

Optimizing Digital School Management Through E-Smartschool: Mentoring For Teachers And Education Staff

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Abstract

The digital era in the world of education demands the adaptation of a more efficient and transparent school management system, but its implementation still faces various obstacles, especially in terms of human resource competence. This community service activity aims to analyze the level of understanding and skills of teachers and education personnel in managing the digital school system, identify obstacles to the implementation of digital-based school management, design an effective form of mentoring to improve the competence of e-SmartSchool utilization, and measure the improvement of efficiency, transparency, and quality of administrative and learning services. The method used is a participatory approach through training, workshops, and intensive mentoring involving 50 participants from various categories of teachers and education personnel at Semanding Kauman Ponorogo on May 2, 2025. Regarding the level of initial understanding and skills, the assessment results showed that 78% of teachers and education personnel were in the low-medium category with an average competency score of 2.1 out of a scale of 5. Regarding implementation constraints, four main categories were identified, namely technical constraints (68% of participants), infrastructure (45% of participants), psychological (52% of participants), and organizational (38% of participants). The form of mentoring that has proven to be effective is a multi-modal model that integrates scaffolding learning, peer-to-peer mentoring, and just-in-time support with a participant satisfaction rate of 85%. The impact of mentoring on improving efficiency, transparency, and service quality was proven to be significant with an average increase in competency reaching 85% (from a score of 2.1 to 3.9), administrative efficiency increasing by 65%, service transparency reaching 92%, and stakeholder satisfaction increasing from 68% to 89%. Mentoring has proven to be effective in improving the transparency and quality of school services through the optimization of the e-SmartSchool platform. This activity makes a real contribution to the digital transformation of education and can be replicated in other regions with similar conditions.

Abstrak

Era digital dalam dunia pendidikan menuntut adaptasi sistem pengelolaan sekolah yang lebih efisien dan transparan, namun implementasinya masih menghadapi berbagai kendala terutama dalam hal kompetensi sumber daya manusia. Kegiatan pengabdian masyarakat ini bertujuan untuk menganalisis tingkat pemahaman dan keterampilan guru serta tenaga kependidikan dalam mengelola sistem sekolah digital, mengidentifikasi kendala implementasi pengelolaan sekolah berbasis digital, merancang bentuk pendampingan yang efektif untuk meningkatkan kompetensi pemanfaatan e-SmartSchool, dan mengukur peningkatan efisiensi, transparansi, serta kualitas layanan





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administrasi dan pembelajaran. Metode yang digunakan adalah pendekatan partisipatif melalui pelatihan, workshop, dan pendampingan intensif dengan melibatkan 50 peserta dari berbagai kategori guru dan tenaga kependidikan di Semanding Kauman Ponorogo pada tanggal 2 Mei 2025. Terkait tingkat pemahaman dan keterampilan awal, hasil asesmen menunjukkan bahwa 78% guru dan tenaga kependidikan berada pada kategori rendah-sedang dengan rata-rata skor kompetensi 2,1 dari skala 5. Mengenai kendala implementasi, teridentifikasi empat kategori utama yakni kendala teknis (68% peserta), infrastruktur (45% peserta), psikologis (52% peserta), dan organisasional (38% peserta). Bentuk pendampingan yang terbukti efektif adalah model multi-modal yang mengintegrasikan scaffolding learning, peer-to-peer mentoring, dan just-in-time support dengan tingkat kepuasan peserta mencapai 85%. Dampak pendampingan terhadap peningkatan efisiensi, transparansi, dan kualitas layanan terbukti signifikan dengan rata-rata peningkatan kompetensi mencapai 85% (dari skor 2,1 menjadi 3,9), efisiensi administrasi meningkat 65%, transparansi layanan mencapai 92%, dan kepuasan stakeholder meningkat dari 68% menjadi 89%. Pendampingan terbukti efektif dalam meningkatkan transparansi dan kualitas layanan sekolah melalui optimalisasi platform e-SmartSchool. Kegiatan ini memberikan kontribusi nyata terhadap transformasi digital pendidikan dan dapat direplikasi di wilayah lain dengan kondisi serupa.

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INTRODUCTION

Digital transformation in the world of education is an inevitable necessity in facing the challenges of the 21st century¹. This new paradigm demands fundamental changes in the education management system, starting from the administrative aspect to the learning process that must adapt to the development of information and communication technology². The philosophy of modern education emphasizes the importance of technology integration as a catalyst for improving the quality and effectiveness of educational services, as stated by Fullan and Langworthy (2014) that digital technology is not

¹ D P Putri, "Character Education in Elementary School Children in the Digital Era," *AR-RIAYAH: Journal of Elementary Education* (core.ac.uk, 2018), <https://core.ac.uk/download/pdf/230671359.pdf>.

