



DOI: <https://doi.org/10.71317/kjard.2.5.2026.349>

The Kashmir Journal of Academic Research and Development

Journal homepage: <https://rjsaonline.org/index.php/KJARD>



Activation and Adoption of Learning Management System (LMS) In Public Schools of Quetta

Mehar Jan

PhD Scholar, Department of Education, Alhamd Islamic University, Quetta

Email: meharjanbarech@gmail.com

Dr. Quaratulain

Assistant Professor, Department of Education, Alhamd Islamic University, Islamabad, Pakistan

Email: quratul.ain@alhamd.pk

Dr. Abdul Rahim

Associate Professor, Department Of International Relation, Alhamd Islamic University, Quetta, Pakistan

Email: raheem_qta@hotmail.com

Shagufta Ambreen

Head of department, Department of Education, Alhamd Islamic University, Quetta, Pakistan

Email: shagufta.umbreen@alhamd.pk

Zainab Faiz Jaffar

PhD Scholar, Department of Education, Alhamd Islamic University, Quetta

Email: zainabfaizjaffar@gmail.com

ARTICLE INFO

ABSTRACT

Received:

March 02, 2026

Revised:

March 16, 2026

Accepted:

April 23, 2026

Available Online:

May 05, 2026

Keywords:

Learning Management System (LMS), Teacher challenges, Public schools

Corresponding Author:

Mehar Jan

Email:

meharjanbarech@gmail.com

The study examine the adoption and implementation of the Learning Management System of (LMS) in public schools of district Quetta Balochistan. Digital literacy holds immense importance in current era. LMS plays an important role in education. There are many challenges in effective implementation of the program. LMS introduced by bureau of curriculum in collaboration with Mediatiz team. However, empirical study is required to check whether the system implemented successfully, and teachers are facing which challenges. Therefore, this study aims to assess the activation in adaptation of system and the institutional providence. A mix method descriptive research employed. Researcher collected quantitative data from trained teachers with questionnaire using 5-point Likert scale using random sampling techniques. Qualitative data from head teachers collected using semi-structured interview question. Descriptive analysis used for frequency, mean and standard deviation. The findings of the study provide frequency of adoption of the system in public school. The challenges faced by teachers, an in depth view of head teachers about its implementation. The findings helped curriculum experts to improve training, infrastructure and technical support to public school teachers.

Introduction

Background study

The advancement of digital technology has changed the scene the of education system. This advancement in technology has made the classroom environment more learning friendly and flexible environment. Learning management system is one of them (Ahmed et, el 2022). Verma and Singh 2021, discussed the importance of Learning Management system that teacher can easily teach and assess students the system. This innovation has become popular in distance education and effective the learning outcomes of students.

Ozkan et al in 2023 revealed that in recent years the LMS has flourished due to COVID-19 pandemic. The system not only support digital learning but also, made the functionality of classroom and student. It made the assessment and progress of the students easy on one click. Gruzina et, el in 2021 argued that LMS adopted in underdeveloped areas. The main objective of its adaptation is to modernize the teaching practice of these areas. The strategy will help in making education system more efficient and active.

Although there are advantages using learning management system but its success depends on the readiness and digital competency of the students. Institutional support also is a great impact factor in this regard. (T.Saha, 2023). The studies also revealed that teachers motivation, training and infrastructure effect the continuous use of learning management system LMS in routine. The willingness of the teacher is important (Rekha, 2024).

Rini et el, (2024) discussed a vital challenge that teachers activate the LMS account due to their institutional needs and pressure but fail to continue it successfully. The sustainability become a challenge for the teachers due to work- load or other factors.

Context of the study

Government of Balochistan introduced (LMS) for the first time in the province to improve the education quality of public schools. Teachers are assign the role as administrative or teacher in the dashboard of the system. Students can avail the benefits by signing in in system. However, the system needs an empirical research to know how whether teachers are implementing it in classroom.

Problem statement

Government has introduced Learning Management System (LMS) in public schools of Balochistan. Public teachers received training for this purpose, during training teachers activated their accounts and signed in. This study is important to check the sustainability activation and of the system and provide empirical evidence of the usage. Moreover, teachers face many challenges in adopting and using the LMS. These challenges includes lack of training, poor digital skills, insufficient infrastructure, lack of parent's involvement in the process. In consequences, school do not achieved the desired results for an interactive learning and engagement of the students.

