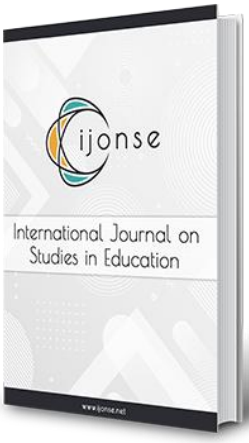


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# Designing an Instrument to Evaluate the Prototype of the Learning Management System-based Materials

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# Designing an Instrument to Evaluate the Prototype of the Learning Management System-based Materials

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## Abstract

This study aims to design an evaluation instrument for the Learning Management System (LMS)-Based Materials at the Minori Education Center through a user needs-based approach. The Focus Group Discussion (FGD) results identified three main instruments: questionnaire surveys, interview guides, and observation sheets, designed to evaluate LMS from technical, pedagogical, and cultural dimensions. Each instrument involves key indicators such as ease of use, functionality, speed and responsiveness, interactivity, and open feedback. The findings show that an intuitive, stable, and interactive LMS improves learning effectiveness. In addition, the participatory approach through FGD successfully explores the specific needs of users, resulting in relevant and flexible evaluation instruments for use in various educational contexts. Further discussion relates these findings to the literature demonstrating the importance of user engagement in improving the validity and reliability of LMS evaluation. With this approach, the evaluation instrument can identify the strengths and weaknesses of the LMS and provide strategic input for developing a more inclusive and innovative platform. This research contributes significantly to supporting the development of LMS oriented to user needs in the digital education era.

## Introduction

The learning management system (LMS) has become essential in modern education in supporting the learning process. LMS not only facilitates the management of teaching materials but also allows for more efficient interaction between teachers and students (Alfailakawi, 2022; Bradley 2021; Hamid et al. 2020; Sabharwal et al., 2023; Tsavdaris et al., 2016). The Minori Education Centre is committed to developing LMs-based content that suits students' learning needs (Hudiah et al., 2025). However, a comprehensive evaluation instrument is required to ensure that the LMS prototype developed is effective and meets user expectations. (Bazeley, 2016). These instruments should be able to measure various aspects, including user satisfaction, learning effectiveness, and ease of use. (Bazeley, 2016; Kuijpers et al., 2014; R (Ruth) De Villiers, 2007). Thus, this study aims to design an evaluation instrument that can provide a comprehensive picture of the performance of LMS-based materials for the Japanese Minori Education Centre.

Although there is much research on LMS evaluation, there are still gaps in the literature that examine evaluation

instruments specific to the educational context. Most previous studies have focused on developing LMS, which may not be entirely relevant to Japanese culture and academic practices (El Shafie et al., 2021; Lius Zen & Trinova2 ', 2022; Rabiman et al., 2020). In the Japanese context, it is essential to consider local values and how students interact with technology (Park et al., 2022; Rayhan, 2023). In addition, many existing evaluation instruments do not think about the user's perspective holistically, thus ignoring essential aspects that can affect the LMS's effectiveness (OECD, 2013). This research aims to fill this gap by designing instruments considering various technical, pedagogical, and cultural dimensions.

The main objective of this study is to create a valid and reliable evaluation instrument to measure the effectiveness of the LMS prototype for the Japanese Minori Education Centre. This instrument will involve various stakeholders, including students, faculty, and LMS developers, to accommodate all perspectives (Parnell & Gangwish, 2023; Stalmeijer et al., 2008)By involving stakeholders, it is hoped that the resulting instruments will be more relevant and acceptable to users. This study also aims to identify the strengths and weaknesses of existing LMS so that it can provide appropriate recommendations for future improvements. Thus, the results of this study are expected to contribute to the development of better LMS for the Japanese Minori Education Centre and other educational institutions.

In designing an evaluation instrument, it is essential to consider various data collection methods that can provide comprehensive information. Surveys, interviews, and observations are some methods that can be used to collect data regarding user experience (Creswell, 2003; Demirel, 2025; Perez-Soltero & Leal-Soto, 2024; Weyant, 2022). Surveys can provide quantitative data on user satisfaction, while interviews and observations can provide deeper qualitative insights. Combining these methods will give researchers a more holistic understanding of using LMS for the Japanese Minori Education Centre. In addition, using a mixed approach in data collection can also help validate the results obtained.

