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## Optimizing the Utilization of the Portal Rumah Belajar as a Learning Management System in Digital Learning: A Literature Review

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### Abstract

The transformation of digital learning in Indonesia necessitates the pedagogically integrated use of Learning Management Systems (LMS). Portal Rumah Belajar is a national LMS developed by the government to support digital learning in alignment with the national curriculum. This study aims to systematically examine the utilization of Portal Rumah Belajar as an LMS in the context of formal education through a literature review approach. Data were collected from journal articles, books, research reports, and official documents published between 2015 and 2025 and analyzed using content analysis techniques. The primary referenes used onsist of 15 articlesthat intensively examine the Portal Rumah Beljar. The findings indicate that Portal Rumah Belajar has the potential to enhance access to digital learning resources, support self-directed learning, and facilitate interaction and learning assessment. However, its utilization has not been fully optimized due to limitations in teachers' digital pedagogical competence and insufficient integration of the platform into instructional planning. Therefore, optimizing Portal Rumah Belajar requires strengthening pedagogical design, institutional support, and sustainable utilization of its features.

Keywords: Digital Learning; Learning Management System; Portal Rumah Belajar

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## INTRODUCTION

Internet usage has become an inseparable component of contemporary society. Daily activities including communication, professional work, information access, and learning are increasingly conducted through online networks (Setiawan, 2021). The escalating global user base indicates that the internet has evolved beyond a supplementary tool into a primary domain for information and knowledge exchange (Danuri, 2019). Data from official institutional surveys such as APJII demonstrate continuous annual growth in internet penetration, driving fundamental changes in how individuals acquire, manage, and utilize information across various life contexts (APJII 2025). These transformations directly and indirectly influence how social institutions, including educational systems, implement digital learning approaches.



Figure 1. Internet Penetration Growth Rate in Indonesia 2023-2025  
Source: APJII 2025

To obtain preliminary insights into societal readiness for digital learning utilization, examining general internet usage patterns across Indonesian regions becomes essential. Statistical data regarding inter-provincial internet usage rates serve as initial indicators of the extent to which digital infrastructure and access support online learning system implementation.



Figure 2. Internet Utilization Rates by Province in Indonesia

According to data from the Central Statistics Agency (BPS) through the National Socioeconomic Survey, internet usage rates across Indonesia exhibit considerable regional variation. Provinces with the highest utilization rates, including Kepulauan Riau (83.90%), DKI Jakarta (83.43%), Kalimantan Timur (83.10%), Kalimantan Utara (77.50%), and Kalimantan Tengah (75.71%), reflect relatively advanced infrastructure and digital literacy conditions. Conversely, provinces with the lowest usage rates, such as Papua Pegunungan (15.76%), Papua Tengah (33.70%), Papua Selatan (50.08%), Sulawesi Barat (52.39%), and Nusa Tenggara Timur (53.90%), indicate uneven internet access and utilization across Indonesia. This overview underscores that while the internet has emerged as a potential learning medium, user and regional readiness levels remain diverse.

This variation directly impacts educational institutions' and users' preparedness to optimally leverage network-based technologies (Aksenta et al., 2023; Rizqiyah et al., 2025). The digital revolution is characterized by expanding internet access, digital device adoption, and network-based platform utilization in learning activities (Azwar et al., 2024; Ananda et al., 2025). This transformation not only modifies how students and educators access information but also influences knowledge production, distribution, and acquisition processes (Hutapea et al., 2024). Accordingly, digital technology utilization in education constitutes a primary agenda for 21st-century educational development (Kurniasari, 2025). Technology is no longer positioned merely as an instructional aid but as an integral component of the learning ecosystem itself (Sesmiarni, 2025; Adiputra et al., 2025). Technology-based learning concepts emphasize flexibility, accessibility, and personalized learning aligned with student needs (Syamsuar et al., 2018; Kusmardiningsih, 2024; Caroline, 2025). Various studies indicate that digital technology integration potentially enhances learning quality when pedagogically designed and supported by adequate teacher competencies (Puteri et al., 2025; Malay et al., 2025).

