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The Effectiveness of the Empowerment Roles of School Heads in the Utilization of the Technology Enhanced Instruction in the Public Junior High Schools in Tagkawayan Districts I And II, Division of Quezon

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ABSTRACT

This study examined school-head empowerment roles and their perceived effectiveness in supporting technology-enhanced instruction in public junior high schools in Tagkawayan Districts I and II, Division of Quezon, during School Year 2025–2026. A descriptive-evaluative comparative survey involved 355 teachers from an enumerated district frame of 165 teachers in District I and 190 in District II. A validated researcher-made questionnaire assessed five leadership domains—visionary leadership, capacity building, instructional supervision, access to technological resources, and mentorship—and five perceived-effectiveness domains. Weighted means, ranks, and Wilcoxon–Mann–Whitney procedures were used at α=.05. Empowerment roles were Very Much Evident overall (M=4.67), with mentorship highest (M=4.70) and visionary leadership lowest (M=4.65). District rank distributions differed for visionary leadership (z=2.25, p=.0122), capacity building (z=1.89, p=.0294), instructional supervision (z=2.23, p=.0129), and access to technological resources (z=2.15, p=.0158), but not for mentorship (z=.31, p=.3783). Perceived effectiveness was also Very Much Evident (M=4.72), led jointly by teacher motivation and job satisfaction and innovation and openness to change (both M=4.73). None of the five perceived-effectiveness domains differed significantly between districts (|z|=.04–1.58, p=.0571–.4840). The findings support a district-wide digital-leadership framework that preserves strong mentoring while strengthening strategic vision, feedback-rich supervision, maintenance systems, teacher autonomy, and learner-centered uses of technology. Because the outcomes are perceptual, implementation evidence and learner-level measures are required before causal effectiveness claims are made.

1. Introduction

Technology-enhanced instruction is most educationally valuable when digital tools are selected in response to curriculum goals, learner needs, and sound pedagogy. Devices and platforms alone do not transform teaching; their contribution depends on how teachers combine subject knowledge, pedagogical judgment, assessment, interaction, and technology. The technological pedagogical content knowledge framework makes this interdependence explicit by positioning technology as one component of an integrated instructional decision (Mishra & Koehler, 2006).

School leadership shapes the organizational conditions in which such decisions become possible. Leaders articulate purpose, allocate resources, establish expectations, protect time for professional learning, and create routines for observation, feedback, and collaborative inquiry. Research on technology leadership consequently emphasizes a combination of direction setting, capacity development, access, instructional support, and monitoring rather than a narrow focus on equipment procurement (Dexter & Richardson, 2020; Sheninger, 2019).

A coherent digital education ecosystem also requires reliable connectivity, appropriate content, data governance, technical support, and sustained teacher development. The OECD (2023) distinguishes digital transition from genuine transformation: technology may merely reproduce conventional teaching unless organizational and pedagogical processes are redesigned. UNESCO (2023) similarly argues that educational technology should be appropriate, equitable, evidence-informed, and sustainable, with learner interests at the center.

In the Philippine basic-education system, school heads exercise substantial responsibility for school-level planning and implementation under the Governance of Basic Education Act. The Enhanced Basic Education Act and the Basic Education Development Plan 2030 further foreground quality, inclusion, relevance, and system capacity (Department of Education, 2022; Republic Act No. 9155, 2001; Republic Act No. 10533, 2013). Connectivity policy expands the enabling environment, but meaningful use still depends on local leadership, infrastructure, and teacher readiness (Republic Act No. 10929, 2017).

The concept of empowerment is therefore operational rather than rhetorical. Teachers are empowered when they receive clear goals, access to usable tools, responsive assistance, opportunities to build competence, permission to experiment, constructive feedback, and meaningful participation in professional decisions. Mentoring and professional learning communities can reduce anxiety and make expertise visible, while instructional supervision helps ensure that technology use remains aligned with standards and learner evidence.

The two Tagkawayan districts operate within a common national and divisional policy environment but differ in school context, resource access, staffing, geography, and implementation routines. A pooled mean can establish a useful baseline, yet it can also conceal differences in how priorities are ordered. Comparing district rank distributions helps identify domains that may require differentiated support while preserving shared standards.