Developing an effective evaluation instrument must also consider various external factors that can affect using the LMS. (Simonson et al., 2022; Williamson & Wang, 2023). For example, the technology infrastructure and internet access for the Japanese Minori Education Centre can play an essential role in determining how well students can utilize the (Missouri Department of Elementary and Secondary Education, 2016). Research shows that internet speed, device access, and technology use training can affect satisfaction and effectiveness in using LMS (Afzal et al., 2023). Therefore, the evaluation instrument should include questions that measure these aspects. Thus, researchers can better understand the context in which LMS is used and how these factors affect student learning outcomes. These external factors will provide a complete picture of the LMS's effectiveness and help formulate more appropriate recommendations.

Additionally, it is essential to explore the long-term impact of LMS use on student learning outcomes. Some studies have shown that LMS use can improve academic outcomes, but this largely depends on how the LMS is integrated into the curriculum (Simelane-Mnisi, 2023; Turnbull et al., 2021; Veluvali & Surisetti, 2022). Therefore, the evaluation instruments should measure user satisfaction and consider the long-term impact on students' learning and academic achievement. By collecting longitudinal data, researchers can analyze the

relationship between LMS use and student learning outcomes over a more extended period. This will provide deeper insights into the LMS's effectiveness and aid in continuous improvement in its design and implementation.

Finally, this study's results are expected to benefit the Minori Education Centre and contribute to developing LMS in other educational contexts in Japan and other countries. By designing a comprehensive and relevant evaluation instrument, this research can serve as a model for different educational institutions looking to evaluate and improve their LMS systems. In addition, this study's findings can enrich the academic literature regarding LMS evaluation, especially in different cultural contexts (Calafato & Simmonds, 2023; Markey et al., 2023)Thus, this research not only focuses on the development of LMS for the Japanese Minori Education Centre but also strives to make a broader contribution to the world of education. Through a systematic and evidence-based approach, it hopes to help create a better and more effective learning environment for students worldwide.

## Method

This study uses a qualitative approach with the Focus Group Discussion (FGD) method as the main instrument to collect data. This method was chosen because it allows for dynamic interaction between participants so that they can explore their views, experiences, and ideas regarding the Learning Management System (LMS) at Minori Education Centre in depth. Participants in this study consisted of the Universitas Muhammadiyah Parepare Katalist research team, evaluation experts with experience in evaluating education systems and LMS, and IT experts who have technical knowledge about LMS development and implementation. The FGD was held three times in two locations, namely Parepare, which focuses on various technical issues, pedagogical, and Makassar, to explore a broader perspective on cultural dimensions.

Each FGD session was led by an experienced moderator for 1.5 to 2 hours, focusing on gathering ideas and opinions from each participant. The data obtained from the FGD was analyzed using thematic analysis techniques to identify the main themes that emerged from the discussion, which will then be used to design a comprehensive evaluation instrument. The research also adhered to ethical principles, including obtaining all participants' consent and guaranteeing the data's confidentiality. By involving various stakeholders and using an in-depth qualitative approach, it is hoped that this research can produce a valid and reliable evaluation instrument for LMS at Minori Education Centre, as well as make a significant contribution to the development of a better LMS in the context of education in Japan and globally.

## Results

This study's findings reveal that designing an evaluation instrument for the Learning Management System (LMS) prototype for the Japanese Minori Education Centre required a systematic and collaborative effort. Through a well-structured Focus Group Discussion (FGD), the research team collected insights and feedback from various participants representing various perspectives. As a result of the FGD, three key instruments were agreed upon to evaluate the LMS effectively: a survey questionnaire, an interview guide, and an observation sheet. These instruments were carefully chosen to ensure a comprehensive assessment of the LMS, addressing both qualitative

and quantitative aspects of user experience and functionality.

**A Survey Questionnaire**

The first instrument developed was the survey questionnaire, a foundational tool for gathering broad user feedback. This questionnaire explored key elements such as ease of use, functionality, user satisfaction, speed and responsiveness, interactivity, and feedback space.

