INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES

Vol 13, Issue 12, (2023) E-ISSN: 2222-6990

A Critical Review of Learning Management Systems: Identifying Students' Readiness Towards it

Renuga Kuppusamy, Muhammad Amir, Choo Li Yu, Rosseni Din, Nabilah Othman

Faculty of Education, Universiti Kebangsaan Malaysia 43600 UKM Bangi, Selangor, MALAYSIA.

Corresponding Author Email: rosseni@ukm.edu.my

To Link this Article: http://dx.doi.org/10.6007/IJARBSS/v13-i12/20284 DOI:10.6007/IJARBSS/v13-i12/20284

Published Date: 26 December 2023

Abstract

This critical review examines the extent of the current knowledge on students' readiness towards the adoption of Learning Management Systems (LMSs) in higher education. A systematic critical review was conducted based on the five steps of a critical literature review study: determining the research objective and research question, selecting suitable sources, collecting and analysing data, reporting the results as well as discussing the implications of the results. The key factors that influence students' readiness such as perceived ease of use, perceived usefulness, and attitude towards LMS were identified and research gaps have been identified through this critical review. This review concludes by highlighting the potential of LMSs in transforming teaching and learning but also emphasises the need for continued research and development in the area of LMS adoption and use. It also contributes to the literature on LMS adoption and provides a foundation for future research in the field.

Keywords: Learning Management Systems, Students' Readiness, Critical Review

Introduction

Learning Management Systems (LMSs) have become an integral part of higher education institutions worldwide, providing a platform for delivering and managing educational content (Mpungose & Khoza, 2022). It offers a range of features such as online course materials, discussion forums and assessment tools, which can increase students' engagement and facilitate collaborative learning (Misiejuk et al., 2023). However, the effectiveness of LMSs in improving students' learning outcomes depends on how well they are accepted and used by students.

Despite the potential benefits of LMSs, studies have shown that students' adoption and use of these systems can vary widely. Factors such as perceived ease of use, perceived usefulness, and attitude towards LMS can all influence students' readiness towards LMS adoption.

Therefore, identifying students' readiness towards LMS adoption is crucial for educators and administrators seeking to optimise the use of LMSs in their teaching and learning contexts.
This critical review focuses on students' readiness towards LMS adoption, which was conducted by examining recent literature on this topic. Adhering to the standard procedures of research, the research problem was formulated first. Then, the process of data collection and analysis was presented along with a discussion of the findings and implications. This paper concludes by offering recommendations for educators and administrators seeking to promote student acceptance and engagement with LMSs.
Numerous credible and contemporary publications discussed how students are accepting the use of Learning Management Systems (LMSs). The success of the adoption and the overall efficiency of these systems in improving student learning outcomes depends largely on how well-liked LMSs are by students. The acceptability of LMSs by students has been the subject of several researches in recent years. These studies have examined different facets of the acceptance process using a variety of theoretical frameworks and research techniques, including the variables that affect students' attitudes towards LMSs, the effects of LMS use on students' engagement and motivation, and the significance of usability and design in influencing students' perceptions of LMSs.
For example, a study by Al-Fraihat et al. (2020) used the Technology Acceptance Model (TAM) to examine the factors that influence students' acceptance of LMS. The researchers found that perceived ease of use, perceived usefulness, and attitude towards technology were significant predictors of students' intention to use LMS. Similarly, a study by Wu and Wu (2021) used the Unified Theory of Acceptance and Use of Technology (UTAUT) to investigate the factors that influence students' intention to use LMS. Findings showed that performance expectancy, effort expectancy and social influence have an impact on students' intention to use LMS. Other studies have explored the impact of LMS use on students' engagement and motivation. For example, studies conducted by Jayasekaran et al. (2022) and Ikhsan et al. (2023) found that LMS use was positively associated with students' engagement and motivation, as well as with students' academic achievement.
Overall, recent and respected publications have focused on understanding the factors that influence students' acceptance of LMSs and the impact of LMS use on students' learning outcomes. These studies have used a range of theoretical frameworks and research methods to explore different aspects of the acceptance process, providing valuable insights for educators and administrators seeking to optimise the use of LMSs in their own teaching and learning contexts.

