JURNAL AR RO'IS MANDALIKA (ARMADA)
Journal website: https://ojs.kahamandalika.com/index.pf/armada

ISSN: 2774-8499 Vol. 4 No. 3 (2024)

Research Article

Integrating Humanity and Technology: Governance of Modern Educational Institutions in the Era of Digital Disruption Through Humanistic-Based Management Information Systems

Zuhdi Esha[1], Uswatun Hasanah[2],Ummu Aiman[3], Zumrotul Amalia Abrori[4], Wafa Sopiulloh[5], Tamsik Udin[6]
UIN Siber Syekh Nurjati Cirebon, Indonesia[1,2,3,4,5,6]
Corresponding Author: zuhdieshao1@gmail.com.

Abstract

The era of digital disruption has introduced a new paradigm in the governance of educational institutions. Challenges are no longer focused solely on administrative efficiency but also on the institution's ability to maintain the humanistic essence within the learning process. This article aims to deeply examine the synergy between effective educational institution governance and the implementation of an Educational Management Information System (EMIS) grounded in a humanistic approach. Through a systematic literature review and conceptual analysis, the article identifies the principles of good governance that must serve as the foundation for educational institutions, including transparency, accountability, responsiveness, fairness, and effectiveness. Furthermore, this article explores the evolution of EMIS from merely an administrative tool to a strategic information ecosystem capable of supporting learning personalization, teacher empowerment, and increased engagement from parents and the community. The main focus of this article is on how EMIS can be designed and implemented not as an instrument of control, but as a means of empowerment for all educational stakeholders students, teachers, staff, and leadership. The analysis also examines implementation challenges, such as the digital divide, human resource readiness, and data security ethics, which are crucial considerations in maintaining the balance between technological innovation and humanistic values. The article concludes that the governance of future educational institutions requires an integrated humanistic technological vision, where technology serves to expand human capacity, not to replace it. Practical recommendations and directions for future research are also presented to provide guidance for education stakeholders in navigating this complex and dynamic landscape.

Keywords: Educational Governance, Educational Management Information System (EMIS), Humanism, Digital Education, Educational Leadership, Digital Transformation.

INTRODUCTION

The global education landscape is undergoing the fastest and most disruptive transformation in modern history. The acceleration, driven by the global pandemic, advancements in artificial intelligence (AI), and the entry of the digital generation into the classroom, has created an inflection point that demands a fundamental reevaluation of how educational institutions are managed (Herceg, n.d.). Amid this wave of disruption, the Education Management Information System (EMIS) has evolved from a peripheral administrative tool to a strategic and operational backbone for many institutions. However, the implementation of this technology is often caught in the narrative of efficiency and control, neglecting more fundamental questions: How can we ensure that the integration of this technology strengthens, rather than weakens, the core mission of education, which is to nurture human potential holistically?

Governance, in the context of educational institutions, goes beyond daily management. It encompasses a set of rules, practices, and ethical values that determine how an institution is directed and controlled to achieve its goals (McKay et al., 2024). It concerns the balance of power between leadership, the board, teachers, parents, students, and the community. In the digital age, this governance must navigate new complexities, particularly in managing digital assets, data security, and ensuring that technology is used fairly and ethically to enhance learning outcomes for all students.

A fundamental issue that often arises is the false dichotomy between "technological efficiency" and "humanistic touch." Many institutions adopt EMIS with the expectation that automation will solve managerial problems but fail to involve teachers and staff in the planning process, leading to resistance and failed implementation. Conversely, some institutions place great value on the "human touch" but are reluctant to adapt to technology, thus falling behind in terms of efficiency, data analysis, and student engagement in the digital era. Both extremes are equally problematic.

This article argues that the future of successful educational governance lies in a smart synthesis of humanistic principles and the strategic use of information technology. Humanism in education emphasizes the dignity, values, and potential of each individual. It views students not as empty vessels to be filled with information but as active, creative, and unique learning agents. Teachers are no longer seen as the sole source of knowledge, but rather as facilitators, mentors, and guides in the students' learning journey (Noddings, 2013). In this context, how can EMIS be designed and implemented to support this humanistic vision?