Table 1. FGD Results on a Survey Questionnaire

| Aspects discussed | FGD Results | Sample questions | Measurement techniques |
|---|---|---|---|
| Ease of use | The discussion emphasized the importance of a technically intuitive LMS that supports pedagogic learning flows and is accessible to users with diverse cultural backgrounds. | a. Is the LMS interface easy to understand without any special training? **(Pedagogic)**<br>b. How easy can you navigate the LMS on different devices? **(Technical)**<br>c. Does the interface design fit your cultural preferences? **(Cultural)** | Likert Scale (1–4) |
| Functionality | Participants agreed that LMS should have technical features that work well, be relevant to learning needs, and be adaptable to how different cultures work. | a. Do features like assignments, exams, and discussion forums work correctly? **(Technical)**<br>b. How effective are LMS features in supporting collaborative learning? **(Pedagogical)**<br>c. Can the LMS adapt to your communication preferences? (**Cultural)** | Likert Scale (1–4) |
| User satisfaction | The FGD highlighted the importance of evaluating user satisfaction related to LMS technical stability, pedagogical support for learning, and the system's cultural sensitivity to users. | a. How satisfied are you with the stability of the LMS? (**Technical)**<br>b. Does the LMS help you achieve your learning goals? (**Pedagogical)**<br>c. Do LMS features match your culture-influenced expectations? **(Cultural)** | Likert Scale (1–4) |

| Aspects discussed | FGD Results | Sample questions | Measurement techniques |
|---|---|---|---|
| Speed and Responsiveness | An LMS must have adequate technical speed and responsiveness, not hinder the learning process, and be accessible in various geographical conditions. | a. Is the LMS responsive on your device? (**Technical**)<br>b. How does the speed of the LMS affect your learning process? (**Pedagogical**)<br>c. Have you ever experienced technical obstacles related to location or internet connection? (**Cultural**) | Likert Scale (1–4) |
| Interactivity | The discussion emphasized that interactive features should work well technically, support pedagogical collaboration, and be relevant to users' communication styles from different cultures. | a. Do you find the discussion forum interactive enough? **(Pedagogic**)<br>b. How often do interactive features in an LMS fail to work? (**Technical)**<br>c. Does the LMS facilitate your culture's distinctive communication style? **(Cultural)** | Likert Scale (1–4) |
| Open Feedback Room | It is essential to allow respondents to provide criticism and suggestions freely. | Are there any suggestions or criticisms for improving this LMS? | Open-ended questions |

The FGD results show a consensus on the importance of survey questionnaire design as one of the main instruments to evaluate LMS. FGD participants agreed that the questionnaire should include key aspects that can provide a comprehensive picture of LMS performance and user acceptance. Five main dimensions were identified during the discussion: ease of use, functionality, user satisfaction, speed and responsiveness, and interactivity.

**An Interview Guide**

The results of the Focus Group Discussion (FGD) conducted in developing the Learning Management System (LMS) evaluation instrument resulted in an interview guide as one of the main tools to obtain more in-depth qualitative data. This guide explores the LMS's user experience, perspective, and expectations in more detail than a questionnaire. Below are the results of the FGD interview guide to evaluate the LMS Minory Education Centre

Table 2. FGD results on interview guide

| Aspects Discussed | Results of FGD discussion | Interview Guide Questions |
|---|---|---|
| Ease of use | The discussion highlighted the importance of LMS interface design, which supports technical navigation, is relevant to learning methods, and is acceptable to different cultures | a. How was your experience using LMS for the first time? (**Technical)**<br>b. Does LMS navigation help you understand the learning material? (**Pedagogical)**<br>c. How does this LMS fit your preferences based on the cultural background? (**Cultural**) |
| Functionality | Participants emphasized that LMS features must work optimally technically, be pedagogically relevant, and be adaptive to the cultural needs of users. | a. Do LMS features meet your digital learning needs? (**Pedagogical)**<br>b. Do LMS features suffer from frequent technical glitches? (**Technical)**<br>c. Do communication features support the way you interact with lecturers or students? (**Cultural)** |
| User satisfaction | User satisfaction is influenced by the technical stability of the LMS, its ability to support learning objectives, and its responsiveness to the needs of the user's culture. | a. Does this LMS match your learning expectations? **(Pedagogical**)<br>b. How would you rate the technical support provided? (**Technical)**<br>c. Do you feel like this LMS is attentive to your cultural needs? (**Cultural)** |
| Speed and Responsiveness | The FGD emphasized the need for a fast and technically responsive LMS relevant to learning flows and accessible across multiple geographic regions. | a. How was your experience with LMS speed? (**Technical)**<br>b. Does the speed of the LMS affect the effectiveness of your learning? (**Pedagogical)**<br>c. Are there any obstacles you experience due to geographical location? (**Cultural)** |
| Interactivity | The discussion pointed out that interactive features should be technically stable, support collaboration, and conform to users' cultural communication habits. | a. What do you think of the discussion and collaboration features in the LMS? (**Pedagogical)**<br>b. Do interactive features often experience technical problems? (**Technical)**<br>c. Does this LMS support the way you communicate based on cultural habits? (**Cultural)** |

| Aspects Discussed | Results of FGD discussion | Interview Guide Questions |
|---|---|---|
| Open Feedback | It is vital to provide space for users to provide criticism, suggestions, and input regarding LMS development. | a. What is one of your top suggestions for improving this LMS?<br>b. Are there any features that you find less effective?<br>c. What are your biggest challenges in using this LMS?<br>d. Are there any other experiences or issues you would like to share?<br>e. What are your expectations for LMS development going forward? |