Perception data must nevertheless be interpreted with restraint. A favorable rating indicates that a practice was frequently observed or positively assessed; it does not by itself demonstrate improved achievement, engagement, or instructional quality. Claims of effectiveness require triangulation with technology-use logs, classroom observations, teacher artifacts, implementation fidelity, and learner outcomes. The present analysis therefore treats effectiveness as perceived contribution rather than as a causal effect.

1.1 Research Purpose and Analytical Focus

The study profiled five empowerment-role domains of public junior high school heads: visionary leadership, capacity building, instructional supervision, access to technological resources, and mentorship. It also assessed five perceived outcomes: technology integration in teaching, teacher confidence and competence, motivation and job satisfaction, collaboration and professional learning, and innovation and openness to change.

The analytical objectives were to summarize each domain, compare the rank distributions of Districts I and II, identify practical strengths and developmental gaps, and translate the evidence into a policy and implementation framework for technology-enhanced instruction. Statistical decisions were based on the reported z and probability values rather than on inconsistent narrative labels elsewhere in the results.

1.2 Conceptual and Empirical Synthesis

The framework treats digital leadership as a connected implementation system. Vision establishes purpose; capacity building develops teacher knowledge; instructional supervision connects practice to curriculum and evidence; resource leadership makes tools available and functional; and mentorship provides situated support. Weakness in any component can interrupt the movement from policy intention to classroom use.

The five perceived-effectiveness domains represent proximal organizational and teacher outcomes rather than direct learner outcomes. Leadership can plausibly increase opportunity, confidence, motivation, collaboration, and experimentation, but learner benefit depends on whether teachers use technology to deepen explanation, feedback, inquiry, creation, differentiation, and assessment rather than simply replace analogue presentation.

Context moderates implementation. Connectivity, device sufficiency, maintenance, technical assistance, leadership workload, subject requirements, and teacher experience may produce different patterns even when district means are uniformly high. A defensible policy response should therefore combine minimum standards with local diagnosis and differentiated assistance.

2. Methodology

A descriptive-evaluative comparative survey design was used to profile reported leadership practices and perceived outcomes and to examine differences in indicator rank distributions between two districts.

The enumerated teaching frame comprised 355 public junior high school teachers: 165 from Tagkawayan District I and 190 from District II. The district distribution was retained in the journal analysis because it is consistent with the final respondent summary and the reported domain tables.

A researcher-made questionnaire contained five leadership-role scales and five perceived-effectiveness scales. The domains included between seven and nine indicators and used a five-point extent scale. The instrument underwent adviser and expert review before administration.

Frequency, percentage, weighted mean, and rank summarized the data. Wilcoxon–Mann–Whitney procedures compared district rank distributions for the indicators within each domain at $\alpha=.05$. The resulting statistics describe whether the two districts ordered the indicators differently; they are not respondent-level estimates of the effect of leadership on teacher or learner outcomes.

Table 1. Research Design, Participants, Measures, and Analysis

Component	Specification
Design	Descriptive-evaluative, cross-sectional, comparative survey
Participants	355 public junior high school teachers
District distribution	District I=165; District II=190
Instrument	Validated researcher-made five-point rating questionnaire
Leadership domains	Vision; capacity; supervision; technological access; mentorship
Perceived outcomes	Integration; competence; motivation; collaboration; innovation
Analysis	Weighted means, ranks, Wilcoxon–Mann–Whitney; $\alpha=.05$

2.1 Analytical Rigor and Boundaries

The large district frame provides broad coverage of the identified teaching population. The balance between districts also supports comparative interpretation, although the pooled results remain weighted toward District II because it contributed more teachers.

The Wilcoxon calculations were performed on ranked indicators within domains. The number of ranked cases therefore varied with the number of indicators rather than the number of teacher respondents. Interpretation is confined to differences in ordering; it does not establish which district is substantively more effective without item-level distributions and effect sizes.

The reported probability values resolve an internal narrative contradiction for capacity building. Its z=1.89 and p=.0294 support a significant district difference at α=.05, whereas mentorship (z=.31, p=.3783) does not. All five perceived-effectiveness comparisons remain non-significant because their reported p values exceed .05.

