Learning management systems are the foundation of online learning. A learning management system is a software for creating, managing, and delivering online-learning content. Organizations use LMSs to manage their online learning programs [6]. LMS can also be defined as an e-learning platform that facilitates the delivery of personalized learning with diverse content to various learners within an organization. These platforms allow the delivery of learning digitally and are used by educational institutions and organizations for training their employees in the workplace [7]. The use of ICT and learning management system promote inclusive education by providing accommodations and support for students with different learning needs, impairments, and language backgrounds. Assistive technologies, multimedia resources, and accessibility features help students to participate fully in educational activities.

Features of Learning Management System

Some of the features of learning management system include: a user interface that is easy to navigate and attractive [8]. Assessments: this feature is essential for evaluating how well the students progress and measuring their levels of engagement and knowledge retention. It enables the teachers to give tests, quizzes, projects, assignments and exams via the LMS in order to give the students the chance to demonstrate their knowledge and identify their strengths and weaknesses. Centralized Storage: this feature allows for the storing learning materials, such as documents, images, audio files, videos, progress reports and presentations. Having a centralized and easily manageable knowledge base open to all students 24/7 makes learning easy and accessible. Security: Learning management systems have various security components to protect one's data against malware and unauthorized third-party access. Some key features are data encryption, multi-factor authentication, user roles and permissions, automated data backups. Course and Content Management: An LMS has tools to manage training. It enables teachers to create new materials, copy and reuse classes and content, customize materials to meet requirements and manage the students. Collaboration elements: Like discussion groups and forums where students communicate and collaborate as they work through their modules. They can engage in peer-to-peer discussions, ask questions and get answers. Gamification: Game-based elements, like badges, leaderboards and certificates that reward learners for completing specific tasks and meeting set goals [9]. Reports and Analytics: these features enable teachers to track learners' progress and identify ways to improve courses [10].

Review of Related Literature

[5] conducted a study on the availability and utilization of adequate ICT as correlates of effective learning of Basic Science. They highlighted the ways that ICT can improve teaching and learning, give access to knowledge and experiences beyond students' immediate environment, contribute to the development of a technologically skilled workforce.



The purpose of the study was to determine the extent to which ICT resources are used in teaching and learning procedures. Data was collected using questionnaires and interviews from science students, teachers and administrators who were asked to evaluate how ICT is used in teaching and learning in Nigerian public secondary schools, particularly those in the North-eastern States. The findings of the study revealed that ICT can serve as a very good teaching resource that can be employed in the teaching and learning of basic science in Nigerian schools, as it will help to visualize and organize learning in general. It also revealed that full integration of ICTs can help revitalize teachers and students and this will go a long way toward increasing the quality of education by providing curricular assistance in the disciplines of fundamental science and technology. [12] carried out a study on the implications of learning management system on education quality in the new normal era: evidence from Islamic higher education. A qualitative research design with a descriptive approach was used to explore two main themes: the advantages and disadvantages of using LMS applications. The data collection technique used was a written interview method with 10 lecturers and 50 students analysed using content analysis techniques. The study was conducted at the Islamic State Institute of Metro (IAIN), Metro City, Lampung Province. The results showed that LMS helps lecturers in creating, distributing, and managing learning content anytime and anywhere. It also revealed that students showed weakness in using the LMS mainly because of poor signal problems, lack of interaction in learning, and the impossibility of uploading videos and photos for practical assignments.

[13] conducted a study on the prospects and challenges of learning management systems in higher education. The research examined current practices, opinions, and challenges that help academicians and system developers contribute to better learning practices and academic achievement. It also aimed to gain instructors' perspective of LMS, investigate the use of its functions, and identify the barriers that may influence LMS utilization at the Gulf University for Science and Technology (GUST). A quantitative method that included a sample of 58 faculty members from GUST was used. Questionnaire was used for data collection. Findings obtained from the study indicated that instructors were generally comfortable and had positive perceptions about Moodle, a GUST learning management system. The results also revealed that LMS's administrative functions, such as files and announcements, are widely used compared to the advanced interactive learning activities such as interactive books and chatting. [14] examined the use of several LMS features by geology graduates at King Fahd University of Petroleum and Minerals. Survey was used to seek students' perceptions of the utilization of the LMS. The study showed that students were favouring the online discussion and believed it as a handy tool. Other tools, such as e-mail, announcement, and grade book, were also important from the students' point of view. A research conducted by [15] aimed to understand instructors' utilization of LMS in Malaysian higher education institutions. A quantitative approach was used, in which questionnaires were distributed to 93 instructors. The investigation included some LMS functions and tools like announcements, files, chat, forums, exercises, and documents. The results revealed that instructors have positive perceptions of these functions. However, it also showed a low percentage of instructors' utilization of LMS.

