

The Leadership Styles Employed in Improving the Digital Technical Skills of the Public Elementary School Principals in the Division of Quezon

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ARTICLE INFORMATION	ABSTRACT
Article history: Published: October 2026 Keywords: School Leadership Digital Technical Skills Public Elementary School Principals Kendall's Concordance Digital Transformation Quezon	The study examined leadership styles, digital technical skills, and challenges among public elementary school principals in the Division of Quezon during School Year 2025–2026. A descriptive-inferential correlational design was used with 205 principals distributed across four congressional districts. A questionnaire covered five leadership styles, four digital technical skill domains, and five challenge domains. Weighted means, ranks, and Kendall's coefficient of concordance were reported. Leadership styles were rated Much Employed overall (4.27); transformational and servant leadership shared the highest summary mean (4.34 each). Digital technical skills were rated Much Evident overall (4.28), with strategic planning and ICT integration in technical assistance rated highest (4.45) and monitoring and evaluation lowest (4.19). Challenges were rated Much Challenging overall (4.24); Teacher's Skill ranked first (4.46), followed by internet connectivity (4.29). Significant agreement was reported for four leadership styles, three digital technical skill domains, and all five challenge domains. Transformational leadership and information dissemination did not show significant rank agreement. The findings support coordinated teacher development, infrastructure support, workflow improvement, and adaptive digital planning. A June 2026–June 2028 action plan was formulated, with an indicative budget of ₱6,000,000. The results describe self-reported practices and agreement on item rankings; they do not establish causal improvement in skills or comparative effectiveness of leadership styles. The proposed action plan requires implementation and outcome evaluation.

1. Introduction

Digital transformation places school principals at the intersection of instructional leadership, staff development, information management, and institutional change. Introducing a digital platform is only one part of this work. Principals must also decide which tasks should be digitized, how teachers will receive technical assistance, how information will circulate, and how school performance will be monitored. These responsibilities make leadership practices relevant to the everyday conditions under which technology is used. The study investigated those practices alongside digital technical skills and implementation challenges among public elementary school principals in the Division of Quezon.

Digital technical skills were examined through four functions: disseminating information and performing technology-related activities; accomplishing reports and administrative process using the new technology; strategic planning and integration of ICT in giving technical assistance to teachers; and monitoring and evaluation of teaching processes. This functional approach connects digital activity with the actual work of principals. It also avoids treating familiarity with a device or application as a complete account of digital leadership. Information dissemination, administrative work, teacher support, and instructional monitoring may require different combinations of technical knowledge, organizational routines, and professional judgment.

Research on school digital transformation has linked leadership with the conditions that support educational technology use. Navaridas-Nalda et al. (2020) emphasized the strategic role of principals and the importance of an organizational culture that enables educational communities to engage with digital resources. This perspective makes the social organization of change relevant to technology adoption. For the study, leadership was therefore examined through several styles rather than through a single global rating of administrative effectiveness. Transactional, transformational, authoritarian, democratic, and servant leadership were assessed as distinct sets of reported practices.

The five styles represent different emphases in school management. Transactional leadership concerns expectations, accountability, recognition, and compliance. Transformational leadership concerns vision, motivation, innovation, and professional growth. Authoritarian leadership concerns centralized direction and control. Democratic leadership concerns participation and shared decision-making. Servant leadership concerns responsiveness to the needs of teachers, staff, learners, and the school community. The study did not assume that each principal used only one style. Multiple practices could be reported by the same principal, and a high rating for one style did not rule out high ratings for another.

The distinction between general leadership orientation and specific support for digital practice is important. Schmitz et al. (2023) examined transformational leadership and technology integration using teacher survey data and identified the relevance of teachers' beliefs, technical skills, and pedagogical capabilities. Their work supports attention to the enabling conditions between leadership

and classroom technology use. The study addressed related concerns through principals' ratings of digital functions and barriers. It did not, however, estimate a mediation model or directly test whether any leadership style predicted skill development.