Significance of the study

The study will examine the activation and utilization of the Learning Management System (LMS) in Balochistan. The implementation of the system is for the media literacy subject. The media literacy introduced in public to avoid fake news and use it with safety. The study will contribute in highlighting the ratio of LMS activation and usage practically in public schools. Policy makers and reformers will get benefit from it.

Objectives of the study

- To assess the level of LMS activation in public school teachers in Quetta.
- To examine the practical usage of LMS in classroom.
- To identify the challenges faced by teachers in using the LMS.

Questions of the study

- What is the level of LMS activation in public school teachers?
- To what extent teachers are using LMS practically in classrooms?
- What challenges faced by public school in implementation of LMS?

Literature Review

Learning management system used in last decade commonly in education system. During COVID-19 pandemic digital tools usage to be enhanced. Digital literacy and blended learning accelerated in that era. Face to face classes was not possible at that time it needed the digital technology usage to continue education progress Ahorsue et el (2020).

Development and trends in LMS system

Current literature shows a fast increase in use of LMS in education. Modern researcher highlight different tools for digital learning. The tools helps in extending learning where physical participation is impossible Anggraini and Handayani 2022. The benefit of the LMS is in times of crisis like pandemic, implementation of unified curriculum and socio- economic critical conditions Armour et al.2022.

Developments in use of LMS in public schools

Recently LMS adoption is increasing rapidly in public schools. It implemented specially in Asia and Europe. The engagement of students with teachers has improved. LMS usage also strengthen the administration performance in implementing blended learning (Minh &Phuong, 2023). Researches revealed that LMS plays an important role in organization of course and completing assessment in diverse backgrounds. The system act as a bridge between student and teachers (Alsahrani, 2023).

(Pradeep et al., 2024) in their study revealed that public schools are adopting LMS to adapt AI support to enhance the learning outcomes of the student and switch to data motivated educational system. Over all these transformation is basically, due to use of LMS for the explanation of content and advance activities digitally. LMS has the capability of monitoring the progress and development in the classroom activities.

Factors effecting the LMS activation in public schools

There are different factors effecting the implementation of LMS. The infrastructure is major issue it included internet continuity, computer or laptop availability lack of other resources related to digital work Rayan and Deci (2023).

The main factor is the competency of teachers to know the use of LMS usage and make it sure for its usage easy for students. Institutional assistance and teacher's training is required for this successful implementation of LMS in public schools Farhaan et el. (2024).

Almusafar, 2025 argued that providences of school support and training of teachers exhibit to greater engagement of students in studies. The willingness of teachers also plays an important role in this regard. Teacher's willingness, interest and acceptance is key element.

Effects and advantages of LMS in schools

Studies shows many positive impacts of LMS in public schools. LMS enhanced student's outcomes and engagement communication channel between teachers and students. It provides quality to education due to its timely feedback and implication of quality evaluation strategies. LMS helps in student progress, quality check and communication in teachers and students. LMS provide equal access to students to avail learning materials and activities regardless of geography and location. LMS also enhance the identification of those student who are at risk and not active in system Ayubi & Retnowardhani (2024).

