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Analyzing the Implementation of Islamic Education Management Information Systems in Indonesian Madrasahs

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Abstrak: *Penelitian ini bertujuan untuk menganalisis secara komprehensif penerapan Sistem Informasi Manajemen Pendidikan Agama Islam (SIM PAI) pada madrasah di Indonesia, dengan fokus pada efektivitas, tantangan, dan dampaknya terhadap tata kelola kelembagaan. Menggunakan metode deskriptif kualitatif berbasis studi kepustakaan dan analisis dokumen kebijakan, penelitian ini mengevaluasi sistem terpusat yang diamanatkan oleh Kementerian Agama, yaitu Education Management Information System (EMIS), Sistem Informasi Manajemen Pendidik dan Tenaga Kependidikan (SIMPATIKA), dan Rapor Digital Madrasah (RDM). Hasil penelitian menunjukkan bahwa integrasi sistem-sistem ini telah memfasilitasi transformasi digital yang signifikan dalam mengelola data kelembagaan, memantau profesionalisme pendidik, dan mendigitalisasi hasil belajar peserta didik. Meskipun penerapan SIM PAI berkontribusi besar terhadap efisiensi administrasi, akurasi data, dan pengambilan keputusan berbasis bukti, implementasinya masih dihadapkan pada hambatan struktural. Kendala utama meliputi disparitas infrastruktur teknologi antar wilayah, kesenjangan literasi digital di kalangan sumber daya manusia, serta tantangan dalam interoperabilitas data. Kesimpulan dari penelitian ini menegaskan bahwa kepemimpinan manajerial yang adaptif dan komitmen terhadap pengembangan kapasitas sangat krusial untuk mengoptimalkan SIM PAI. Upaya strategis dan berkelanjutan diperlukan untuk memastikan bahwa digitalisasi pendidikan Islam tidak hanya memenuhi standar administratif, tetapi juga secara substantif meningkatkan mutu pendidikan secara menyeluruh.*

Kata Kunci*: Sistem Informasi Manajemen, Pendidikan Agama Islam, Madrasah, Digitalisasi Pendidikan.*

Abstract: This study aims to comprehensively analyze the implementation of the Islamic Education Management Information System (SIM PAI) in Indonesian madrasahs, focusing on its effectiveness, challenges, and impact on institutional governance. Utilizing a qualitative descriptive method based on literature review and policy document analysis, this research evaluates the centralized systems mandated by the Ministry of Religious Affairs, namely the Education Management Information System (EMIS), the Educator and Educational Personnel Management Information System (SIMPATIKA), and the Madrasah Digital Report Card (RDM). The findings indicate that the integration of these systems has facilitated a significant digital transformation in managing institutional data, monitoring educator professionalism, and digitalizing student learning outcomes. Although the implementation of SIM PAI greatly contributes to administrative efficiency, data accuracy, and evidence-based decision-making, it still faces structural hurdles. Primary constraints include technological infrastructure disparities across regions, digital literacy gaps among human resources, and data interoperability challenges. The conclusion of this study asserts that adaptive managerial leadership and a commitment to capacity building are crucial for optimizing SIM PAI. Strategic

and continuous efforts are required to ensure that the digitalization of Islamic education not only meets administrative standards but also substantively enhances overall educational quality.

Keywords: Management Information System, Islamic Education, Madrasah, Educational Digitalization.

A. Introduction

The rapid and unprecedented advancement of digital technology in the 21st century has profoundly altered the global landscape of information exchange, fundamentally disrupting traditional paradigms across all sectors, particularly in educational administration and service delivery. In the contemporary digital era, information is no longer merely a byproduct of organizational operations; it has become the most critical asset for institutional survival, strategic planning, and seamless communication. The management of educational institutions now requires sophisticated technological frameworks to process vast amounts of data efficiently, ensure regulatory compliance, and elevate the quality of academic services provided to the community. Transformative education, which explicitly emphasizes the integration of 21st-century skills and competencies, demands that learning environments transition from localized, paper-based operations to dynamic, globally interconnected digital ecosystems (Anwar & Umam, 2020). Consequently, the integration of Management Information Systems (MIS) is no longer a luxury for educational institutions but an absolute necessity to guarantee operational efficiency, data integrity, and sustained competitive advantage.