Evidence from other settings also indicates that digital leadership cannot be interpreted independently of educational goals. Ruloff and Petko (2025) found different approaches to leadership for digital transformation among Swiss upper secondary school principals. Their qualitative findings connected leadership approaches with the way digital change was pursued. The study extended attention to a different educational level and context by examining public elementary school principals in Quezon. Its descriptive and concordance results provide a local account of practices and priorities, rather than a direct replication of the Swiss investigation.

Teacher capability is another central concern. Hamzah et al. (2021) investigated principals' digital leadership and teachers' digital teaching in Malaysia and reported high levels of both. Their study makes the connection between leadership activity and teachers' digital practice relevant to school improvement. Nevertheless, high reported leadership activity does not itself demonstrate that all teachers have the skills required for implementation. Examining challenges alongside positive practice ratings is therefore necessary to identify whether principals perceive substantial barriers even when they report extensive digital engagement.

Digital transformation also depends on infrastructure and institutional arrangements. Mogas et al. (2022), in research involving principals in Catalonia, showed that movement toward smart schools involves pedagogical innovation, management, inclusion, sustainability, and technological preparedness. This broader perspective is relevant to interpreting connectivity and resource constraints in Quezon. A school may have a digital plan while remaining constrained in its capacity to enact that plan. The study consequently treated challenges as substantive findings rather than as incidental explanations for lower practice ratings.

In the Philippine context, professional development for school leaders has a formal reference point in the Philippine Professional Standards for School Heads (Department of Education, 2020). The study's focus on leadership, teacher support, and administrative functions is pertinent to professional learning within that context. The investigation was not an audit of compliance with every professional standard. Its contribution was a structured description of reported leadership practices, digital functions, and obstacles that could inform a locally responsive development plan.

1.1 Purpose and research questions

The study sought to determine the leadership styles employed in improving the digital technical skills of public elementary school principals in the Division of Quezon during School Year 2025–2026. Its eight questions addressed the extent of five leadership styles; agreement on the rank orders of leadership indicators; the extent of four digital technical skill domains; agreement on their rank orders; challenges involving connectivity, teacher skills, resources, organization and process, and digital strategies; solutions to those challenges; agreement on the rank orders of challenges and solutions; and an action plan based on the findings. The corresponding null hypotheses concerned the absence of significant rank agreement within the three groups of domains.

The wording of improvement expresses the study's practical focus. The measurements and reported analyses provide evidence about perceived practices and the consistency of item rankings across district groups. They do not provide a before-and-after measure of improvement, a comparison with an untreated group, or a direct estimate of the relationship between leadership scores and digital skill scores. This distinction guides the interpretation of the results and the scope of the conclusions.

2. Methods

2.1 Design and setting

The study used a descriptive-inferential correlational research design in the Division of Quezon for School Year 2025–2026. The descriptive component assessed the extent of leadership practices, digital technical skills, and challenges. The inferential component examined agreement on ranked indicators across four congressional district groups using Kendall's coefficient of concordance. Although correlational was part of the design designation, the reported results centered on descriptive ratings and concordance. No coefficient estimating a direct association between leadership styles and digital technical skill scores was reported in the results presented here.

2.2 Participants and sampling

The study involved 205 public elementary school principals. The sampling account identified 771 school heads, of whom 420 held principal positions. The population of 420 was distributed across the First, Second, Third, and Fourth congressional districts as 88, 99, 104, and 129, respectively. A sample of 205 was calculated using Slovin's formula, $n = N/(1 + Ne^2)$, with $N = 420$ and $e = 0.05$. The calculation yielded 204.878, rounded to 205. District allocation was described as proportional, with 43, 48, 51, and 63 principals in the four groups.

The sampling description specified stratified random sampling and also referred to purposive selection based on respondents' knowledge of the required information. The account does not resolve how these two descriptions were combined in the selection of individual principals. Both descriptions are retained here without attributing an unreported probability selection procedure to the study. Table 1 reports the district allocations and percentages exactly as tabulated. The reported sample size does not, by itself, establish representativeness or eliminate possible selection and nonresponse biases.

