

Developing a Digital Supervision Ecosystem for Data-Driven Monitoring and Evaluation in Madrasah Aliyah

Anwar¹, Saharudin², Sofyan³

¹ Universitas Jambi, Jambi, Indonesia; warqncay@gmail.com

² Universitas Jambi, Jambi, Indonesia; saharudin.fkip@unja.ac.id

³ Universitas Jambi, Jambi, Indonesia; sofyanzaibaski@unja.ac.id

ARTICLE INFO

Keywords:

digital supervision;
learning supervision;
monitoring and evaluation;
madrasah aliyah;
research and development

Article history:

Received 2025-12-20

Revised 2026-01-03

Accepted 2026-03-17

ABSTRACT

Learning supervision in Madrasah Aliyah in Indonesia remains constrained by fragmented, administratively burdensome, and slow feedback practices, creating a gap between expected and actual quality assurance outcomes. This study employed a Research and Development (R&D) approach using the Lee and Owen model, encompassing analysis, design, development, implementation, and evaluation stages. A mixed-methods design was applied, incorporating questionnaires, interviews, and document analysis involving teachers, madrasah principals, and supervisors in Jambi Province. The developed digital supervision ecosystem was validated as feasible by material and media experts and deemed practical based on user evaluations. Its implementation enhanced reporting efficiency, accelerated formative feedback cycles, and enabled real-time access to supervisory data, supporting more responsive and evidence-based decision-making. The findings indicate that integrating digital leadership principles with data-driven, collaborative supervision can transform conventional supervisory practices into more dynamic and continuous professional development processes. This approach not only addresses inefficiencies in traditional systems but also strengthens the overall educational quality assurance framework. The digital supervision ecosystem represents a valid and practical model for improving supervision in Madrasah Aliyah, facilitating a shift from administrative compliance toward sustainable, data-informed professional growth.

This is an open-access article under the [CC BY-NC-SA](https://creativecommons.org/licenses/by-nc-sa/4.0/) license.



Corresponding Author:

Anwar

Universitas Jambi, Jambi, Indonesia; warqncay@gmail.com

1. INTRODUCTION

The global education landscape is undergoing a profound transformation, driven by the demands of the Industrial Era 4.0 and the integration of digital technology in every aspect of life (Jannah, Suteja, & Mujahidin, 2024). In this context, the quality assurance of the education process ceases to be merely an administrative obligation but rather a strategic imperative for the nation's Development. One of the main pillars of educational quality assurance is academic supervision. Academic supervision is theoretically

understood as a process of professional development that is collaborative, sustainable, and focuses on improving learning practices through formative feedback (Gadriaman, 2024; Hattie & Timperley, 2007). This professional support mechanism aims to foster teacher Development and improve classroom instruction (Gadriaman, 2024). Instructional supervision theory emphasizes that effective supervision is sustainable, collaborative, and reflective, and based on learning data. In addition, formative feedback theory states that timely, contextual, and continuous improvement-oriented feedback is a key factor in improving the quality of learning (Hattie & Timperley, 2007).

Along with technological developments, various studies in the field of educational technology have shown that the use of digital tools has the potential to increase the efficiency of the educational process, accelerate communication, and support data-driven decision-making (Means, Bakia, & Murphy, 2014; Selwyn, 2016). From a theoretical perspective, the Technology Acceptance Model (TAM) posits that the success of technology adoption is significantly influenced by the perceived usefulness and ease of use experienced by users (Davis, 1989; Venkatesh & Davis, 2000). Digital platforms, web-based systems, and learning management applications have been widely used to support the planning, implementation, and evaluation of learning in a more systematic and documented manner (Ally, 2008). In the context of educational supervision, the data-driven decision-making framework views supervision and learning data as the primary basis for follow-up planning and teacher professional development, rather than just as an administrative reporting instrument (Mandinach & Gummer, 2016).