Empirically, increased digital technology utilization in education is evident from both global and national data. UNESCO reports (2021) indicate that over 90% of countries worldwide have adopted digital technologies in their educational systems, particularly through online learning platforms. In Indonesia, the Ministry of Education, Culture, Research, and Technology reported significant increases in digital learning platform usage post-COVID-19 pandemic, with over 60% of secondary schools utilizing Learning Management Systems (LMS) or e-learning platforms in instructional processes (Kemendikbudristek, 2021). These data demonstrate that digital technology has become an inseparable component of modern educational practice. However, increased technology usage is not consistently accompanied by equitable learning quality improvements. Several studies emphasize that school technology utilization tends toward administrative functions or mere content transfer from face-to-face classes to digital platforms, without significant pedagogical approach modifications (Sihotang, 2025; Habibi et al., 2025). This condition indicates gaps between technological potential and actual classroom practices.

Within this context, education's primary challenges no longer centers on technology availability but rather on effective technology utilization to support teaching and learning processes (Yusuf, 2023; Hasyim et al., 2024). Technology integration lacking mature pedagogical planning risks rendering digital learning meaningless for students. Therefore, digital technology utilization requires examination not only from technical aspects but also from pedagogical and contextual perspectives (Pamungkas, 2025).

At the secondary education level, digital technology utilization plays a strategic role in supporting adaptive learning processes addressing student needs. Senior secondary school represents a critical phase for developing higher-order thinking skills, digital literacy, and learning autonomy. Based on Central Statistics Agency (BPS) data, age groups dominated by senior secondary students are recorded as having the highest internet usage percentage compared to other educational levels, reaching 33%. These findings indicate that students at the secondary education level possess relatively superior exposure and readiness in utilizing internet-based technology.

The condition positions senior secondary school as a potential context for developing and implementing digital learning, as student characteristics align with technology usage demands in learning processes (Hasyim et al., 2024). Generally, school learning practices remain dominated by conventional teacher-centered approaches despite increasing digital technology availability (Abdurahman et al., 2024). Technology utilization is often limited to material delivery or online assignments, without accompanying learning strategy changes promoting active student participation and critical thinking (Inayati et al., 2025). This condition indicates that technology-based learning transformation has not been substantially realized.

In efforts to bridge these gaps, Learning Management Systems (LMS) represent a significant form of digital technology utilization supporting learning process transformation in formal education (Mahabu et al., 2025). LMS are designed to systematically manage learning activities, from providing instructional materials and facilitating learning interactions to implementing assessment and learning outcome evaluation. LMS utilization enables more flexible and structured learning processes while

providing extensive digital learning resource access for students and educators (Nisa et al., 2025). As an LMS developed by the Indonesian government, Portal Rumah Belajar occupies a strategic position in supporting digital learning in educational institutions (Warsihna, 2012; Lubis et al., 2021). This platform provides various learning features designed according to national curriculum needs, including digital learning resources, virtual classrooms, question banks, and virtual laboratories (Khoeriyah et al., 2025). Portal Rumah Belajar's existence is expected to serve as a national LMS alternative that not only expands learning access but also enhances teaching and learning quality through integrated digital technology utilization (Aini, 2021; Riyadi et al., 2025).