Table 1. Distribution of principals by congressional district

Congressional district	Principal population	Sample	Percentage
First	88	43	21
Second	99	48	23
Third	104	51	25
Fourth	129	63	31
Total	420	205	100

The Fourth Congressional District contributed the largest sample and the First Congressional District the smallest. This distribution is relevant when interpreting the district comparisons because the four groups were not equal in size. The descriptive tables report district means alongside an average column. The reported averages are retained, and no new pooled means have been calculated. This approach preserves the numerical findings while avoiding an unsupported assumption that every published average was weighted by the number of principals in each district.

2.3 Instrument and measurement

A questionnaire checklist and information sheet were used for data gathering. The leadership assessment was described as using Franco's Pinoy Management Leadership Checklist. The table of specifications organized the questionnaire into three substantive parts totaling 140 items. Part I contained 50 leadership items, with 10 items each for transactional, transformational, authoritarian, democratic, and servant leadership. Part II contained 40 items, with 10 items each for information dissemination and technology-related activities, reports and administrative processes, strategic planning and ICT-based technical assistance, and monitoring and evaluation. Part III contained 50 items, with 10 items each for the five challenge domains.

For leadership, the five-point scale used 4.50–5.00 for Very Much Employed, 3.50–4.49 for Much Employed, 2.50–3.49 for Employed, 1.50–2.49 for Fairly Employed, and 1.00–1.49 for Not at All. For digital technical skills, the corresponding categories were Very Much Evident, Much Evident, Evident, Fairly Evident, and Not at All. For challenges, the categories were Very Much Challenging, Much Challenging, Challenging, Fairly Challenging, and Not at All. The same numerical intervals applied to all three parts. Higher challenge ratings therefore indicated greater perceived difficulty, whereas higher leadership and skill ratings indicated greater reported extent.

The instrument was presented to the adviser for corrections, suggestions, recommendations, and approval. The validation account described a fifteen-day interval before readministration of the corrected tool. The reported reliability coefficient was 0.65, obtained using a procedure identified as Kuder–Richardson Formula 21. The number of pilot participants, item-level calculations, and separate reliability coefficients for the different domains were not reported. The coefficient is retained as a reported measurement property, without inferring stronger reliability or validity than the available information supports. The use of this reliability procedure for five-point responses also limits interpretation of the reported coefficient.

2.4 Data collection and ethical procedures

The research procedure included obtaining permission through the appropriate administrative channels, constructing and validating the questionnaire, conducting a dry run, finalizing the instrument, administering and collecting questionnaires, and tallying and tabulating the responses. Subsequent steps involved analysis, interpretation, and preparation of the completed study. A data sharing agreement was described as having been secured before administration. The procedural schedule covered research activities from 2025 into 2026, but exact dates of questionnaire administration and collection were not specified in the methodological account.

Administrative authorization included a March 6, 2026 endorsement expressing no objection to the conduct of the study. The questionnaire assured respondents that their responses would remain confidential. The data sharing agreement specified physical and password protections, encryption for mobile storage or electronic transmission, nondisclosure of identifying information, prior approval for third-party release or publication, and return or destruction of data on termination. It limited the agreement's term to five years unless renewed. These provisions describe documented safeguards rather than an independent audit of their implementation. An ethics committee approval or exemption identifier and the individual informed consent and nonparticipation procedures were not specified. The analysis uses aggregate findings and does not identify individual principals.

2.5 Data analysis

Frequency counts, percentages, weighted means, and ranks were identified as descriptive tools. The statistical treatment also named Cramer's Coefficient C and the Wilcoxon Mann Whitney U test; however, corresponding results were not reported. The inferential tables provided Kendall's coefficient of concordance, W, for four district groups ranking 10 items within each domain. The reported chi-square statistics used nine degrees of freedom. Critical values were listed as 16.92 at 0.05, 19.02 at 0.025, 21.67 at 0.01, 23.59 at 0.005, and 27.88 at 0.001.

