

## **The Role of AI in Optimizing Learning Management Systems (LMS) for 21st Century Learning**

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### **ABSTRACT**

This study examines the role of Artificial Intelligence (AI) in Learning Management Systems (LMS) and discusses its impact on 21st-century learning as well as related challenges and risks. This paper uses a literature review methodology, referring to ten selected scientific articles from 2019 to 2025, chosen based on criteria such as type of publication, research topic, focus of study. The findings show that most studies confirm the potential of AI-integrated LMS in increasing learner engagement, encouraging independent learning, and improving the effectiveness of digital education, especially in higher education. However, this review also reveals that most studies are still conceptual, review-based, or bibliometric, and lack strong long-term empirical data. Furthermore, concerns such as data privacy, algorithmic bias,

infrastructure readiness, and educators' AI expertise are often cited as significant barriers to the implementation of AI in LMS. These findings suggest that while AI has great potential for LMS development, its integration requires thoughtful, ethical, and context-rooted educational strategies.

Keywords: Artificial Intelligence (AI), Learning Management System (LMS), AI in LMS, Digital learning.

## **INTRODUCTION**

The rapid development of digital innovation has profoundly changed teaching methods, particularly through the widespread implementation of Learning Management Systems (LMS). These systems have become the primary tools for distributing educational resources, monitoring teaching tasks, and facilitating communication between educators and learners in virtual, blended, and semi-online environments. This shift has been further accelerated by the COVID-19 pandemic, forcing academic institutions globally to rely heavily on digital solutions to maintain educational progress (Dhawan, 2020).

As the use of LMS increases, the limitations of standard LMS frameworks have become apparent, particularly in meeting diverse educational needs and promoting engaged and personalized learning. Conventional LMSs generally function as mere repositories of material, rather than dynamic learning spaces. To address these shortcomings, Artificial Intelligence (AI) is gradually being integrated into LMSs to enhance their instructional value and flexibility. AI enables LMSs to analyze large amounts of educational data and provide advanced assistance that goes beyond simple content management.

AI powered LMS offer a range of features, including adaptive learning paths, predictive analytics, intelligent tutoring systems, and automated feedback mechanisms. These features enable educational environments to tailor content, learning pace, and

assessment to the performance and behavior of individual learners. Previous studies have shown that AI-driven personalization can increase student engagement, motivation, and academic achievement by aligning the learning experience with the specific needs and abilities of each student (Gligorea et al., 2023).

The application of AI in LMS is also closely related to 21st-century learning goals, which emphasize learning autonomy, critical thinking, digital literacy, and lifelong learning skills. AI-powered LMS facilitates data-driven decision making, supports self-regulated learning, and encourages active participation in various educational environments, whether face-to-face, hybrid, or fully online. In the context of higher education, these systems have proven to be more effective in accommodating large and diverse student populations than traditional instructional models (Alotaibi, 2024).

Although LMS enhanced with AI have promising potential, several challenges and risks remain. Concerns regarding data privacy, the ethical use of student information, algorithmic bias, and unequal access to AI technology continue to raise critical questions about responsible implementation. Furthermore, low AI literacy among educators and inadequate institutional infrastructure can hinder the effective utilization of AI-based LMS in educational practice.

Given the rapid growth of research on AI integration in LMS, a comprehensive synthesis of existing studies is essential to understand current trends, impacts, and unresolved issues. Therefore, this literature review aims to examine the role of AI in optimizing LMS, explore the impact of AI-enhanced LMS on 21st-century learning, and identify key challenges and risks associated with AI adoption in LMS. By synthesizing findings from selected studies, this review aims to provide insights for educators, researchers, and policymakers to support informed and ethical AI integration in digital learning environments.

## **METHODOLOGY**

This study uses a systematic review methodology to identify, analyze, and integrate findings from studies related to the contribution of AI in improving LMS and its impact on 21st-century education. This method was chosen for its ability to provide a comprehensive and organized summary of the relevant literature, while revealing recurring patterns in research results, unanswered research questions, and ongoing challenges in this field.

### **Resarch Strategy**

The article search process was conducted systematically using major academic databases relevant to the fields of education and technology, particularly Google Scholar. These databases were selected due to their leading reputation in providing credible scientific publications relevant to research in the fields of education, learning technology, and artificial intelligence. To ensure the relevance and applicability of the results, the search was limited to articles published between 2019 and 2025.

