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Digitalizing *I'dād* (Teaching Preparation): A Web Based Platform for Optimmizing Pedagogical Readiness among Pesantren Educators

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ABSTRACT

This study aims to develop and examine the feasibility of a custom web-based teaching preparation system (*E-I'dād*) designed to digitalize, integrate, and document teachers' lesson planning and evaluation processes at Pondok Pesantren Modern Al-Fath, specifically for *Dirasah Islamiyyah* and language subjects. The development of this system was motivated by the conventional, manual drafting of *I'dād*, unintegrated document management, and the lack of a centralized recording and archiving system for *taftisy* and *tashih* processes. This study employed a Research and Development (R&D) method utilizing the ADDIE model (analysis, design, development, implementation, evaluation) combined with a mixed-methods approach. Data were collected through observation, interviews, expert validation, and user questionnaires. The development process yielded an *I'dād* prototype that integrates *I'dād* drafting, submission, *taftisy*, revision, *tashih*, archiving, notifications, and user activity monitoring within a single digital ecosystem. Expert validation results demonstrated a system feasibility rate of 94%–98%, while user trials involved 12 participants consisting of teachers, school principals, and vice principals of curriculum affairs. User evaluation indicated that most features fell into the highly feasible category, ranging from 83% to 100%, whereas account settings and user support features obtained 80% and 76%, respectively. These findings indicate that *E-I'dād* can transform manual, document-based teaching preparation mechanisms into a structured, transparent, documented digital system that supports academic supervision. Consequently, *I'dād* is deemed feasible as a supporting system for the governance of teachers' instructional preparation in Islamic boarding schools, although further refinements to the user interface, user guides, AI integration, and implementation expansion across other subjects and institutions remain necessary.

Keywords: E-*I'dād*; Teaching Preparation; Pesantren; Web Custom; Pedagogical Readiness

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INTRODUCTION

Teachers' expertise in instructional planning is a critical component in ensuring high-quality educational processes (Mustofa et al., 2024). Teachers' lesson preparation serves not merely as an administrative requirement (Pahlevi et al., 2026), but also represents a pedagogical process that assists teachers in formulating learning objectives, selecting content, determining methods and media, designing learning activities, and preparing evaluations (Diakomihalis & Bolovinou, 2022; Nasution et al., 2025). Having a well-designed lesson plan enables teachers to structure instruction in a manner that is organized, flexible, and responsive to the diverse characteristics of students (Gayman et al., 2023). Based on teacher competencies, the ability to plan instruction is a vital component of professional competence directly linked to the quality of teaching execution (Budiman et al., 2025; Yulianti et al., 2023). Furthermore, teachers' instructional planning

documentation supports supervision, reflection, and continuous improvement of learning quality (Azkiya et al., 2024). Therefore, an ideal teacher is not merely administratively compliant, but is also capable of crafting high-quality, flexible, measurable, documented, and sustainable instructional plans for classroom practice (Aisah et al., 2023).

In general, the instructional planning process continues to face various challenges. Teachers must not only possess the capability to develop their own instructional materials, but they must also align them with student characteristics, learning objectives, appropriate methods, media, and evaluation strategies (Cananau et al., 2025; Harrasi, 2025). According to several studies, teachers continue to face challenges in designing adaptive instruction, organizing subject matter, determining appropriate strategies, integrating technology, and developing aligned assessments (Heilbronn, 2026; Hung, 2023). Studies on classroom planning also indicate that instructional planning is a cognitively demanding task involving multiple cognitive processes, such as transforming content, setting goals, designing tasks, and adapting to student conditions (Terosky et al., 2023). These conditions indicate that teacher planning requires a system that enables document storage while streamlining the processes of management, updating, measurement, drafting, inspection, and evaluation of instructional plans.

