

FROM FOUNDATION TO CONTINUITY

Reframing Principal Transformational Leadership In School Digital Transformation

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Abstract: From Foundation to Continuity: Reframing Principal Transformational Leadership in School Digital Transformation

School digital transformation requires leadership capable of driving sustainable cultural and structural change. While prior studies confirm the contribution of transformational and digital leadership to organizational change readiness, the integrative mechanism linking the four transformational leadership dimensions in state junior secondary schools at the early stage of digitalization in second-tier Indonesian cities remains under-explained. This study describes how the principal of SMPN 10 Bengkulu enacts Bass and Riggio's four dimensions—idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration—through a qualitative descriptive approach involving eleven participants over four months. Findings reveal a foundation–energy–transformation–continuity (FETC) mechanism: idealized influence legitimizes, inspirational motivation mobilizes, intellectual stimulation transforms, and individualized consideration sustains digital change. This integrative configuration—rather than a parallel listing of dimensions—constitutes the study's primary contribution and is transferable to *madrasah* and *pesantren* leadership facing similar digital transitions.

Keywords: Transformational Leadership, School Principal, Digital Transformation, Educational Administration, Qualitative Study

Abstrak: Dari Fondasi hingga Kontinuitas: Menata Ulang Kepemimpinan Transformasional Kepala Sekolah dalam Transformasi Digital Sekolah

Transformasi digital sekolah memerlukan kepemimpinan yang mampu menggerakkan perubahan kultural dan struktural secara berkelanjutan. Meskipun kajian terdahulu menegaskan kontribusi kepemimpinan transformasional dan kepemimpinan digital terhadap kesiapan perubahan organisasi, mekanisme integratif keempat dimensinya pada SMP Negeri tahap awal digitalisasi di kota lapis kedua belum cukup dijelaskan. Penelitian ini mendeskripsikan praktik empat dimensi kepemimpinan transformasional Bass dan Riggio oleh kepala SMPN 10 Bengkulu melalui pendekatan kualitatif deskriptif dengan sebelas partisipan selama empat bulan. Temuan menunjukkan keempat dimensi membentuk konfigurasi integratif fondasi, energi, transformasi, dan keberlanjutan (FETC): pengaruh ideal melegitimasi, motivasi inspiratif menggerakkan, stimulasi intelektual mengubah, dan

perhatian individual menjaga keberlanjutan transformasi digital. Konfigurasi ini alih-alih daftar dimensi paralel merupakan kontribusi utama studi dan dapat ditransfer ke konteks madrasah dan pesantren yang menghadapi transisi digital.

Kata Kunci: Kepemimpinan Transformasional, Kepala Sekolah, Transformasi Digital, Administrasi Pendidikan, Studi Kualitatif

INTRODUCTION

Digital transformation has fundamentally reshaped the educational landscape, turning technology from an auxiliary tool into a cultural infrastructure that determines how schools design instruction, manage data, and communicate with stakeholders (Bucăța & Tileagă, 2024; Hashim et al., 2022). In Indonesia, the Merdeka Belajar policy and the national digitalization agenda position schools as the front line of adaptation, placing school principals at the center of institutional change (Karakose et al., 2021; Tigre et al., 2023).

Educational leadership scholarship consistently demonstrates that the success of school digital innovation depends not only on the availability of devices but on the quality of leadership that frames, motivates, and supports change. Transformational leadership theory (Bass & Riggio, 2006) emphasizes four dimensions (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration) through which leaders move followers toward a shared vision. Meta-analyses and integrative reviews position transformational leadership as a robust predictor of teachers' organizational commitment and instructional innovation, including technology integration (Bellibaş et al., 2021; Schmidt & Mestry, 2023). Post-pandemic studies further confirm that principals who simultaneously enact digital and transformational leadership facilitate more meaningful technology adoption rather than mere usage frequency (Antonopoulou et al., 2021; Banoğlu et al., 2023).

Despite this growing literature, most studies treat the four transformational leadership dimensions in a piecemeal manner or rely on aggregated measures that do not articulate how the dimensions reinforce each other. Indonesian research tends to estimate aggregate effects on outcome variables (teacher commitment, performance, or job satisfaction) without examining the mechanisms at schools only beginning their digitalization journey (Adawiah & Nurachadijat, 2023; Aritonang & Hutauruk, 2024). Moreover, the empirical base of digital leadership research remains dominated by higher-education and urban-school contexts, leaving the transferability of findings to primary and secondary schools in peripheral regions under-verified (Berkovich & Hassan, 2025; Johnson & Hackman, 2018; Sliwka et al., 2024; Tigre et al., 2023).