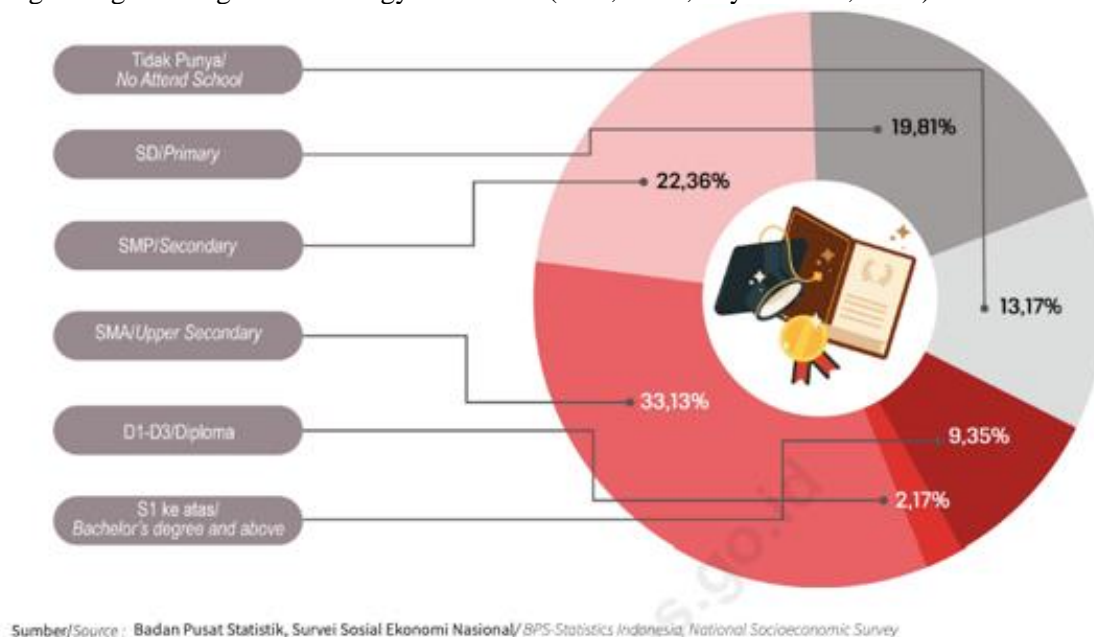


Figure 3. Internet Usage Rates by Educational Level

Nevertheless, research findings regarding LMS utilization reveal diverse outcomes. Numerous studies report that LMS usage can increase learning engagement, student autonomy, and learning effectiveness (Depari et al., 2025; Istiqamah, 2025). However, other research reveals various obstacles, including educators' digital competency limitations, low LMS feature utilization intensity, and suboptimal LMS integration with classroom learning strategies (Rahmawati, 2023; Lubis et al., 2025; Putri et al., 2025). These varied findings indicate that successful LMS utilization is significantly influenced by implementation context, pedagogical design, and institutional support. Based on these conditions, comprehensive studies capable of summarizing, comparing, and analysing previous research findings regarding LMS utilization in learning are necessary. Literature review approaches are considered relevant for identifying LMS utilization patterns, advantages and limitations, and factors influencing successful implementation in formal education. Thus, literature reviews function not only as knowledge synthesis but also as conceptual foundations for formulating optimization strategies for LMS utilization, particularly Portal Rumah Belajar, in digital learning.

This research systematically examines Portal Rumah Belajar utilization as a Learning Management System in digital learning based on previous research findings. The study focus is limited to pedagogical perspectives and LMS-based learning practices, along with factors influencing Portal Rumah Belajar utilization optimization in formal education contexts. This research does not address technical system development aspects or macro educational policies but rather emphasizes conceptual and empirical analysis regarding LMS utilization in learning processes.

## RESEARCH METHODS

The methodology employed in this research is a literature review with a qualitative approach, aiming to examine and synthesize various research findings regarding Portal Rumah Belajar utilization as a Learning Management System (LMS) in digital learning without field data collection. Review materials were obtained from national and international journal articles, academic books, research reports, scientific proceedings, and official documents published by the Ministry of Education, Culture, Research, and Technology and related institutions. Literature searches were conducted through Google Scholar, SINTA, DOAJ, and ScienceDirect databases with criteria including publications from 2015-2025, discussing LMS utilization or specifically examining the Rumah Belajar platform in educational contexts, and written in Indonesian or English. A total of 45 articles that initially met the search criteria were collected. These publications were then reviewed through a relevance reduction process. Finally, 15 highly relevant studies that specifically examined the utilization of the Portal Rumah Belajar as a learning management system and a medium for digital learning were selected for full analysis. Data were analysed using content analysis techniques to identify main ideas, utilization patterns, and emerging issues, then categorized and compared across sources to obtain comprehensive insights regarding Portal Rumah Belajar's benefits, challenges, and development opportunities in digital learning in Indonesia.