This article will thoroughly explore this theme by breaking it down into several parts. First, we will discuss the theoretical foundation of governance in modern educational institutions. Second, we will explore the evolution and role of EMIS as a strategic tool. Third, we will delve into the core discussion by analyzing the synergy between humanistic governance and the implementation of EMIS, highlighting how technology can empower teachers and personalize learning for students. Fourth, we will identify practical and ethical challenges in implementation, including the digital divide and data security. Finally, the article will conclude by summarizing the main arguments and offering recommendations for educational leaders, policymakers, and practitioners. Through this approach, the article aims to provide a comprehensive, evidence-based framework for educational institutions

looking to undertake digital transformation in a wise, human-centered manner.

METHOD

This research uses a qualitative approach with a library research method. The qualitative approach was chosen because the study aims to deeply understand the concepts, principles, and relationships between educational governance, Education Management Information Systems (EMIS), and humanistic values in the context of digital disruption. The research does not focus on statistical measurements but on the analysis of meanings, ideas, and theoretical constructions that have developed in the academic literature.

The research data is derived from secondary data obtained through a review of relevant academic literature. The sources of data include reference books, scientific journal articles both national and international, as well as educational policy documents that discuss educational governance, digital transformation, education management information systems, and the humanistic approach in education. Source selection was purposively made, considering the relevance of the themes, the credibility of the authors, and the timeliness of the publications.

Data collection was conducted using documentation techniques, which involved gathering, critically reading, and taking notes on significant sections of sources directly related to the research focus. The collected literature was then classified based on key themes, such as the principles of educational governance, the evolution and strategic role of EMIS, the integration of humanistic values in educational management, and the challenges and ethical implications of implementing technology in educational institutions.

Data analysis was conducted through content analysis and conceptual analysis. The analysis process began with data reduction to filter relevant information, followed by grouping the main concepts and arguments from various sources. A critical interpretation was then performed by comparing expert viewpoints and synthesizing theoretical findings to build an integrative framework between educational governance and the use of humanism-based EMIS.

Data validity was ensured through source triangulation, comparing various references from different authors and perspectives, as well as ensuring the consistency of arguments with the theoretical foundations used. With this approach, the study is expected to produce a comprehensive and relevant analysis of the development of modern educational governance oriented toward humanistic values.

RESULT AND DISCUSSION

Theoretical Foundation: Concepts and Principles of Modern Educational Institution Governance

Before delving into the role of technology, it is important to understand the philosophical and practical foundations of effective governance in educational institutions. Good governance is not merely a set of rules; it is a dynamic ecosystem that fosters trust, collaboration, and collective commitment to achieving noble educational goals.

Definition and Scope of Educational Governance

Educational governance is often equated with educational management, but it has a broader and more strategic scope. While management focuses on carrying out operational tasks to achieve set objectives (e.g., scheduling, budgeting, and staff

supervision), governance concerns the structures, processes, and traditions that determine how power is exercised, how strategic decisions are made, and how accountability is ensured (McKay et al., 2024). In the context of schools or universities, governance addresses fundamental questions such as: Who holds the highest authority? How are the institution's vision and mission formulated and communicated? How are the interests of various stakeholders (students, teachers, parents, the community, the government) balanced? And, most importantly in this era, how does the institution ensure that all its actions align with ethical values and the core educational objectives?

The scope of modern educational governance encompasses four key pillars:

1. **Academic Governance**: Focuses on the curriculum, teaching standards, assessment of learning, and academic quality assurance. This is the core of the institution's educational mission.
2. **Institutional Governance**: Concerns leadership structure, the role of the school/university board, human resource management (teachers and staff), and financial management.
3. **External Governance**: Involves the institution's relationship with the government (as regulator and funder), the community, and industry. It includes compliance with regulations and public accountability.
4. **Technology Governance**: An increasingly crucial pillar, encompassing policies for technology use, IT infrastructure, cybersecurity, and the integration of technology in learning and administration. This pillar must be closely integrated with the other three pillars.

These four pillars do not stand alone. A decision on technology governance (e.g., selecting a particular learning platform) will have direct implications for academic governance (how the curriculum is delivered), institutional governance (how teachers are trained), and external governance (how the institution reports performance data to the government).

Principles of Good Governance in Education

To guide educational institutions, several universal principles of good governance have been adopted from the public and private sectors, but with adjustments for the educational context. These principles serve as the moral and operational compass for leaders.