The present study was conducted at SMPN 10 Bengkulu, a state junior secondary school in a second-tier city that exemplifies this under-represented profile: network infrastructure is available but unevenly distributed; teacher digital literacy spans from basic to advanced; and the school's digital policy has only recently been formalized. In this formative context, transformational leadership is not a routine practice but an active negotiation between aspiration and constraint. Observational data suggest that certain digital programs are enthusiastically launched but inconsistently followed through, and that individual teacher differences in digital readiness create potential stratification risks that the principal must actively manage. These site-specific phenomena constitute the empirical gap that motivates the present inquiry.

This study addresses the gap with two interrelated contributions. First, theoretically, it formulates an integrative mechanism of the four transformational leadership dimensions, framed as a foundation, energy, transformation, and continuity (FETC) logic, extending prior literature that presents the four dimensions as a parallel list without functional relations (Sliwka et al., 2024). Second, contextually, it fills the qualitative knowledge gap on state junior secondary schools in early-stage digitalization in second-tier Indonesian cities. Although conducted in a state secular school, the findings are directly relevant for principals of Madrasah Tsanawiyah (MTs), Madrasah Aliyah (MA), and modern *pesantren* facing similar digital transitions (Amir et al., 2024; Ifani & Kartiwi, 2023; Riyanto, 2024; Sholeh et al., 2022b). Guided by the central question of how the principal of SMPN 10 Bengkulu enacts transformational leadership in driving school digital transformation, the study employs a descriptive qualitative approach, as detailed in the following section.

RESEARCH METHOD

Table 1. Profile of Research Participants

Code	Role	Sex	Tenure / Grade	Data Collection Technique
AD	Principal	Male	>10 years	In-depth interview, observation, document review
PD	Vice-Principal	Male	8 years in managerial role	In-depth interview, observation
TN	Focal teacher informant	Female	12 years teaching	In-depth interview, observation
Teacher-1 to Teacher-5	Teachers across subject areas	Mixed	5–15 years teaching	Semi-structured interview, observation
Student-1 to Student-3	Grade VIII–IX students	Mixed	Active users of digital media	Focused interview

Source: Authors (2026).

A descriptive qualitative approach is selected because the phenomenon under study (principal transformational leadership in driving digital transformation) is contextual, dynamic, and meaning-laden, requiring depth of participants' perspectives rather than causal-relationship testing (Creswell & Poth, 2018). The constructivist-interpretivist paradigm is adopted, treating leadership as a social reality constituted by the interactions and meanings of school actors. Data collection was conducted at SMPN 10 Bengkulu for four months (January to April 2026), comprising preliminary engagement, data collection, and verification phases.

Participants were selected purposively based on direct involvement in school leadership and digital transformation. They consisted of: the principal (AD) as the key informant; one vice-principal (PD); one focal teacher informant (TN); five teachers across subject areas (Teacher-1 to Teacher-5); and three students from grades VIII to IX (Student-1 to Student-3). The combination of roles (leader, coordinator, implementers, and impact recipients) ensured multi-perspective data. A summary of the participant profile is presented in Table 1.

Participants were selected purposively based on direct involvement in school leadership and digital transformation. They consisted of the principal (coded AD) as the key informant; one vice-principal (PD); one focal teacher informant (TN); five teachers across subject areas as supporting informants; and three students from grades VIII–IX. The combination of roles was deliberate: the principal as leader, the vice-principal as coordinator, teachers as implementers, and students as recipients of impact. A summary of the participant profile is presented in Table 1.

Table 2. Instrument Grid Based on Transformational Leadership Dimensions

No	Dimension	Indicators	Technique	Source
1.	Idealized Influence	Exemplary use of technology; clarity of digital vision; consistency of support; integrity in policy enactment	Interview, Observation, Documentation	P, VP, T
2.	Inspirational Motivation	Vision communication; appreciation; encouragement; use of communication media	Interview, Observation	P, VP, T, S
3.	Intellectual Stimulation	Innovation drive; introduction of new methods; sharing culture; instructional reflection	Interview, Observation, Documentation	VP, T
4.	Individualized Consideration	Differentiated mentoring; attention to low-literacy teachers; fairness of digital access; emotional support	Interview, Observation, Documentation	P, T, S

Note. P = Principal; VP = Vice-Principal; T = Teacher; S = Student. Source: Authors (2026), adapted from Bass and Riggio (2006) and Shenering (2019).

Data were collected through three complementary techniques: in-depth interviews, non-participant observations, and document analysis, all conducted with participants' informed consent and with identities protected through participant codes. Semi-structured interviews followed a guide developed from Bass and Riggio's (2006) four dimensions, contextualized with the school digital transformation (Antonopoulou et al., 2021; Berkovich & Hassan, 2025; Schmidt & Mestry, 2023; Sheninger, 2019), and lasted 45 to 75 minutes; sessions were audio-recorded and transcribed verbatim. Non-participant observations covered teacher meetings, technology-mediated classroom activities, and academic supervision. Document review encompassed the school's annual work plan, meeting minutes, training documents, supervision logs, and digital-platform activity archives. The instrument grid is presented in Table 2.