Table 1. Inclusion and exclusion criteria

Inclusion	Exclusion
Articles published between 2015-2025	Articles published before 2015
Focus on Portal Rumah Belajar Utilization in education	Focus only on general ICT or digital learning without LMS context
Discuss LMS features, functions and pedagogy integration	Discuss general topic
Article based on research and empirical review	Opinion papers without research evidence

## RESULTS AND DISCUSSION

### Result

Portal Rumah Belajar represents a digital learning platform developed by the Indonesian government as part of technology-based educational transformation efforts (Chabibie et al., 2016). Within the national digital learning framework, Portal Rumah Belajar is positioned as a Learning Management System designed to support learning processes in formal educational institutions through integrated digital learning resource provision, learning interaction spaces, and assessment facilities aligned with national curriculum needs (Susilawati, 2019; Iskak, 2021; Tarigan et al., 2025). Literature examined in this study indicates that Portal Rumah Belajar's presence possesses strong policy foundations and is directed toward addressing contextual digital learning needs within Indonesia's educational system. Using Rumah Belajar, learning can occur anywhere, anytime, with anyone. All content available on Rumah Belajar is accessible and freely utilized. Primary features on the Rumah Belajar platform include:

#### *Virtual Classroom*

Virtual Classroom represents a feature supporting online learning implementation by providing virtual spaces for educators and students to interact. Through this feature, educators can manage classes, distribute materials, assign tasks, and facilitate synchronous or asynchronous learning communication. These functions position Virtual Classroom as Portal Rumah Belajar's primary component adopting Learning Management System (LMS) characteristics.