In Indonesia, the modernization of educational management is particularly crucial within the context of Islamic education. Madrasahs, operating under the auspices of the Ministry of Religious Affairs (Kementerian Agama), play a pivotal role in the nation's educational architecture, tasked with the dual mandate of providing rigorous national curriculum standards while deeply instilling Islamic moral and ethical frameworks. The sheer scale of the madrasah system in Indonesia, comprising tens of thousands of institutions spread across a vast geographical archipelago, presents unique administrative complexities. To address these complexities and align with global digitalization trends, the adoption of specialized Management Information Systems tailored for Islamic Education—commonly referred to as SIM PAI (Sistem Informasi Manajemen Pendidikan Agama Islam)—has been institutionalized. SIM PAI encompasses a broad spectrum of digital platforms designed to manage crucial educational data, including curriculum implementation, the professional development of Islamic Education (PAI) teachers, student demographics, and comprehensive academic assessments.

The Ministry of Religious Affairs has proactively initiated this digital transformation by developing and mandating the use of several centralized information systems. The cornerstone of this digital infrastructure is the Education Management Information System (EMIS), which acts as the primary data repository for all institutional, student, and infrastructural statistics. Complementing EMIS is SIMPATIKA (Sistem Informasi Manajemen Pendidik dan Tenaga Kependidikan), a dedicated platform engineered to monitor teacher professionalism, validate educator certifications, and manage the disbursement of professional allowances. Furthermore, the Rapor Digital Madrasah (RDM) has

been introduced to standardize and digitalize the evaluation of student learning outcomes, specifically accommodating the unique subject matter of Islamic education such as Fiqh, Aqidah Akhlak, and Qur'an Hadith. These systems are theoretically designed to create an interconnected digital bureaucracy that enhances transparency, accelerates public service delivery, and provides policymakers with real-time, accurate data.

However, the transition from traditional management to a fully integrated digital system is fraught with systemic and socio-technical challenges. The phenomenon of globalization and the ensuing digital revolution have precipitated a crisis in Islamic education, where the rapid influx of technological mandates frequently outpaces the institutional capacity to adapt, necessitating a profound epistemological response and the reconstruction of pedagogies that maintain traditional values while embracing modern tools (Anwar & Umam, 2025). In practice, the implementation of SIM PAI across Indonesian madrasahs is highly uneven. While urban madrasahs with adequate funding and infrastructure seamlessly adopt these platforms, rural and marginalized institutions often struggle with fundamental prerequisites such as stable internet connectivity and functional computer hardware. Moreover, the human factor remains a significant bottleneck; the digital literacy levels among senior educators and administrative staff vary drastically, leading to user resistance, data input errors, and suboptimal utilization of the systems.

Recognizing the indispensable role of Management Information Systems in elevating the quality of educational services, it is imperative to conduct a rigorous analysis of how these systems are currently functioning within the field. The effectiveness of SIM PAI is directly correlated with the quality of instructional leadership, teacher professionalism, and the strategic managerial capacity of madrasah principals. Therefore, this article aims to comprehensively analyze the implementation of the Islamic Education Management Information System in Indonesian madrasahs. Specifically, this study will examine the conceptual frameworks of EMIS, SIMPATIKA, and RDM, identify the driving factors and infrastructural challenges inherent in their deployment, and evaluate the profound impacts these systems have on the overall effectiveness of Islamic educational management. By addressing these dimensions, this research seeks to provide evidence-based recommendations to optimize the digital governance of madrasahs, ensuring that the integration of technology serves to enhance, rather than hinder, the noble objectives of Islamic education.

B. Literature Review

The theoretical foundation of Management Information Systems (MIS) within educational contexts is built upon the intersection of organizational management, information technology, and pedagogical administration. According to classical definitions, an information system is a computer-based framework that provides essential data to support operations, management, and strategic decision-making within an organization (Rochaety et al., 2005). In the specific domain of education, a Management Information System for Education (SIMDIK) functions to harmonize human resources with technological tools to gather, store, process, and retrieve data, thereby enhancing the fluidity of information, quality control, and overall organizational efficiency (Jetnika, 2013). When applied to Islamic

education (SIM PAI), this system must not only handle standard academic and administrative data but also accommodate the specific theological and ethical dimensions of madrasah curricula, ensuring that technological adoption aligns with the overarching goals of forming noble character and spiritual integrity (Darwis, 2017).