The results retain the tabulated W coefficients, chi-square statistics, significance levels, and decisions. The significance entries are reported threshold levels, not newly computed exact p values. With four groups and 10 items, the tabulated chi-square statistics correspond to 36W when the displayed rounded W values are used. District item-rank matrices and worked calculations were tabulated, but a complete account of tie corrections and unrounded statistical output was not specified. The calculations contain discrepancies that limit independent confirmation of the reported tests. No inferential statistics have been recalculated or substituted. Kendall's W concerns concordance in rankings. It is distinct from the weighted mean, which concerns the reported extent of a practice or difficulty. High concordance can accompany either high or low ratings, and a high average rating can accompany weak concordance. Significant rank agreement does not mean that district means are identical, that all individual principals agree, or that a leadership style causes digital improvement. This separation of descriptive magnitude and inferential agreement is maintained throughout the manuscript.

3. Results

3.1 Extent of leadership styles

Table 2 summarizes the five leadership styles across the four district groups. The overall leadership average was 4.27, interpreted as Much Employed. Transformational leadership and servant leadership shared the highest average of 4.34 and rank of 1.5. Democratic leadership followed at 4.33, authoritarian leadership at 4.19, and transactional leadership at 4.17. All five summary averages were classified as Much Employed. Thus, the results describe extensive use of several leadership orientations rather than a single exclusively dominant style.

Table 2. Summary of the extent of leadership styles

Leadership style	First W _x / R	Second W _x / R	Third W _x / R	Fourth W _x / R	Average W _x / R
Transactional	4.13 / 5	4.28 / 4	4.04 / 5	4.21 / 4	4.17 / 5
Transformational	4.38 / 2	4.42 / 1	4.21 / 3	4.33 / 1	4.34 / 1.5
Authoritarian	4.20 / 4	4.24 / 5	4.24 / 2	4.06 / 5	4.19 / 4
Democratic	4.41 / 1	4.39 / 2	4.21 / 3	4.30 / 3	4.33 / 3
Servant	4.30 / 3	4.30 / 3	4.42 / 1	4.32 / 2	4.34 / 1.5
Average	4.28	4.33	4.22	4.24	4.27

The district profiles differed in ordering. Democratic leadership ranked first in the First Congressional District, transformational leadership ranked first in the Second and Fourth, and servant leadership ranked first in the Third. The Second District had the highest reported overall leadership mean, 4.33, while the Third had the lowest, 4.22. These are descriptive differences. The concordance tests below concern item ranking within each leadership style and are not tests of differences between these district-level overall means.

Selected item findings clarify the meaning of the leadership profile. In transactional leadership, ensuring staff adherence to established policies and procedures had an average of 4.71, whereas using rewards and punishments to motivate teachers and staff had 3.35. In transformational leadership, leading by example through enthusiasm and commitment to educational excellence had 4.71, while offering personal and professional development opportunities had 3.74. For servant leadership, decisions benefiting the entire school community had 4.75, while hands-on assistance in overcoming staff challenges had 3.70. These item values indicate that broad commitments and formal expectations were not uniformly matched by equally high ratings for every form of individualized support.

The item patterns do not establish inconsistency in any individual principal. Each value is an aggregate across responses and district groups. Their significance for interpretation is narrower: the same broadly favorable style rating can include comparatively lower scores for activities that require direct coaching, professional development, or continuing technical assistance. Planning based only on the overall leadership mean would therefore risk overlooking practical areas for development within a positively rated leadership profile.

