

Collaborative Digital Leadership in Strengthening Vocational School Quality

¹⁾ Fathimah Azzahro Hanifah, ²⁾ Endang Sri Budi Herawati

^{1,2)} Master of Education Management, Faculty of Education, Universitas Negeri Yogyakarta

Email: fatimahazzahro.2025@student.uny.ac.id

*Correspondence Author: fatimahazzahro.2025@student.uny.ac.id

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ABSTRACT

This study analyzed digital collaborative leadership in strengthening vocational-school quality at SMKN 1 Rangkasbitung. The main problem was the persistence of administrative supervision, fragmented teacher-performance data, and limited real-time visibility of classroom learning and internship activities. A qualitative case-study design was used through document analysis, digital-practice observation, and semi-structured interviews with nine purposively selected informants: the principal, vice principals, information-technology team, teachers, and students. The findings showed that ESEMKA BESTARI and TEWAK functioned not merely as administrative applications but as governance instruments for reorganizing supervision, discipline, and data-based decision making. Transformative leadership built shared urgency for measurable quality improvement; innovative leadership institutionalized digital workflows; and collaborative leadership expanded accountability by positioning teachers and students as data producers. The study concluded that digital leadership becomes effective when technology adoption is accompanied by cultural reconstruction, ethical data governance, teacher capacity building, and continuous evaluation of platform usefulness.

Informasi Artikel

Kata Kunci:

Kepemimpinan digital; Mutu sekolah vokasi; Kepemimpinan transformatif; ESEMKA BESTARI; TEWAK.

ABSTRAK

Penelitian ini menganalisis kepemimpinan digital kolaboratif dalam penguatan mutu sekolah vokasi di SMKN 1 Rangkasbitung. Masalah yang dikaji ialah kuatnya pola supervisi administratif, terpisahnya data kinerja guru, serta terbatasnya pemantauan real-time terhadap pembelajaran dan praktik kerja lapangan. Penelitian menggunakan desain studi kasus kualitatif melalui telaah dokumen, observasi praktik digital, dan wawancara semi-terstruktur terhadap sembilan informan yang dipilih secara purposif: kepala sekolah, wakil kepala sekolah, tim teknologi informasi, guru, dan siswa. Hasil penelitian menunjukkan bahwa ESEMKA BESTARI dan TEWAK tidak sekadar berfungsi sebagai aplikasi administratif, tetapi menjadi instrumen tata kelola untuk menata ulang supervisi, disiplin profesional, dan keputusan berbasis data. Kepemimpinan transformatif membangun urgensi mutu yang terukur; kepemimpinan inovatif melembagakan alur kerja digital; sedangkan kepemimpinan kolaboratif memperluas akuntabilitas dengan menempatkan guru dan siswa sebagai produsen data. Penelitian menyimpulkan bahwa kepemimpinan digital efektif apabila adopsi teknologi disertai rekonstruksi budaya, tata kelola data etis, penguatan kapasitas guru, dan evaluasi berkelanjutan.

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✉ **Corresponding Author:** (1) Fathimah Azzahro Hanifah, (2) Master of Education Management, (3) Universitas Negeri Yogyakarta, (4) Yogyakarta, Indonesia, (5) Email: fatimahazzahro.2025@student.uny.ac.id

1. Introduction

Vocational high schools (SMK) are expected to produce graduates who are competent, adaptive, and relevant to the needs of the business and industrial sectors (DUDI). In this context, vocational school quality should be understood as the institution's ability to consistently connect learning, fieldwork practice, teachers' professional discipline, and data-based decision making [1], [2]. This demand has become stronger alongside the dynamics of Industry 4.0 and the need for school leadership that is adaptive to technology [3], [4].

The fundamental problem faced by many vocational schools is not merely the lack of technological devices, but weak information governance. Teacher supervision often still follows an administrative pattern: documents are collected, attendance is recorded, and reports are prepared after activities have been completed. This pattern leaves information asymmetry between classroom realities and formal reports. As a result, school leaders find it difficult to quickly identify instructional problems, while quality improvement tends to be reactive and delayed.