**An Observation Sheet**

The observation sheet was designed as one of the essential instruments to evaluate the effectiveness of the Learning Management System (LMS) at Minori Education Centre, Japan. Based on the Focus Group Discussion (FGD) results, the observation sheet can provide direct and objective data on how users interact with the LMS in real situations. This instrument monitors various aspects of the LMS, such as ease of navigation, feature performance, system responsiveness, and user interactivity. Through this approach, LMS evaluation can be carried out in more depth by observing usage patterns, technical challenges, and user comfort levels during the learning process. The results of the FGD are then summarized in the main dimensions that are the focus of observation, ensuring that this observation sheet is relevant to the needs of the evaluation. The following is a table of FGD results on the observation sheet as one of the instruments to evaluate the Minori Education Centre's LMS.

Table 3. FGD Results on the Observation Sheet

| Aspects observed | Results of FGD discussion | Observation Indicators | Additional Notes |
|---|---|---|---|
| Ease of use | The LMS should be technically intuitive, support pedagogical access, and consider the user's cultural background. | a. Users can find features quickly without confusion (**Technical)**<br>b. LMS navigation supports learning **(Pedagogical)**<br>c. Users from different cultures are comfortable with the LMS interface **(Cultural)** | Observe if the user asks for help while navigating. |
| Functionality | LMS features must be technically reliable, relevant to learning needs, and adaptive to cultural norms. | a. LMS features (assignments, exams, forums) work seamlessly **(Technical)**<br>b. Features support | Observe features that users often use or ignore. |

| Aspects observed | Results of FGD discussion | Observation Indicators | Additional Notes |
|---|---|---|---|
| | | collaboration-based teaching **(Pedagogical)**<br>c. LMS supports the way different user cultures work **(Cultural)** | |
| User satisfaction | The user's comfort level is influenced by the technical reliability of the LMS, its pedagogical relevance, and cultural sensitivity. | a. Users seem comfortable while using LMS (**Technical)**<br>b. Users use features according to learning objectives (**Pedagogical)**<br>c. No complaints related to cultural norms (**Cultural)** | Record user expressions that indicate satisfaction or dissatisfaction. |
| Speed and Responsiveness | An LMS must be fast and responsive in various technical situations, support learning flows, and be easily accessible in a specific geographic area. | a. No slow loading during observation (**Technical)**<br>b. LMS does not interfere with the user's learning flow (**Pedagogical)**<br>c. LMS can be used smoothly in specific geographical locations (**Cultural**) | Test the LMS under different network conditions to see the speed consistency. |
| Interactivity | Interactive features should be technically stable, support pedagogical collaboration, and be relevant to the user's cultural communication style. | a. Discussion forums are actively used by users (**Pedagogical)**<br>b. There are no technical glitches in the communication features (**Technical**)<br>c. LMS facilitates a communication style typical of the user's culture (**Cultural)** | Observe the level of user participation in discussions or collaborations. |
| Open Feedback | The LMS should provide space for user input, such as feedback forms or issue-reporting features. | a. There is a facility to provide feedback, criticism, or suggestions directly through the LMS. | Observe the frequency and content of the feedback provided |

| Aspects observed | Results of FGD discussion | Observation Indicators | Additional Notes |
|---|---|---|---|
| | | b. Users are actively using this feature. | through the available features. |

## Discussion

The usability aspect of the Learning Management System (LMS) is a fundamental criterion in evaluating its effectiveness, as it directly impacts the user experience. For the Minori Education Centre, participants in the FGD emphasized the importance of an intuitive interface that allows users to navigate the system effortlessly. This is particularly significant in a multicultural educational setting where students and educators have varying levels of technical proficiency. Studies, such as those by (Paramita et al., 2022), affirm that usability features like simple navigation, clear instructions, and accessibility significantly enhance user engagement and learning motivation. By prioritizing usability, the LMS can bridge the gap between users with advanced technical skills and those less familiar with digital platforms (Van Biljon & Pretorius, 2009). Furthermore, an accessible LMS ensures inclusivity, accommodating diverse user needs while fostering a seamless learning experience. Designing an LMS with user-friendly navigation for the Minori Education Center is vital for effectively meeting technical and pedagogical goals.