In Indonesia, Madrasah Aliyah is a unique and vital component of the national education system. Under the auspices of the Ministry of Religious Affairs, madrasahs carry out a dual mandate: to provide general education equivalent to high school, while instilling deep Islamic values and knowledge (Zohriah, Salimah, Fika, & Bachtiar, 2024). This dual objective demands a highly effective management and supervision framework to ensure both objectives are achieved with high-quality standards. However, the dominant supervision practices in many Aliyah Madrasahs remain conventional, face-to-face, paper-based, and episodic models. This traditional paradigm has systemic flaws that critically undermine its purpose. Preliminary investigations and literature reviews (e.g., Zulhingga, 2020) identified a significant gap between the theoretical idealism of supervision and its practical implementation. Four main challenges characterize this gap. First, there is the onerous administrative burden, whereby manual, paper-based reporting siphons off much of the teacher's and supervisor's precious time. The primary victims in this respect are pedagogical reflection and improvement. Second, the cycle of delayed feedback, which often takes days or even weeks, renders feedback contextually irrelevant and deprives it of its formative function. Third, the inspection paradigm is more dominant than coaching, creating a culture of compliance rather than one of professional growth, and is exacerbated by subjectivity and the absence of longitudinal data.

The combination of systemic inefficiencies with contextual barriers creates a pressing need for an innovative solution. Advances in web-based information technology offer transformative potential to re-engineer this process (Andriawan, Ajie, & Adhi, 2022). It is more than a tool that can be given to various stakeholders, such as teachers, madrasah heads, and supervisors; it brings them together into a single, transparent, and efficient workflow. These ecosystems can be used to automate administrative tasks, particularly for real-time communication and feedback, and to aggregate data to support evidence-based decision-making. This paper, recognizing this potential, addresses the following critical question: How can a digital supervision ecosystem be developed and validated to improve the effectiveness of monitoring and evaluation of learning in Madrasah Aliyah? Therefore, this study aimed to design, develop, and evaluate the effectiveness of a comprehensive web-based supervision ecosystem tailored to the specific context and needs of Madrasah Aliyah in Jambi Province.

In particular, there is still limited research that develops and empirically tests ecosystem-based digital supervision models in the context of religious secondary education, such as Madrasah Aliyah. In fact, the institutional characteristics, organizational culture, and dual mandate of Madrasah Aliyah demand a different approach to supervision from public schools. The absence of an empirically validated ecosystem-based digital supervision model in this context shows that there are research gaps that need to

be addressed. Based on these research gaps, this study was developed based on formative feedback theory, instructional supervision models, data-based decision-making principles, and technology acceptance frameworks. This research aims to design, develop, and evaluate an integrated and contextual web-based digital supervision ecosystem to improve the effectiveness of monitoring and evaluation of learning in Madrasah Aliyah. Conceptually, this research contributes to the enrichment of education supervision theory by offering an ecosystem-based digital supervision model that combines professional coaching approaches, digital leadership, and systematic use of data in the context of religious secondary education.

2. METHODS

The researcher employed the Research and Development (R&D) approach, a systematic method for creating and validating new instructional products (Borg & Gall, 1983). This study is significantly exacerbated by geographical and logistical constraints, especially in a vast province like Jambi. With 239 Aliyah Madrasahs spread across nearly 50,000 km², many of which are located in remote areas, conventional models that rely on in-person visits have become impractical. This has led to uneven and sporadic supervision, leaving many teachers without regular professional support. The study employed the five-step multimedia design approach proposed by Lee & Owen (2004). The study followed the five steps in the approach as follows:

2.1 Phase 1: Assessment/Analysis

In the basic phase, the focus will be on diagnosing the problem and identifying the needs of the target users. The approach shall be mixed.

- a. Needs Analysis: Key stakeholders, such as provincial-level policymakers, Madrasah Superintendents, Madrasah Heads, and senior teachers, were interviewed using a semi-structured interview guide to identify weaknesses in the current supervision system. Quantitative communication, using a need assessment form for this research, was assessed on a 4-point Likert scale among 35 level-one and level-two teachers.
- b. User & Technology Analysis: The qualities of the target users, namely teachers, madrasah heads, and supervisors, are identified and analyzed for their technology competence and adaptability towards new technology solutions. The prevailing technology infrastructure, comprising internet connectivity and device availability at the target madrasah, is also analyzed, as the chosen technology application must be technically feasible.
- c. Document Analysis: The process involves studying existing official supervision documentation tools, reports, or guidelines that can outline the requirements from a formal perspective.