- **Transparency**: All decisions, policies, and resource allocations must be made openly and accessible to relevant stakeholders. In the context of schools, this means clear communication about curriculum changes, budget allocation, and assessment criteria to teachers, students, and parents. Transparency builds trust, which is the most crucial social capital in educational communities (Miao et al., 2022).
- **Accountability**: Every individual or unit within the institution, from the principal to teachers and administrative staff, must be accountable for their actions and decisions. There should be clear mechanisms for clarifying performance accountability. This is not about a culture of blame but a culture of collective responsibility for student learning outcomes.
- **Responsiveness**: Institutions must be responsive to the needs and aspirations of their primary stakeholders, students. This also means being adaptive to changes in the external environment, such as labor market demands,

technological advancements, or social issues affecting students' lives. A responsive institution will proactively seek input from students, parents, and alumni to continually improve.

- **Equity and Fairness**: This principle demands that the institution ensures all students, regardless of socio-economic background, ability, gender, or ethnicity, have equal access to quality educational opportunities. This is not only about student admissions but also about resource distribution (e.g., learning support, access to technology), and fair treatment within the classroom.
- **Effectiveness and Efficiency**: The institution must be able to achieve its educational goals (effectiveness) while using available resources optimally (efficiency). This does not mean "cheap." Student-centered efficiency means allocating more resources to areas directly impacting learning, such as teacher professional development and learning materials, while minimizing bureaucratic waste.
- **Compliance with Laws and Ethics**: The institution must operate within the framework of applicable laws and regulations. However, beyond legal compliance, the institution should be based on the ethics of the educational profession, placing student well-being and development as the primary priority.

These principles form the philosophical foundation that will guide the application of technology, including EMIS. Without a strong foundation, technology risks becoming a tool to reinforce bad practices, such as excessive surveillance or opaque decision-making.

Models of Educational Governance

Various models of governance are applied worldwide, reflecting cultural, political, and historical differences. Understanding these models helps institutions determine the approach most suited to their context.

- **Centralized Model**: In this model, most important decisions, especially related to curriculum, teacher placement, and budgeting, are made by central authorities (e.g., the Ministry of Education). Schools have limited autonomy. This model can ensure uniform national standards but is often less flexible in responding to local needs and specific school requirements.
- **Decentralized Model**: This model grants greater autonomy to schools or regions in managing resources and making academic decisions. School-Based Management (SBM) is a real-world example of this model. In Indonesia, SBM has been promoted since the early 2000s with the goal of increasing community participation and school accountability (Mulyasa, 2002). In this model, principals and school committees play a significant role in determining the institution's direction.
- **Network Governance Model**: This more modern model sees schools not as isolated entities but as part of a collaborative network with other schools, universities, nonprofit organizations, and industries. This model encourages the sharing of resources, best practices, and innovations. Governance in this model is more horizontal and collaborative than hierarchical.

In the digital era, both the decentralized and network models are becoming increasingly relevant. Information technology allows for collaboration between schools regardless of geographic boundaries and provides tools for autonomous

schools to manage their operations more effectively. However, greater autonomy also demands stronger governance capacity at the school level. This is where the role of EMIS becomes crucial.

Education Management Information System (EMIS): Evolution from Administration to Strategy

If governance is the "brain" and "heart" of an educational institution, then the Education Management Information System (EMIS) is its "nervous system" that connects all parts, enabling the rapid and accurate flow of information for better decision-making. Understanding the evolution of EMIS is key to leveraging it strategically.

Definition and Components of EMIS

An Education Management Information System (EMIS), also known as a Student Information System (SIS), is a computer-based system designed to collect, store, manage, and analyze data related to various operational aspects of educational institutions. Its goal is to provide accurate and timely information to managers, administrators, teachers, and other stakeholders to support planning, monitoring, evaluation, and decision-making (Picciano, 2021).

The main components of a comprehensive EMIS include:

- Hardware: Servers, computers, tablets, and networking devices that form the physical infrastructure of the system.
- Software: Applications and programs that run the functions of the EMIS, ranging from databases to user interfaces.
- Data: The most valuable asset. This includes student data (demographic profiles, grades, attendance), teacher data (qualifications, teaching load), financial data (budget, expenditures), curriculum data, and infrastructure data.
- Procedures and People: This is often the most overlooked but crucial component. Procedures determine how data is entered, validated, accessed, and used. People (users), from administrators and teachers to students, operate the system and interpret the information it generates. User readiness and literacy are key to the success or failure of the EMIS.

