

Transformational Leadership of School Principals in Enhancing Teachers' ICT Competence in Primary Schools of Banjarharjo, Brebes

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Abstract : This study examines the application of transformational leadership by headteachers in improving teachers' ability to use information and communication technology (ICT) in two public primary schools in Banjarharjo District, Brebes Regency. A qualitative descriptive design was employed using a structured checklist completed by 16 teachers and in-depth interviews with two headteachers, four subject teachers, four school committee members, and ten pupils. The results indicate that transformational leadership behaviour was perceived at a high level, with a mean score of 81.3%. Idealised influence achieved the highest score at 93.8%, whereas intellectual stimulation was the lowest at 68.8%. Teachers' ability to use ICT was moderate, averaging 59.4%, with digital device operation as the strongest indicator (75.0%) and participation in continuing ICT training as the weakest (43.8%). These findings suggest that transformational leadership encourages teachers' readiness to adopt technology, but requires structured mentoring, peer learning communities, and sustained ICT training.

Keywords : Transformational Leadership; ICT Competence; School Principal; Primary School; Digital Literacy

Abstrak : Penelitian ini mengkaji penerapan kepemimpinan transformasional kepala sekolah dalam meningkatkan kemampuan guru memanfaatkan teknologi informasi dan komunikasi (TIK) di dua sekolah dasar negeri di Kecamatan Banjarharjo, Kabupaten Brebes. Penelitian menggunakan desain deskriptif kualitatif dengan daftar cek terstruktur yang diisi 16 guru serta wawancara mendalam dengan dua kepala sekolah, empat guru mata pelajaran, empat pengurus komite sekolah, dan sepuluh siswa. Hasil menunjukkan bahwa perilaku kepemimpinan transformasional berada pada kategori tinggi dengan rerata 81,3%. Dimensi pengaruh ideal memperoleh skor tertinggi sebesar 93,8%, sedangkan stimulasi intelektual terendah sebesar 68,8%. Kemampuan guru dalam memanfaatkan TIK berada pada kategori sedang dengan rerata 59,4%, dengan pengoperasian perangkat digital sebagai indikator tertinggi (75,0%) dan partisipasi pelatihan TIK berkelanjutan sebagai indikator terendah (43,8%). Temuan ini menunjukkan bahwa kepemimpinan transformasional mendorong kesiapan guru mengadopsi teknologi, tetapi belum sepenuhnya diikuti pendampingan teknis yang berkelanjutan. Oleh karena itu, diperlukan pembinaan terstruktur, komunitas belajar sejawat, dan pelatihan TIK berkelanjutan.

Kata Kunci : *Kepemimpinan Transformasional; Kompetensi TIK; Kepala Sekolah; Sekolah Dasar; Literasi Digital*

INTRODUCTION

School quality in Indonesia is commonly measured against the fulfilment of the National Education Standards, yet in the last three years the benchmark has quietly shifted toward how well schools embed information and communication technology (ICT) into daily instruction and administration. Elementary schools located outside major urban centres, including those in Banjarharjo District, Brebes Regency, face this shift with uneven starting points: some teachers move comfortably between projectors, learning applications, and online assessment platforms, while others remain anchored to lecture based routines inherited from earlier training. Closing that gap is rarely a matter of purchasing hardware, it depends far more on how principals lead the people who are expected to use it.

Transformational leadership offers a useful lens for this problem because it treats change as a relational process rather than a directive one. Bass and Avolio (1994) describe transformational leaders as individuals who raise followers awareness of the value of designated outcomes and induce them to transcend self interest for the sake of the organisation, a description that maps closely onto what principals are asked to do when persuading veteran teachers to adopt unfamiliar digital tools. Leithwood and Jantzi (2000) tested this proposition empirically across nearly 1,800 teachers and found that transformational practices shape organisational conditions and, indirectly, student engagement, even though the direct effects on achievement are comparatively modest. The implication for this study is that principal leadership should be examined not only for its effect on morale but for whether it actually converts into changed classroom practice.

Evidence from the ARMADA journal itself illustrates how uneven this conversion can be across Indonesian schools. Trianggoro and Ansori (2024) found that a madrasah head's managerial competence in fulfilling the eight National Education Standards was constrained specifically by the unoptimised use of information technology in the learning process standard, despite the head's otherwise strong planning and supervision practices. Yusuf et al. (2023) reported a similar pattern in Makassar, where a principal's entrepreneurial competence translated into visible institutional achievement, yet the innovation capacity that made this possible depended heavily on the principal's personal initiative rather than a systematic staff development mechanism. Read together, these studies suggest that leadership intention and technology outcomes do not automatically move in step, the mechanism that links them deserves closer inspection at the primary school level.