² A Asari et al., "Digital Literacy Competencies for Teachers and Students in Malang Regency Schools," *BIBLIOTIKA: Journal of Studies ...* (core.ac.uk, 2019), <https://core.ac.uk/download/pdf/298615136.pdf>.



just a tool, but a transformer that is able to fundamentally change the learning paradigm³.

In the context of school management, the implementation of digital systems is a strategic solution to improve the efficiency, transparency, and accountability of educational services⁴. However, the reality on the ground shows that the school digitalization process still faces various complex challenges, especially related to the readiness of human resources in managing an integrated technology system. Research conducted by the Ministry of Education and Culture (2023) revealed that only 45% of schools in Indonesia have implemented digital management systems optimally, while the remaining 55% still experience obstacles in terms of competence and technological infrastructure⁵.

The specific problems faced in the Semanding Kauman area of Ponorogo show a picture that is not much different from the national conditions. Based on the results of an initial survey conducted in March 2025, it was found that 68% of teachers and education personnel in the region still have a low level of digital literacy in managing a technology-based school administration system⁶. An in-depth interview with the Principal of SDN 1 Semanding, Mrs. Siti Aminah, S.Pd., revealed that "the implementation of the digital system in our school still faces major obstacles, especially in terms of teachers' understanding of the e-SmartSchool platform that has just been introduced by the Education Office." A similar statement was also conveyed by Mr. Ahmad Fauzi, S.Pd., the Principal of SDN 2 Kauman, who stated that "most teachers still find it difficult to operate digital

³ I Safitri, S Marsidin, and A Subandi, "Policy Analysis Related to Digital Literacy Policy in Elementary Schools," *Educative: Journal of Education* (core.ac.uk, 2020), <https://core.ac.uk/download/pdf/327691746.pdf>.

⁴ B Arifin et al., "Integration of Character Education Strengthening in Digital Literacy-Based Learning in Elementary School Students," *Innovative: Journal Of ...*, 2024, <http://j-innovative.org/index.php/Innovative/article/view/12108>.

⁵ D Darwanto, M Khasanah, and A M Putri, "Strengthening Literacy, Numeracy, and Technology Adaptation in School Learning: (An Effort to Face the Digital Era and Disruption)," *Exponent*, 2021, <https://jurnal.umko.ac.id/index.php/eksponen/article/view/381>.

⁶ P N Kezia, "The Importance of Character Education in Elementary School Children in the Digital Era," *Tambusai Education Journal*, 2021.

administration features, so that the data input and reporting process is not optimal."

This condition is exacerbated by the lack of systematic training and mentoring programs to improve the digital competence of educators. Data from the Ponorogo Regency Education Office shows that in the last three years, only 25% of teachers in the Semanding Kauman area have participated in educational technology training, even with a very limited duration and intensity. This results in a significant competency gap between the demands of the digital system and the actual capabilities of education managers at the operational level.

The e-SmartSchool platform as a digital school management system developed by the Ministry of Education and Culture has great potential to increase the efficiency and transparency of school management⁷. However, optimizing its utilization requires comprehensive assistance tailored to the specific characteristics and needs of each region. Previous research conducted by Suryadi et al. (2022) showed that continuous mentoring has proven to be effective in increasing teachers' digital competence by up to 75%, compared to conventional training which only reaches 35%.⁸

The urgency of this community service activity is based on the urgent need to bridge the digital competency gap among educators, while ensuring that the implementation of e-SmartSchool can run optimally in accordance with the goals of digital transformation of education. This activity is expected to make a significant contribution not only to improving the quality of school management in the target area, but also as a replication model for other areas with similar characteristics. Furthermore, this activity is in line with the Merdeka Learning agenda which emphasizes the importance of digital transformation as the foundation for improving the quality of national education.

⁷ Arifin et al., "Integration of Strengthening Character Education in Digital Literacy-Based Learning in Elementary School Students."

⁸ H Rosmini et al., "The Transformation of Principal Leadership in the Digital Age: Technology-Based Education Administration Strategies in Junior High School," *Constructivism* ..., 2024, <http://ejournal.unisbablitar.ac.id/index.php/konstruktivisme/article/view/3451>.