3.2 Agreement on leadership indicator rankings

Table 3. Kendall concordance for leadership indicator rankings

Leadership style	ΣD^2	W	χ^2	Reported level	H ₁ decision
Transactional	1,097.5	0.83	29.88	0.001	Accepted
Transformational	390	0.30	10.8	Not Significant	Rejected
Authoritarian	982	0.74	26.64	0.005	Accepted
Democratic	874	0.66	23.76	0.005	Accepted
Servant	882	0.67	24.12	0.005	Accepted

Table 3 shows significant reported agreement for transactional, authoritarian, democratic, and servant leadership. Transactional leadership had the highest W, 0.83, with a reported chi-square statistic of 29.88 and significance level of 0.001. Transformational leadership had the lowest W, 0.30, and chi-square statistic, 10.8, and was reported as Not Significant. Authoritarian, democratic, and servant leadership had W values of 0.74, 0.66, and 0.67, respectively, with agreement reported at the 0.005 level.

The contrast between Tables 2 and 3 is analytically important. Transformational leadership was jointly highest in reported extent, but its item rankings showed the least concordance across district groups. Principals could rate transformational leadership favorably while placing different relative emphasis on vision, innovation, support, development opportunities, or collaboration. Conversely, transactional leadership ranked lowest in average extent but highest in concordance. Lower relative use did not imply greater uncertainty about the ordering of its indicators.

The nonsignificant transformational result does not demonstrate that transformational leadership was absent, ineffective, or unrelated to digital practices. It indicates that the reported test did not establish significant rank agreement for the transformational indicators under the stated procedure. Similarly, significant agreement for the other styles does not establish the educational value of those styles. The finding concerns consistency of rankings and must be interpreted alongside the descriptive ratings and the content of the measured practices.

3.3 Extent of digital technical skills

Table 4 presents the four digital technical skill domains. The overall average was 4.28, interpreted as Much Evident. Strategic planning and integration of ICT in giving technical assistance to teachers ranked first at 4.45. Disseminating information and performing technology-related activities ranked second at 4.25, followed by accomplishing reports and administrative process using the new technology at 4.24. Monitoring and evaluation of teaching processes ranked fourth at 4.19. All four average-domain classifications were Much Evident.

Table 4. Summary of digital technical skill domains

Digital technical skill domain	First W _x / I / R	Second W _x / I / R	Third W _x / I / R	Fourth W _x / I / R	Average W _x / I / R
Disseminating information and performing technology-related activities	4.29 / ME / 4	4.49 / ME / 1	4.22 / ME / 2	3.99 / ME / 4	4.25 / ME / 2
Accomplishing reports and administrative process using the new technology	4.30 / ME / 2	4.31 / ME / 4	4.14 / ME / 3	4.20 / ME / 2	4.24 / ME / 3

Digital technical skill domain	First W _x / I / R	Second W _x / I / R	Third W _x / I / R	Fourth W _x / I / R	Average W _x / I / R
Strategic planning and integration of ICT in giving technical assistance to teachers	4.56 / VME / 1	4.34 / ME / 3	4.50 / VME / 1	4.39 / ME / 1	4.45 / ME / 1
Monitoring & evaluation of teaching processes	4.30 / ME / 2	4.47 / ME / 2	3.99 / ME / 4	4.01 / ME / 3	4.19 / ME / 4
Average	4.36 / ME	4.40 / ME	4.21 / ME	4.15 / ME	4.28 / ME

The First and Third districts rated strategic planning and ICT-based technical assistance as Very Much Evident, with means of 4.56 and 4.50. The Second District's highest domain was information dissemination, 4.49. The Fourth District's highest domain was strategic planning and ICT-based technical assistance, 4.39. Overall district averages ranged from 4.15 in the Fourth District to 4.40 in the Second. These profiles indicate that the relative prominence of digital functions differed across the four groups.

Monitoring and evaluation was the lowest-rated digital domain overall, but its classification remained Much Evident. The result supports treating it as a relative development priority rather than describing it as an absent function. Strategic planning had a higher reported mean, yet the difference does not prove that plans were implemented successfully or translated into improved teaching. The measures reflect principals' assessments of the extent of these functions and do not include independently observed changes in instructional quality or learner achievement.