Similarly, [16] examined the relationship between 222 instructors representing six Saudi Arabian universities. The investigation was conducted to understand instructors' perceptions of LMS tools and functionalities. The findings revealed that LMS capabilities were not utilized for most of the courses; however, the study indicated some barriers, such as fear of usage. A comparative analysis of several commercial LMS was reported by [17]. The study revealed That LMSs include similar features that allow the delivery and management of different courses. However, functions that assist students and instructors in performing online laboratory experiments are not available since most engineering and science courses require these tools. The study proposed that the online learning of engineering and science courses should be facilitated via a virtual laboratory supported by LMSs. Also, [18] examined LMS usability, in which an analysis of 36 LMSs was performed. Findings showed that all LMSs support multimedia elements such as text, files, images, audio, and videos. There is, however, a lack of communication support for LMS, which leads to using social networks outside the LMS. Furthermore, a study by [19] aimed at gaining students and instructors' perspectives on the use of blackboard LMS. The results showed that students were most comfortable using Blackboard and indicated that their performance and communication with instructors improved considerably. The instructors considered the time factor to be a fundamental challenge related to the use of the LMS. In spite of the challenges, however, the blackboard platform was a positive experience for the instructors and well received by the students.

Categories of Learning Management System

There are numerous learning management systems used in education.

Moodle: It is an open-source LMS used to facilitate online learning. It can be used by students from K-12 through to higher education. it offers various features to monitor students' progress and engagement, integrate multimedia content, and provide a variety of grading and assessment and options [20].

360Learning: It is an AI-driven LMS with collaborative learning capabilities. It allows for mobile content creation and shared device access. Organizations can use it carryout internal employee training and external training such as customer training and partner enablement. It is user-friendly, has comprehensive data and analytics and built-in certification engine [21][20].



TalentLMS: It has various features that allows teachers and administrators to track student progress and employee performance, manage courses, and implement gamification. It supports multiple languages [20].

Canvas: This LMS makes teaching and learning easier for everyone such as early learners, college faculty, and business leaders. It enables teachers to upload learning materials, assignments and create quizzes online and it provides unlimited storage space [21].

Google Classroom: It has both web and mobile applications. It provides different types of classrooms for school accounts, personal google accounts, and workspace accounts. It can integrate google meet for generating meetings for classrooms and allows sharing of materials from google drive [21].

iSpring Learn: It offers a comprehensive platform for creating, managing, distributing, and monitoring eLearning. It is a user-friendly learning platform for impacting performance and streamlining employee training [20]. It is used for employee onboarding and upskilling. It is SCORM (Sharable Content Object Reference Model) compliant. It automatically manages training deadlines and sends invites and reminders [22].

Blackboard: It is a platform for managing, delivering, and evaluating online courses. It has seamless integration with student information systems and access through mobile devices. Its features foster communication and collaboration between teachers and students, enable online and blended learning, provide a central repository for course materials and assignments, and support a range of assessment and grading options to track learner progress [20].

Benefits of ICT and Learning Management System in Education

The use of ICT and learning management system in education has so many benefits. According to [5], teachers can use ICTs to browse through e-books by using smart phones. They can also connect with researchers, experts, and mentors. ICTs can improve the quality of education by boosting students' motivation and aiding the acquisition of fundamental skills. Also, according to [23], the benefits of ICT in teaching and learning include; improves engagement and teamwork, improves knowledge retention, encourages individual learning and students can learn useful skills through technology. [24] also outlined some benefits of ICT in education to include; student centred learning, promotes students' engagement and knowledge retention, any place learning, access to wide range of learning resources, collaborative learning, improves students' motivation and enhancing teacher training. According to [25], the proper implementation of LMS can provide students with self-paced learning, offers unlimited access to e-Learning resources, integrates social learning experiences, tracks learner progress, and increases cost-effectiveness. LMS offers a variety of functions and tools such as interactive books, assignments, announcements, quizzes, forums, chat, labels, and links to learning resources [25, 26, 27]. These tools and functions enrich the management of class activities online and facilitate communication and collaborations between students and faculty members [17, 28]. LMS provides flexibility for users to be able to design and manage learning in accordance with the aims and learning objectives [29].