Formulation of the Problem to be Addressed, Data Collection & Analysis

The objective of this critical review is to investigate to what extent recent and respected publications deal with students' readiness towards the adoption of Learning Management System (LMS). According to Pigott and Polanin (2020), a good critical review requires a comprehensive search and objective screening. Only high-quality articles should be selected to increase the worthiness of a critical review. Hence, a thorough search of all articles related to the topic was conducted and five excluding filters were applied to collect relevant publications for this critical review.
Firstly, articles that were not published in journals referenced by the Web of Science (WOS) or Elsevier's Scopus were excluded. This decision was taken so that a high-quality critical review could be produced. Although Google Scholar provides a wide variety of sources, some sources might not be reliable. Hence, only articles from WOS and Scopus were analysed.

Next, studies that were published before the year 2020 were excluded as Learning Management Systems (LMSs) were not widely used in education back then. According to Misiejuk et al. (2023), a rapid increase in the usage of LMSs among educators and institutions is observed during the Covid-19 pandemic outbreak. Hence, only publications from the year 2020 to the year 2023 were analysed.

Thirdly, publications that are unrelated to education were excluded. This means that all studies that do not take elements of learning into account were not included. For example, the use of LMSs by businesses or government agencies. This criterion was imposed so that the authors do not divert from the main focus and conduct an analysis that focuses on education solely.

The fourth excluding filter applied is the exclusion of all publications related to Computer Assisted Language Learning (CALL). This is because it is an outdated phenomenon that has been researched comprehensively. Although certain articles on this subject could have relevance to the context of this critical review, they were omitted to concentrate on students' readiness towards LMS.

Lastly, studies that are not related to students' acceptance or readiness were excluded. For example, the educators' perspectives on LMS or the frequency of LMS usage among educators and institutions. This is because they do not contribute to the analysis of students' readiness towards LMS. However, a few articles on LMSs in general were included to provide more information on the topic.

Reporting of the Results - Identifying the Research Gap

After the above five filters were applied, the number of articles was reduced to 15 from an initial total of 780**.** Then, the remaining articles were categorised based on specific variables, as can be seen in Table 1. The objective of this critical review is to investigate to what extent recent and respected publications deal with students' readiness towards the adoption of Learning Management System (LMS). Based on Table 1, it is clear that there are numerous recent publications on students' readiness towards the adoption of LMS. Furthermore, 93% of the articles reviewed deal with the two aspects of this research: LMS and Students' Readiness.

However, two research gaps have emerged after data analysis. The first gap is the lack of researches that uses qualitative methods, which is suitable if researchers would like to gain an in-depth understanding of a particular issue (Muzari et al., 2022). As seen in Table 1, majority of the researchers used the quantitative method to investigate LMS and students' readiness. Hence, researchers could consider using a qualitative or mixed-method approach to obtain more in-depth explanation with sufficient credibility.

Another gap is the lack of research on this topic in Malaysia. Only two Malaysian articles that deal with LMS and students' readiness were found from 2020 to 2023. This shows that there is a knowledge gap, which requires further research to be done locally. Possible scenarios contributing to this need to be identified so that adaptation of technology in education happens effectively as aspired in Malaysia Education Blueprint 2013 - 2025.

Reporting of the Results - Conceptual Framework

Several factors that influence students' readiness towards the adoption of Learning Management System (LMS) such as perceived ease of use, perceived usefulness and attitude towards LMS have been identified. These factors were organised in a conceptual framework, as shown in Figure 1.