The gap between industrial demands and school governance practices has become increasingly important because vocational quality is determined not only by academic achievement, but also by the speed with which schools identify learning problems, discipline teachers' work processes, and ensure that students' fieldwork experiences meet required standards. In this situation, school leadership needs to shift from incidental supervision toward a quality-control system that is more predictive, participatory, and evidence-based. Digital supervision is relevant because it provides data that are closer to actual learning events, rather than merely administrative reports produced after activities have ended [5], [6], [7].

Although many studies emphasize the importance of school leadership and digital transformation, discussion remains limited on how vocational school leaders specifically build a quality-data ecosystem through internal school applications, student involvement, and teacher-performance coaching simultaneously. This gap is the contribution of this article. The study positions ESEMKA BESTARI and TEWAK not merely as technological innovations, but as leadership instruments that reshape accountability relationships among leaders, teachers, students, and industry partners.

SMKN 1 Rangkasbitung provides an important context for examining how educational leadership can move from bureaucratic control toward participatory digital governance. The development of ESEMKA BESTARI and TEWAK shows the school's effort to build a more open monitoring system for teacher performance, classroom activity, and fieldwork practice. This initiative is noteworthy because digitalization is not treated merely as a technical project, but as a leadership strategy to transform work culture, accountability, and organizational discipline.

This article offers a critical reading of transformative,

innovative, and collaborative leadership strategies in strengthening vocational school quality. These three strategies are positioned not as separate concepts, but as a configuration of digital leadership. Transformative leadership provides direction and energy for change [8]; innovative leadership provides the courage to redesign systems [9]; and collaborative leadership ensures that quality becomes the collective responsibility of the school community [10].

2. Research Method

This study used a qualitative approach with a case-study design. This design was selected because the study did not aim to measure statistical relationships among variables, but to understand leadership strategies in a specific institutional context. A case study enables researchers to examine school policy dynamics, digital practices, and changes in organizational culture in depth [11], [12].

The object of the study was leadership practice at SMKN 1 Rangkasbitung through the implementation of ESEMKA BESTARI and TEWAK. Data were constructed through program-document analysis, observation of the school's digital practices, and exploration of institutional narratives related to supervision, attendance monitoring, teaching documents, and fieldwork-practice supervision. The analysis was conducted thematically using three main categories: transformative leadership, innovative leadership, and collaborative leadership.

Interview Techniques and Research Informants

Interviews were conducted semi-structurally so that the researcher could obtain focused data while still giving informants room to explain their experiences, perceptions, and critical evaluations of the use of ESEMKA BESTARI and TEWAK. Informants were selected purposively because they were directly involved in planning, implementing, or using the school's digital platforms. The composition of informants included school leaders, vice principals for curriculum or industrial relations, the information-technology team, teachers who used the platforms, and students involved in reporting or monitoring processes.

The research involved nine informants who were purposively selected based on their direct involvement in managing and using the school's digital systems. The informants consisted of one principal as the policy director for quality, two vice principals responsible for curriculum and industrial relations/fieldwork practice, one platform manager or information-technology team member, three teachers who used ESEMKA BESTARI and TEWAK, and two students involved in reporting or learning-monitoring mechanisms. The number and positions of the informants were considered adequate because they represented strategic, technical, pedagogical, and user perspectives on educational services.

The interview guide was organized into five focuses. First, leaders' vision of school-quality digitalization. Second, changes

in supervision mechanisms before and after the implementation of ESEMKA BESTARI and TEWAK. Third, teachers' experiences in uploading teaching documents, meeting deadlines, and receiving data-based coaching. Fourth, students' experiences as providers of information on learning activities or fieldwork practice. Fifth, implementation barriers, including digital literacy, initial resistance, network stability, and data-protection needs. With these focuses, the interviews not only explored program success, but also examined the risks and prerequisites for sustainable innovation.

Data validity was strengthened through source triangulation and technique triangulation. Interview data were compared with digital documents, observations of platform use, and the consistency of narratives among informants. The analysis was conducted through data reduction, thematic coding, presentation of findings, and conclusion drawing. This procedure was important to prevent the article from becoming a promotional claim for the applications and to present a scientific argument about how digital leadership works in school-quality governance.