Recent literature strongly emphasizes the necessity of adaptive leadership and advanced planning models in successfully integrating these digital systems. The transformation of student management and the enhancement of student participation in both academic and non-academic activities rely heavily on the accurate tracking and data analytics provided by robust MIS platforms (Riyanti et al., 2026). Furthermore, the sustainability of new student enrollment, a critical metric for madrasah survival in a competitive educational market, is directly tied to the principal's managerial leadership strategy and their ability to leverage information systems for institutional branding and operational transparency (Kuswanda et al., 2026). The successful deployment of systems like EMIS and SIMPATIKA is not merely a technical endeavor but an exercise in instructional leadership, requiring school principals to navigate institutional resistance and foster a culture of continuous professional development among teachers.

Moreover, advanced theoretical frameworks in educational technology advocate for the implementation of sophisticated data models to elevate institutional planning. Sulastri et al. (2024) demonstrated that deep learning-based planning models for Islamic education can significantly optimize administrative foresight and resource allocation in integrated schools. These models rely entirely on the high-quality, centralized data generated by systems like EMIS. However, the technological shift must be managed with a human-centric approach. Implementing kindness-based leadership strategies has proven effective in mitigating the stress and resistance associated with rapid digital transformations among elementary educators (Suherman et al., 2025). Similarly, the strategic role of institutional leaders, such as the *Kiai* or Madrasah Head, in improving the technological and pedagogical competence of educators is fundamental to bridging the digital divide and ensuring that the adoption of SIM PAI translates into actual pedagogical improvements (Bakar et al., 2025).

C. Methods

This research employs a qualitative descriptive methodology, utilizing a comprehensive library research approach and rigorous document analysis to investigate the implementation of Islamic Education Management Information Systems (SIM PAI) in Indonesian madrasahs. The qualitative descriptive design was selected because it allows for an in-depth exploration of the complex socio-technical phenomena surrounding digital transformation, capturing not only the structural mechanics of the systems but also the contextual challenges faced by educators and administrators. The primary objective is to construct a detailed, analytical narrative that synthesizes existing empirical evidence, theoretical frameworks, and official policy directives regarding SIM PAI.

The data collection strategy involved a systematic review of primary and secondary literature. Primary sources included official guidelines, technical manuals, and policy briefs issued by the Indonesian Ministry of Religious Affairs (Kemenag) concerning the operation of EMIS, SIMPATIKA, and the Rapor Digital Madrasah (RDM). Secondary sources comprised peer-reviewed academic journals,

dissertations, and authoritative books focusing on educational management, information technology in Islamic education, instructional leadership, and digital literacy. The literature search was conducted across academic databases using targeted keywords such as "Sistem Informasi Manajemen," "Digitalisasi Madrasah," "SIMPATIKA," and "Educational Technology in Islamic Schools," prioritizing publications from the last decade to ensure the contemporary relevance of the data.

Data analysis was conducted using a thematic content analysis framework. The collected literature was critically read, categorized, and coded based on predefined themes aligned with the research objectives: the conceptual architecture of centralized MIS, driving factors and infrastructural barriers, and the impacts on managerial effectiveness. This process involved triangulating data from multiple sources to identify consistent patterns, discrepancies, and prevailing challenges in the field. By synthesizing these diverse academic and bureaucratic perspectives, the study formulated a holistic evaluation of the current state of SIM PAI implementation, leading to evidence-based conclusions and strategic recommendations for future improvements in madrasah governance.

D. Result and Discussion

1. Implementation of Centralized MIS (EMIS, SIMPATIKA, RDM) in Madrasahs

The implementation of the Islamic Education Management Information System (SIM PAI) within Indonesian madrasahs is predominantly orchestrated through a highly centralized, bureaucratic digital architecture mandated by the Ministry of Religious Affairs. This architecture is not a monolithic software but a constellation of interconnected, specialized platforms designed to handle distinct facets of educational management. The successful operation of a madrasah in the contemporary era is strictly contingent upon its compliance and proficiency in navigating these three primary pillars: the Education Management Information System (EMIS), the Educator and Educational Personnel Management Information System (SIMPATIKA), and the Madrasah Digital Report Card (Rapor Digital Madrasah/RDM). Each of these systems plays a highly specific, yet interdependent, role in digitizing the educational ecosystem.