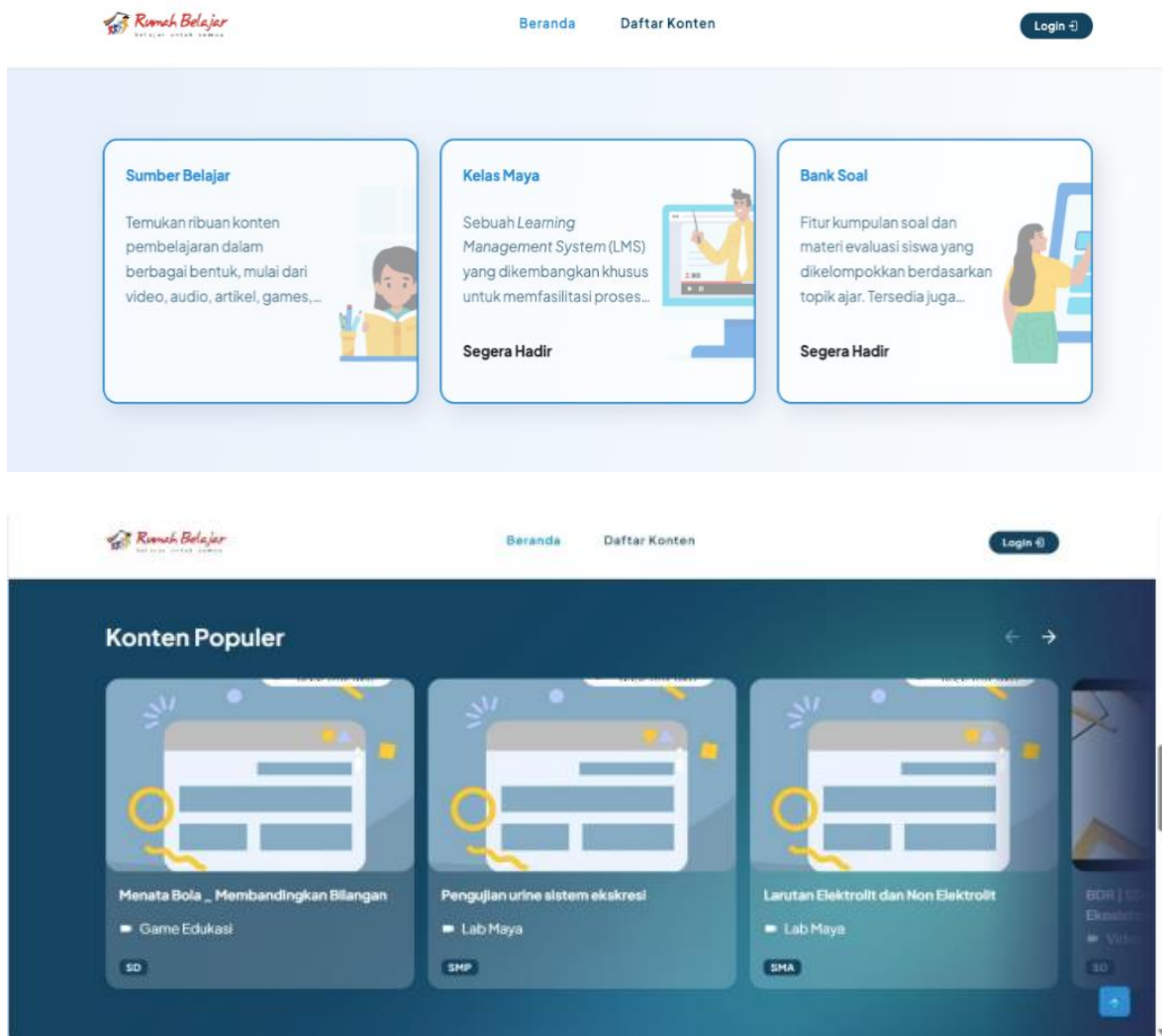


Figure 4. Virtual Classroom Feature

### ***Learning Resources***

The Learning Resources feature on Portal Rumah Belajar functions as a digital learning material repository designed according to the national curriculum. Available content is presented in various formats including text, images, audio, video, animation, and interactive simulations, enabling students to access materials independently or as classroom learning supplements. This feature's existence supports flexible learning principles and expands access to nationally standardized knowledge sources.