In the context of *pesantren* education, which possesses a unique academic learning culture, this need becomes even more pronounced (Mustofa et al., 2025). At Pondok Pesantren Modern Al-Fath, teacher preparation (*I'dād*) has been integrated into the institutional academic mechanism through several stages, including *ta'hīl* (teaching training), *I'dād* drafting (lesson plan preparation), *taftīsh* (inspection), and *taṣḥīḥ I'dād* (formal approval). Fundamentally, this mechanism provides a structured framework to prepare teachers prior to instruction. Nevertheless, the teaching planning and evaluation processes at Pondok Pesantren Modern Al-Fath are still conducted independently by teachers and lack proper documentation. While the centralized record-keeping system does not yet fully support the inspection process, teachers remain reliant on disparate books, notes, and documents to compile and prepare their lessons. Documenting inspection results is essential to ensuring that teacher supervision is conducted consistently, objectively, and in an actionable manner. Consequently, the current practice leads to delays in *I'dād* preparation, difficulties in tracking inspection histories, risks of document loss, and limitations in monitoring the progression of each teacher's instructional readiness..This condition demands a solution that directly bridges the challenges of teacher lesson preparation with a digital system tailored to the academic mechanism of the *pesantren*. A digital system workflow can support independent lesson preparation by providing clear stages, deadlines, and indicators (Triwiyanto et al., 2024). Furthermore, evaluation instruments operationalized through structured inspection indicators can enhance an inspection process that previously lacked measurable standards (Zhang, 2022). By utilizing centralized digital storage, issues related to *I'dād* documents, *taftīsh* outcomes, *taṣḥīḥ*, feedback, and revision history can be effectively resolved. While digital archiving mitigates the risk of losing planning records, automated reminder and notification systems help address delays in *I'dād* preparation.

Several studies on *pesantren* digitalization have been conducted, including an integrative framework for *fiqh* learning based on digital pedagogyl (Abdullah et al., 2026), the development of digital entrepreneurship programs (Sarwenda et al., 2024), the utilization of the Maktabah Syamilah NU digital application for religious moderation (Ibda et al., 2023), the development of digital literature platforms (Ismah, 2023), and the digitalization of the classical Islamic texts (*kitab kuning*) study tradition (Istiqomah et al., 2025; Suresman et al., 2025). While prior research has addressed instructional models, literature, *fiqh* content, and entrepreneurship, a significant research gap remains regarding dedicated digital systems that comprehensively govern academic administrative management and the evaluation process of pesantren teachers' lesson preparation drafts (*I'dād*). Previous studies have predominantly focused on digitalizing student learning processes or teaching materials, rather than internal workflows for teacher supervision and lesson planning. Therefore, this study fills this gap through the development of a custom web-based platform (*E-I'dād*), designing a centralized, measurable, and permanently archived lesson planning and evaluation management system within the pesantren environment.

METHOD

The method employed in this study is the R&D approach. R&D is a research methodology aimed at developing and producing educational products (Royyanah & Wahyuni, 2024) that are

innovative, while testing their feasibility, practicality, and effectiveness through systematic procedures. R&D research begins with an analysis (Dwi & Alfin, 2023) of real-world needs in the field, followed by the product design and development process, and concludes with field testing and evaluation to ensure optimal usability. In this study, R&D was combined with a mixed-methods approach, wherein qualitative data were used to explore the needs, context, and experiences of *pesantren* teachers, while quantitative data were employed to measure the product validity, practicality, and effectiveness of the custom web-based *E-I'dād*

1. Analysis

   The analysis phase was conducted to identify the actual problems and needs of *pesantren* teachers in lesson preparation. This process included problem identification through observation and interviews, which revealed that teachers' instructional preparation still relies heavily on printed books and manual notes.

2. Design

   The design phase aimed to formulate the concept and architecture of the *E-I'dād* (teaching preparation web) product. The process at this stage involved establishing product specifications, specifically defining development objectives and functional requirements that encompass lesson planning features, instructional content management, and teaching material documentation. Subsequently, an initial product design (prototype I) was developed as a custom web platform tailored to the characteristics, needs, and pedagogical indigeneity of *pesantren* learning.

3. Development

   The development phase aimed to transform the product design into a fully functional system. The process at this stage involved expert validation by educational technology (e-learning) specialists and *pesantren* practitioners to assess the system's feasibility from technical, pedagogical, and substantive aspects. Based on the validation results, prototype revisions were conducted in accordance with the experts' feedback and suggestions to enhance product quality and alignment.

Table 1. Questionnare score categories

Percentage	Criteria
81-100%	Highly suitable
61-80%	Suitable
41-60%	Reasonably suitable
21-40%	Less suitable
0-20%	Not suitable

4. Implementation

   The implementation phase was conducted to test the product in a real-world usage environment. The process at this stage involved field testing with a group of *pesantren* teachers to evaluate the website's practicality, ease of use, and functionality. Subsequently, prototype revisions were made based on the results of the limited field trial.