All coding was conducted manually without software assistance, following Saldana's (2021) qualitative coding guide. Open coding was applied to transcripts and field notes clustered by transformational leadership dimension, open codes were then consolidated through focused coding into categories, and finally synthesized into four main themes with sub-themes. Miles et al. (2014) dan Saldaña (2021) Coded data were organized into a theme and sub-theme matrix including participant quotations, data sources, and techniques, enabling traceability of interpretation. Final themes were confirmed through peer debriefing and brief member checking.

Table 3. Trustworthiness Strategies for Qualitative Data

Criterion	Strategy Applied
Credibility	Source triangulation (principal, vice-principal, teachers, students) and method triangulation (interview, observation, documentation); brief member checking on main themes; prolonged engagement of four months.
Transferability	Thick description of the SMPN 10 Bengkulu setting, participant profile, and digital infrastructure to allow readers to judge transferability to similar SMP and MTs contexts.
Dependability	Written audit trail consisting of field notes, verbatim transcripts, code and category logs, and theme versions (v1–v3); researcher recoding with a two-week interval.
Confirmability	Researcher reflexive journal; peer debriefing with supervisors; separation of data description and interpretation in the theme matrix.

Source: Authors (2026), based on Lincoln and Guba (1985).

Instrument validity was strengthened through expert review by two thesis supervisors in educational management, who examined the alignment between indicators and constructs. The review prompted revision of several items to fit the secondary-school context. A readability check was conducted with two non-participant informants to ensure clarity of question structure and wording. To ensure

data quality, the study applied the four trustworthiness criteria of Lincoln and Guba (1985), summarized in Table 3.

Saturation was tracked by recording the number of new codes emerging across interview clusters. Code growth declined sharply after the seventh interview, with virtually no new categories emerging in interviews ten and eleven, as shown in Table 4. The study therefore concludes that saturation was reached at the eleventh participant for all four dimensions.

Table 4. Saturation Trace Across Interview Clusters

Stage	Cumulative Participants	New Codes Emerging	Note
Interviews 1–3	3	37	Initial four-dimension mapping
Interviews 4–6	6	21	Sub-themes stabilize for idealized influence and inspirational motivation
Interviews 7–9	9	6	Only nuance, no new categories on dimensions 1 and 2
Interviews 10–11	11	1	Saturation reached across the four dimensions

Source: Authors (2026).

Data analysis followed the Miles and Huberman interactive model with three concurrent and iterative activities: data reduction, data display, and conclusion drawing and verification (Miles et al., 2014; Saldaña, 2021).. The process began by clustering transcripts and field notes by transformational leadership dimension. In data reduction, the researcher conducted open coding following (Saldaña, 2021) qualitative coding guide, followed by focused coding that grouped codes into categories, and then synthesis into four main themes with sub-themes. In data display, coded data were organized into a theme–sub-theme matrix that included participant quotations, data sources, and techniques, enabling traceability of interpretation. Verification tested theme fit across sources, identified divergent findings, and confirmed final themes through peer debriefing and brief member checking. The full procedure is depicted in Figure 1.

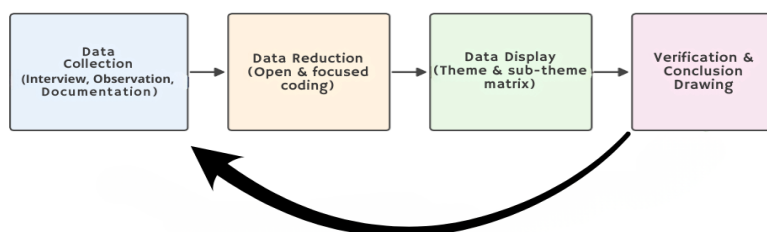


Figure 1. Miles and Huberman Interactive Data Analysis Procedure

Source: Authors (2026), adapted from Miles, Huberman, and Saldaña (2014).

RESULTS AND DISCUSSION

The study involved eleven core participants: the principal (AD), the vice-principal (PD), the focal teacher (TN), five teachers across subject areas (Teacher-1 to Teacher-5), and three grade VIII–IX students (Student-1 to Student-3). Data collection ran for four months, generating eleven verbatim interview transcripts (a total of 187 transcript pages), four cycles of non-participant observation field notes (38 pages), and a corpus of 22 institutional documents covering the school annual plan, meeting minutes, training reports, supervision logs, and digital-platform activity archives. The iterative Miles and Huberman analysis produced 65 open codes, consolidated into 18 focused codes, then organized into 12 sub-themes nested within four main themes. As reported in Table 2 saturation was reached at the eleventh participant. Throughout the four themes, every sub-theme is supported by evidence from at least two of the three data sources (interview, observation, documentation), satisfying the method-triangulation criterion of credibility.