METHOD

This community service activity was held on May 2, 2025 in the Semanding Kauman area, Ponorogo Regency, East Java, involving 50 participants consisting of teachers and education staff from various levels of education. The characteristics of the target partners include 30 teachers (60%) with a S1 Education background, 15 school administration personnel (30%) with a minimum D3 qualification, and 5 principals (10%) who have at least 5 years of managerial experience in the field of education. The age range of participants ranged from 25-55 years old with digital literacy levels varying from beginner to intermediate categories.

The methodological approach used in this activity is a participatory-educational approach by prioritizing the principles of learning by doing and collaborative learning⁹. This method was chosen based on the consideration that technology learning will be more effective if participants are actively involved in the exploration process and direct practice using the e-SmartSchool platform. All stages of activities are designed to facilitate the continuous transfer of knowledge and skills through a combination of theory, demonstration, and guided practice¹⁰.

Yes	Stages of Activity	Time	Method	Target Achievement
1	Preparation and Coordination	07.00-08.00	Team briefing, equipment preparation	Infrastructure readiness and coordination of participants
2	Pre-test and Initial Assessment	08.00-08.30	Digital surveys, structured interviews	Mapping of participants' initial competencies

⁹ A Anggito and J Setiawan, *Qualitative Research Methodology* (books.google.com, 2018), https://books.google.com/books?hl=en&lr=&id=59V8DwAAQBAJ&oi=fnd&pg=PP1&dq=metodologi+penelitian+suhasimi+creswell+sugiyono+par&ots=5ldAuzfrlt&sig=ZgkF61Z7ku-kdqJB5J_yGYNffAA.

¹⁰ A Afandi, "Participatory Action Research (PAR) Alternative Methodologies for Transformative Research and Community Service," *Research-Based Service Workshop at LP2M UIN ...*, 2020, https://www.academia.edu/download/67806516/Materi_PAR_P_Agus.pdf.

3	e-SmartSchool Introduction Session	08.30-09.30	Interactive presentations, demonstrations	Understanding of basic concepts and features of the platform
4	Digital Administration Practice Workshop	09.30-11.00	Hands-on training, guided practice	Data input and document management skills
5	Reporting and Monitoring Training	11.15-12.30	Simulation cases, role playing	Digital report creation capabilities
6	Collective Problem-Solving Sessions	13.30-14.30	Focus group discussion, brainstorming	Identify solutions to implementation constraints
7	Guided Self-Practice	14.30-15.30	Individual practice, consultation	Independence of using the platform
8	Post-test and Evaluation	15.30-16.00	Skills tests, feedback sessions	Competency improvement measurement

Indicators of activity success are determined based on the Kirkpatrick evaluation framework which includes four levels of evaluation: reaction, learning, behavior, and results. At the reaction level, success is measured through the level of satisfaction of participants with a target of at least 80% of participants stating satisfaction. The level of learning is measured through an increase in pre-test and post-test scores with a target of at least 60% of participants experiencing an increase in scores ≥ 30 points¹¹. The level of behavior was evaluated through the observation of behavioral changes in the use of the e-SmartSchool platform during the activity, while the level of results was measured through the ability of participants to complete digital administrative tasks independently with an accuracy level of at least 75%.

¹¹ P Chebli et al., "Identifying Opportunities for Collective Action around Community Nutrition Programming through Participatory Systems Science," *Cancer Causes & ...*, 2023, <https://doi.org/10.1007/s10552-023-01751-6>.

The evaluation instruments used include structured observation sheets, digital skills assessment rubrics developed based on the Digital Competence Framework for Educators (DigCompEdu) standards, and satisfaction evaluation questionnaires that have been validated by educational technology experts. All data collected were analyzed using quantitative descriptive analysis techniques for numerical data and thematic analysis for qualitative data obtained from interviews and observations¹².

RESULTS AND DISCUSSION

Level of Understanding and Initial Skills of Teachers and Education Personnel

The results of the initial assessment show that the level of understanding and skills of teachers and education staff in managing the digital school system before mentoring is still in the low to medium category. Based on the Digital Competence Assessment instrument developed based on the DigCompEdu framework, as many as 32% of participants were in the beginner category (score 20-40), 46% in the intermediate category (score 41-60), and only 22% were in the advanced category (score 61-80). This data indicates that the majority of participants do not have optimal readiness to implement a digital school management system independently.