5. Evaluation

   The evaluation phase aimed to comprehensively assess the final quality of the product. This process encompassed final evaluation and refinement through the analysis of quantitative and qualitative data regarding teacher responses and the quality of the resulting instructional plans. This phase concluded with reporting and dissemination activities, which included compiling the final research report, drafting a scientific article, and documenting the platform as part of the research output dissemination.

RESULT AND DICUSSION

1. Teacher Needs: Specifications for an E-*I'dād* Digital System

The initial problem identification phase revealed several core issues in *I'dād* management: (1) *I'dād* compilation is still conducted manually using printed books or separate physical documents; (2) *I'dād* documents (teaching modules/lesson plans) are prone to being lost due to the absence of an integrated digital archiving system, causing difficulties for teachers during accreditation processes; (3) the *taftīsh* (inspection) and *taṣḥīḥ* (validation) processes remain reliant

on physical meetings between teachers and *musyrif*; and (4) structured activity history and data are not yet available for monitoring and evaluation purposes.

The aforementioned issues are generally experienced by Pondok Pesantren Al-Fath. Furthermore, specific challenges exist regarding instructional preparation for *Dirasah Islamiyyah* (Islamic Studies) and language subjects. As an educational institution that independently develops its *Dirasah Islamiyyah* curriculum, the instructional content is well-structured. In practice, however, class sessions are often ineffective due to the absence of a system to control and monitor the volume of content covered in a given week.

Based on the analysis results, the scope of development was focused specifically on the *I'dād* document lifecycle (a lesson module platform), rather than a comprehensive Learning Management System (LMS). *E-I'dād* is designed as an academic system that manages the complete workflow of weekly lesson module/lesson plan drafting, inspection, revision, validation, and permanent archiving.

The development of *E-I'dād*, tailored to the needs of teachers at Pondok Pesantren Modern Al-Fath, not only enhances instructional administrative efficiency but also equips educators with increasingly essential 21st-century digital skills (I. Mustofa et al., 2025). Empirical studies have demonstrated that integrating digital technology into the *pesantren* curriculum enhances learning management while simultaneously reinforcing Islamic educational values (Arizqi et al., 2026; Ibda et al., 2023; Suresman et al., 2025).

The developed *E-I'dād* website features indigenous-oriented product specifications, as it specifically focuses on *Dirāsah Islamiyyah* and language subjects at Pondok Pesantren Modern Al-Fath. In these learning domains, the institution independently designs its own instructional materials outside the framework of the national curriculum. Given that the precise alignment of semester-based learning materials with rational learning outcomes still requires optimization, *E-I'dād* was developed to address these limitations. The platform facilitates the precise measurement of learning outcomes through a digital tracking system for teachers' *I'dād* draft submissions and the cumulative tracking of subject completion throughout the semester.

Precise measurement of semester-based learning outcomes plays a strategic role in enabling *pesantren* educational institutions to ensure academic accountability (Muslimin et al., 2022). Amid the challenges of integrating the national curriculum with independently developed *Dirāsah Islamiyyah* content, accurately measured learning outcome indicators enable *pesantren* administrators to monitor the integrative development of students' competencies (Budiman *et al*., 2025).

2. Model Design and Workflow of the E-*I'dād* Digital System

In this phase, the Product Requirements Document (PRD) for *E-I'dād* Platform Version 1.2 was drafted as the primary specification document for system development. The product is designed to accommodate four user groups: teachers as primary users, *musyrif* as reviewers, the curriculum department as academic data managers, and administrators as system access managers.

To guarantee operational consistency, the operational unit within the system is strictly defined, wherein a single *I'dād* represents a one-week instructional plan for a specific subject-and-class pair. Each *I'dād* unit encompasses learning objective indicators, implementation dates, allocated lesson hours, and core topics in an integrated manner. This standardization not only establishes a uniform workflow but also generates a systematic data structure that supports the evaluative analysis in this study. The users and their respective roles within the *E-I'dād* system are outlined below:

Table 2. Roles, Requirements, and Relations within the E-*I'dād* System

Roles	Primary Requirements	System Relationships
Teacher (Primary User)	Drafting and submitting *I'dād*, as well as managing a personal *I'dād* repository	Paired with exactly one *mushrif* per academic period.
Musyrif / Supervisor (Reviewer) / Principal	Reviewing, correcting, and approving *I'dād* efficiently without physical documents.	Supervises a designated group of teachers; can only access *I'dād* plans submitted by assigned teachers.
Academic Administrator	Managing user accounts, schedules, and exporting reporting data.	Has full data access; assigns *mushrif*-teacher pairings and sets submission deadlines for each period.