Table 5. Thematic Structure Summary

Theme	Sub-themes	Codes	Participants (n=11)	Data sources
T1. Idealized Influence	1.1 Modeling exemplary technology use; 1.2 Articulating a clear digital vision; 1.3 Sustaining policy consistency through institutional integration	18	11/11	I, O, D
T2. Inspirational Motivation	2.1 Persuasive framing of digital change; 2.2 Public appreciation as recognition ritual; 2.3 Emotional support during technical struggles	16	10/11	I, O, D
T3. Intellectual Stimulation	3.1 Innovation drive in instructional design; 3.2 Structured experimentation with new methods; 3.3 Peer-learning communities of practice	16	9/11	I, O, D
T4. Individualized Consideration	4.1 Differentiated digital mentoring; 4.2 Attention to teachers with low digital literacy; 4.3 Ensuring equitable access to digital resources	15	11/11	I, O, D

Note. I = Interview, O = Observation, D = Documentation. Source: Authors (2026), derived from coded transcripts.

The structure of themes and sub-themes is summarized in Table 5. The summary lists each main theme, its constituent sub-themes, the number of

supporting open codes, the number of participants whose transcripts contributed to each sub-theme, and the data sources that converged for each. The summary deliberately separates description from interpretation, following Lincoln and Guba's (1985) recommendation to make the audit trail visible to readers. The map of theme–sub-theme relationships is then visualized in Figure 1.

Figure 2 presents the thematic map that links the four leadership dimensions to their twelve sub-themes around the central object of inquiry, school digital transformation. The map serves three analytical purposes: it makes the hierarchy of analytical units explicit, it enables readers to trace any interpretive claim back to the relevant sub-theme cluster, and it sets up the integrative discussion by showing the four dimensions as parallel branches that will later be revisited as functionally interdependent components.

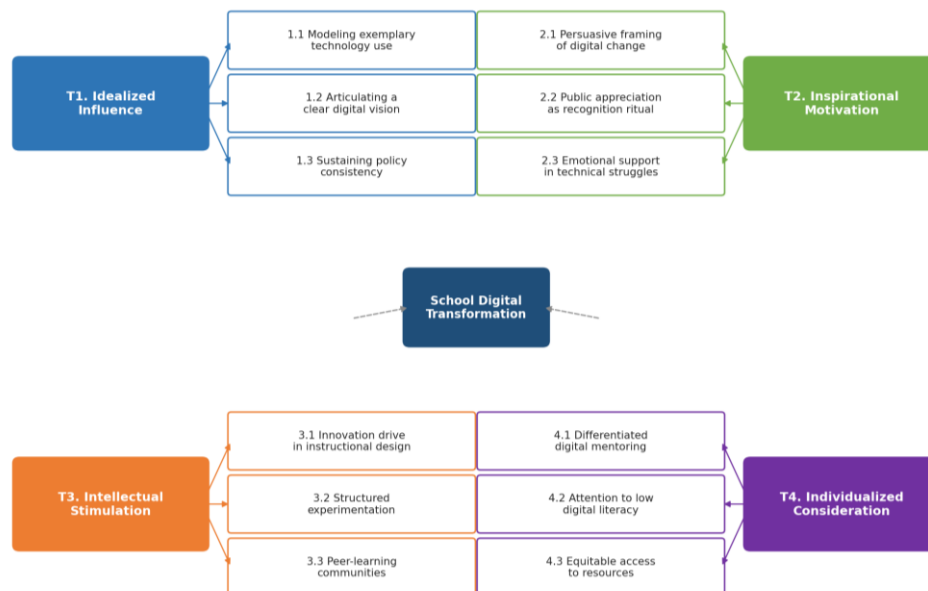


Figure 2. Thematic Map of Four Leadership Dimensions and Twelve Sub-themes

Source: Authors (2026), based on coded data.

1. Idealized Influence as Cultural Foundation

Theme 1 captures the principal's idealized influence as the moral and behavioral architecture that legitimizes digital transformation. All eleven participants contributed to this theme, which decomposed into three sub-themes that each carry a distinctive logic.

Sub-theme 1.1, modeling exemplary technology use, captured the principal's habit of treating technology as a default tool of managerial work. The principal articulated this disposition directly when he described the routinization of digital tools across managerial domains:

"Our principal always uses technology in many activities such as online meetings, school administration applications, and communication via digital

platforms. He often joins technology training together with the teachers. This makes us motivated to learn and use technology in our teaching.” (AD, principal)

Two teachers independently confirmed that this behavior was experienced as a model rather than a directive. Teacher-2 noted that the principal’s presence in routine training ‘removes the wall between the leader and us’, while Teacher-4 emphasized that ‘when the principal himself struggles with a new platform in front of us, the room becomes a learning space, not a rating space.’ Observation field notes from three weekly meetings recorded the principal demonstrating specific applications and sharing his own learning errors, and the school annual plan documented the principal’s monthly facilitation of digital sessions, providing institutional evidence of the same behavior.