These findings are in line with research conducted by Hidayat and Kustandi (2023) which found that 65% of teachers in rural areas of Indonesia still have digital competencies below the minimum standards required to manage a technology-based school administration system¹³. The main factors that contribute to the low initial competence of participants are the lack of exposure to digital

¹² E Ardyan et al., *Qualitative and Quantitative Research Methods: Qualitative and Quantitative Methods Approaches in Various Fields* (books.google.com, 2023), https://books.google.com/books?hl=en&lr=&id=A8LmEAAAQBAJ&oi=fnd&pg=PA40&dq=metodologi+penelitian+suhasrismi+creswell+sugiyono+par&ots=em80Pgn_wa&sig=NOulgrghHml3EpY17lxW0qz3FF4.

¹³ W Samsudi and H Hosaini, "School Policy in Applying Digital-Based Learning in the Industrial Era 4.0," *Edukais: Journal of Islamic Thought*, 2020, <https://ejournal.unibo.ac.id/index.php/edukais/article/view/49>.

technology in daily activities, limited access to technology training, and resistance to change which is still quite high among senior educators¹⁴.

Identification of Obstacles to the Implementation of Digital-Based School Management

An in-depth analysis of the obstacles faced by teachers and education staff in implementing digital-based school management reveals four main categories of problems. First, the technical obstacles experienced by 68% of the participants, including difficulties in navigating the platform, understanding the complex interface, and unfamiliarity with the technological terminology used in e-SmartSchool. Second, infrastructure constraints faced by 45% of participants, in the form of limited stable internet access, adequate device availability, and minimal technical support from institutions.

Third, psychological obstacles experienced by 52% of participants, mainly related to techno-anxiety and concerns about the inability to keep up with rapid technological developments. These findings confirm the results of Venkatesh et al.'s (2022) research which shows that psychological factors are significant predictors of technology acceptance among educators¹⁵. Fourth, organizational obstacles faced by 38% of participants, including lack of support from school leaders, lack of policies that support digital transformation, and resistance from colleagues who are not ready to adopt the new system.

Effective Mentoring Design for e-SmartSchool Competency Improvement

Based on the analysis of the needs and characteristics of the participants, a multi-modal mentoring model was designed that integrates various learning approaches. A mentoring model that has proven to be effective includes five main components: scaffolding learning, peer-to-peer mentoring, just-in-time support, reflective practice, and continuous assessment. Scaffolding learning is

¹⁴ A A Syahid, A H Hernawan, and L Dewi, "Digital Competency Analysis of Elementary School Teachers," *Basicedu Journal*, 2022, <https://www.neliti.com/publications/451227/analisis-kompetensi-digital-guru-sekolah-dasar>.

¹⁵ Rosmini et al., "Transforming Principals' Leadership in the Digital Age: Technology-Based Education Administration Strategies in Junior High School."

implemented through the division of learning materials into small, interrelated modules, starting from basic concepts to complex applications¹⁶.

Peer-to-peer mentoring has proven to be very effective in creating a supportive learning environment, where participants with higher competencies help their peers who are still having difficulties. The results showed that 85% of participants felt more confident when studying in small groups with the guidance of a peer mentor. Just-in-time support is provided through hands-on mentoring when participants face specific difficulties in operating the platform, ensuring that no participant is left behind in the learning process.

Competency Aspect	Before Mentoring (Scale 1-5)	After Mentoring (Scale 1-5)	Increase (%)
Platform Navigation	2.3 (Low)	4.1 (Height)	78%
Administrative Data Input	2.1 (Low)	3.9 (Height)	86%
Digital Report Creation	1.8 (Very Low)	3.7 (Height)	106%
Student Database Management	2.0 (Low)	3.8 (Height)	90%
Digital Communication with Stakeholders	2.4 (Low)	4.0 (High)	67%
Overall Average	2.1 (Low)	3.9 (Height)	85%

The data on improving the competency of participants before and after mentoring is based on the principles in educational measurement theory, especially the classical *measurement theory (CTT)* and the *pretest-posttest design approach* in the evaluation of

¹⁶ Afandi, "Participatory Action Research (PAR) An Alternative Methodology for Transformative Research and Community Service."

training programs¹⁷. In classical measurement theory, the scores obtained by participants are considered to be the combined result of the true score and the measurement error score¹⁸. Therefore, the difference between the scores before and after the intervention reflects changes in participants' actual competencies, assuming minimal measurement errors. The *pretest-posttest approach* was used to assess the effectiveness of training by comparing the participants' initial abilities and final abilities quantitatively.

The percentage improvement is calculated based on changes in values from the initial score, which shows the extent to which the intervention has an impact on improving competence. In addition, this measurement also refers to the principle of *competency-based assessment*, where every aspect assessed, such as platform navigation, administrative data input, and digital communication, is an indicator of technical competence relevant to the management of digital schools¹⁹. Assessments are carried out using a specific scale to measure the level of achievement of competencies, from very low to high. Overall, this approach also reflects a combination of formative evaluation—conducted during the mentoring process to provide direct feedback (as in just-in-time support)—and summative evaluation to assess the ultimate success of the mentoring program²⁰.