Construct validity would be strengthened by reporting reliability coefficients for every scale and by linking survey responses with classroom observation, professional-learning records, device and connectivity inventories, technical-support logs, and learner assessment evidence.

3. Results and Discussion

3.1 Respondent Distribution

Teachers from both Tagkawayan districts were represented in the analysis.

Table 2. Distribution of Public Junior High School Teachers

District	Frequency	Percent
Tagkawayan District I	165	46.5%
Tagkawayan District II	190	53.5%
Total	355	100%

District II contributed a modest majority of the teaching frame. The distribution permits district comparison without extreme imbalance, but the combined profile should be interpreted as a weighted description of the two districts rather than an equal-district average. Differences between districts may reflect infrastructure, school size, geography, technical support, staff experience, or local routines. The district label identifies an administrative context; it does not by itself explain the mechanisms behind a significant rank difference.

3.2 School-Head Empowerment Roles

All five leadership domains were assessed as Very Much Evident.

Table 3. Empowerment Roles in Technology-Enhanced Instruction

Leadership Domain	District I	District II	Combined	Rank
Mentorship	4.69	4.70	4.70	1
Access to technological resources	4.66	4.70	4.68	2
Capacity building	4.64	4.68	4.66	3
Instructional supervision	4.64	4.68	4.66	3
Visionary leadership	4.62	4.67	4.65	5
Grand mean	4.65	4.69	4.67	—

Mentorship ranked first, indicating that individualized guidance, peer support, and continuous coaching were the most visible features of school-head empowerment. Access to resources followed, suggesting that leadership support was expressed both relationally and materially.

Visionary leadership ranked last but remained very highly evident. The narrow .05 range cautions against treating the ranking as a large performance gap. It identifies a refinement priority: long-term direction, measurable technology goals, and strategic alignment should be made as concrete and observable as immediate mentoring and technical support.

The profile is consistent with a distributed view of digital leadership. Teachers require leaders who set direction, but they also need accessible expertise, functioning tools, feedback, and collective learning structures that enable them to enact the vision.

3.3 District Differences in Empowerment Roles

Four leadership domains showed statistically different indicator rankings between the districts.

Table 4. Wilcoxon–Mann–Whitney Results for Empowerment Roles

Domain	z	p	Decision
Visionary leadership	2.25	.0122	Significant
Capacity building	1.89	.0294	Significant
Instructional supervision	2.23	.0129	Significant
Access to technological resources	2.15	.0158	Significant

Domain	z	p	Decision
Mentorship	.31	.3783	Not significant

The districts differed in how they ordered practices within vision, capacity development, supervision, and technological access. Similar high means therefore coexist with contextual differences in priority or visibility. A single division-wide program should not assume identical needs or implementation sequences.

Mentorship was both the highest-rated domain and the only domain without a significant rank difference. This common pattern provides a strong platform for cross-district peer learning, coaching standards, and communities of practice.

The appropriate response is calibration rather than forced uniformity. District teams should examine item-level results, infrastructure records, training participation, observation evidence, and teacher feedback before selecting targeted interventions.

3.4 Operational Strengths and Developmental Gaps

Item-level extrema clarify which practices were most visible and where further development is warranted.

Table 5. Representative Strengths and Developmental Priorities

Domain	Highest-Rated Practice	Mean	Developmental Priority	Mean
Vision	Realistic and achievable technology vision	4.70	Long-term commitment and instructional alignment	4.61
Capacity	Technical assistance available	4.70	Peer mentoring and external training access	4.64
Supervision	Technology aligned with curriculum	4.69	Constructive feedback on lesson integration	4.63
Resources	Access to platforms and online resources	4.71	Timely equipment maintenance and repair	4.65
Mentorship	One-to-one guidance for struggling teachers	4.77	Motivation for confidence and creativity	4.64

Teachers most strongly recognized practical and immediate supports: attainable direction, technical assistance, curricular alignment, accessible platforms, and individualized guidance. These practices reduce uncertainty and make digital implementation feasible.