EMIS (Education Management Information System) serves as the foundational bedrock of all administrative data within the Ministry of Religious Affairs. It is a comprehensive database designed to capture the macro and micro-level statistics of every registered madrasah across the archipelago. EMIS mandates the meticulous input of institutional profiles, geographical coordinates, infrastructure conditions, asset inventories, and detailed student demographics. The accuracy of EMIS data is of paramount importance because it directly dictates national policy interventions and resource allocation. For instance, the disbursement of the School Operational Assistance fund (Bantuan Operasional Sekolah/BOS) and the Smart Indonesia Program (Program Indonesia Pintar/PIP) scholarships are calculated exclusively based on the real-time student enrollment figures verified within EMIS. Consequently, madrasah operators face immense pressure to maintain the integrity of this database. An error in EMIS can result in severe financial deficits for the institution. From a managerial perspective, EMIS represents a shift towards absolute data centralization, forcing madrasahs to adopt rigorous data governance

protocols to survive structurally and financially.

SIMPATIKA, on the other hand, is specifically engineered to manage the human capital of Islamic education. It functions as a dynamic, digital portfolio for every teacher and educational staff member operating within the madrasah system. SIMPATIKA meticulously tracks a teacher's professional journey, recording their academic qualifications, teaching hours, training certifications, and performance evaluations. The most critical function of SIMPATIKA is its role as the sole mechanism for processing and validating the disbursement of the Teacher Professional Allowance (Tunjangan Profesi Guru/TPG). To qualify for this substantial financial incentive, a teacher must digitally prove that they fulfill the mandatory teaching load, a process that requires the madrasah principal to accurately map the weekly class schedules within the system. This platform has fundamentally transformed instructional leadership; principals must now perform highly complex digital scheduling to ensure all teachers meet their certification requirements. While it acts as a powerful catalyst for enhancing teacher professionalism and accountability, SIMPATIKA also introduces a layer of digital bureaucracy that demands high-level technical competence from both teachers and administrative operators.

RDM (Rapor Digital Madrasah) represents the pedagogical arm of the SIM PAI ecosystem. RDM was developed to standardize and digitalize the assessment of student learning outcomes across all madrasahs. Unlike generic grading software, RDM is intrinsically tailored to accommodate the unique curriculum structure of Islamic education, featuring specialized modules for subjects such as Qur'an Hadith, Aqidah Akhlak, Fiqh, Islamic Cultural History (SKI), and Arabic Language, alongside the standard national curriculum. RDM allows teachers to input formative and summative grades, automatically calculating final scores, and generating legally valid, printable report cards. The implementation of RDM ensures that assessment rubrics are applied uniformly across the country, mitigating subjective grading practices. Furthermore, RDM facilitates the seamless tracking of a student's academic trajectory, providing parents and educators with transparent, accessible data regarding learning progress. The integration of RDM fundamentally alters classroom management, compelling teachers to transition from traditional ledger books to continuous, cloud-based data entry, thereby fostering a culture of real-time academic monitoring.

The integration of these three systems aims to create a holistic digital ecosystem. Ideally, the institutional data in EMIS should perfectly align with the teacher deployment data in SIMPATIKA, which in turn should correspond with the academic output recorded in RDM. This interconnectedness allows the Ministry to deploy deep learning-based planning models (Sulastri et al., 2024) to forecast educational trends, identify systemic weaknesses, and design highly targeted policy interventions. However, the successful convergence of these platforms requires an unprecedented level of institutional discipline, marking a definitive end to the era of isolated, manual educational management in Indonesian madrasahs.

2. Driving Factors and Infrastructural/Human Resource Challenges

The ambitious digital transformation agenda propelled by the Ministry of Religious Affairs through the implementation of SIM PAI is driven by a confluence of strong supportive factors, yet it is simultaneously hindered by profound infrastructural and human

resource challenges. Understanding this dichotomy is essential for evaluating the actual efficacy of these systems on the ground. The primary driving factor is the robust regulatory framework and unwavering policy mandate established by the central government. The utilization of EMIS, SIMPATIKA, and RDM is not optional; it is a strict prerequisite for institutional accreditation, operational funding, and teacher financial benefits. This top-down coercion ensures rapid, widespread adoption across the country. Furthermore, the commitment of instructional leaders—specifically, the proactive managerial leadership strategies employed by madrasah principals to maintain institutional sustainability and competitiveness (Kuswanda et al., 2026)—serves as a critical internal catalyst. Principals who recognize that transparent, efficient data management is linked to increased public trust and new student enrollment are highly motivated to prioritize the acquisition of necessary Information and Communication Technology (ICT) infrastructure.