Sub-theme 1.2, articulating a clear digital vision, captured the way the principal converted abstract policy into a shared operational direction. TN, the focal teacher informant, described how repeated articulation made the vision a decision-making heuristic rather than a slogan:

“The principal always conveys the school’s digital vision in every meeting and activity. The vision is also socialized through training and discussion. As teachers, we understand the direction we want to achieve and use it as a guide in teaching.” (TN, teacher)

Documentary triangulation reinforced this interpretation: the school annual plan opens with a digital-priority statement and every quarterly programme document references that statement as a justification. Observation in two leadership meetings confirmed that the principal closed both meetings by relating decisions back to the digital-vision frame, signalling vertical alignment from policy to practice.

Sub-theme 1.3, sustaining policy consistency through institutional integration, captured the way support did not fade after initial enthusiasm. Teachers contrasted the present practice with previous experiences where digital programs were ‘launched then forgotten’. PD, the vice-principal, summarized the rhythm of consistency:

“Our principal provides continuous support in using technology. Not only at the beginning, but he also monitors our progress through meetings and supervision. With this support, we feel more enthusiastic and assisted in using technology in our teaching.” (PD, vice-principal)

Procurement records, supervision logs, and minutes from a year-long evaluation cycle confirmed that the principal translated rhetorical commitment into budget allocations, scheduled supervision, and periodic reflective evaluation. Method triangulation across interview, observation, and documentation thus converged on the same finding.

2. Inspirational Motivation as Collective Energy

Theme 2 captures the affective and rhetorical work through which the principal generated collective energy for digital change. Ten of eleven participants contributed

to this theme—the only non-contributor was Student-3, whose interview focused on classroom experience rather than school-level leadership. The theme decomposed into three sub-themes.

Sub-theme 2.1, persuasive framing of digital change, captured the principal's reframing of digital transformation from external pressure to shared moral purpose. Teacher-1 reflected:

“The principal often reminds us that digital learning is for the children. When a teacher tries a new medium, he gives appreciation in the meeting. That is what makes us want to try.” (Teacher-1)

Observation field notes recorded that the principal opened every monthly assembly with a one-minute framing statement linking technology use to student learning, a pattern that PD described as ‘consistent storytelling’. The frequency and patterning of motivational acts mattered as much as their content:

“The principal often gives motivation to teachers to use technology in learning. He gives examples, direction, and appreciation for those who are active. The motivation is not given only once but in many occasions. We become more enthusiastic and confident.” (PD, vice-principal)

Sub-theme 2.2, public appreciation as recognition ritual, captured the deliberate use of public visibility to amplify small wins. Teacher-3 explained that ‘appreciation in front of all teachers means more than a thousand emails’, while Teacher-5 contrasted this with prior years when ‘our progress was invisible’. Documentation included formal certificates, internal newsletter mentions, and structured agenda items labelled ‘*Berbagi Praktik Baik*’ (sharing good practices) in monthly meeting minutes—evidence that recognition was ritualized rather than improvised.

Sub-theme 2.3, emotional support during technical struggles, captured the principal's response to teachers' anxiety about rapid platform turnover. Teacher-4, a senior teacher, reported that ‘when I almost gave up after a Wi-Fi outage in my class, the principal sat with me and said it was a problem we would fix together, not my failure.’ Observation in a supervisory session corroborated this affective stance: the principal spent a fifteen-minute segment listening to a teacher's frustration before suggesting any technical solution.

3. Intellectual Stimulation as Transformation Engine

Theme 3 captures how the principal converted collective energy into innovative pedagogical practice. Nine of eleven participants contributed to this theme; the two non-contributing participants were Student-2 and Student-3, whose perspectives centered on receiving rather than producing pedagogical innovation.

Sub-theme 3.1, innovation drive in instructional design, captured the principal's articulation of innovation as professional necessity rather than optional add-on. PD framed the institutional logic behind this drive:

“The drive for digital instructional innovation in our school emerged from the need to adapt to technological development and to current student characteristics. We have started to apply new methods such as online learning platforms, interactive media, and educational applications.” (PD, *vice-principal*)

The principal’s own framing extended this institutional logic to the cognitive level, treating innovation as a thinking skill:

“I tell teachers that innovation is not the application; it is the way we think about a lesson. The application changes; the way of thinking is what we keep.” (AD, *principal*)

Sub-theme 3.2, structured experimentation with new methods, captured the principal’s active scaffolding of experimentation through micro-pilots. Teacher-3 described a typical pattern: ‘the principal asks two of us to try a new platform for two weeks, then we report what worked, what failed, and what we learned.’ Classroom observations recorded teachers using interactive presentations, short videos, and online quiz applications with varying mastery levels—clear evidence of experimentation rather than imitation.