The following presents the access workflow for teachers and *musyrif* through to the end of the *I'dād* lifecycle on the E-*I'dād* webs

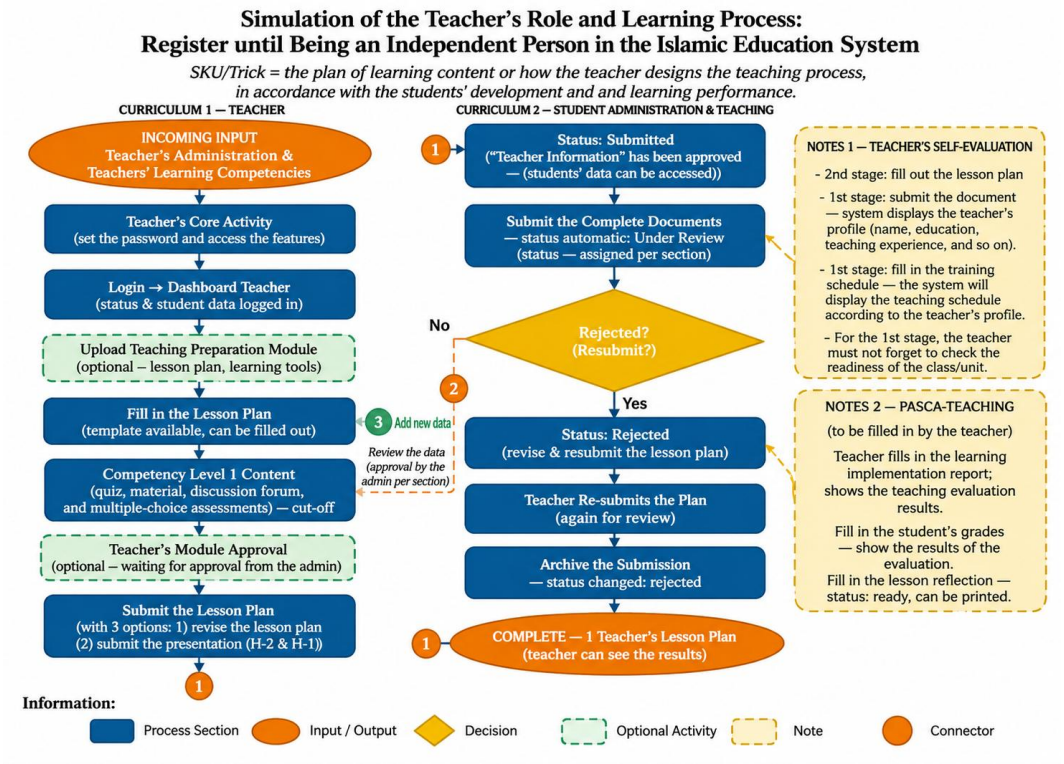


Figure 1. Simulation of teacher and *mushrif* access workflow

Design standardization in the development of the *E-I'dād* digital platform is demonstrated through the establishment of a structured operational unit, specifically one draft per week for each subject-and-class pair. Additionally, user access is divided into four distinct roles with clear permissions: teachers, *musyrif*, curriculum administrators, and system administrators. For *pesantren* educational institutions, an ideal design standard must effectively align the unique traditions of Islamic academic heritage (*dirāsah islamiyyah*) with modern administrative governance, while maintaining user interface simplicity for educators with varying levels of digital literacy (Ismah, 2023). The urgency of this standardization lies in establishing a supervisory workflow that is consistent, transparent, and permanently archived, thereby preventing document loss while providing structured data critical for evaluating instructional quality and supporting ongoing institutional accreditation (Triwiyanto et al., 2024).

3. Development of an E-*I'dād* Digital System

The system development yielded an *E-I'dād* prototype as a Minimum Viable Product (MVP) that integrates core features to comprehensively support the functional requirements of *pesantren* teachers' instructional planning. The platform ecosystem encompasses account governance with tiered access rights, role-based user dashboards, and configurable settings for academic periods, subjects, classes, and teaching assignments.