2.2 Phase 2: Design

The results from the analysis phase of the process will be interpreted in a product blueprint. This stage comprises:

- a. Design of System Architecture: The client-server modular system architecture is designed for scalability and maintainability.
- b. Workflow and Database Design: The process of layered supervision (class teacher input >=> madrasah head evaluation >=> supervision conducted by school supervisors) was prototyped. Normalized relational database design was accomplished through the use of Entity Relationship Diagrams (ERD).
- c. UI/UX DESIGN: The principles of user-centric design are applied to create high-fidelity wireframes and mockups for each screen, ensuring simplicity, clarity, and intuitive navigation that caters to users with different levels of technology expertise.

2.3 Phase 3: Development

- a. The design plan will come true as functional software. Backend development will use PHP with Laravel to handle business logic and APIs. Moreover, the frontend will be implemented using

conventional web technologies, that is, HTML, CSS, and JavaScript, along with a responsive design.

- b. The theme for the entire application will remain business-like. This will make the whole system more professional. Moreover, the design plan will come true as functional software. The system was developed as a web-based supervision platform emphasizing usability, scalability, and accessibility. This phase resulted in the first functional prototype (Product I).

2.4 Phase 4: Implementation

Implementation is carried out in two primary cycles:

- a. Small Group Trial (Practicality Test): The validated product (Product II) was implemented in a small group of users from three pilot madrasahs over two weeks. This phase focuses on gathering intensive qualitative feedback on usability and practicality through observation and focus group discussions (FGDs).
- b. Large Group Trial (Effectiveness Test): The improved system (Product III) was then implemented in five Madrasahs for a whole semester. This stage will involve a larger and more diverse group of users, as its purpose is to test the system's stability, scalability, and efficacy.

2.5 Phase 5: Evaluation

Evaluation continues throughout the cycle:

- a. Formative Evaluation: Performed in the Development and Implementation phases. The evaluation comprises expert validation of Product I by a panel of three experts: two in educational supervision and one in instructional technology, using a structured validation approach. Feedback from a small-group trial is another form of formative evaluation.
- b. Summative Evaluation: The final evaluation is conducted at the end of a large-group trial. The survey form, which assesses the effectiveness, feasibility, user satisfaction, and impact of the system, was distributed to 102 teachers, 5 heads of madrasah, and 5 supervisors.

2.6 Data Analysis Techniques

The quantitative results of all questionnaires were analyzed using descriptive statistics. A 4-point Likert scale is used, and the average score is converted to a percentage index using the formula: $\text{Index (\%)} = (\text{Average Score} / 4) \times 100\%$. This index is then interpreted using a predetermined qualitative category (e.g., 81.25%–100.00% = Very High/Very Practical). The qualitative data from interviews, open-ended questions, and observations were used for thematic analysis to identify patterns and to explain the findings from the quantitative analysis in the qualitative study.

2.7 Research Ethics

This research is carried out by paying attention to the ethical principles of research. Informed consent is obtained from all participants before data collection, with an explanation of the participants' objectives, procedures, and rights. Participation is voluntary, and participants have the right to withdraw at any time without any consequences. Data confidentiality is maintained by eliminating the personal identity of participants and using data only for research purposes. All research results were reported in aggregate to maintain the anonymity of participants.

3. FINDINGS AND DISCUSSION

3.1 Findings

In this section, the results of each stage of the research will be described in depth, culminating in a discussion of the results of the developed digital ecosystem of supervision.

3.1.1 Analysis Phase Results

A Mandate for Change. The analysis phase provides a strong foundation for justifying the intervention. The quantitative insights from the needs analysis questionnaire (N = 35) indicated strong support for the issues in traditional systems. The key indicators presented in Table 1 highlight inefficiencies and opportunities for improvement through digital transformation.

Table 1. Selected Findings from the Needs Analysis Questionnaire (N=35)

Statement	Average Score	Percentage Index	Category
The manual reporting process is inefficient.	3.40	85.00%	Strongly agree
Supervision so far has not been fully effective.	3.20	80.00%	Agree
The manual process is already effective; it does not need to be changed (Negative).	1.26	31.50%	Strongly Disagree
I need a system for real-time reporting.	3.57	89.25%	Strongly agree

The high approval rate for the inefficiency statement (85.00%) and the strong rejection of the status quo (31.50%) indicate fundamental dissatisfaction. This is strongly supported by the high demand for real-time digital systems (89.25%) and high adoption readiness (90.00%). Qualitative data enriches this picture. A madrasah head declared:

"We are buried in paper. By the time I reviewed the teacher's weekly journal, the moment for meaningful feedback had passed. The momentum is gone." This statement highlights the dual problems, namely, administrative burden and formative malfunction. One supervisor added, "With the school hundreds of miles apart, I can only visit once a semester. The visit became an administrative examination, not real guidance. I don't have insight into what goes on day to day."