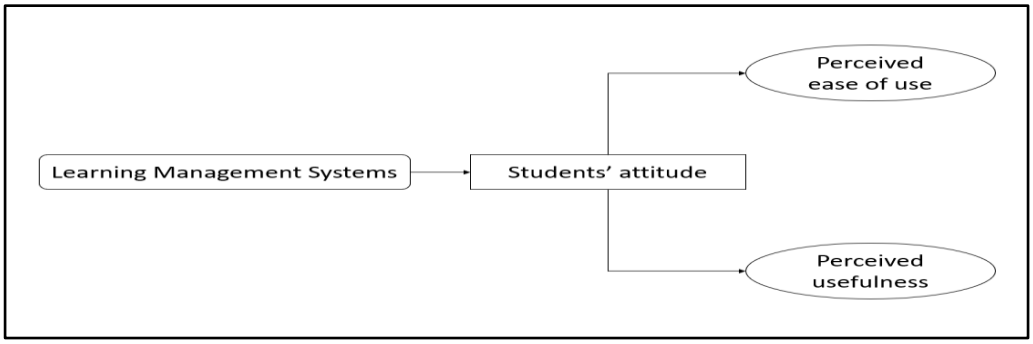

Figure 1. Conceptual framework

Table 1
Critical analysis on articles on the theme of Learning Management System and Students' Readiness

	Author(s)	Year	Journal	WOS/SC	LMS	SR	Country	Method(s)
1	Alfalah	2023	International	✓	✓	✓	Saudi	Questionnaire
2	Misiejuk et al.	2023	Frontiers in	✓	✓		Norway	Data analysis
3	Ikhsan et al.	2023	Journal of	✓	✓	✓	Indonesia	Questionnaire
4	Fibriasari et al.	2023	International	✓	✓	✓	Indonesia	Interview
5	Mosalanejad	2022	Strides in	✓	✓	✓	Iran	Questionnaire
6	Flores-Cáceres	2022	International	✓	✓	✓	Peru	Questionnaire
7	Ying et al.	2022	Journal of	✓	✓	✓	Malaysia	Questionnaire
8	Mostafa,	2022	International	✓	✓	✓	Saudi	Quasi
9	Qattous et al.	2022	International	✓	✓	✓	Jordan	Questionnaire
10	Alshammari,	2022	Sustainability	✓	✓	✓	Saudi	Questionnaire
11	Rodríguez et al.	2022	Journal of	✓	✓	✓	Colombia	Questionnaire
12	Al-Mamary	2022	International	✓	✓	✓	Saudi	Questionnaire
13	Camilleri,	2022	Technology,	✓	✓	✓	Malta	Questionnaire
14	Subashini et al.	2022	BMC Medical	✓	✓	✓	Sri Lanka	Questionnaire
15	Samaila et al.	2022	Tuning Journal for	✓	✓	✓	Malaysia	Questionnaire

Note: WOS = Web of Science; SC = SCOPUS; LMS = Learning Management System; SR = Students' Readiness

According to Mosalanejad and Maghsodzadeh (2022), perceived ease of use refers to students' perceptions of the time and effort needed to use LMS. If students perceive LMS to

be easy to use and do not require much of their time, there is a higher possibility of them using LMS. A study conducted by Muhammad et al. (2022) and Wan Zulkifli (2020) supports that LMS is easy to access at any time and anywhere by students. This is due to LMS being a simple, fast and transparent way to store and distribute course materials.

On the other hand, perceived usefulness refers to the extent to which students believe LMS would enhance their performance (Qattous et al., 2022). This means that if students believe that LMS is useful and helpful in their academics, they are more likely to adopt LMS. LMS is widely used to assess learners' progress, provide constructive feedback, and provide support and encouragement (Muhammad et al., 2022). The same study also concludes that LMS increases learners' motivation, personal engagement and commitment, enhances independent learning as well as improves learner achievement and outcomes; directly supporting the notion that the usefulness of LMS influences students' attitudes towards LMS. Concerns and questions about eLearning are minimised when the eLearning strategy is clear and well communicated. Mujalli et al. (2022) claim that when students and faculty find that LMS used in an institution works well, they embrace it. Moreover, the research conducted by them on the use of LMS (Blackboard) shows that increased perceived usefulness drives the behavioural intent of students to use it.