To assist teachers, the platform features an *I'dād* builder that enables structured document compilation, a functionality for duplicating *I'dād* from previous weeks, and an efficient lesson module library. Furthermore, the system facilitates a transparent academic cycle through submission, *taftīsh* (inspection), revision, and *taṣḥīḥ* (validation) mechanisms, enhanced by deadline settings and automated notifications. Instructional quality control is further strengthened by version history, permanent archives, 'Document Spot-Check' and 'Classroom Inspection Logging' features, as well as a monitoring dashboard supporting research data exports and audit logs to record all critical system activities in real time. This entire functional foundation was systematically engineered to undergo feasibility and functionality testing during limited trials and field testing.

The resulting feature catalog further demonstrates that the interface structure was engineered based on user roles. On the teacher interface, menus are available for *I'dād* compilation, teaching schedules, lesson modules, *taṣḥīḥ* status, archives, and notifications. Meanwhile, *musyrif*

have access to the *taṣḥīḥ* queue, *I'dād* inspections, spot-checks, and archives. The curriculum department manages academic periods, subjects, classes, teaching assignments, and teacher mentorship, whereas system administrators oversee account management, archives, data exports, and system logs. The user interfaces of the *E-I'dād* web platform are displayed below:

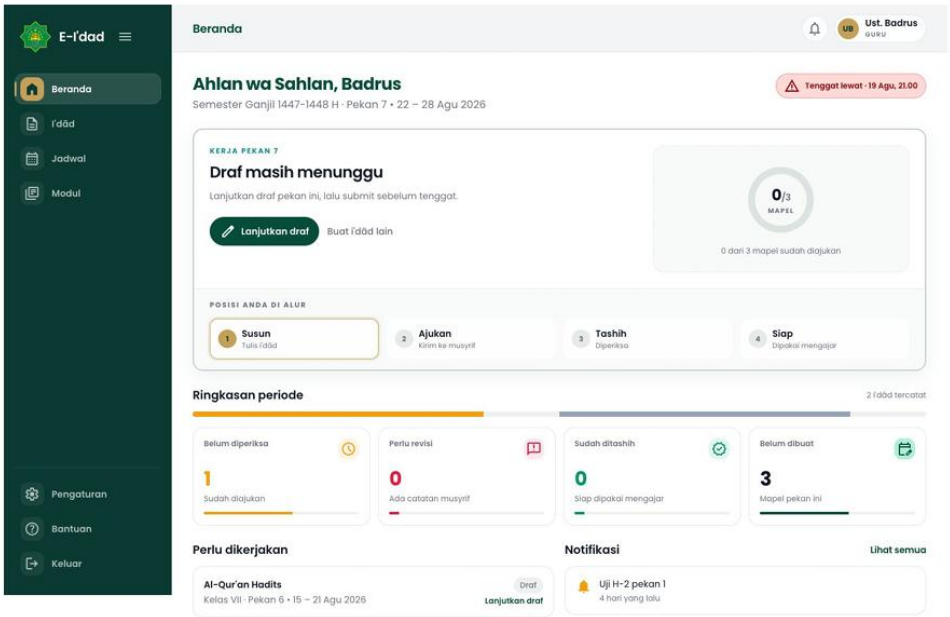


Figure 2. Web initial menu interface

This display features the platform tagline and the landing page showcasing the latest uploaded *I'dād*, complete with its *taṣḥīḥ* (approval) status. Located in the upper-right corner are login and registration menus for users who have not yet registered an account.

Figure 3. Feature Catalog of the E-*I'dād* Platform

This display shows that the top section presents users with semester period information, deadline alerts, and a progress indicator showing that no subjects have been submitted out of the



total target of three for the current week. Furthermore, the platform visually maps the workflow through four primary stages: draft (current active stage), submit, validate (*tashih*), and ready for teaching.

To facilitate monitoring, the central area of the interface provides a period summary statistic card detailing *I'dād* statuses, such as uninspected documents, pending revisions, validated documents, or uncreated drafts. Meanwhile, at the bottom, the system displays a list of pending tasks—such as a draft for Class VII *Al-Qur'an Hadits* content that can be directly resumed—alongside a notification panel to track announcements and recent activities.