The Evolution of EMIS: From Digital Archives to Artificial Intelligence

The journey of EMIS has gone through several significant phases, aligned with advancements in information technology.

- Phase 1: Administrative Automation (1980s - 1990s): In its early phase, EMIS primarily served to replace paper-based and manual archiving systems. Its functions were limited to basic student data management (registration, personal details), scheduling, and grade recording. The focus was purely on administrative efficiency. These systems were often stand-alone, non-integrated, and accessible only by administrative staff.
- Phase 2: Integration and Web Access (2000s - 2010s): With the advent of the internet, EMIS evolved into integrated systems that could be accessed via the web. Its functions expanded to include financial management, human resources, and library management. Dedicated portals for teachers, students, and parents were developed, allowing for more transparent access to information (e.g., parents could view their children's grades and attendance in

real-time). Integration between modules became key, allowing data entered once to be used for various purposes.

- Phase 3: Analytics and Adaptive Learning (2010s - Present): The current phase is characterized by a shift from systems that only record data to systems that can analyze data to provide insights. Learning Analytics became a key feature. EMIS now analyzes student learning patterns, identifies at-risk students, and even recommends personalized learning paths. Integration with Learning Management Systems (LMS) like Moodle, Canvas, or Google Classroom allows for deeper tracking of student learning activities.
- Phase 4: Artificial Intelligence and Prediction (Future): The next evolution is the integration of artificial intelligence (AI) and machine learning. Future EMIS will not only report on what has happened but predict what is likely to happen. For example, systems may predict student graduation rates based on historical patterns, or recommend combinations of teaching strategies most effective for students with specific learning styles. AI chatbots may offer 24/7 academic support to students. However, this phase also raises complex ethical questions about algorithmic bias and data privacy (Selwyn, 2019).

Understanding this evolution helps educational leaders position their institutions strategically. An institution still focused on Phase 1 will fall behind in using data to enhance academic quality. Conversely, an institution that rushes into Phase 4 without strong foundations in Phases 2 and 3 risks implementing advanced technology that is not relevant to the real needs on the ground.

Strategic Benefits of EMIS for Educational Institutions

When implemented with a clear vision, EMIS can provide benefits far beyond administrative efficiency. These strategic benefits include:

- Improved Academic Quality: With learning analytics, teachers can identify areas where students are struggling early on and provide timely interventions. Data can also be used to evaluate the effectiveness of the curriculum and teaching methods.
- Data-Driven Decision Making: School leaders no longer need to rely solely on intuition when making key decisions, such as budget allocations for teacher professional development or changes to academic policies. They can use data from the EMIS as a foundation for making more objective, evidence-based decisions.
- Enhanced Accountability and Transparency: EMIS makes it easier to generate performance reports for various stakeholders, both internal (self-evaluation) and external (reporting to government or parents). Parent portals enhance transparency and strengthen the partnership between schools and homes.
- Increased Stakeholder Engagement: Student and parent portals, integrated communication systems, and easy access to relevant information can significantly enhance student engagement in learning and parent participation in their children's education.
- Operational Efficiency: Automating routine tasks such as grade processing, scheduling, and attendance management frees up teachers and administrative staff to focus on higher-value tasks, such as lesson planning, student interaction, and professional development.

These benefits illustrate the tremendous potential of EMIS. However, as will be discussed in the next section, realizing these benefits depends heavily on how the technology is treated and integrated into the culture and governance of the institution.

Humanistic Synergy: Integrating Governance and EMIS for Empowerment

The core of this article lies in this section. We can ensure that significant investments in EMIS technology and infrastructure truly have a positive impact on the human learning experience through the synergy between humanistic governance and the wise implementation of EMIS. Technology should be positioned as a servant, not a master.

EMIS as a Tool for Teacher Empowerment, Not a Control Instrument

One of the biggest pitfalls in the implementation of educational technology is when EMIS is designed and used as a tool for micromanagement and control over teachers. Systems that exclusively monitor teachers' login times, assess performance solely based on quantitative metrics (e.g., number of assignments uploaded), or restrict pedagogical creativity will create a culture of fear and resistance. This approach contradicts the principles of good governance and humanism.