Teachers' technology competence is itself multidimensional. Mishra and Koehler (2006) argue, through the Technological Pedagogical Content Knowledge (TPACK) framework, that effective use of digital tools requires an integration of technological, pedagogical, and content knowledge rather than isolated device familiarity. A teacher who can operate a laptop is not automatically able to design a lesson that uses that laptop meaningfully, nor to use it for assessment and record keeping. Prensky (2001) further observes that many teachers are, in his terms, digital immigrants who continue to think and instruct in pre digital patterns even after adopting digital tools, which helps explain why device ownership and confident pedagogical integration are frequently reported at different levels within the same school.

Recent studies published in ARMADA : Jurnal Penelitian Multidisiplin reinforce this distinction between access and competence. Lahanika et al. (2026) surveyed Indonesian language teachers in a coastal elementary school and found that, although the school possessed adequate digital facilities and teachers reported high student engagement gains, internet access stability remained the weakest link, underscoring that infrastructural readiness does not automatically guarantee pedagogical readiness. In a related vein, Arfanaldy et al. (2025) argue that transformational leaders function best as facilitators of change rather than as policy enforcers, a distinction relevant to how principals in Banjarharjo choose to introduce technology related expectations to their staff. Meanwhile, Riyan Yulianti et al. (2026) demonstrate, using regression analysis among elementary teachers in Banyuasin, that work motivation exerts a stronger influence

on teacher performance than financial incentives alone, which lends support to the idea that motivational leadership behaviour, not compliance mechanisms, is what ultimately drives sustained professional change.

Within Kecamatan Banjarharjo, SD Negeri Cikakak 02 and SD Negeri Dukuhjeruk 03 present a useful contrast. Institutional performance data drawn from the national Rapor Pendidikan for 2024-2025 place Cikakak 02 consistently ahead of Dukuhjeruk 03 on indicators of learning quality and instructional leadership, even though both schools serve communities with broadly similar socio economic profiles rooted in agriculture and informal labour. This divergence, rather than a simple resource gap, is what motivates the present inquiry: if two schools with comparable external constraints produce different outcomes, the difference plausibly lies in how each principal exercises leadership day to day, particularly around the adoption of digital tools for teaching. Mulyasa (2021) contends that principals who function as learning organisation builders are more likely to normalise continuous skill development among staff, while Sagala (2019) adds that strategic, mutu oriented management requires innovation to be embedded structurally rather than left to individual enthusiasm.

Building on this body of work, the present study investigates how principals' transformational leadership behaviour is perceived by teachers at the two schools, how that perception relates to teachers' self reported ICT utilisation competence, and where the practical gap between leadership intention and technical capability is most pronounced. The findings are intended to inform not only the two schools studied but also the broader cluster of rural elementary schools working under Kurikulum Merdeka, where digital adoption is expected but rarely accompanied by a clear coaching structure.

RESEARCH METHOD

This study used a qualitative descriptive design, chosen because the object of inquiry, the way transformational leadership is enacted and perceived in daily school life, is better captured through narrative and contextual detail than through inferential statistics alone. To give the qualitative findings a clearer empirical anchor, the descriptive design was combined with a structured indicator checklist, a mixed strategy consistent with the document and observation based instruments commonly used in ARMADA published school leadership studies (Trianggoro & Ansori, 2024; Yusuf et al., 2023).

The research was conducted at SD Negeri Cikakak 02 and SD Negeri Dukuhjeruk 03, both located in Kecamatan Banjarharjo, Kabupaten Brebes, between April and May 2026. The two schools were selected purposively because their 2024-2025 Rapor Pendidikan scores on learning quality and instructional leadership indicators diverge noticeably despite comparable community characteristics, making them a productive pair for comparison.

Informants were selected through purposive sampling and comprised two principals, twelve homeroom teachers, four subject teachers, four school committee members, and ten sixth grade students, for a combined total of thirty two informants. The sixteen homeroom and subject teachers (nine from Cikakak 02 and seven from Dukuhjeruk 03) additionally completed a structured checklist covering eight closed indicators, four describing perceived transformational leadership behaviour and four describing self reported ICT utilisation competence, scored on a Ya/Tidak basis and converted into percentages following the formula $P = (f/n) \times 100\%$, with categories of 0-20% very low, 21-40% low, 41-60% moderate, 61-80% high, and 81-100% very high.