Despite these strong driving forces, the implementation of SIM PAI encounters severe, systemic friction, primarily rooted in the vast digital divide that characterizes the Indonesian archipelago. The most glaring challenge is the severe limitation of technological infrastructure. While madrasahs situated in metropolitan areas generally possess high-speed broadband and modern computer laboratories, a significant percentage of madrasahs—particularly private institutions in rural, mountainous, or remote coastal regions—operate under severe technological deficits. These institutions frequently struggle with basic prerequisites: unstable or nonexistent internet connectivity, frequent power outages, and a severe shortage of functional computer hardware. Operating complex, cloud-based platforms like EMIS and SIMPATIKA under these conditions is an exercise in extreme frustration, often forcing madrasah operators to travel long distances to urban centers simply to upload mandatory data before server deadlines expire. This infrastructural inequity severely compromises the reliability of national data and places an undue administrative burden on marginalized schools.

Equally debilitating is the challenge regarding human resource capacity and digital literacy. The architectural sophistication of SIM PAI frequently outpaces the technological competence of the educators tasked with using it. The demographic profile of madrasah teachers includes a substantial number of senior educators who have spent decades utilizing traditional, paper-based pedagogical methods. For these individuals, transitioning to complex digital interfaces involves a steep, intimidating learning curve. This lack of digital fluency often manifests as psychological resistance, where teachers view data entry as a burdensome bureaucratic distraction from their primary teaching duties, rather than a tool for professional enhancement. The phenomenon of "technostress" is prevalent, exacerbated by the central ministry's tendency to frequently update software interfaces and introduce new regulatory features with minimal corresponding technical training for end-users.

Furthermore, the issue of data inconsistency and system integration remains a persistent technical hurdle. Although EMIS, SIMPATIKA, and RDM are designed to be part of a unified ecosystem, interoperability issues frequently arise. Data synced between the platforms occasionally suffers from latency or corruption, leading to discrepancies—for example, a teacher's valid certification status in EMIS failing to reflect accurately in

SIMPATIKA, thereby blocking their professional allowance. Resolving these technical glitches requires highly competent madrasah operators. Unfortunately, the role of the madrasah operator is often undervalued, assigned as an additional duty to existing teachers rather than recognized as a specialized IT professional position. To mitigate these multifaceted challenges, institutional leaders must employ highly empathetic, kindness-based leadership strategies to support overwhelmed staff (Suherman et al., 2025), while simultaneously advocating for intensive, localized technical training and lobbying for equitable infrastructural investments from both the government and private stakeholders.

3. The Impact of MIS on the Effectiveness of Islamic Education Management

Notwithstanding the significant infrastructural and socio-technical hurdles, the implementation of the Islamic Education Management Information System (SIM PAI) has exerted a profoundly transformative impact on the overall effectiveness, transparency, and strategic governance of madrasahs in Indonesia. The transition from fragmented, analog administration to centralized, digital data management has precipitated a paradigm shift in how educational institutions operate, monitor progress, and interact with external stakeholders. This impact is observable across multiple dimensions of educational administration, primarily in administrative efficiency, data-driven decision-making, and the elevation of academic service quality.

The most immediate and tangible impact of SIM PAI is the exponential increase in administrative efficiency. Historically, the compilation of institutional reports, the tracking of student attendance, and the calculation of final grades required hundreds of hours of manual labor, heavily prone to human error and physical document loss. Systems like the Rapor Digital Madrasah (RDM) have automated the most tedious aspects of academic evaluation. Teachers can now input raw scores into standardized, cloud-based rubrics that instantly calculate final grades, generate analytical charts of student progress, and format legally compliant report cards. This automation severely reduces the bureaucratic workload on educators, theoretically liberating their time and cognitive energy to focus on their core pedagogical duties: designing innovative lesson plans, engaging in personalized student mentorship, and refining their instructional delivery. Similarly, SIMPATIKA automates the convoluted process of verifying teacher teaching hours and certification status, replacing stacks of physical dossiers with streamlined digital workflows. This drastic reduction in paperwork not only accelerates administrative processes but also promotes environmental sustainability by significantly reducing paper consumption.