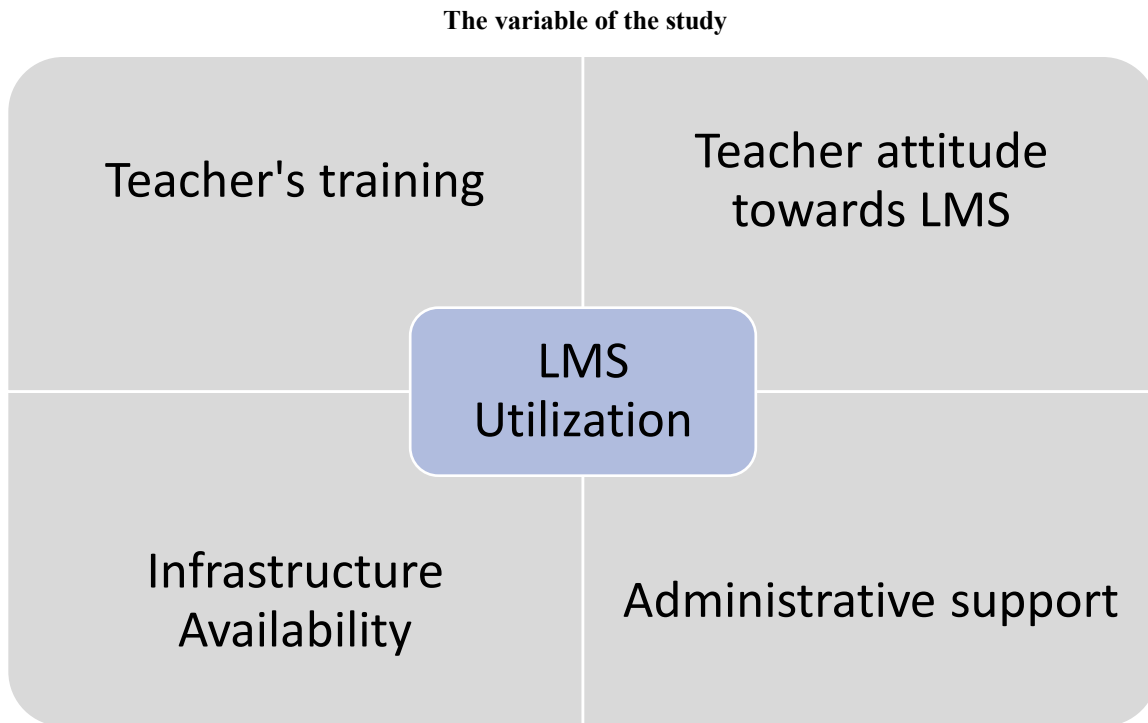
Summary

Many studies conducted in different countries on the adoption and implementation of LMS but there are few studies focusing on its activation and routine use of the system in public schools in Pakistan. In Balochistan, freshly introduced by bureau of curriculum in collaboration with mediatiz team so there are no evidence of studies to assess the activation and adoption of LMS in classrooms, specifically for a new subject media literacy. This gap need to fill with empirical study for measuring its activation and implementation in public schools of district Quetta.

Theoretical framework

The study based on Technology Acceptance Theory Model. Presented by Fred Davis 1989. The theory consist of two major factors. First factor is perceive of usefulness. This factor refers to the usefulness of technology and users understanding of the fact that how technology will improve their performance. This represented by Teacher training, administration support and infrastructure. The second factor perceived of ease. It refers to the, believe of its users and easiness of adoption of technology. It refers to teacher's attitude and the utilization represent the actual use. Based on the theory in the current study.

Conceptual framework



Method

Research design

The study employed a mixed method approach with exploratory design to examine the activation and implementation process of LMS in public schools. Mix method helped in collecting, quantitative data from trained teachers and qualitative data helped in gave an in depth insight of the Mediatiz team about the activation and practical adaptation of LMS in public schools.

Population of the study

The population of the study included 200 teachers who have received the LMS training in in district Quetta in collaboration with Mediatiz team. Quantitative data collected from teachers. Quantitative data helped in measuring the level of activation and implementation in public schools of Quetta Balochistan. The population for qualitative team consisted of members of Mediatiz team.

Sample and sampling techniques

From the total 200, trained public school teachers 110 teachers selected as sample of the population to collect quantitative data. Teachers selected by simple random technique. Eight head teachers selected for, semi-structured interview to collect qualitative data for deep insight of the utilization level of LMS in schools.

Data collection instruments

For quantitative data, collection 5- point Likert scale questionnaire developed for trained teachers of district Quetta. The questionnaire consisted of scales and items related to LMS activation and its adaptation frequency and challenges.

In qualitative phase, semi-structured interview questions used to collect data for LMS activation and adaption challenges in district Quetta.

Data collection procedure

The researcher collected data from trained teachers with the help of structured questionnaire with 5-point Likert scale. The demographic information rows placed as the first section of the questionnaire. This questionnaire for quantitative data constructed in four scales consisted of 20 questions. The scales consisted of the items related to activation, adaptation and challenges in implementing the system. The semi-structured interview questions were ten in number. These questions also determines the activation level of LMS and challenges in implementation of the system in public schools.

Data Analysis

For analysis of quantitative data the SPSS-27 version used. The data of 5-point Likert scale questionnaire entered in SPSS data view tab and in variable view, the data coded to the related variable. The descriptive statics used in analysis for frequency, mean and standard deviation. It helped to interpret the responses of the respondent.