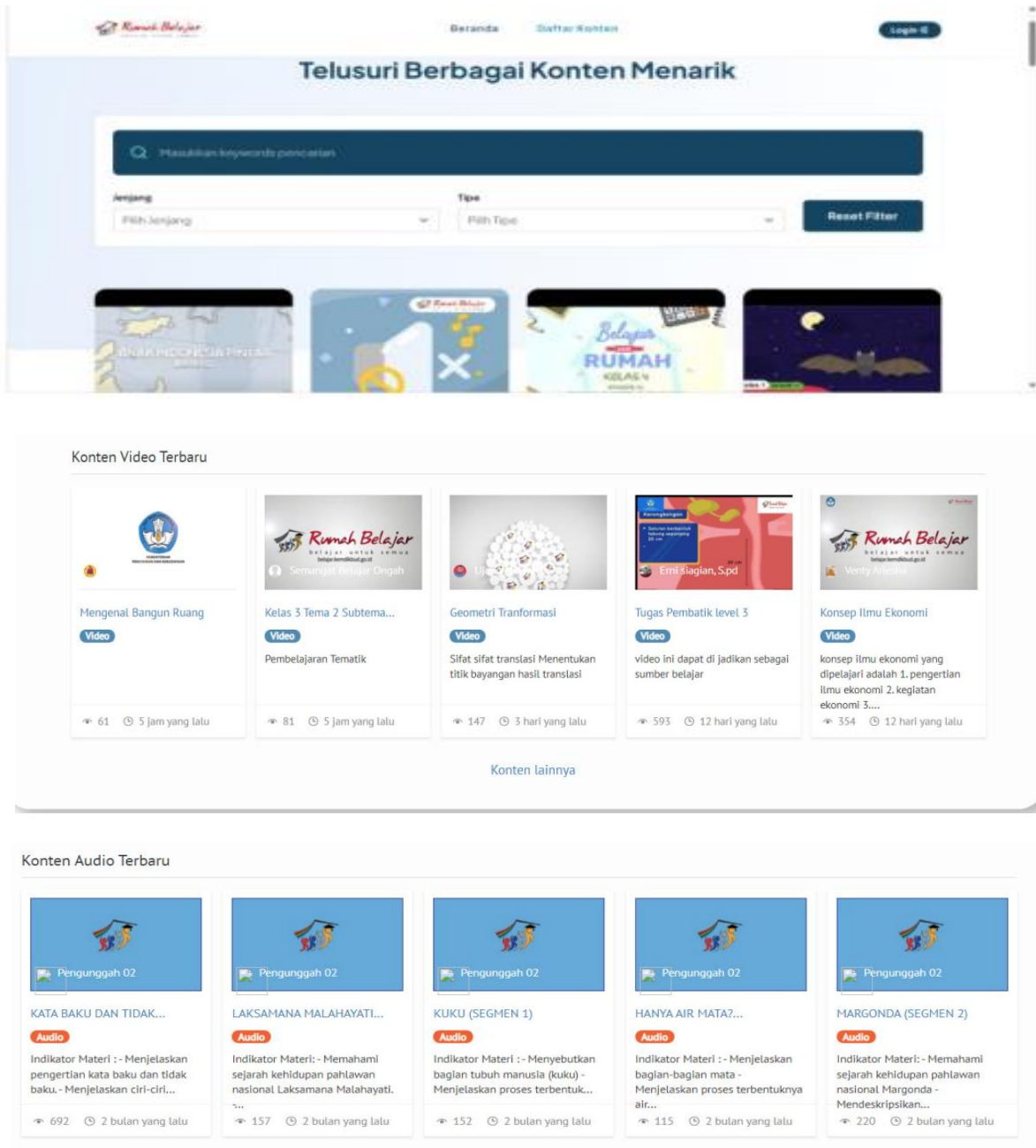


Figure 5. Learning Resources Feature Display

### ***Virtual Laboratory***

Virtual Laboratory provides virtual practicum simulations enabling students to conduct experimental activities digitally. This feature serves as a practical learning alternative when facility limitations, time constraints, or specific conditions hinder physical laboratory usage. Through interactive simulations, students can still conceptually understand experimental concepts and procedures.

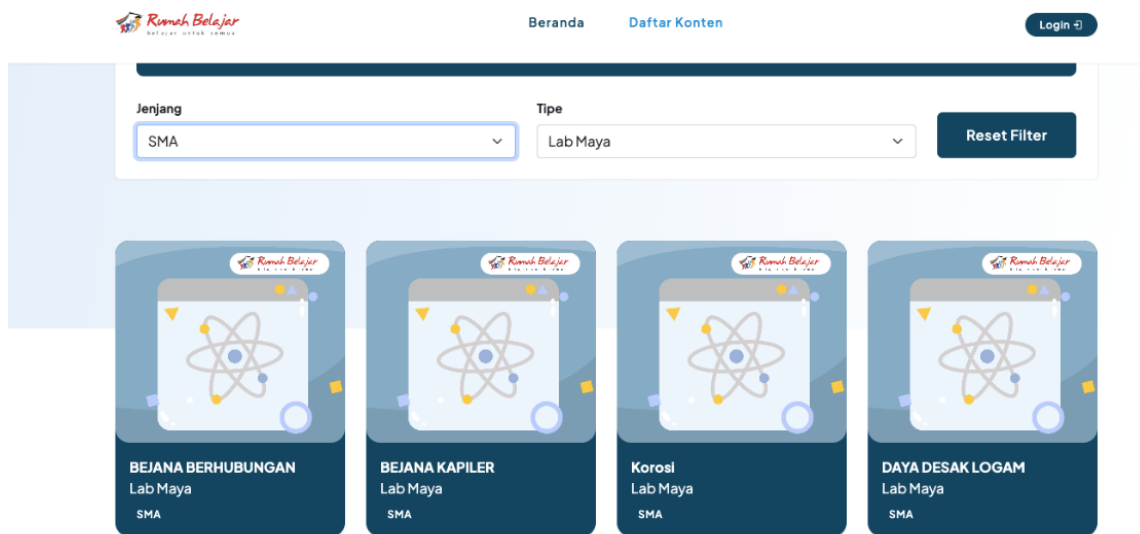


Figure 6. Virtual Laboratory Feature Display

### Question Bank

The Question Bank feature is designed to support learning assessment processes through curated question collections manageable and utilizable by educators. Available questions can be used for exercises, assignments, or student learning outcome assessments. This feature makes assessment processes more structured and aligned with delivered learning materials.