According to Al-Mamary (2022), identifying students' readiness towards LMS adoption is crucial to ensure that LMS is implemented appropriately and used to support students' learning. If students are not ready or do not accept the use of LMS, its benefits will not be maximised. Hence, further research on this topic would be beneficial for Malaysian educators and administrators seeking to optimise the use of LMS during the teaching and learning process.

Based on the gap found in the critical review, a research to investigate undergraduate students' readiness towards the use of Google Classroom (GC) was conducted. A quantitative method (survey research) was adopted instead of a mixed-method approach due to time constraint. The population consisted of undergraduate students from universities in Selangor. Purposive sampling was used to select participants for the research and 75 undergraduate students from different universities participated in the research. These students are of diverse backgrounds and most of them use GC very often for learning purposes.

An online questionnaire that was adapted from Manal (2021) and Wan Zulkifli (2020) was developed for the research. The questionnaire contained 23 items that were divided into three sections. The first section was developed to elicit information regarding the participants' background such as their gender, age, ethnicity, location and educational institution. Another two questions were developed under the same section to find out the frequency and purpose of GC use among participants. Next, the second and third sections contained statements on GC's ease of use and usefulness respectively. All items are rated on a five-point Likert scale: Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) and Strongly Agree (5). Then, participants would have to select the number that best represents their perspective.

The online questionnaire was distributed to 75 undergraduate students from universities in Selangor. Participants were given one week to complete it and after receiving all responses, data were analysed via Statistical Package for Social Science (SPSS). Then, descriptive statistics were used to present the findings of this research. The criteria for results interpretation, which was adopted from Wan Zulkifli (2020), are shown as in Table 2.

Table 2
Criteria for results interpretation

Measurement	Degree of Agreement				
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Mean	1 – 1.79	1.80 – 2.59	2.60 – 3.39	3.40 – 4.19	4.20 – 5

As indicated in Table 3, it is clear that the respondents' demographics were diverse. Out of 75 respondents, a majority of them were female respondents (57.3%). The age range of the respondents varied, with the highest percentage falling in the 19-20 age group (25.3%) and the lowest percentage falling in the 23-24 age group (16%). The racial and ethnic background of the respondents was also diverse, with Malay (32%) being the largest group of Malaysians who participated in this research. On the other hand, 41.3% of the respondents were students of other nationalities. In terms of location, a majority of the respondents were from the city area (73.3%), with a smaller percentage from the city outskirts (25.3%) and rural areas (1.3%). It was also revealed that 76% of the respondents were studying in private institutions while the remaining 24% were from public institutions.

Table 3
Demographic data based on respondents' background

Item	Values	Frequency	Percentage (%)
Gender	Male	32	42.7
	Female	43	57.3
Age	17-18	15	20.0
	19-20	19	25.3
	21-22	16	21.3
	23-24	12	16.0
	Above 25	13	17.3
Ethnicity	Malay	24	32.0
	Chinese	13	17.3
	Indian	7	9.3
	Others	31	41.3
Location	City area	55	73.3
	City outskirt	19	25.3
	Rural area	1	1.3
Educational Institution	Private Institutions	57	76.0
	Public Institutions	18	24.0

Table 4 revealed how frequently the respondents used Google Classroom (GC) and their purpose for using it. More than 90% of the respondents used GC regularly for various purposes. For example, 96% of the respondents agreed that they used GC to receive or complete a task assigned. Additionally, a high percentage of respondents used GC to view announcements (80%) and grades or feedback from teachers (64%). The diverse demographics of the respondents suggest that the findings of this research are representative of a wide range of students from different backgrounds and educational institutions. This is important as it indicates that the results can be applied to a larger population of students. Overall, the demographics of the respondents provide important information about the

characteristics of the sample population and allow a better understanding of the findings of this research.