Thematic analysis employed for qualitative data. The semi-structured interview recorded first then converted it in written, organized and coded in themes for convenience to recognize perception of Mediatiz team and challenges effecting usage of LMS.

Ethical consideration

Participant consent was make sure. Permission also obtained from participant moreover they were ensured that the responses will use only for research purpose.

Results

The chapter interpret the quantitative and qualitative data results. Quantitative data collected from the public school teachers in the form of questionnaire consisted of 20 items of four scales. Qualitative data collected from members of Media team to get deep insight in to the activation, utilization and challenges related to its implementation. The collected data then enter in SPSS for descriptive and inferential results. Demographic information were part of the questionnaire both in close- ended questionnaire for teachers and open-ended questions of media team members.

Descriptive Analysis

Demographic data

Table 1: Gender of respondent

Gender	Frequency	Percentage
Male	50	50%
Female	50	50%
Total	100	100

Table 1 shows that 50 male and 50 female- trained teacher participated in the study. The percentage of the respondents are 52.7% male and 47.3% female teachers.

Table 2: Age data of the respondents

Age group	Frequency	Percentage
25-30	24	24
31-35	35	35
35-40	25	25
Above 40	16	16
Total	100	100

Table 2 shows that the respondent between 31-35 years are large in number and 36 to 40 year respondents are 25 in number. The smallest group is above 40 who are 16 in number.

Table 3: Teaching experience of teachers

Teaching Experience	Frequency	Percentage
1-5 years	20	20.0
6-10 years	37	37.0
11-15 years	27	27.0
Above 15 years	16	16.0
Total	100	100

Table 3 shows that most of respondents are with teaching experience between 6-10 years and only 18 (16.3%) had experience more than 15 years.

Descriptive analysis of LMS variables**Table 4: LMS usage and effectiveness**

Statement	SD%	D%	SWA%	A%	SA%	Mean	SD
I regularly use LMS in teaching.	20.0	6.0	14.0	44.0	16.0	3.30	1.367
LMS improve my communication with class.	12.0	28.0	4.0	37.0	19.0	3.32	1.362
LMS enhance student's learning engagement.	5.0	6.0	13.0	51.0	25.0	3.85	1.029
I find LMS easy to use.	6.0	3.0	12.0	55.0	24.0	3.88	1.008
LMS help me in assignment management.	8.0	2.0	15.0	47.0	28.0	3.85	1.104

Note: SD = strongly agree, D = dis agree, SWA = some what agree, A = agree, SD = standard deviation.

Table 4 shows that regular use of LMS has mean 3.30 and standard deviation 1.367 showing moderate level of LMS usage.

The improvement of communication with class shows mean 3.32 and SD 1.362. Showing a moderate improvement in communication of students with teachers. The engagement of students enhanced with mean value 3.85 and SD equal to 1.029. As for as the teacher's perception is concerned about the usage of LMS it is 3.88 SD 1.008.

LMS use in assignment management shows Mean 3.85 and SD 1,104 revealing the teachers get help with LMS in assignment management.

Table 5: Challenges in LMS implementation

Statement	SD%	D%	SWA%	A%	SD%	Mean	SD
I face internet connectivity issues while using LMS.	3.0	3.0	10.0	52.0	32.0	4.07	.902
I face lack of technical support using LMS.	7.0	1.0	14.0	60.0	18.0	3.81	.982
I face difficulty in activity management.	9.0	0.0	12.0	55.0	24.0	3.85	1.077
There are limited digital resources in schools.	11.0	1.0	10.0	56.0	22.0	3.77	1.145
Students face difficulty in accessing LMS.	7.0	2.0	21.0	52.0	18.0	3.72	1.016

Note: SD = strongly agree, D = dis agree, SWA = some what agree, A = agree, SD = standard deviation.

Table 5 shows the challenges faced while using LMS. In internet continuity challenge the mean is 4.07 and SD is .902 showing difficulty in internet connectivity issues. In second question of this scale, it highlighted that teachers face lack of technical support in using LMS. The table also reveal that 78% respondents that they facing trouble in technical assistance. In activities, management teachers 79% teachers faced difficulty showing that teachers need more training. For the question of resource availability where mean is 3.77 and SD= 1.15 and 78% teachers showed agreement with the statement. In the statement Student's access to LMS a great number of respondents 78% agreed that students face difficulty in accessing LMS.