3. Results and Discussion

The findings show that ESEMKA BESTARI and TEWAK became arenas in which transformative, innovative, and collaborative leadership worked simultaneously. Interview data indicate that change occurred not only in how the school documented activities, but also in how the school community understood quality, discipline, and professional responsibility. The main findings are formulated into five themes: changing quality orientation, institutionalizing digital supervision, expanding student participation, strengthening data for decision making, and addressing ethical challenges in digital governance.

Table 1. Informants and Main Interview Findings

Informants and Position	Main Findings
Principal (1): director of quality policy and school digitalization.	Digitalization is positioned as a governance strategy to accelerate supervision and reduce dependence on manual reports.
Vice principals (2): curriculum and industrial relations/fieldwork practice.	ESEMKA BESTARI helps monitor classroom and fieldwork-practice activities, while TEWAK strengthens discipline in teaching documents and punctuality.
Platform manager/information-technology team (1): manager of data flows and systems.	System success depends on input consistency, technical stability, operating standards, and follow-up by leaders.
Teachers using the platforms (3): implementers of learning and digital administration.	Teachers experienced initial adjustment, but the system encouraged administrative order, learning readiness, and work transparency.
Student reporters/monitors (2): users of learning services.	Student involvement expands accountability because quality information comes not only from leaders or teachers, but also from students' learning experiences.

Source: Processed interview data and document analysis, 2026.

Table 2. Benefits of ESEMKA BESTARI and TEWAK for Students and Teachers

Application	Main Users	Benefits for Students	Benefits for Teachers	Implications for School Quality
ESEMKA BESTARI	Students, teachers, school leaders, and fieldwork-practice managers	Helps students obtain certainty in learning services, monitor classroom activities, strengthen participation in reporting, and ensure that fieldwork-practice activities are better documented.	Helps teachers present learning activities more transparently, facilitates reporting, and strengthens the connection between classroom learning and industrial practice.	Improves learning transparency, reduces information asymmetry, and strengthens data-based decision making.
TEWAK	Teachers, school leaders, and supervision team	Provides indirect benefits for students through improved teacher discipline, readiness of teaching documents, and orderly learning services.	Helps teachers organize learning administration, upload teaching documents, maintain punctuality, and receive more objective data-based coaching.	Strengthens teachers' professional discipline, accelerates academic supervision, and creates a more accountable work culture.

3.1. Interview Findings: Changes in Quality Orientation and Work Culture

Interviews with school leaders showed that digitalization was understood as a strategy to shorten the distance between policy and the reality of instructional implementation. In the manual pattern, leaders obtained information only after activities had taken place, so coaching tended to be delayed. Through ESEMKA BESTARI and TEWAK, information about attendance, readiness of teaching documents, classroom activities, and fieldwork practice could be traced more quickly. This finding confirms that digital leadership is not merely the ability to use technology, but the ability to make data the basis of managerial action [5].

Teachers interviewed acknowledged that platform use initially required adjustment to work habits. However, once the digital workflow was understood, the platforms helped them organize learning documents, meet schedules, and recognize that administrative discipline was directly related to the quality

of services provided to students. This finding shows a cultural shift from formal compliance toward more measurable professional responsibility.

From the students' perspective, involvement in monitoring created a new experience in which learning quality was not solely the concern of the principal and teachers. Students became part of the accountability ecosystem because their learning experiences could become sources of information for school improvement. Nevertheless, student involvement must be managed carefully so that it does not turn into a rigid surveillance relationship. The school needs to ensure that student data are used for system improvement, not to embarrass individuals.

3.2. *Transformative Leadership: Changing Quality Orientation*

Quality transformation in vocational schools does not begin with applications, but with changes in the thinking of leaders and the school community. Transformative leadership is visible when leaders are able to shift the orientation of quality from merely fulfilling documents toward the quality of learning processes that can be monitored, evaluated, and continuously improved. In the framework of Bass and Riggio, transformative leaders work through idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration [8], [13].