Sub-theme 3.3, peer-learning communities of practice, captured the institutionalization of innovation through shared learning. Teacher-2 reported that ‘our small group of five teachers meets every Friday to swap one tool we used in the week’, an arrangement that PD described as a deliberate leadership choice to ‘make innovation a team sport, not a personal heroism’. Documentary evidence included minutes of weekly subject-team meetings and screenshots of a school WhatsApp group dedicated to sharing teaching tips.

4. Individualized Consideration as Continuity Mechanism

Theme 4 captures the principal’s personalised attention to the differentiated needs of teachers and the equity of access. All eleven participants contributed, indicating that this theme was the most pervasive in the data.

Sub-theme 4.1, differentiated digital mentoring, captured the principal’s practice of mapping each teacher’s starting point and tailoring the next step. TN articulated this practice from the recipient’s side:

“In digital learning, we recognize differences in capability across teachers. For those with low digital literacy, we provide basic training first. We also try to ensure fairness by giving equal access to digital facilities.” (TN, *teacher*)

Documentary evidence included individual professional development plans for fifteen teachers, each with a current literacy level and a six-month target, as well as a supervision schedule that grouped teachers by literacy band. Observation in two coaching sessions confirmed that the principal began each session by asking the teacher to set the agenda, signalling respect for the teacher’s self-defined starting point.

Sub-theme 4.2, attention to teachers with low digital literacy, captured the destigmatisation of catching up. Teacher-5, a senior teacher, expressed how the

principal's stance reframed her experience: 'I used to feel ashamed for asking a younger colleague to help with WhatsApp. The principal told me asking is the bravest leadership.' The framing matters because it converts a private weakness into a public collegial competence.

Sub-theme 4.3, ensuring equitable access to digital resources, captured leadership attention to the structural conditions of fairness. The principal allocated devices to teachers with no personal access, prioritized classrooms with the weakest Wi-Fi for upgrade in the procurement plan, and set up a small fund for monthly internet subsidies for teachers who needed them. Documentary evidence included the procurement list and the fund disbursement record.

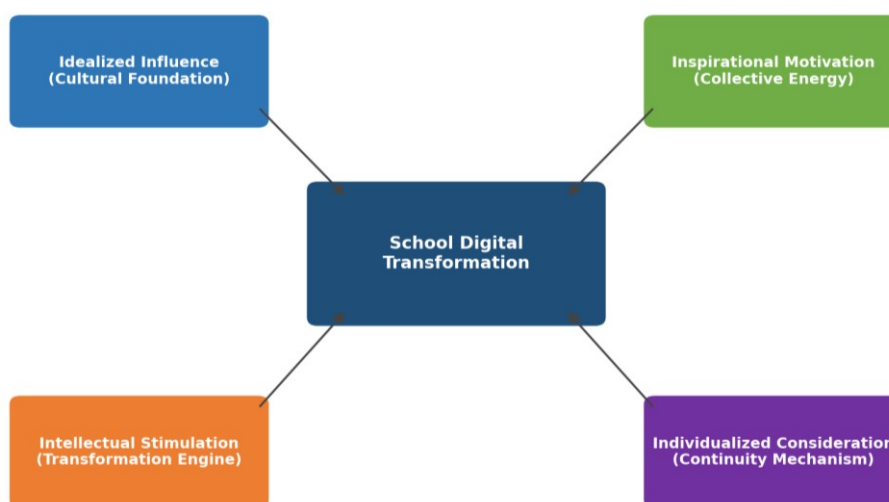


Figure 3. Integrative Foundation–Energy–Transformation–Continuity Model of Principal Transformational Leadership for School Digital Transformation

Source: Authors (2026), based on field data.

The most distinctive contribution of this study is the foundation–energy–transformation–continuity mechanism shown in Figure 3. The mechanism goes beyond a parallel mapping of dimensions and frames the four dimensions as functional components that depend on each other: without a foundation (idealized influence), energy is not legitimized; without energy (inspirational motivation), the transformation engine does not start; without an engine (intellectual stimulation), innovation does not occur; and without a continuity mechanism (individualized consideration), innovation does not last. This configuration enriches digital education leadership scholarship that has frequently treated these dimensions in a fragmented manner.

Theme 1 functions as the cultural foundation of school digital transformation. The three sub-themes echo Sheneringer's (Sheneringer, 2019) construct of digital leadership as a principal's reflective and visible technology use, while also extending Karakose, Polat, and Papadakis's (Karakose et al., 2021) post-pandemic evidence by clarifying the local mechanisms—modeling, vision-articulation, and sustained policy

follow-through—that translate digital leadership into teachers’ trust. Read through an institutional-theory lens, the three sub-themes operate as legitimacy-conferring acts that align cognitive, normative, and regulative pressures within the school, an alignment that Banoğlu, Vanderlinde, Çetin, and Aesaert (Banoğlu et al., 2023) identify as a precondition for learning-organization culture in K–12 settings.