Administrative digitization and information dissemination occupied the middle of the overall ranking. These functions involve practical routines that can remain active even when deeper instructional monitoring is less developed. The study does not measure how much time principals spent on each function, the accuracy of digitally generated reports, or the reach and usability of communications. Consequently, the reported averages should not be converted into claims about administrative efficiency or communication effectiveness without additional evidence.

3.4 Agreement on digital technical skill rankings

Table 5. Kendall concordance for digital technical skill indicator rankings

Digital technical skill domain	ΣD^2	W	χ^2	Reported level	H ₁ decision
Disseminating information and performing technology related activities	576	0.44	15.84	Not Significant	Rejected
Accomplishing reports and administrative process using the new technology	976	0.74	26.64	0.005	Accepted
Strategic planning and integration of ICT in giving technical assistance to teachers	736	0.56	20.16	0.025	Accepted
Monitoring and Evaluation of teaching processes	748	0.57	20.52	0.025	Accepted

Table 5 indicates significant reported rank agreement for reports and administrative processes, strategic planning and ICT-based technical assistance, and monitoring and evaluation. Reports and administrative processes had the highest concordance, $W = 0.74$, with chi-square of 26.64 and a reported significance level of 0.005. Strategic planning and ICT-based technical assistance had $W = 0.56$ and chi-square of 20.16, while monitoring and evaluation had $W = 0.57$ and chi-square of 20.52. Both were reported at the 0.025 level.

Information dissemination and technology-related activities had $W = 0.44$ and chi-square of 15.84, below the reported 0.05 critical value of 16.92. The result was classified as Not Significant. This does not contradict the Much Evident average in Table 4. The average describes reported extent, whereas the concordance result describes whether the ordering of the 10 indicators was sufficiently consistent across the four district groups under the stated test.

The combination of relatively high reported extent and nonsignificant rank agreement in information dissemination suggests that district groups did not share the same ordering of communication-related activities. The data do not identify the reasons for that pattern. Connectivity, available platforms, administrative arrangements, and local routines are possible issues for further investigation, but they were not tested as explanations of the concordance result. The study therefore supports contextual inquiry into communication practices rather than a definitive account of why rankings differed.

3.5 Challenges in improving digital technical skills

Table 6 shows that all five challenge domains were rated Much Challenging in the average column. The overall mean was 4.24. Teacher's Skill ranked first with 4.46, followed by internet connectivity with 4.29, resources with 4.20, organization and process with 4.18, and digital strategies with 4.06. Teacher skills were therefore the highest-rated difficulty overall, although the study identified substantial reported challenges across all five domains.

Table 6. Summary of challenges in improving digital technical skills

Challenge domain	First W _x / I / R	Second W _x / I / R	Third W _x / I / R	Fourth W _x / I / R	Average W _x / I / R
Internet connectivity	4.29 / MC / 3	4.37 / MC / 3	4.21 / MC / 2	4.29 / MC / 2	4.29 / MC / 2
Teacher's Skill	4.71 / VMC / 1	4.73 / VMC / 1	3.75 / MC / 5	4.66 / VMC / 1	4.46 / MC / 1
Resources	4.51 / VMC / 2	3.99 / MC / 5	4.20 / MC / 3	4.10 / MC / 3	4.20 / MC / 3
Organization and Process	4.02 / MC / 5	4.38 / MC / 2	4.24 / MC / 1	4.09 / MC / 4	4.18 / MC / 4
Digital strategies	4.09 / MC / 4	4.21 / MC / 4	3.86 / MC / 4	4.08 / MC / 5	4.06 / MC / 5
Average	4.32 / MC	4.34 / MC	4.05 / MC	4.24 / MC	4.24 / MC

Teacher's Skill was rated Very Much Challenging in the First, Second, and Fourth districts, with respective means of 4.71, 4.73, and 4.66. In the Third District, the same domain had a mean of 3.75 and ranked fifth. Organization and Process ranked first in the Third District at 4.24. Resources were rated Very Much Challenging in the First District at 4.51. These descriptive contrasts show why division-wide priorities need to be accompanied by district-specific assessment.