Table 6: Administrative support in LMS implementation

Statement	SD%	D%	SWA%	A%	SA%	Mean	SD
In my school administrative support is available for LMS implementation.	13.0	10.0	14.0	44.0	19.0	3.46	1.275
School administration encourage teachers to use LMS.	8.0	1.0	19.0	45.0	27.0	3.82	1.095
LMS training improved my digital skills.	4.0	5.0	9.0	45.0	37.0	4.06	1.013
Many teachers in my school received LMS training.	15.0	15.0	16.0	27.0	27.0	3.36	1.411
Professional development program give support to LMS integration.	9.0	1.0	7.0	49.0	34.0	3.98	1.128

Note: SD = strongly agree, D = dis agree, SWA = some what agree, A = agree, SD = standard deviation.

The table 6 shows the administrative support regarding LMS usage. The table shows that for the first statement of the scale the LMS training improved teacher's digital skills 82% respondent agreed with the statement only 9% disagreed. For the second item school administration, encourage teachers to use LMS where M= 3.82 and SD= 1.10 72% respondents showed agreement only 9% disagreed. The statement about the improvement of digital skills after showed that 85% respondent agreed. Where M= 4.06 and SD=1.013 while 9% respondents showed disagreement. Lowest mean score showed for the item that many teachers attended the LMS training having

M= 3.36 and SD= 1.41 almost 60% respondents showed agreement and 30% showed disagreement. The responses of the question of scale with M= 3.98 and SD=1.13 shows that 83% teachers agreed that professional development increase teachers digital skills.

Table 7: Perception and future use of LMS

Statement	SD%	D%	SWA%	A%	SD%	Mean	SD
LMS should continue in schools after training.	4.0	7.0	9.0	45.0	35.0	4.0	1.04
LMS increase the effectiveness of teaching.	6.0	0.0	7.0	50.0	37.0	4.12	0.99
LMS support collaborative learning.	1.0	1.0	8.0	50.0	40.0	4.27	0.74
Teachers are satisfied with LMS implementation.	7.0	6.0	13.0	53.0	21.0	3.75	1.08
Teachers are willing to use LMS in future.	5.0	0.0	14.0	51.0	30.0	4.01	0.95

Note: SD = strongly agree, D = dis agree, SWA = some what agree, A = agree, SD = standard deviation.

Table 7 shows the the responses about the future and usage of LMS. The first statement is about the continuation of LMS after training with M= 4.0000 and SD= 1.04447 showing that 90% respondents are agree with the statement and only 2% shows disagreement. The responses for second question regarding the increase in effectiveness of teaching with M= 4.1200 and SD= .98760. The table shows that 87% respondents showed agreement and only 6% respond in dis agreement.

For the third statement of the scale related to help in collaborative learning by LMS the respondent showed 81% agreement with M= 4.01 and SD= 0.95.

The item regarding teacher satisfaction about LMS showed 74% agreement and 13 % disagreement. Where M= 3.75 and SD= 1.08.

In the last item of the scale regarding teacher's willingness regarding the use of LMS in future almost 81% respondents responded agree and 5% showed disagreement and the M=4.01 SD= .95.

Table 8: Thematic Analysis

S#	Themes	Sub- themes	Responses from head teachers
1.	LMS activation in schools	Availability and implementation	Head teachers stated that LMS moderately implemented and schools not visited by bureau of curriculum to check the resources availability for LMS implementation only teachers training is not sufficient.
2.	Administrative and technical support	Encouragement and technical support from administration	Administration stated that they support LMS usage but technical support lacks.
3.	Practical implementation of LMS	Communication, assignments and assessments	Head teachers stated that LMS is not implemented full- fledged yet.
4.	Student engagement and learning	Student's participation, interaction and collaboration	Participants believe LMS enhanced student's engagement but most students face accessibility challenges.
5.	Teachers digital skills and competency	ICT skills	Most head teachers stated that LMS training enhanced teacher's digital skills
6.	Challenges in LMS implementation	Internet issues, work load on teachers, technical support	Lack of Internet, Unequipped computer labs, difficulties in online assessments and lack of time management.
7.	Students access	Devices, internet, digital literacy	Head teachers stated that there are no devices for students at school, most parents, lacks android phones and internet availability and data often suspended in Quetta.
8.	Sustainability and future usage	Satisfaction and willingness	Head teachers stated that LMS can be sustainable if schools and teachers are equipped with digital facilities

9.	Recommendations for improvement	for Training, technical support, infrastructure and evaluation	Head teachers stated that technical support, teacher's training and monitoring can make LMS effective
----	---------------------------------	--	---

Table 8 shows that for different themes head teachers has different point of views.