In contrast, the humanistic approach positions EMIS as a tool for empowering teachers. This empowerment can take several forms:

- Automating Administrative Burdens: Teachers spend a significant amount of time on administrative tasks such as grading, attendance reporting, and classroom administration. A good EMIS can automate most of these tasks. The time saved can then be reallocated to far more valuable activities: designing innovative learning experiences, providing in-depth feedback to students, and collaborating with colleagues. This is the most fundamental form of empowerment (Hattie & Yates, 2013).
- Providing Data for Pedagogical Reflection: EMIS can provide easily understandable analytical dashboards for teachers. For example, a mathematics teacher might notice that 70% of their students are still struggling with fraction concepts after a lesson. This data is not for performance evaluation, but as a starting point for reflection: “Why is this happening? Is my teaching method ineffective? Should I try a different approach?” In this way, EMIS becomes an intellectual partner for teachers to improve their practices (Mishra & Koehler, 2006).
- Supporting Collaboration and Resource Sharing: Modern EMIS can include features like digital resource libraries where teachers can share lesson plans, teaching materials, and best teaching practices. This creates a learning community where teachers support each other and learn from one another, breaking down silos that often exist between departments or classrooms.
- Facilitating Ongoing Professional Development: Data from EMIS can identify teachers' training needs. If data shows that many teachers are struggling to integrate technology into their teaching, the institution can organize relevant workshops. This ensures that professional development programs are targeted effectively based on evidence, not assumptions.

To achieve this, the role of the school principal as an instructional leader is critical. Principals must promote the narrative that EMIS is a tool to assist teachers,

not a surveillance tool to monitor them. Training and socialization should focus on how technology can make teachers' work more meaningful and effective.

EMIS for Personalized Learning and Enhancing Student Well-Being

One of the greatest promises of technology in education is its ability to personalize learning. The industrial model of education, "one size fits all," often fails to meet the needs of individual students who have diverse backgrounds, interests, and learning styles. A humanistic-based EMIS can be the key to unlocking this personalization.

- Early Identification of Student Needs: By tracking academic and behavioral data (e.g., attendance patterns, participation in online discussions, time spent on assignments), EMIS can help teachers and school counselors identify students who show signs of academic struggles or even mental well-being issues early on. Early intervention is far more effective than waiting for students to experience complete failure (Garmston & Wellman, 2016).
- Creating Adaptive Learning Paths: For high-performing students, EMIS integrated with adaptive learning platforms can offer more challenging materials. For students who need additional support, the system can provide remedial resources. This ensures that each student learns within their proximal development zone—not too easy to be boring, and not too difficult to be confusing.
- Giving Students Autonomy and Ownership: A well-designed student portal not only displays grades but also provides insights into their learning progress. Students can see the competencies they have mastered and those they still need to work on. They can access their work portfolio, reflect on their learning, and set personal learning goals. This gives students a sense of ownership and autonomy over their educational journey, which is a crucial aspect of humanistic learning (Deci & Ryan, 2012).
- Improving Communication and Support: Integrated communication features in EMIS can facilitate easier interactions between students, teachers, and parents. Students who are shy about asking questions in class can message their teacher privately. Parents can proactively communicate with teachers about their child's progress. This open and easy communication flow creates a strong support network around the student.

Increasing Parental and Community Engagement through EMIS

- Education is not the exclusive responsibility of schools. Active engagement of parents and the community has a strong correlation with student success. EMIS can serve as a digital bridge that strengthens these partnerships.
- Transparency of Information: Parent portals provide real-time access to important information such as schedules, attendance, grades, assignments, and school announcements. This transparency reduces miscommunication and enables parents to be more proactively involved in their child's education. They no longer need to wait for semester reports to understand their child's performance.
- Facilitating Two-Way Communication: Integrated messaging systems allow for easy and documented communication between parents and teachers. Parents can ask questions or express concerns at any time, and teachers can respond efficiently. This is much more effective than communication through paper

notes, which often get missed, or phone calls, which can be difficult to schedule.