Keywords were compiled by combining core concepts and their synonyms relevant to the research topic, using Boolean operators (AND and OR) for refinement. The keywords used include: *“Artificial Intelligence,” “AI in Education,” “LMS,” “AI in LMS,” “21st Century Learning,” “Digital Learning,” and “Educational Technology.”* This set of keywords is tailored to the features of each database, aiming to achieve the most effective search results.

### **Inclusion and Exlucion Criteria**

To ensure the relevance and quality of the articles reviewed, this study applied clear and systematic inclusion and exclusion criteria. These criteria were established to select studies that specifically examined the integration of AI into LMS, its impact on 21st-century education, and the associated challenges and risks. By following these criteria, the analysis and synthesis focused

exclusively on articles that were in line with the research objectives and were able to answer the main research questions.

To maintain the significance and standard of the articles analyzed, this study adopted detailed and systematic inclusion and exclusion guidelines. These guidelines were formulated to identify studies directly related to the application of AI in LMS, its implications for 21st-

century learning, and the challenges and risks that accompany it. By applying these guidelines, only articles that are substantially related to the research objectives and capable of answering the key questions were included in the review and consolidation of results.

Table 1. Inclusion and Exclusion Criteria

<b>Aspect</b>	<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
Type of publication	scientific journal article	Blog, editorials, opinion pieces.
Research topic	Studies that explicitly discuss the integration or use of AI in Learning Management Systems (LMS).	Studies that discuss AI in education in general without direct relevance to LMS
Focus of study	Articles examining the role of AI in LMS, its impact on 21st-century learning, or the challenges and risks of its use.	Studies that focus solely on the technical development of AI without pedagogical implications
Educational context	Higher education	Non-educational contexts (e.g., industry or pure business)
Publication period	2019-2025	Articles published before 2019
Language	English language	Other English language

## RESULTS

After conducting a systematic search and selection of articles according to the established inclusion and exclusion criteria, 10 articles were selected for analysis in this systematic review. These publications, published between 2019 and 2025, directly discuss the integration of AI into LMS or its impact on 21st-century education.

Table 2 provides an overview of the main attributes and results of the ten studies analyzed, including sources of data, focus of study, and key findings.

**Table 2. Characteristic of the Study Reviewed**

No.	Author(s), year	Source of Data	Focus of study	Key findings
1.	(Gligorea et al., 2023)	63 articles	The application of Artificial Intelligence and Machine Learning in e-learning to support adaptive learning.	AI/ML in e-learning enables personalized learning paths, improves student engagement and performance, but faces challenges of system complexity and data privacy.
2.	(Vergara et al., 2024)	256 documents from the Scopus and Web of Science (WoS)	A bibliometric review of the integration of Artificial Intelligence in Learning Management Systems (LMS).	AI in LMS supports adaptive and personalized learning, increases engagement, motivation, and learning outcomes, and

				expands access to education, but still requires development in design, evaluation, and AI literacy among stakeholders.
3.	(Arghir, 2024)	Platform LMS, system design, curriculum sample, literature	Implementation of a Learning Management System integrated with Generative Artificial Intelligence functions in the context of post-pandemic learning.	The integration of generative AI in LMS enhances instructor support, material design flexibility, and adaptive learning quality, although it requires the selection of the right platform and system design for effective implementation.
4.	(Villegas-Ch et al., 2020)	Conceptual models, literature	Development of online education models through the integration of Machine Learning and data analysis in Learning Management Systems.	The integration of ML and data analysis in LMS supports more adaptive learning through virtual assistants, improves online learning management, and strengthens educational models in the new normal era.
5.	(Kaleci, 2025)	Moodle documentation, AI tools,	Theoretical exploration of the integration and application of	The integration of AI in Moodle enhances personalization,

		theoretical literature	Artificial Intelligence tools in the Moodle LMS platform.	student engagement and data-driven decision-making, but requires infrastructure readiness, educator training, and attention to ethics, data privacy, and algorithmic bias.
6.	(Pawar & Dongardive, 2025)	44 peer-reviewed articles were retrieved from Scopus, Web of Science, and IEEE Xplore	A systematic review of the application and impact of Artificial Intelligence in Learning Management Systems in higher education.	AI in higher education LMS is widely used for predictive analytics and improving learning outcomes, with Moodle as the dominant platform; however, research is still limited on data diversity, explainable AI implementation, inclusivity, and pedagogical validation.
7.	(Ikhsan et al., 2025)	literature review and library research	Implementation strategies for Artificial Intelligence in Learning Management Systems to improve the effectiveness and personalization of digital learning.	AI in LMS supports adaptive learning, personalized feedback, and educator task efficiency, but requires attention to issues of ethics, data privacy, the