The development of the *E-I'dād* prototype as a Minimum Viable Product (MVP) successfully integrated *pesantren* teachers' instructional planning governance into a structured, transparent, and permanently archived digital ecosystem. The integration of core features—such as the *I'dād* builder, automated module duplication, tiered supervision mechanisms, and field oversight tools including document and classroom spot-checks—demonstrates that the system architecture was specifically designed to address academic administrative challenges in educational environments (Hu & Tang, 2024).

The differentiation of user-role interfaces combined with progress indicator visualizations not only enhances operational efficiency, but also facilitates instructional quality oversight for school administrators and *musyrif*. Overall, the provision of a systematic data repository recorded in audit logs establishes a solid foundation for evidence-based evaluation (Liu, 2022), while simultaneously ensuring the sustainability of digitalized learning management (Abid et al., 2024).

Expert Validation:

Meanwhile, system feasibility and product practicality were evaluated using expert validation instruments and user questionnaires, targeting a minimum feasibility/practicality threshold of 80%. The questionnaires employed a 5-point Likert scale (scored 1 to 5). The general aspects of the *E-I'dād* system consisted of 10 indicators, yielding a maximum score of 50. The teacher operating system aspect comprised 17 indicators with a maximum score of 85. The *mushrif* account operating system aspect included 15 indicators, resulting in a maximum score of 75. Finally, the academic administrator account operating system aspect contained 18 indicators with a maximum score of 90. Following expert validation, the scores obtained were as follows:

Table 3. Cumulative Expert Scores for the E-*I'dād* System

Aspect	Indikacators Aspect	Score	Persentage	Feasibility Status
General System Dimension of E-*I'dād*.	10	49	98%	Highly suitable
Teacher Account Operating System.	17	82	96%	Highly suitable
Mushrif Account Operating System.	15	72	96%	Highly suitable
Academic Admin Account Administrative System.	18	85	94%	Highly suitable

The validation findings indicate that E-*I'dād* has achieved functional feasibility as a digital platform for managing the preparation, review, approval, and archiving of lesson plans for pesantren teachers. However, further improvements are needed in data integration and academic automation. The proposed addition of a PDF schedule download feature and data-import functionality for classes, teachers, and teaching assignments can be understood in light of studies identifying academic timetabling as an optimization problem involving multiple constraints, including teacher availability, workload distribution, time allocation, and interdependencies among classes (Abdipoor et al., 2023; Mallari et al., 2023).

In the context of E-*I'dād*, data integration has the potential to reduce redundant data entry, improve information consistency, and provide a structured database for more accurate timetable generation. The PDF download feature could also be developed to facilitate the distribution of schedules in an accessible format that can be viewed and used outside the platform. Meanwhile, the data-import function should incorporate format validation, duplicate detection, and data-correction mechanisms to ensure data integrity. Thus, these revisions represent more than merely the addition of administrative functionalities; they constitute a strategic effort to strengthen system interoperability and reliability in supporting academic governance within pesantren institutions.

Furthermore, the recommendation to integrate AI for generating teaching schedules and *I'dād* (lesson plan) drafts aligns with the evolving research on generative AI in instructional design. A study indicates that generative AI can support teachers in designing learning activities, developing materials, and structuring inquiry-based lesson plans (Abubakari, 2024); Meanwhile, another study found that ChatGPT can assist in generating and refining lesson plans, although the quality of the output still requires evaluation (Powell & Courchesne, 2024). Therefore, incorporating AI into the E-*I'dād* system remains crucial, even though its application still requires human oversight.

4. Implementation and Evaluation of the E-*I'dād* Web System at Pondok Pesantren Al-Fath

The system implementation phase initiated with field testing involving 12 key participants, including teachers of *Dirāsah Islamiyyah* and language subjects, the School Principal, and the Vice Principal of Curriculum Affairs. The targeted involvement of educators teaching these core *pesantren* subjects aimed to evaluate the operational reliability, flexibility, and feasibility of the *E-I'dād* platform when directly applied to the Islamic curriculum framework. This trial successfully validated the platform's capacity to integrate and accommodate the structural requirements of lesson planning (*I'dād*) documents, utilizing a builder structure precisely tailored to the nuances of Islamic studies and language disciplines.