Challenges of ICT and Learning Management System in Education

There are some challenges involved in the use of ICT and learning management system in education. According to [23], some of the challenges of using ICT in teaching and learning are Lack of learning equipment and resources, inadequate training, teachers' reluctance to new technology, lack of skilled personnel. [24] outlined some challenges of ICT in education to include high cost of ICT tools, poor ICT infrastructure, language and culture barriers, lack of technical support, lack of trained teachers. Studies by [30, 31] listed some barriers to LMS implementations: instructor commitment, lack of students, and instructors' feedback, and technical support. [32] identified some challenges of using LMS to include insufficient technical support, a negative attitude toward technology, inadequate training on the LMS platforms, poor Internet connectivity and networking, limited infrastructure support, lack of hardware and LMS software, and English-speaking challenges. According to [11], the challenges of LMS include lack of planning and strategies for the LMS implementation, the lack of user participation and training, lack of models to track and forecast the evolution of LMS, and lack of models support the decisions regarding LMS implementation.

V. METHODOLOGY

The study used a descriptive survey design. A sample size of 89 respondents, consisting of 62 students and 27 teachers. Purposive sampling technique was used for the study. Questionnaire was used for data collection. The questionnaire has two sections, A and B. Section A deals with the demographic data of the teachers and students. Section B contains information on ICT and learning management system. Section B has four clusters. Clusters A, B, C, and D. Clusters B, C and D has four-point rating - Strongly Agree (SA) – 4 points, Agree (A) – 3 points, Disagree (D) – 2 points, Strongly Disagree (SD) - 1 point.



Method of Data Analysis

The data collected from the respondents was analysed using mean, standard deviation, percentage, and frequency.

$$\text{Mean, } \bar{X} = \frac{\sum X}{N}$$

Where, $\sum X$ = Summation of the values
 N = Total number of values

The questionnaire items have response modes of SA, A, D, SD, with weights 4, 3, 2, and 1 attached to them respectively. To determine the cut-off point,

$$\bar{X} = \frac{\sum X}{N} = \frac{4+3+2+1}{4} = \frac{10}{4} = 2.50$$

Decision Rule: any response with a mean of 2.50 and above is adjudged accepted, while any response with mean of 2.49 and below is adjudged rejected.

VI. DISCUSSION AND RESULT

The results of the study are presented in tables and graphs in accordance with the research questions.

Table 1: Learning management systems that are mostly used in education

S/N	NAME	STUDENTS		TEACHERS	
		FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
1	Moodle	9	14.5%	12	44.4%
2	360Learning	8	12.9%	3	11.1%
3	Canvas	54	87.1%	25	92.6%
4	Google classroom	40	64.5%	13	48.1%
5	TalentLMS	10	16.1%	5	18.5%
6	ispring Learn	1	1.6%	2	7.4%

Table 1 shows that from the students' perspectives, the learning management systems mostly used are Canvas with a frequency of 54 (87.1%) and Google classroom with a frequency of 40 (64.5%). Other LMSs like TalentLMS, Moodle, 360Learning and ispring Learn have frequencies of 10 (16.1%), 9 (14.5%), 8 (12.9%) and 1 (1.6%) respectively are ranked low in the learning management systems that are mostly used in education.

Table 1 also shows that from the teachers' perspectives, the learning management systems that are mostly used are Canvas with a frequency of 25 (92.6%), Google classroom with a frequency of 13 (48.1%) and Moodle with a frequency of 12 (44.4%). Other LMSs like TalentLMS, 360Learning and ispring Learn have frequencies of 5 (18.5%), 3 (11.1%) and 2 (7.4%) respectively and are ranked low in the learning management systems that are mostly used in education.