Attitudes of Students towards Google Classroom's Ease of Use

To investigate participants' perceptions of Google Classroom's ease of use, their responses to the six items under this component were analysed and displayed in Table 5.

Table 4
Demographic data based on respondents' use of Google Classroom (GC)

Item	Values	Frequency	Percentage (%)
Frequency of Google Classroom Use	Every day	41	54.7
	Several times a week	27	36.0
	Once a week	5	6.7
	Rarely	2	2.7
Purpose of Google Classroom Use	To receive / complete a task assigned	72	96.0
	To view announcements	60	80.0
	To view grades / feedback from teachers	48	64.0
	To view / share resources	43	57.3
	To communicate with teachers and friends	18	24.0

Table 5
Perceived Ease of Use

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Degree of Agreement
It is easy to sign on to Google Classroom.	0 (0%)	2 (2.7%)	9 (12%)	25 (33.3%)	39 (52%)	4.35	Strongly Agree
It is easy to access announcements and updates on Google Classroom.	0 (0%)	2 (2.7%)	8 (10.7%)	27 (36%)	38 (50.7%)	4.35	Strongly Agree
It is easy to access learning materials on Google Classroom.	0 (0%)	2 (2.7%)	10 (13.3%)	26 (34.7%)	37 (49.3%)	4.31	Strongly Agree
It is easy to receive and submit tasks on Google Classroom.	0 (0%)	1 (1.3%)	10 (13.3%)	18 (24%)	46 (61.3%)	4.45	Strongly Agree
It is easy to navigate Google Classroom.	0 (0%)	3 (4%)	15 (20%)	20 (26.7%)	37 (49.3%)	4.21	Strongly Agree
It is easy to learn how Google Classroom works as a learning system.	0 (0%)	5 (6.7%)	13 (17.3%)	21 (28%)	36 (48%)	4.17	Agree
Perceived Ease of Use						**4.31**	**Strongly Agree**

Findings shows that a large percentage of the respondents perceived Google Classroom (GC) as a tool that is easy to use. A higher number of responses were recorded in the "Agree" and "Strongly Agree" categories, with an average of 82% of respondents agreeing that GC is easy to use. Additionally, it is important to note that there were no responses in the "Strongly Disagree" category, indicating that no participants found GC to be extremely difficult to use. However, there were a small number of respondents who disagreed or had a neutral perspective about the ease of use of GC. Focusing on specific items in the questionnaire, it appears that respondents were highly positive about the ease of use of GC to receive and submit tasks as well as to access announcements and updates. This is because a majority of responses fall under the "Agree" and "Strongly Agree" categories. Respondents were slightly less positive about the ease of use to navigate GC and learning how GC works as a learning system, as evidenced by the higher number of neutral responses compared to other items. Overall, the data suggest that GC is generally perceived as easy to use by the respondents in this study. This finding has important implications for educators who are using or considering to use GC as a platform for online learning. By providing a user-friendly platform, educators can facilitate student engagement and learning, ultimately leading to more positive educational outcomes.

Attitudes of Students towards Google Classroom's Usefulness

To investigate participants' perceptions of GC's usefulness, their responses to the ten items under this component were analysed and displayed in Table 6.