In the context of SMKN 1 Rangkasbitung, this orientation appears in the effort to make data transparency an organizational value. Teacher attendance, readiness of teaching documents, and learning activities are no longer understood as private matters of individuals, but as part of the school's public responsibility. This is the sharp point of digital leadership: technology is used to reorganize power relations among leaders, teachers, students, and the quality system.

3.3. *Innovative Leadership: From Manual Administration to a Digital System*

Innovative leadership does not stop at the ability to generate new ideas, but requires the courage to institutionalize those ideas into work systems. ESEMKA BESTARI and TEWAK can be understood as managerial innovations because they change the supervision pattern from delayed reports to faster and more documented data-based processes. This innovation is in line with information-system principles, in which system quality and information quality influence organizational usefulness [14].

ESEMKA BESTARI functions as an instrument for monitoring learning activities and fieldwork practice. In vocational education, this feature is strategic because quality takes place not only in the classroom, but also at industrial sites. When students' activities in DUDI can be monitored, the school obtains a stronger basis for ensuring alignment between the competencies taught and real work experience.

For students, ESEMKA BESTARI provides direct benefits

in the form of certainty in learning services, monitoring of learning activities, and strengthening of fieldwork-practice experiences. Through this system, teacher attendance, classroom learning activities, and the development of students' activities in industry can be documented more systematically. Students are no longer merely recipients of educational services, but also gain space to ensure that learning processes take place according to schedule, teachers provide academic services, and fieldwork-practice activities run according to competency objectives. In vocational schools, this benefit is important because graduate quality is strongly determined by the connection between school-based learning and real work experience in industry.

In addition, ESEMKA BESTARI helps students build a culture of discipline, responsibility, and digital literacy. When learning and fieldwork-practice activities are recorded in the system, students learn that every educational process has a data trail that can be evaluated. This encourages students to be more responsible for attendance, engagement, and achievements in practice activities. Thus, the benefits of the application are not only administrative but also educational because they shape students' character as prospective workers who are accustomed to digital work systems, activity reporting, and professional accountability.

TEWAK functions as a digital mechanism for enforcing punctuality, discipline, and the collection of teaching documents. The strategic value of TEWAK lies not merely in document automation, but in its ability to create data trails. These data trails can become the basis for academic supervision, teacher coaching, and more objective managerial decisions. In other words, TEWAK moves supervision from the realm of perception to the realm of evidence.

For teachers, TEWAK provides benefits by clarifying work standards, accelerating the documentation of learning administration, and strengthening professional discipline. Teachers have a digital space to upload teaching documents, meet deadlines, and demonstrate readiness for instruction more transparently. This system helps teachers reduce dependence on manual administration that is easily scattered, difficult to trace, and often checked only after activities have taken place. With digital traces, teachers can more easily organize learning documents, correct administrative weaknesses, and understand the aspects that need to be improved in the academic supervision process.

Another benefit for teachers is the presence of a more objective basis for coaching. Data in TEWAK enable school leaders to view teacher performance based on evidence rather than merely perception or verbal reports. This condition can reduce subjectivity in supervision and encourage fairer coaching. When used ethically, TEWAK does not become a punitive control tool, but a professional-reflection instrument for teachers to improve teaching readiness, discipline, and the quality of learning services for students.

3.4. Collaborative Leadership: Students as Subjects of Accountability

One of the strongest aspects of this strategy is the involvement of students as part of the monitoring ecosystem. In the old paradigm, students were often positioned as objects of educational services. Through ESEMKA BESTARI, students can be understood as subjects who also produce quality data. This involvement expands accountability because information comes not only from teachers or leaders, but also from students' learning experiences.

Collaborative leadership requires leaders to build trust, open space for participation, and manage data as an organizational asset, not as a tool for punishing individuals. If not managed ethically, digital monitoring can turn into a control mechanism that creates resistance. Therefore, the success of ESEMKA BESTARI and TEWAK depends on leaders' ability to explain quality goals, protect teachers' professional dignity, and make data the basis for coaching rather than mere assessment.