				technology gap, and strengthening collaboration and teacher training.
8.	(Alotaibi, 2024)	60 studi ilmiah dari database Scopus	Review of the impact of the integration of Artificial Intelligence and Learning Management Systems on the future of higher education.	AI-LMS integration enhances personalization, engagement, and student learning outcomes while supporting educational sustainability, but faces challenges related to data privacy, algorithmic bias, the digital divide, and faculty training needs.
9.	(Chitimoju, 2023)	Technical experiments and AI/LM system analysis	Risk assessment of the use of AI-based Language Models (LMs) in the development and escalation of cyber threats.	LMs can be weaponized to automate and enhance the effectiveness of cyberattacks such as phishing, malware, and social engineering, requiring stronger detection, mitigation, and regulation systems to prevent AI abuse.
10.	(Şahin Kölemen, 2024)	The study group consists of students,	Exploring the multidimensional impact of	AI-based LMS has an impact on improving

		teachers, administrators and educational technology experts.	implementing Artificial Intelligence-based Learning Management Systems in the digital transformation of education.	student performance, teacher adaptation, innovation in learning materials and methods, and evaluation systems, although challenges are still found in the adaptation and implementation of learning processes.
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### **The Role of AI in Optimizing Learning Management Systems**

The integration of the results from the selected studies shows that AI plays a key role in improving the performance of LMS. In the reviewed literature, AI is routinely used to enhance personalization through adaptive learning algorithms, predictive analytics, and

recommendation engines. These innovations enable LMS platforms to tailor educational content, pace, and learning paths according to student actions, achievements, and preferences, thereby creating a more adaptive and student-oriented online learning space.

Beyond personalization, AI helps improve instructional and administrative workflows within LMS. Several studies highlight that AI-powered platforms can automate repetitive activities, including grading, attendance tracking, performance monitoring, and content organization. Furthermore, the integration of generative AI expands the functionality of LMS by helping educators design instructional resources, create assessment tools, and vary teaching materials. These improvements not only increase operational efficiency but

also allow teachers to focus on strategic pedagogical choices and student support.

In addition, LMS equipped with AI provides data-driven insights to facilitate lesson planning and continuous improvement. Integrated learning analytics tools collect and analyze student data in depth, empowering educators and organizations to monitor progress, identify learning challenges, and evaluate the impact of teaching methods. As a result, AI serves as an important tool for improving the effectiveness of LMS, bridging the gap between technological frameworks and educational goals.

### **The Impact of AI-Enhanced LMS on 21st-Century Learning**

The analyzed research shows that LMS integrated with AI has a significant impact on the development of the 21st century educational environment. One of the main findings is the positive impact of AI on student engagement and motivation. Features such as adaptive feedback, personalized recommendations, and interactive AI applications encourage greater participation and maintain student enthusiasm in face-to-face, hybrid, and fully virtual learning scenarios. These elements facilitate a more dynamic and adaptive educational experience compared to conventional LMS configurations.

With regard to educational achievement, the literature highlights the role of AI-supported LMS in improving academic outcomes and encouraging independent learning. Tools such as predictive analytics and intelligent tutoring systems help students track their progress, get quick feedback, and refine their learning approaches. This aligns with 21st-century educational ideals that prioritize student independence, analytical skills, and the development of lifelong learning abilities. Additionally, AI technology facilitates personalized teaching by meeting the diverse needs of students and their preferred learning methods.

In addition, LMS integrated with AI helps promote inclusion, equity, and digital skills, which are essential components of modern education. Various studies highlight the potential of AI to expand access to educational resources through open materials, flexible pathways, and assistive tools. By creating a fair learning environment and data-driven decisions, AI-enhanced LMS supports students' preparation for a digital and knowledge-based society.

### **Challenges and Risks of Using AI in Learning Management Systems**

Despite the significant benefits that have been documented, the compilation of research findings also reveals ongoing obstacles and risks associated with integrating AI into LMS. Data privacy and security stand out as the most frequently cited concerns in the studies analyzed. The extensive collection and analysis of student data raise ethical dilemmas related to data rights, consent, and protection, especially in large online learning environments. These issues require strong regulatory structures and oversight policies.