Figure 7. Question Bank Feature Display

### Electronic School Books

Electronic School Books represent official textbooks in digital format compiled according to grade levels and subjects based on the national curriculum. Currently, Electronic School Book provision and management are centralized through the Indonesian Book Information System (SIBI), while Portal Rumah Belajar serves as a learning support utilizing these digital books as teaching material references. Electronic School Book existence continues supporting standardized teaching material access equity, particularly in regions with limited printed learning resource availability. Portal Rumah Belajar and the Indonesian Book Information System (SIBI) exist within the same digital learning ecosystem and are functionally

interconnected. Rumah Belajar serves as a platform for learning and learning activity management, while SIBI provides digital textbooks as primary teaching material sources.

The image displays three screenshots of the SIBI (Sistem Informasi Perbukuan Indonesia) platform interface, showcasing different sections for book discovery and access.

**Top Screenshot: "Buku untuk Semua"**  
 This section features a navigation bar with links for Beranda, Katalog Terbaru, Kategori Buku, Petunjuk, Profil, Hasil Penilaian Baru, and a Masuk button. The main heading is "Buku untuk Semua" with the tagline "Akses di mana pun, kapan pun. Baca buku yuk!". Below the heading is a search bar with the placeholder "Cari buku disini" and a "Cari" button. The background includes an illustration of a person reading and a stack of books.

**Middle Screenshot: "Buku populer"**  
 This section is titled "Buku populer" and includes a "Lihat Semua Buku" button. It displays four book covers with their respective details:
 

- English for Nusantara** (English for Nusantara untuk SMP/MTs Kelas VII): Available in PDF and SMP/MTs formats.
- Bahasa Indonesia Kawan Seiring** (Bahasa Indonesia Kawan Seiring untuk SD/MI Kelas III): Available in PDF and SD/MI formats.
- Ilmu Pengetahuan Alam dan Sosial** (Ilmu Pengetahuan Alam dan Sosial untuk SD/MI Kelas VI): Available in PDF and SD/MI formats.
- Matematika** (Matematika untuk SD/MI Kelas II): Available in PDF and SD/MI formats.

**Bottom Screenshot: "Akses buku lebih mudah"**  
 This section is titled "Akses buku lebih mudah" and includes a "Lihat Semua Buku Audio" button. It displays three book categories:
 

- Buku Teks Kurikulum Merdeka** (Buku teks pelajaran terbitan tahun 2021): Available in PDF format.
- Buku Teks K-13** (Buku teks pelajaran terbitan tahun 2013): Available in PDF format.
- Buku Nonteks** (Buku umum sebagai pelengkap belajarmu): Available in PDF format.

The bottom-most screenshot shows a section titled "Buku untuk semua" with the tagline "Manfaat buku berdasarkan peran". It displays three user roles and their benefits:
 

- Siswa** (Siswa): Belajar lebih asik bersama Buku Kemendikdasmen. (Lihat selengkapnya →)
- Guru** (Guru): Dapatkan akses buku untuk bahan ajar di kelas. (Lihat selengkapnya →)
- Orang Tua** (Orang Tua): Bantu tingkatkan proses belajar anak. (Lihat selengkapnya →)

Figure 8. Kemendikbud Books Display on SIBI Platform

## Discussion

Literature review findings indicate that Portal Rumah Belajar utilization in learning provides substantial contributions toward expanding digital learning resource access. Available digital learning resource features enable teachers and students to access learning materials in various formats including text, video, animation, and simulation. This format diversity provides opportunities for teachers to adapt instruction to student characteristics while supporting autonomous learning. Several studies note that Portal Rumah Belajar utilization can assist students in understanding materials more flexibly, particularly when learning does not entirely occur face-to-face (Chabibie et al., 2016; Khoeriyah et al., 2025). Beyond serving as a learning resource, Portal Rumah Belajar is also utilized as a digital learning space facilitating interaction between teachers and students (Lubis et al., 2021). Through the virtual classroom feature, teachers can manage learning activities, provide assignments, and monitor student engagement in learning processes. Literature indicates that utilizing this feature potentially increases learning continuity and expands learning interaction spaces beyond face-to-face hours (Utami et al., 2020). However, virtual classroom feature utilization effectiveness heavily depends on teachers' instructional design and platform usage intensity in teaching and learning activities.