Theme 2 operates as the collective-energy mechanism that mobilizes Theme 1’s legitimacy into willingness to act. The findings resonate with Berkovich and Bogler’s (Berkovich & Bogler, 2021) evidence that effective school leadership influences teachers’ organizational commitment through socio-affective and psychological-capital pathways, and align with Antonopoulou, Halkiopoulou, Barlou, and Beligiannis’s (Antonopoulou et al., 2021) report of a strong positive correlation between transformational leadership and the implementation of digital leadership. Importantly, the data show that inspirational motivation gains credibility only when grounded in the visible exemplary behavior described in Theme 1, suggesting a directional dependency that the integrative model will make explicit.

Theme 3 functions as the transformation engine that converts willingness into adaptive capacity. The findings are consistent with Schmitz, Antonietti, Consoli, Cattaneo, Gonon, and Petko’s (Schmitz et al., 2023) evidence that transformational leadership encourages more demanding technology use rather than mere frequency of use, and with Bellibaş, Kılınç, and Polatcan’s (Bellibaş et al., 2021) demonstration that transformational leadership moderates the effect of instructional leadership on teachers’ instructional practice. Read through the TPACK lens (Mishra & Koehler, 2006), the three sub-themes operate at distinct knowledge intersections: 1.1 at TK (technological knowledge), 1.2 at TPK (technological-pedagogical knowledge), and 1.3 at the collegial-social layer that Hasanah’s (2023) study of MA Al Irtiqo’ IBS identifies as the smart-learning ecosystem condition for sustained pedagogical change (Hasanah, 2023).

Theme 4 operates as the continuity mechanism that prevents digital transformation from becoming a two-tier process between the digitally fluent and the digitally lagging. The findings extend the work of Banoğlu et al. (2023) on the importance of leadership sensitivity to teacher capability differences, and reinforce the conclusions of Sholeh, Kholis, and Mufidah (2022) and Riyanto (2024) on madrasah principals’ role in integrating quality assurance with digital leadership. Considered through a sociotechnical lens, the three sub-themes reveal that digital transformation is not only a problem of devices but a problem of distribution of attention, of opportunity, and of dignity (Banoğlu et al., 2023; Riyanto, 2024; Sholeh et al., 2022). This redefinition matters because it moves educational management beyond the reductionist view that treats digital transformation as a purely technical undertaking (Berkovich & Hassan, 2025; Cortellazzo et al., 2019; Lin, 2024; Tigre et al., 2023a; Zhu et al., 2025).

Cross-theme analysis indicates that the four transformational leadership dimensions do not operate in isolation but mutually reinforce one another in shaping the school's digital ecosystem. Theme 1 supplies cultural legitimacy; Theme 2 builds collective energy; Theme 3 converts that energy into innovative practice; and Theme 4 secures equity and continuity. The pattern is articulated in Figure 2 as a foundation–energy–transformation–continuity (FETC) mechanism that emerged inductively from the data and represents the study's primary theoretical contribution. The mechanism advances prior literature that often treats the four dimensions as a parallel list (Sliwka et al., 2024).

Three directional dependencies in the FETC mechanism warrant explicit articulation. First, Theme 2 (energy) gains credibility only when anchored in Theme 1 (foundation): without visible exemplary behavior, motivational rhetoric is experienced as bureaucratic compliance. Second, Theme 3 (transformation) converts energy into adaptive capacity only when leaders provide structured experimentation rather than exhortation alone, suggesting that intellectual stimulation is best understood as a scaffolding practice rather than a speech act. Third, Theme 4 (continuity) prevents Theme 3 from stratifying the staff into early adopters and laggards, indicating that individualized consideration acts as the equity guarantor without which transformation hollows out.

Although the majority of participants described the positive impact of transformational leadership, three divergent experiences delineate the boundary conditions of the FETC mechanism. First, two teachers reported that recurring internet limitations and student-device capacity gaps in certain weeks blocked the translation of leadership inspiration into immediate classroom practice—revealing that Theme 3 (transformation) requires a baseline of material infrastructure that leadership alone cannot supply. Second, Teacher 4, a senior teacher, expressed anxiety about the rapid platform turnover, signalling that Theme 4 (continuity) must extend to managing the cognitive load of repeated tool changes, not only initial onboarding. Third, two students reported that some classroom routines remained traditional even when their teachers had attended digital training indicating a translation gap between teacher learning and classroom practice that points to a possible missing mediating mechanism in the model. These divergent findings do not invalidate the FETC mechanism; rather, they specify the conditions under which its components are effective and open productive directions for future testing.