It confirms the presence of logistical factors that prevent regular observation. Collectively, these findings not only suggest but also demand the Development of a digital ecosystem.

3.1.2 Results of Formative Evaluation

Validation by Experts. The functional prototype (Product I) underwent a rigorous evaluation by three experts. The quantitative results, summarized in Table 2, show a very high level of feasibility from both substantive and technical perspectives.

Table 2. Summary of Expert Validation Scores

Validation Aspects	Expert Group	Average Score	Percentage Index	Category
Content Fit & Workflow	Material Expert (n=2)	3.85	96.25%	Highly Worthy
Usability & Technical Design	Media Expert (n=1)	3.67	91.75%	Sangat Worthy

Subject matter experts (Index 96.25%) praised the system for successfully operationalizing collaborative and sustainable supervision principles. One of the experts stated:

"The architecture of this system appropriately positions the madrasah head as the main learning leader, with the supervisor playing a strategic supervisory role. This is a significant paradigm shift." Media experts (Index 91.75%) affirmed the design's high usability and adherence to user-centric principles, stating, "The interface is clean, and the workflow is logical. The system effectively models the principle of perceived ease of use; this is important for acceptance by non-technical users."

The qualitative feedback from this phase played an essential role in improving the product. It led to the Development of key features, including a digital consultation room and a report export option, thereby enhancing the prototype into Product II.

3.1.3 Summative Evaluation Results

Transformative Power. Summative evaluation provides a final judgment of how well ecosystems function in real-world settings. Data collected from 102 teachers, five madrasah heads, and five supervisors present a consistent narrative of a profound and positive impact.

3.1.4 Teacher's Perspective

Exceptional Satisfaction and Increased Efficiency. For teachers and frontline users, this system is not just an improvement but a revolution in their workflow. The data in Table 3 show the magnitude of this impact.

Table 3. Results of Summative Evaluation Choice from Teachers (N=102)

Statement	Average Score	Percentage Index	Category
Overall, I am satisfied with this system.	4.00	100.00%	Strongly agree
Successfully reduce administrative burden.	3.90	97.50%	Strongly agree
The reporting process is more efficient than the manual way.	3.89	97.25%	Strongly agree
The system is easy to learn, and the flow is clear.	3.51	87.75%	Strongly agree
Communication and feedback are made easier.	3.76	94.00%	Strongly agree
This system helps me reflect on the teaching.	3.81	95.25%	Strongly agree

A perfect satisfaction score (Average 4.00) is a rare and potent indicator of a product's success in meeting and exceeding user expectations. This satisfaction stems from a substantial improvement in efficiency, with 97.50% of respondents agreeing that the administrative burden has been reduced. This was expressed so candidly by a teacher: "What I used to do over the weekends, I now do in five minutes after each class. This has brought back my evenings free to plan better classes."

Beyond efficiency, the results show that the system successfully fosters a more supportive professional environment. High scores on ease of feedback (94.00%) and support for self-reflection (95.25%) prove that these ecosystems serve as professional Development tools, not just monitoring. The system successfully operationalized the concept of timely feedback (Hattie & Timperley, 2007), transforming supervision from a dreaded annual review to an ongoing, constructive conversation focused on growth.

3.1.5 Leadership Perspective

Empowerment through Data. For madrasah heads (N=5) and supervisors (N=5), this ecosystem serves as a powerful managerial and strategic tool. The two groups of leaders unanimously agreed (Average 4.00) that the system is "an effective instrument to support academic and managerial supervision tasks." This confirms the value of the system for leaders.

The head of the madrasah strongly agreed that the system makes it easier to monitor teachers' activities (Average 3.80) and provides a more accurate, real-time picture of classroom progress (Average 3.80). A madrasah head explained, "Before, I was like flying blind, relying only on conversations in the corridors. But now, I have a dashboard that gives me the helicopter vision! I can see which teachers are struggling with a particular topic and offer support right away, not at the end of the semester." This describes a shift toward proactive, data-driven instructional Leadership.