Another significant obstacle is the potential for algorithmic bias and opacity in AI technology. Multiple reports indicate that AI algorithms often rely on limited or context-bound data, potentially leading to biased predictions and uneven educational outcomes. The minimal use of explainable AI (XAI) methods also hinders educators' ability to understand and trust AI-generated decisions in LMS systems. This highlights the importance of rigorous methodologies and ethical oversight in AI development.

In addition to ethical and technical challenges, this study highlights issues related to infrastructure readiness and human competence. Many institutions face technological disparities, inadequate resources, and limited AI knowledge among educators and stakeholders. Therefore, successful integration of AI into LMS requires collaborative initiatives in infrastructure improvement, provision of professional development, and promotion of

interdisciplinary collaboration. Without addressing these barriers, the full benefits of AI-enhanced LMS may not be fully realized.

## **DISCUSSION**

### **Interpretation of Results**

The integrated findings from the selected studies indicate that the integration of AI into LMS marks a significant transition towards a more efficient, data-driven, and student-oriented online education space. The research results show that AI not only serves as a technological update, but also as a fundamental driver that transforms LMS operations, particularly through

personalization, flexible learning paths, and analytical tools. This indicates that AI-integrated LMSs are gradually aligning with modern education models that prioritize adaptability, responsiveness, and personalized educational journeys.

Furthermore, the impact of AI-enhanced LMS on 21st-century education highlights the growing contribution of technology in developing skills such as self-directed learning, digital literacy, and learning independence. Analyzed research consistently shows that AI-enabled elements—such as predictive analytics, intelligent tutoring platforms, and generative AI—increase student participation and improve educational outcomes. These findings reinforce the view that AI-enhanced LMS can facilitate dynamic and meaningful learning, going beyond the passive distribution of content.

Nonetheless, the research outcomes also highlight a significant tension between technological potential and practical implementation. While the benefits of integrating AI into LMS are widely acknowledged, ongoing challenges such as data privacy concerns, algorithmic biases, infrastructure readiness, and

inadequate AI expertise persist across different contexts. This underscores that the effectiveness of AI-augmented LMS depends substantially on ethical governance, institutional resources, and human factors, rather than technology alone. Consequently, the adoption of AI ought to be approached as a socio-technical initiative instead of a purely technical solution.

## **Implications for Practice**

### Implications for Educational Practice

The findings of this review have significant implications for teaching practice. For educators, the evidence suggests that AI-integrated LMSs can serve as effective tools for guiding teaching choices, personalizing educational journeys, and reducing administrative burdens. To maximize these benefits, educators require comprehensive training focused on AI expertise, pedagogical integration, and responsible AI system implementation. Without such preparedness, AI resources may be underutilized or misused in teaching situations.

### Implications for Institutions and LMS Developers

For educational organizations and LMS creators, the research findings indicate that well-planned strategic planning and collaboration among relevant parties are crucial for the sustainable implementation of AI in education. Decision-makers need to support structures that address data protection, fairness, and the prudent application of AI, while encouraging progress

in the online learning space. By aligning technological advances with learning objectives and moral principles, AI-supported LMS can more effectively drive the evolution of sustainable education.

### Implications for Policy

From a policy perspective, the research findings indicate that well-planned strategic planning and collaboration among relevant parties are crucial for the sustainable implementation of AI in education. Decision-makers need to support structures that address data protection, fairness, and the prudent application of AI, while encouraging progress in the online learning space. By aligning technological advances with learning objectives and moral principles, AI-supported LMS can more effectively drive the evolution of sustainable education.

### **Limitations of the Study**

Although this review provides a comprehensive synthesis of current research, it is important to be aware of its limitations. Primarily, most of the studies included are review, conceptual, or theoretical in nature, with few empirical studies directly involving students and educators. This limitation hinders the application of findings to diverse educational settings and reduces understanding of practical classroom implementation.

Second, the studies analyzed mostly focus on higher education settings and specific geographic regions, potentially overlooking the experiences of underrepresented regions or other educational stages, such as elementary and secondary school levels. Furthermore, reliance on commonly used datasets and platforms may limit the range of research perspectives and methodologies.

Finally, because this review refers to previously published works, it depends on the scope, quality, and documentation standards of those studies. Rapid advances in AI technology also mean that some conclusions may quickly become obsolete. Therefore, future research should prioritize longitudinal and empirical studies, cover a wider range of educational contexts, and evaluate the ethical and pedagogical impact of AI-integrated learning management systems in real-world scenarios.