Table 4. Validation of the E-*I'dād* System by Teachers

No.	Indicators	Score	Presentage	Feasibility status
1	Dashboard	54	90%	Highly suitable
2	Due Date Information	52	87%	Highly suitable
3	Lesson Plan Preparation	56	93%	Highly suitable
4	Preparation Efficiency	56	93%	Highly suitable
5	Component Completeness	54	90%	Highly suitable
6	Clarity of Input	56	93%	Highly suitable
7	Teaching Module	58	97%	Highly suitable
8	Submission	54	90%	Highly suitable
9	Document Status	52	87%	Highly suitable
10	Document Lock	52	87%	Highly suitable
11	Version History	54	90%	Highly suitable
12	Teaching Schedule	52	87%	Highly suitable
13	Tashih Status	52	87%	Highly suitable
14	Archive	50	83%	Highly suitable
15	Notifications	60	100%	Highly suitable
16	Account Settings	48	80%	Suitable
17	User Support	46	76%	Suitable

The practicality validation results evaluated by teachers demonstrated that the *E-I'dād* platform achieved a very high degree of feasibility and acceptance across the majority of assessment indicators. The notification feature recorded the highest feasibility rate at a perfect 100% (score of 60), followed by the teaching module indicator at 97% (score of 58), while *i'dād* creation, drafting efficiency, and input clarity each reached 93% (score of 56), falling within the *highly suitable* category. Most other core functional indicators—such as the dashboard, component completeness, submission, version history (90%), deadline information, document status, document locking, teaching schedule, and *taṣḥīḥ* status (87%), as well as archiving (83%)—were all confirmed to be in the highly feasible qualification. nevertheless, technical analysis identified that the account settings (80%) and user support (76%) indicators were categorized as *suitable*, indicating the need for optimization in preference management and operational guidance systems.

The feedback and testing results obtained from the 12 participants served as a fundamental evaluation base for iteratively refining the *E-I'dād* platform. The analysis of the testing outcomes focused on enhancing the user interface (UI) to make it more intuitive, resolving technical issues within the user profile update feature, and developing adaptive operational guides. These adjustments were specifically engineered to improve accessibility and accommodate educators with limited digital literacy, thereby ensuring smooth technology adoption within the *pesantren* environment. Entering the final stage of the ADDIE development framework (Evaluation), a comprehensive assessment was conducted to evaluate the final product's quality and effectiveness.

This phase combined quantitative and qualitative data analyses of teachers' perceptions and responses while simultaneously evaluating improvements in the quality of the resulting instructional planning documents.

DISCUSSION

This study integrates teachers' lesson preparation and academic supervision within the pesantren educational environment. Conventional LMSs typically emphasize general instructional content and classroom activities; in contrast, E-*I'dad* governs the full lifecycle of *i'dad* documents, encompassing drafting, submission, *taftīsh*, revision, *taṣḥīḥ*, archiving, and activity monitoring. Developed for Pondok Pesantren Modern Al-Fath, it addresses the specific academic demands of *dirāsah Islamiyyah* and language courses, which utilize institutionally tailored instructional materials. Through this targeted design, E-*I'dad* establishes an integrated digital governance framework that enhances workflow efficiency, role-based supervision, and accountability across pesantren academic operations.The findings demonstrate that E-*I'dad* achieved a high level of feasibility, with expert validation scores ranging from 94% to 98% across system and user-account dimensions. A limited field trial involving 12 participants confirmed its strong perceived practicality, particularly in notifications (100%), teaching modules (97%), and lesson plan preparation, drafting efficiency, and input clarity (93%). Most core features, including document submission, version history, scheduling, status tracking, and archiving, scored between 83% and 90%. However, account settings (80%) and user support (76%) require further improvement. These results establish E-*I'dad* as a feasible digital platform for integrating teachers' instructional preparation, document management, and academic supervision in pesantren education. Nevertheless, further research is needed to determine its actual impact on teaching performance, instructional quality, and student learning outcomes.

The findings are consistent with previous research emphasizing the importance of digital platforms, structured educational management, and user-centered system development in improving educational processes. Study Mella-Norambuena et al., in their systematic review highlighted that the availability of digital technology does not automatically guarantee its effective acceptance and use (Al-Nuaimi & Al-Emran, 2021). This perspective is reflected in the present study, in which most E-*I'dad* features received favorable evaluations, although account settings and user support remained areas requiring improvement. Similarly, Al-Fraihat et al. demonstrated the relevance of system design and content presentation to users' experiences with moodle, supporting the importance of usability in the further development of E-*I'dad* (Al-Fraihat *et al*., 2025b).