Literature review also highlights Portal Rumah Belajar's role in supporting learning assessment and evaluation implementation. Available question bank and evaluation features enable teachers to conduct more structured and documented assessments. Several studies indicate that Portal Rumah Belajar evaluation feature utilization can assist teachers in monitoring student learning progress (Lindiwina, 2023). However, literature also notes that evaluation features have not been optimally utilized across all educational institutions, particularly in implementing continuous formative assessment. Despite possessing significant potential, literature examined in this study indicates that Portal Rumah Belajar utilization still faces various challenges (Zulviana et al., 2021). These challenges include teachers' digital pedagogical competency limitations, low platform feature utilization intensity, and insufficient Portal Rumah Belajar integration into school instructional planning. Several studies note that Portal Rumah Belajar tends to be used as a learning supplement rather than as a core component of learning strategies (Wiragunawan, 2022). This condition indicates that platform utilization optimization requires not only technology provision but also systematic support and educator capacity strengthening (Iswanto et al., 2021; Amilia, 2022; Latief et al., 2025).

From an educational equity perspective, Portal Rumah Belajar possesses advantages as a freely accessible digital learning platform developed according to national needs. Literature indicates that this platform's existence potentially reduces digital learning access gaps, particularly for educational institutions with resource limitations (Aini, 2021; Lubis, 2021). However, studies also emphasize that Portal Rumah Belajar utilization equity remains influenced by network infrastructure availability, supporting devices, and policy support at school and regional levels. Based on literature synthesis, optimizing Portal Rumah Belajar utilization as a Learning Management System requires strengthening pedagogical integration in learning. Optimization is measured not only by platform usage frequency but by the extent to which Portal Rumah Belajar features are utilized to support learning objective achievement. Teachers need encouragement to design instruction consciously utilizing Portal Rumah Belajar as a planned, interactive digital learning space oriented toward student engagement.

Overall, that Portal Rumah Belajar possesses strategic potential as a Learning Management System in digital learning in Indonesia. This potential can be optimized if platform utilization is supported by teachers' pedagogical readiness, school policies encouraging technology integration in learning, and consistent and sustainable platform feature utilization. Findings in this literature review provide conceptual foundations for developing more directed Portal Rumah Belajar utilization strategies while serving as groundwork for further research examining this platform's implementation empirically across various educational contexts.

## CONCLUSION

This study validates that Portal Rumah Belajar occupies a strategic role as a Learning Management System supporting digital learning in formal education contexts in Indonesia. Literature indicates that this platform is designed to provide digital learning resources, facilitate learning activities, and support integrated assessment processes aligned with national curriculum needs. Portal Rumah Belajar's existence provides a national LMS alternative potentially expanding more equitable digital learning access.

Review findings also indicate that Portal Rumah Belajar utilization provides several positive contributions to learning processes, particularly regarding learning resource access flexibility, autonomous learning support, and opportunities for implementing more varied learning strategies. Nevertheless, platform utilization optimization has not been fully realized. Most literature notes that Portal Rumah Belajar usage tends to be limited to basic functions and has not been fully integrated into pedagogically-oriented instructional planning.

Overall, this literature review provides comprehensive understanding regarding Portal Rumah Belajar utilization potential and challenges as a Learning Management System in digital learning. Research findings are expected to serve as conceptual foundations for educators, schools, and educational stakeholders in formulating Portal Rumah Belajar utilization optimization strategies while serving as references for subsequent research examining this platform's implementation empirically across various educational contexts and planning more structured and sustainable digital learning strategies in Indonesia.

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