## **CONCLUSION**

This review highlights the important role of AI in improving the performance of LMS in higher education environments. Evidence shows that AI-enabled LMS improve the learning process

through customized instruction, flexible evaluation, data-driven insights, and simplification of teaching and operational tasks. These attributes result in better educational outcomes and ensure that the LMS approach meets contemporary pedagogical standards. However, the success of AI implementation is highly dependent on organizational readiness, data reliability, and teachers' ability to use AI-supported tools.

Despite its many advantages, this review identifies ongoing challenges related to data privacy, ethical dilemmas, algorithmic bias, and unequal access to technology. These issues could hinder the long-term adoption of AI-enhanced LMSs unless they are effectively resolved. Therefore, institutions must establish ethical protocols, provide professional development for educators, and develop inclusive digital frameworks to maximize the benefits of AI in the educational context.

Future research should emphasize longitudinal and empirical studies to evaluate the sustainable impact of AI-integrated LMS on student learning outcomes and engagement. Additionally, more studies are needed in underrepresented regions and diverse educational environments to strengthen the broad applicability of findings. Further investigation into explainable AI, ethical governance models, and pedagogical verification of AI tools in LMS is also crucial to facilitate the responsible and effective adoption of AI in education.

## REFERENCES

Alotaibi, N. S. (2024). The Impact of AI and LMS Integration on the Future of Higher Education: Opportunities, Challenges, and Strategies for Transformation. *Sustainability (Switzerland)*, 16(23). <https://doi.org/10.3390/su162310357>

Arghir, D.-C. (2024). Implementation of Learning Management Systems With Generative Artificial Intelligence Functions in the Post-Pandemic Environment. *Information Technologies and Learning Tools*, 100(2), 217–232. <https://doi.org/10.33407/itlt.v100i2.5518>

Chitimoju, S. (2023). The Risks of AI-Generated Cyber Threats: How LMs Can Be Weaponized for Attacks. *International Journal of Digital Innovation*, 4(1).

Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. *Journal of Educational Technology Systems*, 49(1), 5–22. <https://doi.org/10.1177/0047239520934018>

Gligorea, I., Cioca, M., Oancea, R., Gorski, A. T., Gorski, H., & Tudorache, P. (2023). Adaptive Learning Using Artificial Intelligence in e-Learning: A Literature Review. *Education Sciences*, 13(12). <https://doi.org/10.3390/educsci13121216>

Ikhsan, I., Hartanti, K., & Lopo, F. L. (2025). Strategies for Implementing AI in LMS to Improve the Effectiveness and Personalization of Digital Learning. *The Journal of Academic Science*, 2(3), 944–953. <https://doi.org/10.59613/qp3e7d30>

Kaleci, D. (2025). Integration and application of artificial intelligence tools in the Moodle platform: A theoretical exploration. *Journal of Educational Technology and Online Learning*, 8(1), 100–111. <https://doi.org/10.31681/jetol.1595079>

Pawar, M., & Dongardive, J. (2025). Leveraging Artificial Intelligence in Project Management: A Systematic Review of Applications, Challenges, and Future Directions. *Computers*, 14(2), 3124–3135. <https://doi.org/10.3390/computers14020066>

Şahin Kölemen, C. (2024). Digital Transformation in Education: Multidimensional Effects of Artificial Intelligence Supported Learning Management Systems. *Participatory Educational Research*, 11(5), 102–124. <https://doi.org/10.17275/per.24.66.11.5>

Vergara, D., Lampropoulos, G., Antón-Sancho, Á., & Fernández-Arias, P. (2024). Impact of Artificial Intelligence on Learning Management Systems: A Bibliometric Review. *Multimodal Technologies and Interaction*, 8(9). <https://doi.org/10.3390/mti8090075>

Villegas-Ch, W., Román-Cañizares, M., & Palacios-Pacheco, X. (2020). Improvement of an online education model with the integration of machine learning and data analysis in an LMS. *Applied Sciences* (Switzerland), 10(15). <https://doi.org/10.3390/APP10155371>

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the data, then making notes. A summary of the key points, the study strategy, and the conclusions was recorded in a Word document