Beyond mere operational speed, the most strategic impact of SIM PAI lies in its facilitation of data-driven decision-making (DDDM) at both the micro (institutional) and macro (ministerial) levels. Prior to the existence of centralized databases like EMIS, policy formulation was frequently based on estimations, outdated surveys, or anecdotal evidence. Today, madrasah principals have access to real-time, comprehensive dashboards detailing every facet of their institution's health. By analyzing EMIS and RDM data, a principal can pinpoint specific demographic shifts, identify subjects where student performance is consistently lagging, and evaluate the correlation between a teacher's professional development (tracked via SIMPATIKA) and classroom outcomes.

This empirical foundation allows for precise, targeted interventions. For instance, if data indicates a decline in new student enrollment or poor performance in specific PAI subjects, the leadership can proactively redesign marketing strategies, transform student management approaches to include more engaging non-academic activities (Riyanti et al., 2026), or allocate specific budget lines for targeted teacher training. On a macro level, the Ministry utilizes the aggregated big data to deploy sophisticated deep learning-based planning models (Sulastri et al., 2024), enabling predictive analytics that forecast future infrastructure needs, budget requirements, and demographic shifts across the national Islamic education sector.

Finally, the implementation of SIM PAI fundamentally enhances the quality of educational services through heightened transparency and accountability. In the digital era, stakeholders—particularly parents and the surrounding community—demand unprecedented access to information regarding institutional performance and student progress. Systems like RDM allow parents to receive clear, standardized, and timely updates on their children's academic and moral development. The transparent tracking of institutional assets and teacher qualifications via EMIS and SIMPATIKA ensures that madrasahs remain highly accountable to the government and the public regarding the utilization of operational funds (BOS) and professional allowances. This transparency directly combats mismanagement and corruption. By operating a robust, transparent digital infrastructure, madrasahs significantly enhance their institutional credibility and brand reputation, which is a critical factor in maintaining public trust and ensuring the sustainability of student enrollment in a highly competitive educational landscape. Ultimately, the successful integration of SIM PAI elevates the madrasah from a traditional, localized religious school into a modern, accountable, and strategically managed educational institution capable of delivering 21st-century competencies while fiercely maintaining its Islamic identity.

E. Conclusion

The implementation of the Islamic Education Management Information System (SIM PAI) within Indonesian madrasahs represents a monumental and necessary leap toward modernizing educational governance. Initiated through centralized platforms by the Ministry of Religious Affairs—specifically EMIS, SIMPATIKA, and the Rapor Digital Madrasah (RDM)—this digital architecture effectively streamlines the management of institutional data, monitors the professional development of Islamic educators, and standardizes the assessment of student learning outcomes. The integration of these systems has demonstrably revolutionized madrasah administration, shifting operations from error-prone, manual processes to highly efficient, automated digital workflows. Consequently, SIM PAI significantly enhances administrative efficiency, ensures data accuracy, and most importantly, empowers institutional leaders to engage in strategic, evidence-based decision-making that directly elevates the quality of academic services.

However, the realization of a fully integrated digital ecosystem is continuously challenged by stark disparities in technological infrastructure and uneven digital literacy among human resources. Rural and marginalized madrasahs disproportionately bear the burden of unstable internet connectivity and inadequate hardware, while many

senior educators experience profound technostress adapting to complex interfaces. Furthermore, issues regarding data interoperability between the centralized platforms occasionally disrupt administrative fluidity. To overcome these barriers, strategic interventions are imperative. The Ministry of Religious Affairs must prioritize equitable investments in ICT infrastructure for remote madrasahs and establish standardized, continuous technical training programs for educators and operators. Concurrently, madrasah principals must exercise empathetic, visionary leadership to foster a resilient digital culture within their institutions. Ultimately, optimizing SIM PAI is not merely an administrative upgrade; it is a critical strategy to ensure that Islamic education remains globally competitive, administratively transparent, and pedagogically robust in the 21st century.

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