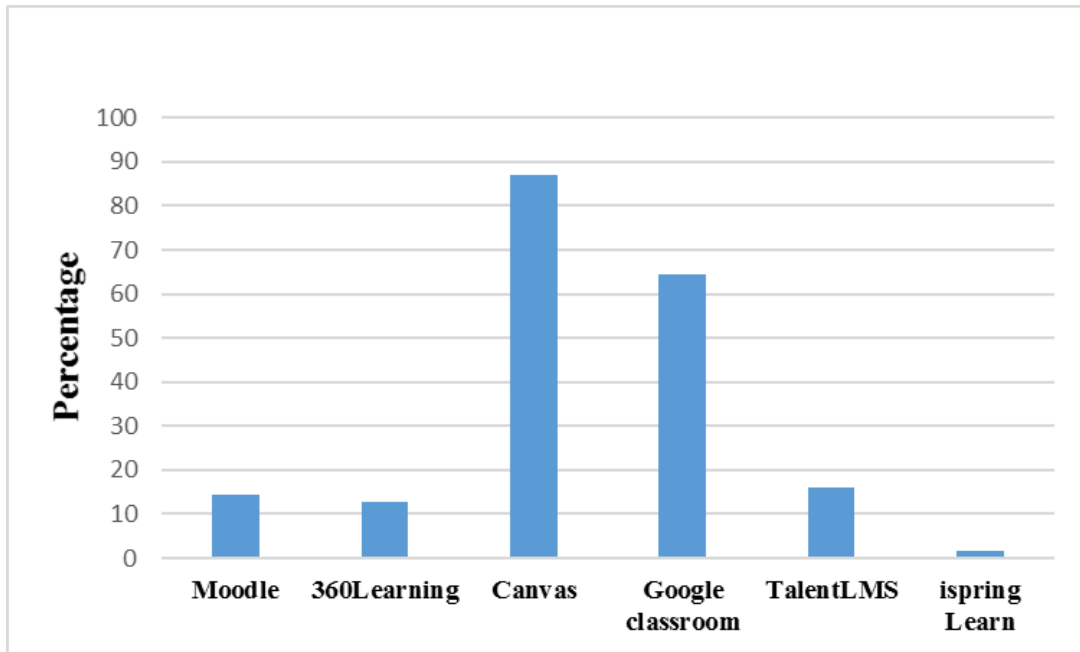


Fig. 1: Students' percentage distribution of learning management systems that are used in education

Fig 1 indicates that Canvas and Google classroom are learning management systems that have the highest patronage according to the students. Other learning management systems like Moodle, TalentLMS, 360Learning and ispring are least utilized.

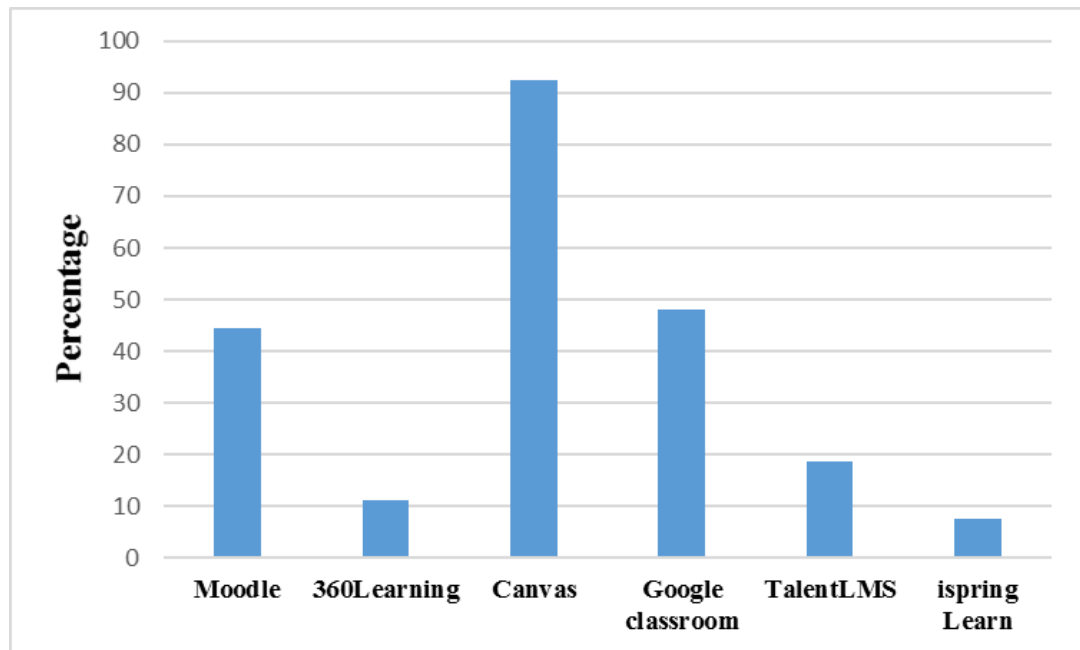


Fig. 2: Teachers' percentage distribution of learning management systems that are used in education

Fig 2 shows that Canvas, Google classroom and Moodle are learning management systems that are mostly used from the teachers' perspectives. Other learning management systems like TalentLMS, 360Learning and ispring are ranked low in the learning management system that are used in education.