## RESULT AND DISCUSSION

### 1. The Using of Paper-mode Quizizz in English Language Learning

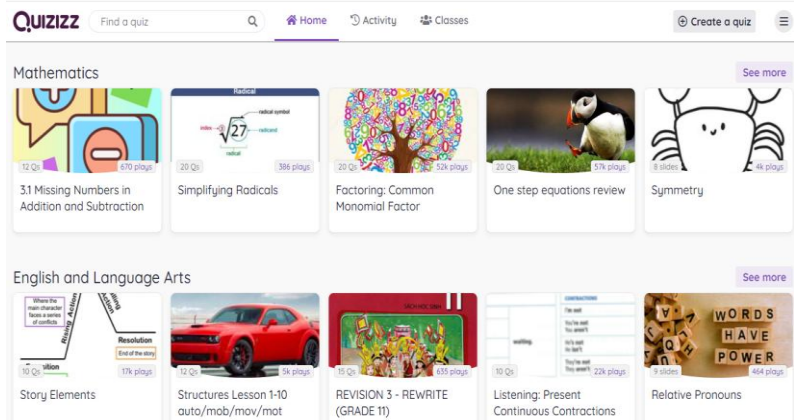
The followings were the steps in using paper-mode Quizizz in English learning including signing up, creating questions, printing Q-cards, and starting and scanning the Q-cards.

The steps to register for Quizizz are as follows:

- a) Open the browser, then type Quizizz.com

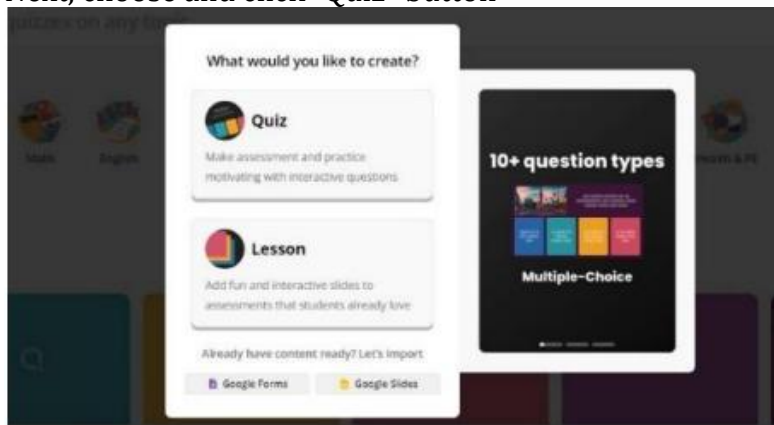


- b) Click the “Sign Up” in the corner
- c) Next, go clicking “Continue with Google” button
- d) Choose and go to your Google account, click “next”, type your password
- e) Click “next” again, then you are now signing Quizizz.

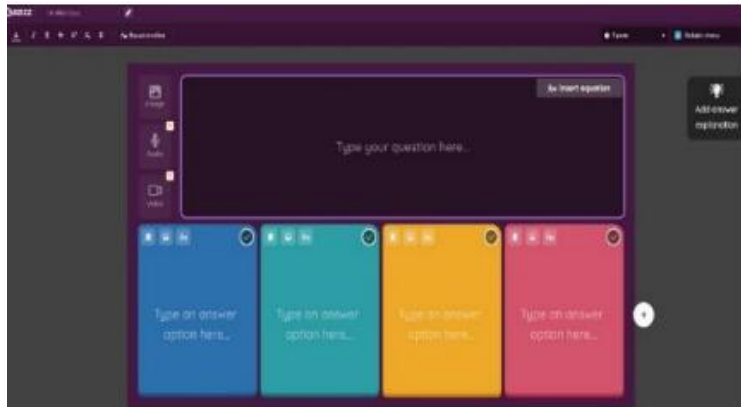


The next steps in order for creating questions are as follows:

- a) After signing Quizizz, click “create” menu
- b) Next, choose and click “Quiz” button




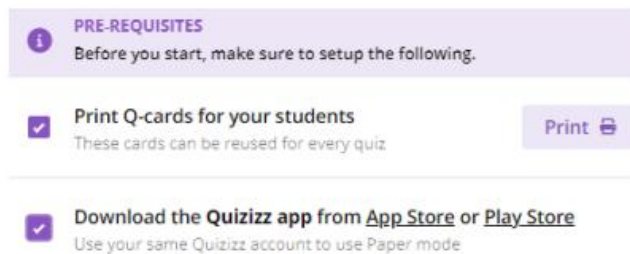
- c) Then, choose and click “multiple choice” button
- d) Type the questions and the answers. You can also insert the images on the questions and answer if you want to.




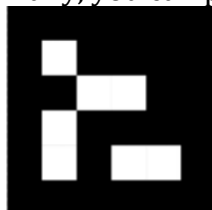
e) Finally, choose the right answer and click button.