Data were collected through in depth interviews, non-participant observation of classroom and administrative routines, document review of school planning and ICT related records, and the structured checklist described above. Interview guides and observation sheets followed the same coding structure used in the school's internal instrument bank (W.KS, W.GK, W.GMP, W.KoS, W.S), which allowed triangulation between what principals reported intending to do and what teachers and students described experiencing.

Qualitative data were analysed using the interactive model of data reduction, data display, and conclusion drawing/verification, carried out iteratively rather than only after data collection ended (Sugiyono, 2022; Moleong, 2017). Checklist data were tabulated in a spreadsheet, cross tabulated by school, and presented alongside the qualitative narrative so that the numeric pattern

could be interpreted in light of what informants actually said in interviews, rather than read as a stand alone statistical result.

RESULTS AND DISCUSSION

Results are presented in two parts. The first summarises how teachers perceived their principals' transformational leadership behaviour across four dimensions; the second summarises teachers' self-reported ICT utilisation competence. Both are then read together to identify where leadership intention and technical capability diverge. Table 1 presents the composition of the sixteen teacher-respondents who completed the structured checklist.

Table 1. Composition of Teacher-Respondents

School	Teachers (n)	Homeroom / Subject	Mean Teaching Experience
SD Negeri Cikakak 02	9	7 / 2	12.4 years
SD Negeri Dukuheruk 03	7	5 / 2	9.8 years
Total	16	12 / 4	11.3 years

Source: Field data, April-May 2026

Table 2 presents teachers' perception of their principals' transformational leadership behaviour, disaggregated by school and by the four dimensions adapted from Bass and Avolio (1994).

Table 2. Teachers' Perception of Principals' Transformational Leadership Behaviour

Indicator	Cikakak 02 (n=9)	Dukuheruk 03 (n=7)	Combined (N=16)	Category
Idealized influence (keteladanan)	100.0%	85.7%	93.8%	Very High
Inspirational motivation	88.9%	71.4%	81.3%	High
Intellectual stimulation (digital innovation)	77.8%	57.1%	68.8%	High
Individualized consideration	88.9%	71.4%	81.3%	High
Mean	88.9%	71.4%	81.3%	High

Source: Structured checklist and interview triangulation, April-May 2026

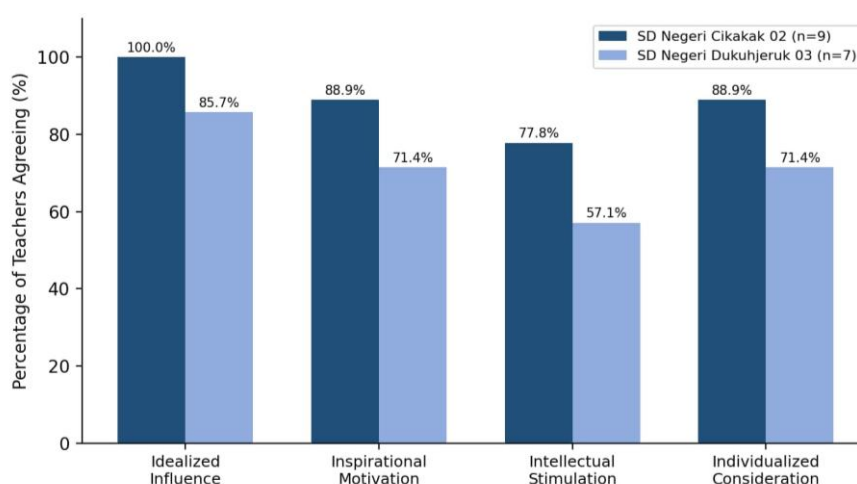


Figure 1. Teachers' Perception of Principals' Transformational Leadership Dimensions

Source: Processed field data, 2026

Across both schools, teachers rated idealized influence highest, with all nine respondents at Cikakak 02 and six of seven at Dukuheruk 03 describing their principal as consistently punctual,

disciplined, and personally engaged in classroom visits. Several teachers, when asked to elaborate during interviews, pointed specifically to the principal's habit of attending morning briefings and modelling the use of a tablet during supervision rather than merely instructing staff to do the same, a pattern consistent with Leithwood and Jantzi's (2000) observation that transformational effects operate most reliably through the affective and relational dimension before they reach behavioural change.

Intellectual stimulation, the dimension most directly tied to encouraging digital innovation, scored lowest at both schools and fell to 57.1% at Dukuheruk 03. Teachers there described receiving general encouragement to "try new things" without a corresponding structure for follow up, workshops, or peer mentoring, which mirrors the constraint Trianggoro and Ansori (2024) identified in their study of a madrasah head whose otherwise capable managerial practice was undercut by the unoptimised application of information technology within the learning process standard. This dimension is the clearest early signal of the leadership to competence gap explored further below. Table 3 presents teachers' self reported ICT utilisation competence across the same two schools.