- Encouraging Participation in School Activities: EMIS can be used to manage volunteer registrations, parent opinion surveys, and invitations to school events. This makes parents feel more appreciated and connected to the school community. By providing them with a platform to participate, schools leverage valuable resources within the community.
- Connecting Schools with Community Resources: EMIS can also have modules to manage partnerships with industry or local community organizations. For example, a vocational school could use the system to manage internships with partner companies, or a general education school could coordinate visits to museums or research institutions.

Thus, EMIS helps transform the perception of schools from a "black box" to an open, accountable, and collaborative organization. This aligns with the principles of good governance, especially transparency and responsiveness to stakeholders.

Challenges, Ethics, and Practical Considerations in Implementation

Achieving the vision of humanistic synergy between governance and EMIS is not an easy task. Many educational institutions, particularly in developing countries like Indonesia, face various complex challenges that must be carefully addressed.

Technology and Infrastructure Challenges: The Digital Divide
One of the most significant barriers is the digital divide. This challenge is not just about the availability of hardware and software but also about reliable and affordable internet access.

- Access and Availability: Many schools, especially those in remote areas or 3T (underdeveloped, leading, outermost) regions, still lack adequate IT infrastructure. Existing computers may be outdated, and internet connections may be very slow or non-existent. Governments and the private sector need to collaborate to ensure basic connectivity as a right for all schools.
- Cost: Implementing and maintaining EMIS requires a significant financial investment. These costs include software licenses, server purchases or rentals, internet subscription fees, and system maintenance. For schools with limited budgets, this can become a heavy burden. Subscription-based cloud models (Software as a Service/SaaS) can be a more affordable solution, as they eliminate the need for upfront investment in expensive servers and IT infrastructure.
- Sustainability: Implementing EMIS is not a one-off project. There are ongoing costs for software updates, training new users, and technical support. Long-term budget plans need to be developed to ensure the system's sustainability.

Human Resources Challenges: Digital Literacy and Resistance to Change
No matter how good the technology, it will be wasted if its users are not ready. Human resource challenges are often more difficult to address than technological challenges.

- Teacher and Staff Digital Literacy: Not all teachers and staff have the same level of digital literacy. Some are very skilled, while others struggle with basic

computer operations. Comprehensive and ongoing training programs are essential. Training should not only be technical (how to use buttons) but also pedagogical (how to integrate technology into effective teaching practices).

- Resistance to Change: Change often brings fear and resistance. Some teachers may feel that technology threatens their profession or that they won't be able to keep up. Others may feel comfortable with traditional methods and see technology as an additional burden. Overcoming this resistance requires strong leadership, clear communication about the benefits of change, and involving teachers in the planning and selection process from the beginning. Giving them a sense of ownership over the change process can reduce resistance.
- Availability of IT Personnel: Many schools, especially primary and secondary schools, do not have dedicated IT staff. Technical tasks are often assigned to IT teachers or even other teachers with an interest in technology, which can disrupt their primary teaching responsibilities. The solution could be using third-party IT services or sharing IT resources between schools in a region.

By addressing these challenges, institutions can successfully integrate EMIS to enhance parental involvement, improve operational efficiency, and drive the personal development of both students and teachers.

Ethics and Data Security: Protecting Privacy in the Era of Transparency

EMIS manages highly sensitive data, ranging from personal student information to teacher performance data. Therefore, ethical considerations and data security are non-negotiable.

- Student Privacy: Student data, particularly data related to learning outcomes and behavior, must be rigorously protected. Institutions should have clear and transparent data privacy policies that comply with applicable regulations (such as the Personal Data Protection Law in Indonesia). The principle of "privacy by design" must be implemented, where privacy considerations are integrated into the system's design from the outset, not as an afterthought (Solove, 2004).
- Cybersecurity: As more data is stored digitally, the threat of cyberattacks, such as hacking or malware, becomes a real concern. Institutions must invest in cybersecurity measures, including firewalls, data encryption, and reliable backup systems. Training on cybersecurity awareness for all users (teachers, staff, students) is also essential to prevent incidents caused by human error, such as phishing attacks.
- Algorithmic Bias: As EMIS begins to use AI to make recommendations or predictions, there is a risk of algorithmic bias. If historical data used to train the AI contains biases (e.g., biases against certain student groups), the decisions made by the system will also be biased. This could reinforce existing inequalities. Institutions must be vigilant about this risk and regularly audit the algorithms used to ensure fairness.
- Balance Between Monitoring and Surveillance: While data can be used to support students, there is a fine line between helpful monitoring and invasive surveillance. Systems that track every click and movement of students online can create a stressful and unhealthy learning environment. Humanistic governance should establish clear boundaries to ensure that technology is used to build trust, not destroy it.