In addition, the following actions must be taken in order to print the Q-cards:

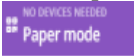
- Go to the library by clicking "my library" button on the left-side Quizizz display
- After that, choose the quiz you have made, and click  button to create the Q-cards
- Tick the following options before printing the Q-cards

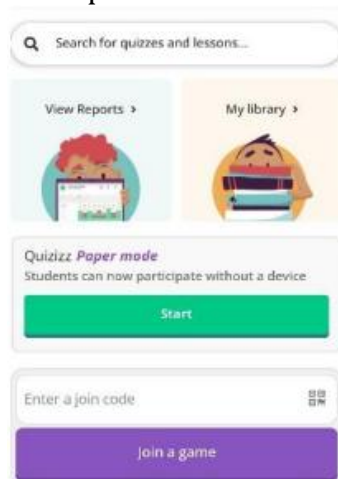


- Then, click the  button to print the Q-cards.
- Finally, you can print the Q-cards.



The steps below can be used to begin the quiz and scan the Q-cards:

- a) Using your laptop or computer, go to the library and click “my library” button
- b) Select the quiz you have made, and click button  button
- c) Make sure you have thicken the following items, then click “start” button to run the quiz
- d) Open your Quizzz apps on your smartphone, click “start” button Quizizz paper mode on your smartphone.



- e) Before running the quiz, then choose the quiz you have made.
- f) After the quiz running and, let the students answer the questions, then scan the students' codes by clicking “Scan responses” button on your Quizizz app.
- g) Verify that the cards are displayed, then use the Quizizz app on your smartphone to scan the students' cards. Using your smartphone, you may move it to pick up the Q-cards.

- h) The indications will then appear; red indicates the incorrect response and green indicates the correct answer.
- i) Click "Submit" button, then the results will be displayed on the live-view screen.

There are some studies about the use of paper-mode quizizz in English language learning and teaching. Firstly, Al Husnah *et al.*, (2023) aimed to unveil the unique insights and experiences of students regarding Quizizz Paper Mode as a tool for language assessment. This study used descriptive analysis as a qualitative method. Semi-structured interviews were used to acquire data from a wide range of pupils. Students from a diverse range of backgrounds set out to collect a broad range of data samples. Their unique motivation and level of activity during their English language acquisition expanded the study's reach. According to the research gathered, students view Quizizz Paper Mode as an engaging instrument for language evaluation that boosts their self-esteem, drives them more, and improves their reading comprehension.

Rizal Wahid Permana Putra (2023) also carried out the study about paper-mode quizizz. His study aimed to investigate the use of Paper-Mode Quizizz to improve students' vocabulary at eighth grade students. He used Classroom Action Research as the research methodology. The data demonstrated that the usage of paper-mode Quizizz dramatically increased the eighth-grade students' vocabulary proficiency. Additionally, using paper-mode Quizizz to acquire new vocabulary increased the students' enjoyment, participation, motivation, and engagement. Lastly, Khadijah Maming *et al.*, (2023) aimed to evaluate if using Quizizz in paper format, an engaging and interactive medium, will help junior high school students improve their vocabulary scores. According to this study, paper-mode Quizizz is a useful tool for helping students become proficient in English vocabulary. The

results revealed that paper-mode Quizizz considerably increased students' vocabulary achievement compared to other similar programmes utilised in the control group.

## **2. The Benefits of Paper-mode Quizizz in ICT and Non-ICT Classroom for English Language Learning**

Rukiye Degirmenci (2021) in her study states that Quizizz is useful and plays a significant part in English language learning and teaching. It also has a favourable impact in these areas, and both teachers and students have great things to say about Quizizz. Next, Iim Naila Faroh (2023) says that the use of paper-mode Quizizz gave a significant effect on students' grammar mastery. It helped students to be able to make sentences correctly. Then, Rizal Wahid Permana Putra (2023) adds that most students demonstrate favourable perceptiveness in utilising Paper-mode Quizizz for formative evaluation in teaching and studying English. Paper-mode Quizizz is described as being incredibly intriguing, demanding, pleasurable, and fun. The teacher will scan the code cards to display the findings in real time; the students just need to demonstrate and rotate their answers. Employing Paper-Mode Due to the real-time scoring feature on Quizizz, students were also more motivated. Additionally, the students were able to view their results instantly after completing each question thanks to the real-time scoring feature.