Incorporating usability into the evaluation instrument ensures the system aligns with technical and cultural dimensions. The ability of users to interact with the LMS confidently and efficiently is closely tied to its design quality and relevance to their needs. Usability indicators developed through the FGD, such as ease of navigation, responsiveness, and accessibility for users with disabilities, provide a comprehensive framework for assessment. This approach aligns with modern usability principles, emphasizing system adaptability to different user profiles and cultural contexts. For example, culturally sensitive features, such as multilingual interfaces, were prioritized to accommodate the diverse backgrounds of the Minori Education Centre’s users. Additionally, focusing on usability reflects a broader pedagogical strategy of minimizing barriers to accessing learning resources (Molina et al., 2022). This ensures that the LMS is not just a technical tool but a dynamic platform supporting equitable education across diverse cultural and technical landscapes.

The functionality of the LMS focuses on the system's technical capacity to effectively support diverse pedagogical needs. Participants in the FGD highlighted the importance of functional tools such as online assessments, discussion forums, and resource sharing, which align with the learning goals of the Minori Education Centre. This aspect ensures that the LMS facilitates teaching and learning while offering features tailored to educational requirements (Chahal & Patel, 2021) and (Yousaf et al., 2021) Underscore that robust LMS functionality directly contributes to user satisfaction and overall system success. Moreover, functionality also includes the system's capacity to integrate external tools or platforms, allowing educators to diversify their teaching methods. This adaptability ensures that the LMS remains relevant as pedagogical approaches evolve. By incorporating these aspects, the evaluation instrument emphasizes functionality as a critical technical and pedagogical value dimension.

Beyond supporting pedagogical goals, functionality also aligns with cultural dimensions by accommodating various teaching and learning styles (A. Khan & Qudrat-Ullah, 2021; Dalle et al., 2024). For instance, features such as customizable templates and culturally relevant content repositories were deemed essential during the FGD discussions. These aspects ensure that the LMS aligns with local cultural practices while maintaining global educational technology standards. Functionality indicators, including the system's reliability during high-traffic periods and its compatibility with multimedia resources, are crucial for providing a seamless learning experience. The flexibility to adapt system functionalities to specific cultural and pedagogical contexts strengthens the LMS's position as a practical learning tool. Furthermore, these indicators also focus on the ease with which educators and learners can access and utilize core features, ensuring that the LMS is an enabler rather than a barrier in the educational process. This makes functionality a cornerstone of the Minori Education Centre's LMS evaluation framework.

User satisfaction is critical in LMS evaluation as it directly influences the learning experience. During the FGD at the Minori Education Centre, participants identified key indicators of user satisfaction, including convenience, alignment of features with user expectations, and ease of interaction with the system. These indicators reflect the user's perception of the LMS's technical performance, particularly the importance of an intuitive interface, smooth navigation, and responsive features. Recent studies, such as (Mohd Nasir et al., 2021; Nguyen, 2021), highlight that user satisfaction is strongly influenced by the system's design quality and reliability in meeting user needs. Pedagogically, user satisfaction is vital in fostering engagement and motivation, as a well-designed LMS encourages active participation and supports effective learning practices. Culturally, satisfaction is tied to how well the LMS accommodates diverse user preferences and expectations, such as offering multilingual support and culturally sensitive designs. Addressing these dimensions with urgency ensures that the LMS meets current user needs and serves as a foundation for continuous improvement, making it more effective, inclusive, and aligned with the Minori Education Centre's broader goals.

Speed and responsiveness are critical components of an LMS, as they ensure seamless learning experiences by minimizing disruptions and enhancing usability. During the FGD at the Minori Education Centre, participants emphasized the need for swift access to resources, real-time responsiveness, and quick feedback on interactive features such as discussion forums and assignment submissions. Recent studies, (Ali et al., 2022; Nolasco & Hernandez, 2023), underline that delays or system interruptions can negatively impact learning processes and user satisfaction. **Technically**, fast response times and system stability during peak usage are urgent requirements to maintain smooth operation, especially for handling diverse user demands and preventing technical issues that could disrupt activities. **Pedagogically**, responsiveness directly supports the learning process by ensuring uninterrupted access to learning materials and enabling immediate feedback, which fosters active engagement and practical instruction. **Culturally**, responsiveness must consider user expectations across different backgrounds, such as norms for response times and communication styles, to create an inclusive and adaptive learning environment. Addressing these dimensions with urgency ensures that the LMS can provide a dynamic, user-friendly platform that supports the diverse needs of students and educators at the Minori Education Centre.