The findings also correspond with systematic review research that identified technical, pedagogical, usability, and administrative dimensions as important considerations in assessing LMS quality. Beyond platform usability, research Triwiyanto et al. emphasized the significance of accountability management systems in educational digital transformation, which aligns with E-*I'dad*'s emphasis on structured workflows, centralized documentation, and transparent supervision (Triwiyanto *et al*., 2024b). Furthermore, Abid et al. examined evaluation frameworks and comparative quality considerations for widely used LMS platforms, reinforcing the importance of assessing digital educational systems through multiple quality dimensions rather than functionality alone. In the context of Islamic education (Abid *et al*., 2024), Other research examined digital learning through Maktabah Syamilah NU software in pesantren (Ibda *et al*., 2023), while Suresman et al. analyzed the transformation of pesantren learning models from traditional *sorogan* practices toward digital learning (Suresman *et al*., 2025). These studies demonstrate the broader relevance of digital technology in Islamic educational environments. However, E-*I'dad* extends this discussion by directing technological innovation toward teachers' instructional preparation, academic supervision, and document governance, areas that differ from the primary learning-oriented focus of the aforementioned studies. Collectively, these comparisons indicate that the present findings are consistent with established perspectives on educational digitalization while offering a more specialized application within pesantren academic administration.

The similarities between the present findings and previous studies can be attributed to the role of structured digital workflows in improving administrative organization, accountability, and information management. E-*I'dad* integrates submission deadlines, notifications, revision histories, approval statuses, and centralized archives, addressing documentation and monitoring challenges identified during the needs analysis. These functions align with Triwiyanto et al. on educational accountability and Abid et al. (2024) on multidimensional system quality (Abid *et al*., 2024;

Triwiyanto *et al*., 2024b). Positive evaluations of notifications and teaching modules further suggest that features directly supporting teachers' routine tasks are perceived as useful. However, comparisons with previous studies should consider contextual and methodological differences. E-*I'dad* was developed for a single pesantren and evaluated by only 12 participants, primarily through expert validation and user perceptions.

This study extends educational digitalization in pesantren from learning content management to the systematic governance of teachers' instructional preparation. Unlike conventional learning management systems that primarily facilitate content delivery and student learning, E-*I'dad* manages the complete *i'dad* workflow, including lesson plan drafting, submission, inspection (*taftīsh*), revision, validation (*taṣḥīḥ*), and permanent archiving. These functions enable systematic monitoring and traceability of instructional preparation, particularly for *dirāsah Islamiyyah* and language subjects with institutionally developed materials. Rather than replacing teachers' professional judgment or *musyrif*/ supervisory roles, E-*I'dad* digitizes and coordinates their existing responsibilities. Thus, its main contribution is a context-specific digital governance model that integrates instructional preparation, academic supervision, and document management within a single platform tailored to pesantren.

E-*I'dad* offers practical benefits for pesantren by centralizing instructional documents and streamlining lesson plan submission, inspection, and approval. Academically, this study provides initial evidence of the feasibility of a context-specific digital platform for instructional preparation and academic supervision in pesantren. However, its single-institution setting and small sample limit generalizability. Future research should involve multiple pesantren, measure usability and document-processing efficiency, and examine long-term effects on instructional preparation and supervisory practices. Integrating generative AI to support lesson planning and scheduling may also be explored, with human oversight ensuring accuracy and alignment with the pesantren curriculum.

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CONCLUSION

This study designs and tests the *E-I'dād* web platform to digitize lesson plan (*I'dād*) management at Pondok Pesantren Modern Al-Fath. Based on expert validation and trials involving 12 participants, the platform achieved feasibility scores ranging from 83% to 100% across most core features. Nevertheless, this study has certain limitations, including a small field trial scale and the need for improvements in account setup simplicity and user support to accommodate varying levels of digital literacy. Accordingly, future studies are recommended to evaluate the updated system with a larger participant sample, observe task completion times directly, and deepen the analysis of platform usability challenges. Future development may also focus on optimizing automated data integration, expanding implementation to other Islamic boarding institutions, and exploring the integration of Artificial Intelligence to assist educators in drafting learning materials and schedules.

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