Table 6
Perceived Usefulness

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Degree of Agreement
The announcement section on GC provides urgent information.	0 (0%)	6 (8%)	29 (38.7%)	23 (30.7%)	17 (22.7%)	3.68	Agree
GC allows me to download class notes, slides, references and review materials.	1 (1.3%)	6 (8%)	12 (16%)	26 (34.7%)	30 (40%)	4.04	Agree
GC helps me to learn on my own during my free time.	4 (5.3%)	12 (16%)	15 (20%)	22 (29.3%)	22 (29.3%)	3.61	Agree
GC allows me to interact with my teacher and other students effectively.	6 (8%)	16 (21.3%)	21 (28%)	14 (18.7%)	18 (24%)	3.29	Neutral
The quality of learning activity on GC is excellent.	2 (2.7%)	8 (10.7%)	17 (22.7%)	29 (38.7%)	19 (25.3%)	3.73	Agree
GC allows me to submit my assignments quickly and on time.	0 (0%)	4 (5.3%)	12 (16%)	22 (29.3%)	37 (49.3%)	4.23	Strongly Agree
The instant feedback of assignments on GC helps me to understand my mistakes.	4 (5.3%)	6 (8%)	21 (28%)	26 (34.7%)	18 (24%)	3.64	Agree
GC helps me to track my learning progress.	4 (5.3%)	11 (14.7%)	23 (30.7%)	17 (22.7%)	20 (26.7%)	3.51	Agree
The grading system on GC helps me to monitor my performance and understanding of the topic.	2 (2.7%)	11 (14.7%)	22 (29.3%)	21 (28%)	19 (25.3%)	3.59	Agree

Items	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Degree of Agreement
The subject's objective, assessment, and content becomes clear with the aid of GC.	3 (4%)	6 (8%)	26 (34.7%)	18 (24%)	22 (29.3%)	3.67	Agree
Perceived Usefulness						**3.70**	**Agree**

Based on the data provided, it is evident that the attitudes of students towards GC's usefulness were generally positive, with a majority of respondents agreeing or strongly agreeing that the platform is useful for online learning. The highest number of responses were recorded in the "Agree" and "Strongly Agree" categories for items 2, 5 and 6. This indicates that participants perceived GC to be useful for them to download and review learning materials as well as submit assignments quickly and on time. Many also believed that the quality of learning activity on GC is excellent. However, it was discovered that the highest number of responses fell under the "Neutral" category for items 1 and 10. This indicates that some respondents had a neutral perspective about the usefulness of GC in providing urgent information as well as having a clearer understanding of a subject's objective, assessment and content through GC. Overall, the data suggest that while some participants may have reservations about the usefulness of GC, a majority of them find the platform to be useful for online learning. This finding is important for educators who are using or considering using GC as a platform for online learning, as it highlights the need for quality learning materials and activities within the platform to ensure student engagement and success.

Overall Attitudes of Students Towards Google Classroom

The objective of this research is to investigate undergraduate students' readiness towards the use of Google Classroom (GC). The 16 items in the questionnaire were grouped under two main components: perceived ease of use and perceived usefulness. Results obtained from data analysis are displayed below in Table 7.

Table 7
Mean and Degree of Agreement of the components

Component	N	Mean	Degree of Agreement
Perceived Ease of Use	75	4.31	Strongly Agree
Perceived Usefulness	75	3.70	Agree

Based on Table 7, it is clear that "perceived ease of use" had a higher mean score (4.31) and this component falls under the "Strongly Agree" level. On the contrary, "perceived usefulness" had a lower mean score (3.70) and this component falls under the "Agree" level. Overall, this indicates that the participants have a positive attitude and perceive GC to be a Learning Management System that is easy to use and useful, which would influence their readiness towards the use of GC.

Implications

Based on the analysis, the findings suggest that Google Classroom (GC) is perceived as an easy and useful tool by students for their learning. Teachers can consider using GC as a platform to support students' learning process, particularly for tasks and activities that require

collaboration, communication and resource-sharing. Additionally, it was found that students mainly use GC to complete tasks assigned by teachers, view announcements or updates as well as download and review learning materials. Therefore, teachers can focus on designing tasks and activities that align with these purposes to increase students' engagement with the platform. Lastly, the analysis also provides insights into the demographic characteristics of participants using GC, which can serve as a reference for the design of future studies or interventions.