Interactivity is a crucial element of an LMS, facilitating collaboration, engagement, and meaningful learning

experiences. During the FGD at the Minori Education Centre, participants emphasized the significance of features such as live chat, discussion boards, shared whiteboards, and group project spaces, which align with pedagogical goals by fostering active participation and community building among users. Previous research by 2021 and Wei et al., 2015) underscores that interactivity enhances engagement and creates a more dynamic and effective learning process. Technically, the LMS must ensure smooth and real-time exchanges to avoid delays disrupting user collaboration, particularly in multicultural contexts where learners use interactive tools to navigate language and cultural barriers. Pedagogically, interactive features provide immediate feedback, encourage peer collaboration, and support innovative learning strategies, making them essential for achieving meaningful educational outcomes. Culturally, interactivity promotes inclusivity by accommodating diverse communication styles and offering multilingual support, which is crucial for respecting user preferences and fostering engagement. By addressing these three dimensions with urgency, the LMS can ensure that it serves as a dynamic platform for meaningful interactions while meeting the broader goals of the Minori Education Centre.

Open feedback mechanisms are essential for evaluating and improving an LMS, enabling users to share their needs, preferences, and concerns. During the FGD at the Minori Education Centre, participants emphasized the importance of tools like surveys, feedback forms, and suggestion boxes for aligning the LMS with user expectations. Følstad (2017) and Tacer et al., (2018) highlight that user-driven feedback is pivotal in shaping evaluation instruments and enhancing system design. Technically, accessible and responsive feedback tools are critical to ensure that user inputs directly inform the improvement of system functionality and usability. Pedagogically, feedback plays a vital role in identifying areas for enhancement, such as the quality of course content and instructional methods, ensuring the LMS continually supports effective teaching and learning practices. Culturally, feedback mechanisms must foster inclusivity by respecting user preferences, offering multilingual options, and providing anonymity to encourage honest and open participation. The integration of these dimensions underscores the urgency of establishing robust feedback mechanisms that drive continuous improvement, ensuring the LMS remains responsive to the dynamic needs of the Minori Education Centre.

## Conclusion

The results of the FGD and discussion showed that the evaluation instrument of the Minori Education Centre's LMS had been designed with the user's needs in mind, covering the technical, pedagogical, and cultural dimensions. This instrument involves three main components: ease of use, functionality, user satisfaction, speed and responsiveness, interactivity, and an open feedback mechanism. The findings of the FGD emphasized the importance of indicators such as easy navigation, system stability, and interactive features that support collaborative learning. Further discussion links these aspects to the current literature showing that a responsive, stable, intuitive LMS can improve user engagement, motivation, and learning outcomes. This conclusion confirms that the designed evaluation instrument can measure various vital dimensions that directly affect the success of LMS implementation in the context of education.

In addition, the user participation-based approach applied through FGD successfully delves into the in-depth perspectives of users, creating evaluation instruments that are relevant and responsive to their specific needs.

Technical dimensions, such as system speed and reliability; pedagogical dimensions, such as user engagement in learning; and cultural dimensions, such as adaptation to multicultural communication preferences, are well integrated. By connecting the results of the FGD and the discussion, it can be concluded that this evaluation instrument can not only identify the strengths and weaknesses of the LMS but also provide constructive input for the future development of the LMS.

**Recommendations**

Based on these findings, it is recommended that the Minori Education Centre consistently use this evaluation instrument to monitor and improve the quality of their LMS. The evaluation process must be carried out periodically to ensure that the indicators that have been designed remain relevant to technological developments and user needs. In addition, it is essential to actively involve users in providing feedback through an open feedback mechanism so that LMS development can continue to be adjusted to user needs and expectations. The sustainability of this evaluation can be supported by technical training for administrative staff to manage feedback and ensure that the evaluation results are implemented effectively.

Another recommendation is to strengthen the cultural aspects of LMS evaluation by developing features that support cross-cultural communication preferences and provide broader multilingual support. This will ensure that the LMS remains inclusive and usable by diverse learning communities. In addition, further research is recommended to explore new dimensions, such as adaptation to artificial intelligence-based technologies or adaptive learning features, to improve LMS's functionality. With these steps, LMS Minori Education Centre is expected to continue to develop as an effective, innovative, and responsive learning platform to global needs.

## Notes

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