Table 2: Benefits of ICT and learning management system in education

S/N	ITEMS	STUDENTS			TEACHERS		
		\bar{X}	SD	DECISION	\bar{X}	SD	DECISION
8	Accessibility of learning materials and resources	3.16	0.909	Accepted	3.70	0.542	Accepted
9	Promote personalized learning experiences tailored to individual student needs, preferences, and learning styles	3.16	0.772	Accepted	3.56	0.577	Accepted
10	Allows the tracking of students' progress and performance	3.10	0.783	Accepted	3.74	0.447	Accepted
11	Enhance the development of essential 21st-century skills like digital literacy, critical thinking, problem-solving, and collaboration	3.18	0.859	Accepted	3.67	0.555	Accepted
12	Promote collaborative learning among students	3.02	0.932	Accepted	3.15	0.718	Accepted
13	ICT and LMS make it easier for students to complete assignments and keep track of deadlines	2.79	0.994	Accepted	3.63	0.565	Accepted
14	Facilitate communication between students and their teachers	2.48	0.971	Rejected	3.30	0.775	Accepted
15	Parental access to students' progress	3.26	0.828	Accepted	3.70	0.465	Accepted
16	Offers new teaching and learning techniques	3.08	0.874	Accepted	3.78	0.506	Accepted
17	Students are able to manage their time and study schedule with the help of ICT and LMS	2.61	1.092	Accepted	3.41	0.572	Accepted
18	Promote students' engagement, motivation, and participation in the learning process leading to improved academic performance	2.87	1.032	Accepted	3.56	0.506	Accepted

Table 2 shows that items 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 have means of 3.16, 3.16, 3.10, 3.18, 3.02, 2.79, 2.48, 3.26, 3.08, 2.61 and 2.87 respectively. It is therefore the opinions of the majority of the respondents that through the use of ICT and learning management systems, there is accessibility of learning materials and resources, it allows the tracking of students' progress and performance, enhance the development of essential 21st-century skills like digital literacy, critical thinking, problem-solving, and collaboration.

The respondents also agreed that the use of ICT and LMS promote collaborative learning among students, make it easier for students to complete assignments and keep track of deadlines, parents have access to students' progress, offers new teaching and learning techniques, students are able to manage their time and study schedule, promote students' engagement, motivation, and participation in the learning process leading to improved academic performance.

However, the respondents made a strong disagreement that the use of ICT and learning management system does not facilitate communication between students and their teachers and it deemed rejected because it is indicated by a mean of 2.48 which is below the minimum acceptance level of 2.50.

Table 2 also shows that items 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 have means of 3.70, 3.56, 3.74, 3.67, 3.15, 3.63, 3.30, 3.70, 3.78, 3.41 and 3.56 respectively. The mean scores are above the minimum acceptance level of 2.50, therefore, the decision is accepted as to the benefits of ICT and learning management in education.



Table 3: Challenges and barriers to the successful use of ICT and LMS in education

Table 3 shows that items 19, 20, 21, 22, 23 and 24 have means of 3.31, 3.68, 3.47, 3.31, 3.31 and 3.63 respectively. It is the opinions of the respondents that there are privacy and security concerns, poor internet connectivity, inadequate ICT facilities, lack of digital skills among students and teachers, lack of effective training and technical issues and support. Table 3 also shows that items 19, 20, 21, 22, 23 and 24 have means of 3.33, 3.78, 3.22, 3.30, 3.07 and 3.41 respectively.

S/N	ITEMS	STUDENTS			TEACHERS		
		\bar{X}	SD	DECISION	\bar{X}	SD	DECISION
19	Privacy and security concerns	3.31	0.861	Accepted	3.33	0.679	Accepted
20	Poor internet connectivity	3.68	0.594	Accepted	3.78	0.424	Accepted
21	Inadequate ICT facilities	3.47	0.804	Accepted	3.22	0.751	Accepted
22	Lack of digital skills among students and teachers	3.31	0.737	Accepted	3.30	0.609	Accepted
23	Lack of effective training	3.31	0.822	Accepted	3.07	0.781	Accepted
24	Technical issues and support	3.63	0.520	Accepted	3.41	0.694	Accepted

The mean scores are above the minimum acceptance level of 2.50, therefore the decision is accepted as to the challenges and barriers to successful use of ICT and learning management system in education.