Conclusion

This critical review has highlighted the importance of identifying students' readiness towards the adoption of Learning Management Systems (LMSs). While LMSs have become a central part of many educational institutions, their effectiveness in enhancing students' learning outcomes depends largely on how well they are accepted and used by students.

The literature on LMS adoption has identified several factors that influence students' readiness to use these systems, such as perceived ease of use, perceived usefulness, and attitude towards technology. To maximise the benefits of LMSs, educators and administrators must understand and address these factors to promote students' acceptance and engagement.

Moreover, this review has highlighted the importance of taking a learner-centred approach to the design and implementation of LMSs. This includes considering factors such as usability, design and accessibility, as well as tailoring the system to the unique needs and goals of individual instructors and students. By doing so, educators can ensure that LMSs are used effectively to enhance students' learning outcomes and support the development of 21st-century skills.

In conclusion, this critical review highlights the need for continued research and development in the area of LMS adoption and use. By understanding the factors that influence students' readiness towards LMSs, educators and administrators can better promote student engagement and achieve more positive outcomes in teaching and learning. Research also can be done to explore the extent LMS aids teachers and students in the teaching and learning process. Ultimately, LMSs have the potential to transform the way we teach and learn, and we must continue to explore and optimise their use in education.

Aknowlegment

I, the first author would like to convey our utmost appreciation to my fellow friends, lecturer, for our course GP6213 Media Development Research, Associate Professor Ts. Dr. Rosseni Din, Faculty of Education, Univerisiti Kebangsaan Malaysia for editing, proofreading and intellectual, spiritual, moral support in publishing this critical review and Pn Nabilah for technical editing and facilitation of the course and article. We also like to thank UKM for the grant GG-2021-002 which supports the APC for this article.

References

Alfalah, A. A. (2023). Factors influencing students' adoption and use of mobile learning management systems (m-LMSs): A quantitative study of Saudi Arabia. International Journal of Information Management Data Insights, 3(1), 1-8.

Al-Fraihat, D., Joy, M., Masa'deh, R., & Sinclair, J. (2020). Evaluating E-learning systems success: An empirical study. Computers in Human Behaviour, 102, 67-86.

Al-Mamary, Y. H. S. (2022). Why do students adopt and use Learning Management Systems?: Insights from Saudi Arabia. International Journal of Information Management Data Insights, 2(2), 1-9.

Alshammari, M. H., & Alshammari, S.H. (2022). Examining students' readiness toward using Learning Management System at University of Ha'il: A Structural Equation Modelling approach. Sustainability, 14(22), 1-12.

Camilleri, M. A., & Camilleri, A. C. (2022). The acceptance of Learning Management Systems and video conferencing technologies: Lessons learned from COVID-19. Technology, Knowledge and Learning, 27(4), 1311-1333.

Fibriasari, H., Andayani, W., Putri, T. T. A., & Harianja, N. (2023). Learning Management System now and in the future: Study case from the Indonesian university students. International Journal of Information and Education Technology, 13(1), 158-165.

Flores-Cáceres, R., Dávila-Ignacio, C., Ortega-Galicio, O., Morales-Romero, G., Trinidad-Loli, N., Caycho-Salas, B., Auqui-Ramos, E., León-Velarde, C. & Auqui-Ramos, R. (2022). Evaluation of the learning management system and its relationship in the perception of engineering students. International Journal of Evaluation and Research in Education (IJERE), 11(4), 1760-1768.

Ikhsan, R. B., Prabowo, H., Yuniarty, Simamora, B., Ruan, X. M. & Kumar, V. (2023). Predicting students' use of Mobile-Learning Management Systems in Indonesia. The Journal of Educators Online, 20(1), 1-14.

Jayasekaran, S.R., Saira, A., Cho, K.S. & Syeda, F.A. (2022, June 26-29). Relationship of students' engagement with Learning Management System and their performance: An undergraduate programming course perspective. 129th ASEE Annual Conference and Exposition, Minneapolis, US.