Supervisors highlight strategic benefits. They strongly agreed that this system allows efficient monitoring of the fostered madrassas (Average 3.80) and makes it easier to compare trends between madrasas (Average 3.60). One supervisor commented, "This is a breakthrough. I can now identify systemic issues—for example, the widespread difficulties in implementing the new curriculum—in all of my target schools from the office. My field visits are now much more strategic and focused because I already have the data." It demonstrates the system's success in overcoming geographical barriers and enables strategic supervisory roles at the macro level.

3.2 Discussion

3.2.1 Digital Supervision as Formative Guidance

The findings of this study suggest that the digital supervision ecosystem enables a shift in supervisory practices from an administrative inspection paradigm to continuous formative guidance. A system with real-time reporting and feedback allows supervisory interactions to take place closer to the ongoing learning context. This is in line with formative feedback theory that emphasizes timeliness, relevance, and sustainability as the main prerequisites for improving the quality of learning (Black & Wiliam, 1998; Hattie & Timperley, 2007).

In the context of educational supervision, these findings expand clinical and developmental supervision practices (Glickman, Gordon, & Ross-Gordon, 2014) by showing that formative guidance principles can be operationally operationalized systematically through the support of digital technologies. Thus, supervision is no longer positioned as an episodic event, but as a continuous process of professional dialogue.

3.2.2 Data-Driven Leadership and Decision-Making

The results of the study also show that the digital supervision ecosystem functions as a supporting instrument for learning leadership and data-driven decision-making. The availability of centralized and up-to-date learning data allows madrasah heads and supervisors to gain a comprehensive picture of learning practices without having to rely on fragmented manual reports.

Theoretically, these findings support a data-driven decision-making framework that places data as the primary basis for follow-up planning and teacher professional development (Mandinach & Gummer, 2016). This study expands on the theory by showing how ecosystem-based system design can connect microdata (classroom and teacher) with decision-making at the managerial and regional levels simultaneously.

3.2.3 User-Centered Technology and Design Acceptance

The high level of satisfaction and perception of ease of use shows that system design that departs from the real needs of users plays an important role in the successful adoption of technology. These findings are consistent with the Technology Acceptance Model (TAM), which emphasizes the role of perceived usefulness and perceived ease of use as the main determinants of system acceptance (Davis, 1989).

The conceptual contribution of this research lies in the "ecosystem" approach, not just the development of separate digital tools. This approach is theoretically important because it positions technology as an integrated work environment that brings together actors, workflows, and data in a single system. Thus, the cognitive load of the user can be suppressed, and the supervision process becomes more natural in the daily work routine.

3.2.4 Contextual Relevance for the Religious Education System

The successful implementation of this system in the context of Madrasah Aliyah shows that digital innovation is not limited to educational units with high resources. The responsive web-based design that can be accessed via mobile devices demonstrates the relevance of this model to religious education systems that have diverse geographical and institutional characteristics.

However, critical reflection shows that the scalability of the system outside Jambi Province requires policy adjustments, human resource capacity, and consistent institutional support. Reliance on the internet network infrastructure is also a challenge, especially in areas with limited connectivity. Therefore, the long-term sustainability of this system requires a mentoring strategy, technical maintenance, and integration with the official system of the Ministry of Religion.

3.2.5 Theoretical Contributions and Implications

Overall, this study expands the theory of educational supervision by presenting an ecosystem-based digital supervision model that is empirically tested in the context of religious secondary education. The ecosystem approach offered enriches the supervisory discourse by integrating formative feedback theory, instructional leadership, technology acceptance, and data-driven decision-making in a single operational framework.

However, the limitations of the duration of the study limit the measurement of long-term impact on student learning outcomes. Therefore, longitudinal research in the future is needed to assess the sustainability of the influence of the digital supervision ecosystem on improving the quality of learning more comprehensively.