Lisa'adah Al Husnah et al., (2023) say that in ICT and non-ICT Classroom, paper-mode Quizizz has some advantages such as helping students view paper-mode Quizizz as an engaging instrument for language evaluation, boosting their self-esteem, boosting motivation, and improving their reading comprehension. It also provide valuable insight for educators seeking innovative approaches to language assessment in the digital age. Moreover, Mohammad Yusuf Rizaldy (2022), in ICT and non-ICT classroom, paper-mode quizizz can be an alternative to manual assessment because it simplifies the entire process for teachers and students so

that teachers and students can also evaluate students' understanding and learning outcomes.

### **3. The Limitations of Paper-mode Quizizz in ICT and Non-ICT Classroom for English Language Learning**

The study was conducted by Lisa'adah Al Husnah *et al.*, (2023) say that there were a number of difficulties with using paper-mode Quizizz as a language evaluation tool. The advantages made sure that all students, regardless of their level of internet access, could participate in examinations, especially for schools or other organisations with minimal technology resources. Due to technological limitations, no student was left behind due to technological restrictions. Students needed time to adjust to new habits before they could continue studying. One of the challenges that students have is directly adjusting to the usage of paper-mode Quizizz as a language evaluation tool because it was a new feature. Students' confidence in directly responding questions in paper mode is also indirectly impacted by this practice. Moreover, students may feel confused about how to play paper-mode quizzes and so do teachers. If this happens, it certainly affects learning time, it takes up time that could be used for learning.

## **CONCLUSION**

Based on the above explanations, it can be concluded that paper-mode Quizizz is one alternate site that offers a variety of tools for English teaching and learning . Moreover, Paper-mode Quizizz, students' responses are delivered via printed code cards. After the students have shown and rotated their Q-cards, their teacher will scan each response card to provide the score and real-time answer. Besides that, paper-mode Quizizz is user-friendly, entertaining, challenging, and fascinating. The students are therefore more inclined to take the Quizizz exam in paper mode. The using paper-mode Quizizz in ICT and non-ICT classroom has some advantages, they are, improve students' motivation, enhance students'

confidence, improve students' vocabulary, help teacher in assessing students' learning outcomes

## REFERENCES

- Degirmenci, R. (2021). The use of Quizizz in language learning and teaching from the teachers' and students' perspectives: A literature review. *Language Education and Technology*, 1(1), 1-11.
- Fazriyah, N., Cartonon., & Awangga, R. M. (2020). Pelatihan aplikasi pembelajaran Quizizz di sekolah dasar di kota Bandung. *Jurnal Penelitian Dan Pengabdian Masyarakat*, 8(2), 199-204.
- Groening, C., & Binnewies, C. (2019). Achievement unlocked!"—The impact of digital achievements as a gamification element on motivation and performance. *Computers in Human Behavior*, 97. <https://doi.org/10.1016/j.chb.2019.02.026>
- Heriyawati, D. F., & Elfiyanto, S. (2023). Quizizz Paper Mode is New: Students' Perception of Using E-Tool of Language Assessment in EFL Class. *Celtic: A Journal of Culture, English Language Teaching, Literature and Linguistics*, 10(2), 121-137.
- Lopez, C. E., & Tucker, C. S. (2019). The effects of player type on performance: A gamification case study. *Computers in Human Behavior*, 92. <https://doi.org/10.1016/j.chb.2018.10.005>
- Maming, K., Sani, A. A., Putra, D. P., & Radiana, S. P. (2023). Get Ahead with Quizizz: Advancing Junior High School Students' Vocabulary Mastery in Online Learning. *Elsya : Journal of English Language Studies*, 5(2), 224-235. <https://doi.org/10.31849/elsya.v5i2.10275>
- Nabila, Hesti., Muliati, A., & Talib, Ahmad. (2023). The Effectiveness of Using

Enji Nursyaindah, Saefurrohman

Quizizz to Improve the Students' Vocabulary. *Journal of Excellence in English Language Education*, 2(4), 499-506

Nguyen, T. H. (2022). The effects of using online applications to teach vocabulary to

English learners of HUFU in Ho chi minh city. *International Journal of TESOL & Education*, 2(3), 32-42.

Ningrum, D. W. (2022). The Utilization of Quizizz Application in Online English

Learning. *Eltin Journal: Journal of English Language Teaching in Indonesia*, 10(1), 55-64.

Putra, R. W. P. (2023). Utilizing Paper-mode Quizizz for formative assessment in

English teaching and learning. *Journal of Research on English and Language Learning*, 4 (1), 48-54.

Rizaldy, M. Y. (2022). The Use of Quizizz and Google Forms as Formative Assessment

Tools of English Grammar. *Student Repository*.