Manal, M. A. M. (2021). English major students' attitudes towards using Google Classroom in Teaching. Turkish Online Journal of Qualitative Inquiry (TOJQI), 12(8), 8005-8017.

Misiejuk, K., Ness, I.J., Gray, R. & Wasson, B. (2023). Changes in online course designs: Before, during, and after the pandemic. Frontiers in Education, 7, 1-19.

Mosalanejad, L. & Maghsodzadeh, S. (2022). Evaluation of the feasibility and usefulness of the LMS acceptance questionnaire: Technology confirmation during the Covid-19 pandemic in medical students users in Iran. Strides in Development of Medical Education Journal, 19(1), 1-9.

Mostafa, N. M. & Alghamdi, J. (2022). Effectiveness of Learning Management Systems in developing essay writing skills as a form of creative writing for undergraduate students in Saudi Arabia. International Journal of Education and Practice, 10(4), 393-410.

Mpungose, C. B. & Khoza, S. B. (2022). Postgraduate students' experiences on the use of Moodle and Canvas Learning Management System. Technology Knowledge and Learning, 27, 1–16.

Muhammad, N. M., Chairil, A. K. & Munir, M. (2022). Benefits and difficulties in using Learning Management System (LMS) in paragraph writing class: A study of a lecturer's and her students' perception. Journal of Excellence in English Language Education, 1(1), 1-12.

Mujalli, A., Khan, T. & Almgrashi, A. (2022). University Accounting students and faculty members using the Blackboard platform during COVID-19: Proposed modification of the UTAUT Model and an empirical study. Sustainability, 14(4), 1-18.

Muzari, T., Shava, G. N. & Shonhiwa, S. (2022). Qualitative research paradigm, a key research design for educational researchers, processes and procedures: A theoretical overview. Indiana Journal of Humanities and Social Sciences, 3(1), 14-20.

Pigott, T. D. & Polanin, J.R. (2020). Methodological guidance paper: High-quality meta-analysis in a systematic review. Review of Educational Research, 90(1), 24-46.

Qattous, H., Alghanim, F., Omar, F., Al-Oudat, M., Shkoukani, M. & Sowan, B. (2022). Examination of students' acceptance and intention to use a new LMS during COVID-19 pandemic. International Journal of Data and Network Science, 6(4), 1485-1500.

Rodríguez, C. A., Valderrama, S., Vargas, D., Eliseo, M. A., Fracchia, C. C. & Roa, K. (2023). Quizzes via Augmented Reality on Learning Management System: A Case Study of Moodle. The Journal of Educators Online, 20(1), 1-8.

Samaila, K., Mas Nida, Md. K., Kumar, J. A. & Mona, M. (2022). Factors influencing postgraduate students' intention to use learning management systems. Tuning Journal for Higher Education, 9(2), 151-176.

Subashini, N., Udayanga, L., De Silva, L. H. N., Edirisinghe, J. C. & Nafla, M. N. (2022). Undergraduate perceptions on transitioning into E-learning for continuation of higher education during the COVID pandemic in a developing country: A cross-sectional study from Sri Lanka. BMC Medical Education, 22(1), 1-12.

Wan Zulkifli, W. K. (2020). Google Classroom: Malaysian university students' attitudes towards its use as Learning Management System. Advances in Social Science, Education and Humanities Research, 536, 438-446.

Wu, P. F. & Wu, Y.T. (2021). What drives learners' intention to use Learning Management Systems?: An empirical investigation. Australasian Journal of Educational Technology, 37(1), 63-79.

Ying, Y. H., Maslawati, M. & M. Khalid, M.N. (2022). Students' acceptance of using CIDOS 3.5 for learning communicative English during Covid-19 pandemic. Journal of Language Teaching and Research, 13(5), 956-964.