Theme 1: LMS activation in schools

Head teachers stated that LMS (Learning Management System) implemented in schools at once with out any survey or checking the infrastructure of the schools. The implementation level reported Moderate.

Theme 2: Administrative and technical support

Table 8 reveals that head teachers support LMS implementation but internet availability is a big challenge. Insufficient technical assistance is a major challenge and hindering the Implementation, of LMS in public schools.

Theme 3: Practical implementation of LMS

LMS basically, introduced for the awareness of media literacy in public school students. Head teachers reported that LMS not fully implemented and underutilized in many schools.

Theme 4: Students learning and engagement

Head teachers understand the importance of LMS for student's collaboration and engagement but due to insufficient facilities students cannot access the program.

Theme 5: Teacher's digital skills and corporation

The teachers who received training related to media literacy and LMS showed improvement in their digital skills.

Theme 6: Challenges faced in LMS implementation

Head teachers reported that LMS implementation facing many challenges like internet activity, Lack of trained teachers, teachers not delivering performance after training .Difficulty in time management for teachers in schools and lack of administrative support.

Theme 7: Access of students to LMS

Access to LMS for students is not easy. Head teachers reported that students do not have personal devices to use LMS neither at home nor in schools. Parents cannot afford android phones or internet connections. In most schools, PTCL connection is disconnected due to non- payment of school.

Theme 8: Sustainability and Future use of LMS

The conception of the head teachers towards LMS was positive, However, Showed concerns about Sustainability, that providence of infrastructure will make implementation long-term.

Theme 9: Recommendation of head teachers for LMS improvement

Head teachers reported that for long lasting effect internet connection, trained teachers, equipped labs and effective monitoring is crucial.

Discussion

The study assess the activation, implementation of Learning Management System (LMS) in district Quetta. The study also encircle the challenges that hinders the practical use of the LMS. The findings of the study indicate that LMS not fully implemented in schools. Most of the teachers have received the training and during training they have activated their accounts but not using it in classrooms due to inadequate facilities these findings align with findings of Ryan and Deci (2023), who highlighted that internet availability and administrative is necessary for LMS implementation. Similarly, head teachers also reported that schools has no internet connection and equipped computer labs. Only training is not sufficient.

The study also argued that practical use of LMS is in progress. Some teachers are using the LMS for assignments, activities and assessments. The classroom integration is not satisfactory. These findings support he findings of Minh and Phuong (2023), they find that LMS enhance communication between the teachers and students it also support blended learning.

As for as the student engagement is concern both quantities and qualitative data reveal that LMS influenced the students. Participation. Students believe that LMS strong the communication and interaction between teachers and students. The findings shows agreement with the findings of Ayubi and Rentnowardhani (2024), who revealed in their studies that LMS has a great impact on students learning outcomes. The main hinder in its implication is infrastructure weakness.

The findings also highlight that digital skills for teachers are necessary successful implementation of LMS. Head teachers stated that training is useful in LMS implementation. These results aligned with the findings of Farhaan et al. (2024), they highlighted that teachers training and hands on digital skills are necessary for the successful adoption of LMS who argued that teachers digital skills and continuous professional development is essential for its implementation. These findings also supported by Almusafar (2025).

Many challenges highlighted in the study both in quantitative and qualitative data. These challenges included lack or poor internet connectivity, deficiency of well-equipped computer labs and increase of workload on teachers. Study reveal that students are also facing problems in accessing LMS. Lack of devices with students. Lack of digital skills and unavailability of internet at home. All these findings of the study correspond to the previous studies that teacher's training, internet connectivity , infrastructure region conditions due to which internet is dis connect several times a month.

The study conclude that despite of positive impact of Learning Management System (LMS) it is facing several challenges in implementation process in public schools of Quetta. Findings show that teachers are not satisfied with the administrative support provided in schools these findings supported by Farhaan et el (2024).