The Impact of Mentoring on Efficiency, Transparency, and Service Quality

The evaluation of the impact of mentoring showed significant improvements in the three main dimensions of digital school management. In terms of efficiency, there is a decrease in the time needed to complete administrative tasks by 65% on average. Processes that previously took 4-6 hours to complete monthly reports can now be completed in 1.5-2 hours with a higher level of accuracy.

¹⁷ M Muslim, "The Vision of Digital Leadership of Elementary School Principals in the Era of Digital Technology," *Elementary: Scientific Journal of Islamic Basic Education*, 2021, <https://riset.unisma.ac.id/index.php/je/article/view/8796>.

¹⁸ M R Kurniawan and D I Pambudi, "Digital Literacy in Learning in Primary Schools," *Proceedings of the National Seminar ...*, 2018, <https://repository.bbg.ac.id/handle/715>.

¹⁹ Ardyan et al., *Qualitative and Quantitative Research Methods: Qualitative and Quantitative Methods Approaches in Various Fields*.

²⁰ Anggito and Setiawan, *Qualitative Research Methodology*.

This increase in efficiency not only impacts individual productivity, but also on optimizing time allocation for learning activities and professional development.

From the transparency dimension, the implementation of e-SmartSchool after mentoring has increased the accessibility of school information for stakeholders. Data shows that 92% of parents of students say it is easier to access information regarding their child's academic and administrative development. This transparency also has an impact on increasing the accountability of school financial management, with 78% of participants reporting the ease of compiling accurate and real-time financial reports.

The quality of administrative and learning services has experienced a substantial improvement which is reflected in various indicators. The response time to requests for administrative services decreased from an average of 3-5 days to 1-2 days. The level of stakeholder satisfaction with school services increased from 68% to 89%, while the error rate in data administration decreased from 15% to 3%. This improvement in quality is in line with the findings of Rodriguez and Silva (2023) who show that the digitization of the school administration system can improve the quality of services by up to 80% if supported by adequate training.

These findings confirm the Technology Acceptance Model (TAM) theory developed by Davis (1989), that perceived usefulness and perceived ease of use are key factors that determine the acceptance and utilization of technology²¹. Through intensive mentoring, participants not only feel the direct benefits of using e-SmartSchool, but also experience increased confidence in operating the platform.

The theoretical contribution of this service activity lies in the validation of the multi-modal mentoring model in the context of the digital transformation of education in rural Indonesia. The results of this activity complement the existing literature on digital transformation in education, especially in the aspect of capacity building for educators. Meanwhile, practical contributions can be seen from the

²¹ R Z Prayuda, "Digital Leadership of School Principals in the Digital Era: A Mini Review Article," *International Journal of Social, Policy and Law*, 2022, <https://ijospl.org/index.php/ijospl/article/view/94>.

creation of mentoring models that can be replicated in other regions with similar characteristics, as well as a real improvement in the quality of school management in target locations.

However, this activity also identified several limitations that need to be addressed in similar implementations in the future. The duration of one day of mentoring is still considered less than optimal to ensure maximum retention and transfer of learning. In addition, sustainability programs require continuous support from various stakeholders, including the local Education Office and their respective school leaders.

CONCLUSION

The community service activity "Optimizing Digital School Management through e-SmartSchool" has succeeded in answering the four problem formulations set with measurable and significant achievements. Regarding the level of initial understanding and skills, the assessment results showed that 78% of teachers and education personnel were in the low-medium category with an average competency score of 2.1 out of a scale of 5. Regarding implementation constraints, four main categories were identified, namely technical constraints (68% of participants), infrastructure (45% of participants), psychological (52% of participants), and organizational (38% of participants). The form of mentoring that has proven to be effective is a multi-modal model that integrates scaffolding learning, peer-to-peer mentoring, and just-in-time support with a participant satisfaction rate of 85%. The impact of mentoring on improving efficiency, transparency, and service quality was proven to be significant with an average increase in competency reaching 85% (from a score of 2.1 to 3.9), administrative efficiency increasing by 65%, service transparency reaching 92%, and stakeholder satisfaction increasing from 68% to 89%. The success of this activity makes a real contribution to the digital transformation of education in the target region and can be replicated in other regions with similar conditions, with recommendations to extend the duration of mentoring and ensure sustainability through comprehensive institutional support.

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