Table 4: Strategies for effective use of ICT and learning management system in education

S/N	ITEMS	STUDENTS			TEACHERS		
		\bar{X}	SD	DECISION	\bar{X}	SD	DECISION
25	Utilization of collaboration tools within LMS platforms to facilitate group projects, peer reviews and online discussions	3.45	0.803	Accepted	3.48	0.509	Accepted
26	Proper teacher training and professional development	3.61	0.583	Accepted	3.52	0.700	Accepted
27	Integrating digital literacy education into curriculum to ensure that students develop essential skills for navigating online environments.	3.56	0.668	Accepted	3.70	0.465	Accepted
28	Implementing robust data privacy policies and security protocols to safeguard teachers and students' information	3.56	0.716	Accepted	3.63	0.565	Accepted
29	Learning content should be engaging and meaningful	3.60	0.586	Accepted	3.70	0.465	Accepted
30	Enabling continuous improvement by regularly getting feedback from students and teachers on LMS functionality	3.53	0.718	Accepted	3.63	0.565	Accepted
31	Establishing technical support team to assist teachers, students and parents to fix technical issues	3.63	0.607	Accepted	3.74	0.447	Accepted
32	Ensuring that LMS is user and mobile friendly (it can be accessed on various devices like tablets and phones)	3.63	0.773	Accepted	3.89	0.320	Accepted
33	Provision of a robust internet connection	3.73	0.657	Accepted	3.93	0.267	Accepted

From Table 4, items 25, 26, 27, 28, 29, 30, 31, 32 and 33 have means of 3.45, 3.61, 3.56, 3.56, 3.60, 3.53, 3.63, 3.63 and 3.73 respectively. The respondents agreed that the strategies for effective use of ICT and learning management systems are: utilization of collaboration tools within LMS platforms to facilitate group projects, peer reviews and online discussions, proper teacher training and professional development, integrating digital literacy education into curriculum to ensure that students develop essential skills for navigating online environments.



The respondents also agreed that robust data privacy policies and security protocols should be implemented to safeguard the teachers and students' information, learning content should be engaging and meaningful and there should be continuous improvement by regularly getting feedback from students and teachers on LMS functionality. They also revealed that technical support team should be established to assist teachers, students and parents to fix technical issues, LMS should be user and machine friendly and there should be robust internet connection. The decision shows that all the items were accepted as the strategies for effective use of ICT and learning management in education.

Table 4 also shows that items 25, 26, 27, 28, 29, 30, 31, 32 and 33 have means of 3.48, 3.52, 3.70, 3.63, 3.70, 3.63, 3.74, 3.89 and 3.93 respectively. The decision shows that all the items were accepted as the strategies for effective use of ICT and learning management system in education.

VII. FINDINGS OF THE STUDY

The analysis of data collected for the study revealed some remarkable results. A summary of the results of this study are as follows:

1. The learning management system that are mostly used in education are canvas, google classroom and moodle.
2. That the use of ICT and learning management system in education promotes personalized learning experiences tailored to individual student needs, preferences and learning styles.
3. It enhances the development of essential 21st-century skills like digital literacy, critical thinking, problem-solving, and collaboration.
4. It promotes students' engagement, motivation, and participation in the learning process leading to improved academic performance.
5. Poor internet connectivity, privacy and security concerns and inadequate ICT facilities are challenges to the successful use of ICT and LMS in education.
6. There should be utilization of collaboration tools within LMS platforms to facilitate group projects, peer reviews and online discussions.
7. A robust data privacy policies and security protocols should be implemented to safeguard teachers and students' information.
8. A robust internet connection should be provided and technical support team should be established to assist teachers, students and parents to fix technical issues and also proper teacher training and professional development.

VIII. CONCLUSION

Information and communication technology (ICT) and learning management system (LMS) have great impact in education. These technologies have transformed the traditional teaching and learning methods. They promote anytime and anywhere learning, enabling students to access course materials and participate in activities at their own pace and convenience. The study also looked at the challenges towards the successful use of ICT and LMS in education and also revealed some strategies to be put in place for effective use of ICT and LMS in teaching and learning in order to achieve educational goals and objectives and enhance learning outcomes.

IX. RECOMMENDATIONS

Based on the findings drawn from this study, the researchers have made the following recommendations;

1. There should be comprehensive training programs, workshops and seminars to train teachers, students and administrators with the features, functionalities and best practices of ICT and LMS in order to develop their digital literacy and technical skills for effective teaching and learning.
2. School administrators should invest in ICT infrastructure and resources like hardware, software, network connectivity and technical support services to ensure successful outcome.
3. School administrators should regularly evaluate the effectiveness, usability and impact of ICT and LMS implementations through feedback surveys, user analytics, learning analytics and assessment data in order to identify areas for improvement.



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