Conclusion

This study showed that LMS activated in public schools of district Quetta. Teachers have activated their accounts and are using it. Most if the teachers consider that LMS enhance their communication with their students. LMS is beneficial for student's engagement. Teachers face difficulty in its implementation due to internet connectivity, lack of technical support. Teachers faced difficulties and there is no technical support in schools and education department. In most schools there is no internet connection or disconnect due to non- payment of bill. Teachers and head teachers are willing to continue LMS in schools but its implementation is hinder due to different challenges. The study conclude that LMS has a good impact on students learning and engagement. Teachers and head teachers reported that LMS implementation is a good imitative in public schools. Its implementation needs infrastructure improvement, continuous professional support, regular internet connectivity and availability of devices for students. So if administration support is available the capacity of LMS will enhanced.

References

- Ahorsu, D.K.; Lin, C.Y.; Imani, V.; Saffari, M.; Griffiths, M.D.; Pakpour, A.H. The Fear of COVID-19 Scale: Development and Initial Validation. *Int. J. Ment. Heal. Addict.* 2020, 18, 1–9. Google Scholar CrossRef PubMed Green Version
- Ahmad, I., Sharma, S., Singh, R., Gehlot, A., Priyadarshi, N., & Twala, B. (2022). MOOC 5.0: A Roadmap to the future of learning. *Sustainability*, 14(18), 11199. <https://doi.org/10.3390/su141811199>.
- Almusfar, L. A. (2025). Improving learning management system performance: A comprehensive approach to engagement, trust, and adaptive learning. *IEEE Access*, 13, 46408–46425. <https://doi.org/10.1109/ACCESS.2025.3550288> K. R. Pradeep, A. S. Manish, A. S
- Ayubi, M. N., & Retnowardhani, A. (2024). Optimizing learning experiences: A study of student satisfaction with LMS in higher education. *Applied Technology and Computing Trends*, 7(2). <https://doi.org/10.34306/att.v7i2.501>
- Adithiyaa, N. Sahana, and S. T. Abhishek, "Personalized adaptive learning platform empowered by artificial intelligence," in *Proc. 10th Int. Conf. Knowl. Eng. Commun. Syst. (ICKECS)*, vol. 1, Apr. 2024, pp. 1–8.
- Alshahrani, A. (2023). The impact of ChatGPT on blended learning: Current trends and future research directions. *International Journal of Data and Network Science*, 7(4), 2029–2040. <https://doi.org/10.5267/j.ijdns.2023.6.010>
- F. Rini, Y. Yelfiza, and A. Y. Pernanda, "Measuring user satisfaction: Open source LMS mobile application as a learning technology," *J. Adv. Res. Appl. Sci. Eng. Technol.*, vol. 38, no. 2, pp. 176–185, Jan. 2024.
- Gruzina, Y., Firsova, I., and Strielkowski, W. (2021). Dynamics of human capital development in economic development cycles, *Economics*, 9(2), 1-18
- Minh, N.H.; Phuong, L.T. Evaluating the Efficacy of Policy Interventions for Sustainable Agriculture: A Focus on Resource Conservation and Educational Initiatives. *AI IoT Fourth Ind. Revolut. Rev.* 2023, 13, 1–18. [\[Google Scholar\]](#)

- Özkan, U. B., Çiğdem, H., & Yazar, G. (2023). College instructors' usage of LMS in the post-pandemic normal. *Pakistan Journal of Educational Research and Reviews*, 12(1), Article 14. https://doi.org/10.52963/PERR_Biruni_V12.N1.14
- R. M. Ryan and E. L. Deci, *The Oxford Handbook of Self-Determination Theory*. London, U.K. : Oxford Univ. Press, 2023, doi: 10.1093/oxfordhb/9780197600047.001.0001.
- T. Saha, "The role of ict in education: challenges and issues," *Journal of Emerging Technologies and Innovative Research* vol. 10, no. 2, Feb 2023
- Verma, A., & Singh, A. (2021). New Era Of Technology Empowered Education: Education 4.0 A Systematic Review. 9th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions) (ICRITO), 7. <https://doi.org/10.1109/ICRITO51393.2021.9596245>.



2026 by the authors; Journal of The *Kashmir Journal of Academic Research and Development*. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).