Practically, the findings imply three concrete actions. First, for school principals, the development of digital leadership should be designed as an integrated package across the four dimensions rather than as separate exercises. Principals can audit their own leadership profiles using four diagnostic questions derived from the model: (a) am I displaying exemplary behavior and a clear vision; (b) am I building collective energy; (c) am I providing space and encouragement for innovation; and (d) am I ensuring differentiated consideration? Second, for district education offices, principal

training in regions at the early stage of digitalization should adopt the integrative mechanism as a diagnostic frame for training needs, so that interventions are not concentrated on a single dimension. Third, for national policymakers, regulations on principal workload should provide sufficient time for personal mentoring, since the individualized consideration that determines continuity is most easily eroded when principals are submerged in administrative tasks.

Although the study is conducted in a state secular school, the integrative mechanism offers transferable insights for leadership in Islamic educational institutions, particularly Madrasah Tsanawiyah, Madrasah Aliyah, and modern pesantren. Sholeh, Kholis, and Mufidah (Sholeh et al., 2022) demonstrated that madrasah principals play an equivalent digital leadership role in integrating technology, while Riyanto (Riyanto, 2024) emphasized that digital leadership in Islamic institutions is most effective when integrated with quality assurance mechanisms. Hasanah (2023), in a study at MA Al Irtiqo' IIBS Malang published in *Evaluasi: Jurnal Manajemen Pendidikan Islam*, specifically described how madrasah principals build a smart learning ecosystem through staged innovation strategies that mirror the transformation engine identified in our model. Umar et al (2024) in their article confirmed that Bass's four dimensions retain their explanatory power in pesantren contexts oriented toward entrepreneurial transformation. In the pesantren context, Digital transformation requires leadership capable of bridging technology with religious values and scholarly tradition. Three implications can be drawn for madrasah and pesantren leaders. First, idealized influence in Islamic contexts can be strengthened through the value of *uswah hasanah* in technology use, so that exemplary behavior is moral as well as technical. Second, individualized consideration in madrasah needs to take into account the wider range of teacher backgrounds, which often exhibit a broader spread of digital literacy than urban state schools. Third, the continuity mechanism can be supported by integrating Ministry of Religious Affairs programs such as Madrasah Digitalization to avoid overlapping workload for the madrasah principal (Lin, 2024; Sliwka et al., 2024; Tigre et al., 2023; Zhu et al., 2025).

Several limitations should be acknowledged. First, the study was conducted at a single school, so transferability of findings to other contexts requires careful judgment and further testing through multi-case studies. Second, the four-month data collection, while sufficient for saturation across the four dimensions, did not allow observation of a full organizational change cycle. Third, the perspectives of parents and the school committee were not included, although they may shape perceptions of digital transformation success. Fourth, researcher reflexivity remains a potential source of bias, partly mitigated through the reflexive journal and peer debriefing.

Future research can extend the present findings in several directions. First, multi-case studies across SMPs and MTs in different regions can test the consistency

of the proposed foundation, energy, transformation and continuity mechanism. Second, mixed-methods designs that combine quantitative instruments based on the four dimensions with digital leadership measures (Antonopoulou et al., 2021; Karakose et al., 2021) can examine the strength of the relationships between each dimension and digital transformation outcomes. Third, longitudinal studies can map the dynamics of transformational leadership across the change cycle, including when the school enters a digitally mature phase. Fourth, exploring the perspectives of students and parents as ultimate beneficiaries can deepen understanding of learning outcomes from principal-led digital transformation.

CONCLUSION

This study concludes that the principal of SMPN 10 Bengkulu drives school digital transformation through four transformational leadership dimensions that operate synergistically as a foundation–energy–transformation–continuity mechanism. Idealized influence acts as the cultural foundation through exemplary behavior, vision clarity, and policy consistency; inspirational motivation builds collective energy through persuasive communication, appreciation, and emotional support; intellectual stimulation drives innovation through training, collaboration, and experimentation; and individualized consideration sustains continuity through equitable differentiated mentoring. The integrative configuration, formulated as a model in Figure 3, constitutes the study’s primary novelty and offers a practical reference for principals, madrasah leaders, and policymakers in designing adaptive and inclusive school digital transformation strategies. Beyond its practical contribution, the model enriches the literature on transformational leadership by demonstrating how leadership dimensions interact dynamically to support technology adoption and organizational change in educational settings. We recommend further multi-case and mixed-methods research to test the mechanism in diverse Indonesian contexts, including Islamic educational institutions where the Madrasah Digitalization agenda is currently being implemented. Future studies may also examine the long-term impact of this leadership model on teacher digital competence, student learning outcomes, and institutional sustainability in the digital era.

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