Contextual Case Study: EMIS Implementation at "SMK Cipta Karya"

To make these concepts more concrete, let's imagine a case study at SMK Cipta Karya, a vocational high school in a medium-sized city in Indonesia.

- Initial Condition: SMK Cipta Karya managed data manually. The annual student registration process took weeks. Teachers often struggled to access the academic history of students from the previous year. Communication with parents was frequently hindered due to the lack of a structured system. The principal, Mrs. Anwar, felt that the school needed to transform to improve its graduates' competitiveness.
- Planning Process: Mrs. Anwar did not immediately purchase the most expensive system. She formed a small team consisting of representatives from teachers, administrative staff, and the school committee. This team conducted research, identified the school's specific needs, and visited other schools that had successfully implemented EMIS. They decided to choose a cloud-based system (SaaS) to reduce infrastructure burdens and selected a vendor with a strong reputation for customer support.
- Implementation and Training: The implementation phase was carried out gradually. The first module activated was student data and attendance management. Prior to implementation, all teachers and administrative staff underwent intensive training. The training was not only technical but also emphasized the "why" behind the technology's importance in enhancing student learning and easing teachers' workloads. Mrs. Anwar consistently communicated the narrative of empowerment.
- Results and Challenges: After one year, the results began to show. Administrative processes became much more efficient. Teachers reported having more time to focus on lesson preparation. The parent portal increased parent satisfaction. However, challenges also arose. Some older teachers still struggled to adapt and required individual guidance. There was also a minor incident where the school's internet connection was down for a day, disrupting the learning process that relied on the system. Mrs. Anwar and her team responded by providing additional training and planning for an internet connection upgrade.
- Humanistic Focus: Most importantly, Mrs. Anwar ensured that data from the EMIS was used for humanistic purposes. Data on the timeliness of students' assignment submissions was not used to punish them but to help school counselors identify students who may be facing issues at home. Grading data was used in teacher meetings to discuss collective strategies to help struggling students, not to blame individual teachers.

This case study illustrates that the successful implementation of EMIS is a well-managed change process that places humans—both teachers and students—at the center.

CONCLUSION

The journey of educational institutions in the 21st century is a complex dance between tradition and innovation, between human intuition and the power of data. The Education Management Information System (EMIS) has proven itself to be more than just an administrative tool; it is a strategic information ecosystem that has the potential to revolutionize how we manage and experience education. However, this article has consistently argued that this technology is not a cure-all. Its value lies not in the sophistication of its algorithms but in the philosophy and governance

underlying its implementation.

First, effective educational governance in the digital era must be based on the principles of good governance: transparency, accountability, responsiveness, fairness, and effectiveness. These principles should serve as a moral compass for every decision, including those related to technology. Without a strong ethical foundation, EMIS risks becoming a tool for reinforcing rigid hierarchies, invasive surveillance, and inequality.

Second, the evolution of EMIS from an administrative tool to an analytical and predictive platform opens unlimited opportunities for personalized learning and data-driven decision-making. However, to realize this potential, institutions must move beyond simple automation and adopt a culture that views data as an asset for continuous learning and improvement.

Third, and most importantly, the core of successful EMIS implementation lies in humanistic synergy. Technology should be positioned as a tool for empowering teachers, freeing them from burdensome tasks so they can focus on the essence of their profession: inspiring, guiding, and deeply engaging with students. EMIS should be designed to give students autonomy and ownership over their learning journey while strengthening the partnership between schools, parents, and communities.

Fourth, the implementation of EMIS faces real challenges, ranging from the digital infrastructure gap to human resource readiness and complex ethical considerations related to privacy and data security. Overcoming these challenges requires visionary leadership, careful planning, sustained investment, and a commitment to prioritizing justice and humanity.