Table 3. Teachers' ICT Utilization Competence Indicators

Indicator	Cikakak 02 (n=9)	Dukuheruk 03 (n=7)	Combined (N=16)	Category
Digital device operation	88.9%	57.1%	75.0%	High
ICT integration in lesson planning	66.7%	42.9%	56.3%	Moderate
ICT use for assessment / administration	77.8%	42.9%	62.5%	High
Participation in continuing ICT training	55.6%	28.6%	43.8%	Moderate
Mean	72.2%	42.9%	59.4%	Moderate

Source: Structured checklist and document review, April-May 2026

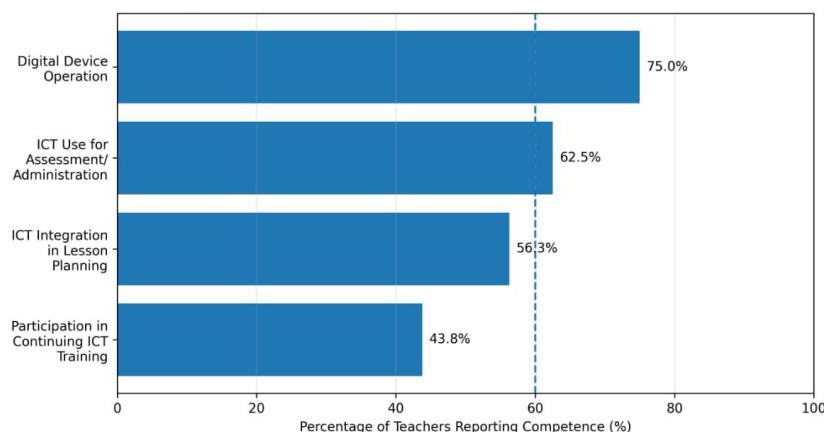


Figure 2. Teachers' ICT Utilization Competence Indicators (N=16)

Source: Processed field data, 2026

Device operation was the strongest competence indicator (75.0% combined), which is unsurprising given that most teachers already own a personal smartphone and have used video conferencing applications since the pandemic period. Participation in continuing ICT training, by contrast, was the weakest indicator overall (43.8%) and dropped to 28.6% at Dukuheruk 03, where several teachers reported that the last workshop they attended predated the current curriculum cycle. This pattern is consistent with Mishra and Koehler's (2006) argument that operational familiarity with a device does not equate to the pedagogical and content integration knowledge that TPACK identifies as the harder to acquire component of technology competence.

ICT integration into lesson planning also lagged behind device operation, at 56.3% combined and only 42.9% at Dukuhjeruk 03. In interviews, several homeroom teachers explained that they used digital slides for presentation but continued to write lesson plans in the same format used before the school owned a projector, describing the technology as an addition to, rather than a redesign of, their teaching method. This distinction echoes Prensky's (2001) characterisation of digital immigrant teaching, in which new tools are absorbed into old instructional habits rather than reshaping them. To make the relationship between leadership behaviour and technology competence explicit rather than implicit, Table 4 synthesises the four transformational leadership dimensions against the ICT competence indicator each was most consistently linked to during interview triangulation, together with a qualitative rating of how strongly the interview evidence supported that linkage.

Table 4. Synthesis of Transformational Leadership Dimensions and Their Linkage to ICT Competence

Leadership Dimension	ICT Competence Indicator Most Affected	Direction of Linkage (Interview Evidence)	Evidence Strength
Idealized Influence	Digital Device Operation	Principals modelling device use during supervision normalised routine handling of digital tools among teachers.	High
Inspirational Motivation	ICT Use for Assessment / Administration	Verbal encouragement raised teachers' willingness to try e assessment, but follow through varied by school.	High
Intellectual Stimulation	ICT Integration in Lesson Planning	Encouragement to innovate was rarely paired with structured follow up, limiting redesign of lesson plans.	Moderate
Individualized Consideration	Participation in Continuing Training	Personal attention to teachers' needs was reported, but scheduled coaching or training access remained inconsistent.	Moderate

Source: Cross tabulation of checklist results with interview and observation triangulation, 2026

The synthesis in Table 4 indicates that the two dimensions most visible to teachers on a daily basis, idealized influence and inspirational motivation, are also the two most strongly linked to competence outcomes, while the two dimensions that require deliberate structural follow through, intellectual stimulation and individualized consideration, show only a moderate linkage. This distinction sharpens the diagnosis: teachers are willing and motivated, but the organisational scaffolding that would convert willingness into sustained technical skill, recurring coaching tied to intellectual stimulation, and individualised training access tied to individualized consideration, is the weaker link in the chain.