The lower-rated practices point to sustainability risks. Equipment access loses value without maintenance; supervision is incomplete without actionable feedback; and mentoring should build teacher autonomy and creativity rather than prolonged dependence on the school head.

Professional learning should therefore move beyond one-time tool demonstrations. Coaching cycles can connect planning, model lessons, guided experimentation, observation, evidence review, and independent application. Maintenance plans, service standards, and replacement schedules should be integrated into school improvement planning.

3.5 Perceived Effectiveness of Empowerment Roles

Respondents perceived school-head empowerment as highly supportive of all five teacher and implementation outcomes.

Table 6. Perceived Outcomes of Technology-Leadership Empowerment

Perceived-Effectiveness Domain	District I	District II	Combined	Rank
Motivation and job satisfaction	4.74	4.72	4.73	1
Innovation and openness to change	4.75	4.71	4.73	1
Teacher confidence and competence	4.72	4.72	4.72	3
Collaboration and professional learning	4.72	4.71	4.72	3
Technology integration in teaching	4.70	4.71	4.71	5
Grand mean	4.73	4.71	4.72	—

Motivation and openness to change led the perceived-effectiveness profile. Recognition, psychological safety, access to help, and visible leadership support can make experimentation less risky and strengthen teachers' willingness to engage with digital practices.

Technology integration ranked last despite a very high mean. Item evidence suggests that multimedia presentation was more prominent than student-centered technology activity. This distinction is educationally important: frequent device use is not equivalent to deeper learning, collaboration, inquiry, feedback, or knowledge creation.

Evaluation should therefore separate access, frequency, pedagogical quality, and learning value. Teacher confidence and satisfaction are worthwhile implementation outcomes, but they should be connected to lesson artifacts, observation rubrics, assessment evidence, and equitable learner participation.

3.6 District Differences in Perceived Effectiveness

The two districts displayed statistically comparable rankings across all five perceived-effectiveness domains.

Table 7. Wilcoxon–Mann–Whitney Results for Perceived Effectiveness

Outcome Domain	z	p	Decision
Technology integration in teaching	.62	.2676	Not significant
Teacher confidence and competence	−.05	.4801	Not significant
Motivation and job satisfaction	−.96	.1685	Not significant
Collaboration and professional learning	−.04	.4840	Not significant
Innovation and openness to change	−1.58	.0571	Not significant

None of the reported probability values crossed the .05 threshold. The districts therefore shared similar ordering of perceived outcomes even though several leadership-process domains differed. Common outcome priorities may arise from a shared curriculum, divisional support, and comparable expectations for teachers.

Innovation and openness to change approached but did not reach significance (p=.0571). It should not be labeled significant, but its relative proximity to the threshold justifies closer descriptive review and replication with respondent-level data and effect-size estimates.

The non-significant results do not prove equivalence or causal effectiveness. They indicate that the available rank evidence did not establish a district difference. A stronger evaluation would define equivalence margins, measure implementation exposure, and follow teacher practice and learner outcomes over time.

3.7 Integrated Interpretation of the Findings

The evidence presents a favorable digital-leadership baseline. School heads were perceived to provide strong mentoring, resources, capacity development, supervision, and direction, while teachers were perceived to show confidence, motivation, collaboration, and openness to change.

At the same time, the significant district differences in four leadership-process domains demonstrate that favorable pooled means do not imply identical implementation. District-responsive diagnostics are needed for strategic direction, professional development, supervision, and infrastructure support.

The most defensible implementation model combines a shared minimum standard with differentiated assistance. Every school should have an explicit technology-integration plan, reliable access and maintenance, coaching and feedback routines, professional learning communities, and outcome monitoring; the intensity and sequence of support should be based on verified local needs.

The central developmental shift is from technology availability and presentation toward pedagogically purposeful, learner-centered use. Leadership should enable teachers to design activities in which learners investigate, create, collaborate, receive feedback, and demonstrate understanding through appropriate technology.

4. Conclusions and Implications

4.1 Conclusions

School-head empowerment roles were Very Much Evident overall (M=4.67). Mentorship was the strongest domain, followed by access to technological resources; visionary leadership was the lowest but remained very highly rated.