4. CONCLUSION

This Research and Development study successfully addresses the critical need for a more effective and efficient academic supervision model in Madrasah Aliyah by systematically applying Lee and Owen's R&D framework to design, develop, and rigorously evaluate a comprehensive digital supervision ecosystem. The findings demonstrate that the proposed system is a valid, efficient, and transformative intervention, empirically proven to significantly reduce administrative inefficiencies for teachers—resulting in exceptionally high user satisfaction—while accelerating the feedback cycle and transforming supervision from a summative audit into a formative, coaching-oriented process, and equipping education leaders with aggregated, real-time data to support evidence-based decision-making. As such, this research contributes a validated, contextually relevant, and scalable multi-tiered digital supervision model, illustrating how user-centered design and thoughtful technology integration can overcome systemic barriers and foster a more transparent, supportive, and effective educational environment. From a scientific perspective, the study advances theory by extending the field of educational supervision through an ecosystem-based digital model tested within the context of religious secondary education, integrating formative supervision, instructional leadership, technology acceptance, and data-driven decision-making into a unified operational framework, while also offering practical value as a reference for policymakers and practitioners in designing adaptive supervision systems suited to geographical and resource constraints. Nevertheless, the study is limited to evaluating supervision processes, user perceptions, and efficiency gains, without assessing long-term impacts on student learning outcomes; therefore, future research is recommended to conduct longitudinal studies examining effects on learning quality and academic achievement, as well as to explore the model's scalability beyond Jambi Province and assess its sustainability in relation to infrastructure readiness and institutional policy support.

REFERENCES

- Ally, M. (2004). Foundations of educational theory for online learning. *Theory and practice of online learning*, 2(1), 15-44.
- Andriawan, C., Ajie, H., & Adhi, B. P. (2022). Pengembangan Sistem Informasi Sekolah di Sekolah Menengah Kejuruan (SMK) Pangudi Rahayu 1 Jakarta. *Jurnal Pendidikan Teknik Informatika dan Komputer*, 6(1), 1-8.
- Astuti, J., Nuraida, D., & Darmawan, C. (2023). Manajemen Madrasah Aliyah menghadapi era society 5.0. *Al-Idarah: Jurnal Kependidikan Islam*, 14(1), 1-14.
- Badan Pusat Statistik Provinsi Jambi. (2024). *Provinsi Jambi Dalam Angka 2024*. BPS Provinsi Jambi.
- Black, P., & Wiliam, D. (1998). Assessment and Classroom Learning. *Assessment in Education: Principles, Policy & Practice*, 5(1), 7-74.
- Borg, W. R., & Gall, M. D. (1983). *Educational research: An introduction* (4th ed.). Longman.
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, 13(3), 319-340.

- Gadriaman. (2024). Pengaruh Supervisi Kepala Sekolah Terhadap Kinerja Guru. *Jurnal Educatio (FKIP UNMA)*, 10(1), 49-53.
- Glickman, C. D., Gordon, S. P., & Ross-Gordon, J. M. (2014). *SuperVision and instructional leadership: A developmental approach* (9th ed.). Pearson.
- Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, 77(1), 81–112.
- Jannah, S., Suteja, & Mujahidin, E. (2024). Modernisasi Manajemen Pendidikan Islam di Era Teknologi Digital. *Jurnal Ilmiah Wahana Pendidikan*, 10(12), 434-442.
- Lee, W. W., & Owens, D. L. (2004). *Multimedia-based instructional design: Computer-based training, web-based training, distance broadcast training, performance-based solutions* (2nd ed.). Pfeiffer.
- Mandinach, E. B., & Gummer, E. S. (2016). What does it mean for teachers to be data literate: Laying out the skills, knowledge, and dispositions. *Teaching and teacher education*, 60, 366-376.
- Means, B., Bakia, M., & Murphy, R. (2014). *Learning online: What research tells us about whether, when and how*. Routledge.
- Selwyn, N. (2021). *Education and technology: Key issues and debates*. Bloomsbury Publishing.
- Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 tentang Sistem Pendidikan Nasional.
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), 186-204.
- Wahyudi, S. (2022). Peran Strategis Kelompok Kerja Pengawas dalam Peningkatan Kompetensi Kepada Madrasah Aliyah Se-Kabupaten Banjarnegara. [Disertasi, Universitas Islam Negeri Saizu].
- Zohriah, A., Salimah, Fika, N., & Bachtiar, M. (2024). Konsep Dasar Menejemen Pendidikan di Madrasah Aliyah. *Journal on Education*, 6(1), 8094–8102.
- Zulhimma. (2020). Efektivitas Madrasah: Pengaruh Kepemimpinan Kepala Madrasah, Komunikasi Organisasi, dan Komitmen Guru. Disertasi, Universitas Islam Negeri Sultan Thaha Saifuddin Jambi.