Reading Tables 2 and 3 together shows a consistent pattern: leadership perception averaged 81.3% (high), while ICT competence averaged 59.4% (moderate), a gap of roughly twenty-two percentage points that held at both schools even though the absolute scores differed. At Dukuhjeruk 03, where leadership scores were already lower, the competence gap widened further, suggesting that weaker intellectual stimulation and individualized consideration compound rather than merely coincide with weaker technology competence. This mirrors Riyan Yulianti *et al.* (2026) finding that work motivation, which transformational leadership is meant to cultivate, exerts a stronger influence on teacher performance than financial or structural incentives in isolation, motivating teachers appears necessary but, on its own, not sufficient to build technical skill.

Interviews with both principals reinforce this reading. Both described actively encouraging teachers to use digital tools and both could recite the school's device inventory in detail, yet neither could describe a scheduled, recurring coaching mechanism comparable to a teacher learning

community, support was described as available on request rather than built into the school calendar. This is broadly consistent with Arfanaldy et al. (2025) argument that transformational leaders are most effective when they act as facilitators who build structures for continued growth, not only as inspirational figures, and it points to the specific mechanism, structured and recurring technical mentoring, that appears to be missing at both schools, more acutely at Dukuhjeruk 03.

The school-committee and student interviews add a complementary layer. Committee members at both schools were generally aware of the principal's efforts to encourage technology use but had limited visibility into how consistently it translated into classroom practice, while students, particularly at Cikakak 02, described specific instances of watching short instructional videos or using a quiz application, corroborating the higher ICT competence scores recorded for that school. Consistent with Lahanika et al. (2026), who found that ICT facility ownership alone reached very high adoption while sustained connectivity remained the binding constraint in a different regional context, the constraint identified here is less about facility ownership and more about the continuity of professional support that turns ownership into confident, integrated practice.

Taken together, the checklist results, the synthesis in Table 4, and the interview evidence converge on a single explanatory sequence rather than a set of unrelated findings. Figure 3 sets out this sequence as a conceptual model: transformational leadership behaviour first builds teacher motivation, motivation then determines how consistently teachers engage in ICT utilisation, and the depth of that utilisation, not mere access to devices, is what ultimately shapes the quality of digital teaching observed in the classroom. The model is consistent with Bass and Avolio's (1994) original premise that transformational leadership operates through follower motivation rather than direct instruction, and it clarifies why the two schools in this study, despite sharing a similarly motivating leadership style, arrived at different levels of digital teaching quality: the middle link, sustained ICT utilisation, was reinforced more consistently at Cikakak 02 than at Dukuhjeruk 03.



Figure 3. Conceptual Model Linking Transformational Leadership to Digital Teaching Quality
Source: Synthesised from study findings, 2026

This model carries a practical implication for both schools: interventions aimed only at the top of the sequence, for instance a one off motivational address to staff, are unlikely to move the bottom of the sequence unless the middle link is deliberately strengthened through recurring, structured ICT mentoring. This is precisely the gap identified in Table 4 and discussed throughout this section, and it forms the basis for the recommendations presented in the following section

CONCLUSION AND SUGGESTIONS

Principals at both SD Negeri Cikakak 02 and SD Negeri Dukuhjeruk 03 are perceived by their teachers as transformational leaders, most strongly on the dimension of idealized influence and least strongly on intellectual stimulation directed toward digital innovation. Teachers' ICT utilisation competence sits at a moderate overall level, anchored by confident device operation but held back by limited integration of technology into lesson planning and by infrequent participation in continuing training. The consistent gap between high leadership perception and moderate technology competence, more pronounced at Dukuhjeruk 03 than at Cikakak 02, indicates that motivational and exemplary leadership behaviour has not yet been fully converted into a structured mechanism for technical skill-building.

Three recommendations follow from these findings. First, principals should formalise intellectual stimulation around technology into a recurring activity, such as a monthly peer teaching session or a rotating technology mentor role among staff, rather than leaving digital innovation to individual initiative. Second, district level supervisors (Korwilcamsatpendik) should prioritise continuing ICT training for schools showing lower baseline scores, using indicators such as those presented in Table 3 to target support where it is most needed rather than distributing training uniformly. Third, future research should extend this checklist supported qualitative design to a larger number of schools within Kecamatan Banjarharjo to test whether the leadership competence gap identified here holds at a broader scale, and should consider following individual teachers over time to observe whether structured mentoring narrows the gap.

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