District rank distributions differed significantly for visionary leadership, capacity building, instructional supervision, and technological access, but not for mentorship. These results support common standards accompanied by district-specific implementation assistance.

Perceived effectiveness was Very Much Evident overall (M=4.72), particularly for motivation, job satisfaction, innovation, and openness to change. No perceived-effectiveness domain showed a significant district difference.

The findings establish a perception-based implementation baseline, not causal proof that leadership produced improved teacher performance or learner achievement. Stronger effectiveness claims require longitudinal, observational, and learner-level evidence.

4.2 Study Limitations

The cross-sectional design captures perceptions at one point in time and does not establish temporal order or causal influence. High ratings therefore describe perceived implementation or effectiveness rather than independently verified changes in teaching, learning, or organizational performance.

The measures rely on structured self-report responses and may be affected by social desirability, recall, common-method variance, and differences in how respondents interpreted the rating anchors. Classroom observations, document review, administrative records, and learner-performance evidence were not integrated into the principal estimates.

Rank-based comparisons identify differences in the ordering of indicators between groups, but they do not quantify the practical magnitude of a respondent-level effect. Future reporting should include verified item-level data, missing-data procedures, reliability coefficients, rank sums, effect sizes, and confidence intervals.

The respondent count follows the final enumerated teaching frame of 355. Future reports should explicitly reconcile the enumerated population with any separately calculated survey sample and state the actual valid-response count used in every analysis.

The study operationalized effectiveness through teacher perceptions. It did not directly measure technology dosage, pedagogical quality, teacher digital performance, learner engagement, or achievement, and the Wilcoxon calculations compared indicator rankings rather than individual teacher scores.

4.3 Implications for Practice and Policy

School improvement plans should contain measurable technology-integration objectives, responsible persons, resource and maintenance provisions, implementation milestones, and evidence of instructional and learner benefit.

Professional development should be job-embedded and differentiated. Coaching, lesson study, Learning Action Cells, peer demonstration, and guided design tasks should connect digital tools with curriculum, formative assessment, inclusion, and learner-centered pedagogy.

Instructional supervision should include technology-specific observation and feedback criteria. School heads and ICT coordinators need protected time to review lesson purpose, learner participation, feedback quality, accessibility, data privacy, and evidence of understanding.

District and local-government partnerships should prioritize reliable connectivity, device sufficiency, licensed and accessible content, technical assistance, preventive maintenance, replacement planning, and equitable access across schools and learners.

Monitoring should triangulate perception surveys with inventories, service logs, training completion, coaching artifacts, lesson observations, platform-use records, teacher products, learner work, and assessment results.

5. Policy and Implementation Priorities

Table 8. Digital Leadership and Technology-Integration Policy Matrix

Priority Area	Recommended Direction	Expected Evidence
Strategic direction	Embed measurable, curriculum-aligned digital goals in school improvement plans.	Approved plan; milestones; implementation review
Teacher capability	Use coaching, lesson study, LACs, and assessed application tasks.	Coaching records; lesson artifacts; competency evidence
Instructional quality	Adopt observation and feedback criteria for purposeful technology use.	Observation rubric; feedback cycles; learner work
Infrastructure	Maintain access, connectivity, preventive maintenance, and replacement systems.	Inventory; service logs; uptime and access data
Equity and safety	Audit accessibility, participation, data privacy, and responsible technology use.	Equity audit; consent and privacy records; safeguards
Outcome evaluation	Link implementation exposure with teacher practice and learner outcomes.	Dashboard; pre/post evidence; mixed-method review

6. Directions for Future Research

Longitudinal studies should examine whether sustained leadership practices predict changes in teacher digital competence, classroom pedagogy, learner engagement, and achievement.

Mixed-methods research should combine observation, interviews, professional-learning artifacts, infrastructure audits, and learner work to identify why district implementation patterns differ.

Future statistical analyses should use respondent-level scores, report reliability and missing-data procedures, estimate effect sizes and confidence intervals, and distinguish testing of differences from testing of equivalence.

Intervention studies should compare coaching, lesson-study, technical-support, and infrastructure models and assess implementation fidelity, cost, equity, and sustainability.

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