Recommendations for Stakeholders

Based on the conclusions above, here are some practical recommendations:

For Educational Leaders (Principals, Rectors):

- Be a Learning Leader, Not Just a Manager: Focus on how technology can enhance learning and teaching, not just administrative efficiency.
- Involve Teachers in the Process from the Start: Do not impose technology from the top down. Form an inclusive planning team and give teachers a sense of ownership over the change process.
- Allocate Resources for Ongoing Training: View training not as an expense but as a crucial investment in the school's most important asset: its teachers.
- Develop Clear and Ethical Data Policies: Create transparent privacy and data security policies and ensure all stakeholders understand them.

For Teachers and Educational Staff:

- Be a Lifelong Learner: Technology will continue to evolve. Have an open and proactive attitude toward learning about new tools that can assist your work.
- Focus on Pedagogical Integration: Don't just ask "how do I use this software?" but also ask, "How can I use this software to make student learning more engaging and effective?"
- Use Data for Self-Reflection: Leverage data from EMIS as a mirror to identify areas of strength and areas for improvement in your teaching practices.

For Policymakers (Government):

- Invest in Basic Infrastructure: Ensure reliable and affordable internet connectivity as a national priority for all schools, without exception.
- Create Clear Standards and Regulations: Develop national standards for EMIS that emphasize interoperability (the ability of systems to connect), data

security, and accessibility.

- Support the Development of Open-Source EMIS: Encouraging the development of open-source EMIS platforms that can be customized to local needs can provide a cost-effective and empowering solution.
- Facilitate the Sharing of Best Practices: Create platforms or forums where schools can share experiences and solutions in implementing educational technology.

For EMIS Developers and Vendors:

- Design with a "Human-Centered" Principle: Involve teachers and students in the design process to ensure the system is truly intuitive, useful, and solves real problems.
- Prioritize Security and Privacy: Don't treat security as an add-on feature. Build it into every line of code and system architecture from the start.
- Offer Comprehensive Support and Training: A good product must be backed by good services. Vendors are responsible not only for selling software but also ensuring that their clients can use it effectively.

Future Research Directions

This article opens several paths for future research. First, more in-depth qualitative research is needed to understand the lived experiences of teachers and students in data-driven environments. Second, research on the long-term impact of using learning analytics on learning outcomes and student well-being is still very limited. Third, exploring the ethics of AI in education, particularly concerning algorithmic bias and fairness, becomes an essential area for further investigation.

Ultimately, the end goal of integrating technology into educational governance is not to create perfectly efficient schools or students who score the highest test marks. The goal is to create a fairer, more responsive, and more human-centered learning ecosystem, where every student is seen as a unique individual with unlimited potential, and every teacher is empowered to be an inspiring agent of change. Technology, when managed with wisdom and a humanistic vision, is the most powerful tool we have to achieve these noble goals.

Bibliography

Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. *Handbook of Theories of Social Psychology*, *1*(20), 416–436.

Garmston, R. J., & Wellman, B. M. (2016). *The adaptive school: A sourcebook for developing collaborative groups*. Rowman & Littlefield.

Hattie, J., & Yates, G. C. R. (2013). *Visible learning and the science of how we learn*. Routledge.

Herceg, I. V. (n.d.). *THE GREAT RESET OF SERBIA'S ECONOMY DURING AND AFTER THE COVID-19 CRISIS*.

McKay, A., Thomson, P., & Blackmore, J. (2024). *Resistance in Educational Leadership, Management, and Administration*. Routledge Abingdon.

Miao, F., Hinostroza, J. E., Lee, M., Isaacs, S., Orr, D., Senne, F., Martinez, A.-L., Song, K.-S., Uvarov, A., & Holmes, W. (2022). *Guidelines for ICT in education policies and masterplans*. UNESCO.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, *108*(6), 1017–1054.

Mulyasa, E. (2002). *Manajemen berbasis sekolah* (Vol. 90). Bandung: Remaja

Rosdakarya.
Noddings, N. (2013). *Education and democracy in the 21st century*. Teachers College Press.
Picciano, A. G. (2021). Theories and frameworks for online education. *A Guide to Administering Distance Learning*, *21*(3), 166–190.
Selwyn, N. (2019). *Should robots replace teachers?: AI and the future of education*. John Wiley & Sons.
Solove, D. J. (2004). *The digital person: Technology and privacy in the information age* (Vol. 1). NyU Press.