3.5. Synthesis of Interview Findings and Quality Implications

The synthesis of interview findings shows that vocational school quality strengthens when digital data are used to improve processes, not merely to archive activities. Informants from leadership elements emphasized the importance of quickly reading problems; teachers emphasized the clarity of work standards; the information-technology team emphasized the need for system stability; and students emphasized the importance of learning that truly takes place in class and is connected to industrial practice. Operationally, the nine informants showed a consistent view that the benefits of the platforms did not lie in the existence of the applications, but in the connection among data, coaching, and school decisions. The similarity of response patterns among school leaders, teachers, the information-technology team, and students strengthens the validity of the finding that ESEMKA BESTARI and TEWAK have become part of the school's quality-control mechanism.

Based on the synthesis of interviews, the benefits of the applications for students and teachers appear in two mutually reinforcing directions. For students, ESEMKA BESTARI strengthens learning certainty, monitoring of fieldwork practice, and participation in school-quality accountability. Students gain the experience that learning processes, teacher attendance, and practice activities do not run informally, but are located within a system that can be monitored and evaluated. For teachers, TEWAK and ESEMKA BESTARI help build a more orderly work culture through the documentation of teaching documents, activity reporting, and data-based supervision. Thus, the two applications bring together the interests of students as recipients of educational services and teachers as implementers of learning services in a more transparent quality ecosystem.

The practical implication of these findings is the need for clear standard operating procedures. Every item of data entered

into the system must have a clear purpose: academic supervision, discipline coaching, evaluation of fieldwork practice, or improvement of learning services. Without such standards, digital data may accumulate without providing added value. Therefore, digital leadership needs to be equipped with regular reflection forums, user training, and feedback mechanisms so that the platforms remain relevant to school needs.

From the perspective of Total Quality Management, educational quality rests on continuous improvement, the involvement of all organizational members, and the satisfaction of service users [15]. ESEMKA BESTARI and TEWAK bring the school closer to this principle because they provide data that can be used to identify problems, conduct supervision, and improve learning processes. However, long-term success requires integration with teacher-competency development policies, students' digital literacy, data protection, and regular evaluation of system usefulness) [6], [7].

3.6. Collaborative Digital Leadership Model

The findings of this study show that strengthening vocational school quality requires a synthesis of three leadership strategies. First, transformative strategy builds a vision that quality must be transparent and measurable. Second, innovative strategy translates that vision into digital platforms. Third, collaborative strategy ensures that quality data are produced and used by many school actors. Without transformation, applications become a new administrative routine; without innovation, the vision of change has no instrument; without collaboration, digital systems risk becoming one-sided control.

Thus, the collaborative digital leadership model at SMKN 1 Rangkasbitung can be explained as the leader's ability to orchestrate vision, technology, and participation of the school community to produce verifiable quality. This model is relevant for other vocational schools, particularly those facing challenges related to large numbers of students, varied industrial-practice locations, and the need for rapid academic supervision. In brief, transformative strategy changes quality orientation, innovative strategy builds a digital work system, and collaborative strategy expands data ownership to the school community. Together, they form a quality cycle: change vision, digital instruments, participation, data evidence, and continuous improvement. This cycle is in line with the idea of educational change that positions leadership as the driver of an organizational learning culture) [16].

4. Conclusion

The collaborative digital leadership strategy at SMKN 1 Rangkasbitung shows that strengthening vocational school quality cannot be achieved merely through administrative instructions. Quality requires a system that makes learning processes, teacher performance, and industrial practice more visible, documented, and improvable. ESEMKA BESTARI and TEWAK are examples of how digital platforms can strengthen

school governance when supported by transformative, innovative, and collaborative leadership.

The main conclusion of this article is that technology affects quality only when it is attached to changes in organizational culture. Transformative leadership provides direction for change, innovative leadership provides instruments, and collaborative leadership builds shared ownership. Interview findings strengthen the conclusion that the success of quality digitalization is determined by clear goals, user involvement, data quality, and the sustainability of coaching. For other vocational schools, this model can be replicated provided that there is readiness in digital literacy, ethical data governance, teacher training, and continuous evaluation of platform effectiveness in facing educational change and disruption [17].

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