The overall challenge ranking should not be read as a sequence in which only the highest-rated domain matters. Teacher capability can remain constrained if connectivity and devices are inadequate, and improvements in equipment can remain difficult to use if workflows are unclear. The survey did not estimate statistical interactions among these conditions. Its results nevertheless identify a set of concurrent perceived difficulties that the proposed action plan addresses through complementary strategies.

The high challenge ratings also qualify the favorable digital skill ratings. Principals reported extensive digital activity while simultaneously identifying difficulties in the conditions supporting that activity. These are different constructs, so the findings need not be mutually exclusive. A principal can carry out administrative tasks digitally and still experience unreliable internet, uneven teacher capability, or limited resources. The study provides no basis for treating the challenge scores as direct evidence that the positive skill ratings were inaccurate.

3.5 Agreement on challenge and solution rankings

Table 7. Kendall concordance for challenges encountered and solutions offered

Challenge domain	ΣD^2	W	χ^2	Reported level	H ₁ decision
Internet connectivity	822	0.62	22.32	0.01	Accepted
Teacher's Skill	864	0.66	23.76	0.005	Accepted
Resources	966	0.73	26.28	0.005	Accepted
Organization and Process	736	0.56	20.16	0.025	Accepted
Digital strategies	622	0.47	16.92	0.05	Accepted

Table 7 reports significant agreement in all five challenge domains. Resources had the highest coefficient, $W = 0.73$, with chi-square of 26.28 and a reported significance level of 0.005. Teacher's Skill followed with $W = 0.66$ and chi-square of 23.76, also reported at 0.005. Internet connectivity had $W = 0.62$ and chi-square of 22.32 at 0.01. Organization and Process had $W = 0.56$ and chi-square of 20.16 at 0.025. Digital strategies had $W = 0.47$ and chi-square of 16.92 at the reported 0.05 level.

The strongest rank agreement occurred for resources, while the highest average challenge rating occurred for Teacher's Skill. These findings answer different questions. The resource result concerns consistency in the ordering of resource-related indicators across district groups. The teacher skill result concerns the reported overall degree of difficulty. It would therefore be incorrect to replace teacher skills with resources as the most highly rated challenge solely because resources had the largest W .

The title of the reported agreement table includes solutions offered, but its numerical columns are the five challenge domains. Separate means or rankings for individual solutions are not displayed. The study's recommendations can be presented as responses to the identified difficulties, but the table alone does not establish that a distinct solution instrument was administered or that the proposed responses were evaluated for effectiveness. The solution and action-plan outputs are consequently treated as proposals informed by the findings.

3.7 Solutions and proposed action plan

The study proposed sustained teacher development, technical assistance from digitally skilled personnel, infrastructure partnerships, improved use of available resources, workflow redesign, and adaptable digital planning. It formulated an action plan for June 2026–June 2028, titled Strengthening Leadership and Digital Technical Capacities of the Public Elementary School Principals in the Division of Quezon: A Comprehensive Action Plan. Implementation was proposed for all public elementary schools in the division. Table 8 summarizes the proposed responses without treating them as completed interventions.

Table 8. Proposed action plan priorities and implementation arrangements

Priority or arrangement	Proposed response
Teacher skills	Conduct digital competency assessment; provide tiered professional development; prepare school digital mentors; organize weekly one-hour Tech Tuesdays peer coaching.
Internet connectivity	Audit connectivity; pilot offline or low-bandwidth alternatives; pursue connectivity partnerships.
Resources	Audit and redistribute equipment; establish a rotating resource pool; develop a digital resources library; pursue external partnerships.
Organization and process	Pilot digital administrative workflows; establish a division help desk; clarify digital roles and responsibilities.
Digital strategies	Establish a Division EdTech Council; conduct trend-scanning sessions; apply a pilot-and-scale framework.
Phase 1	June–December 2026: foundation, assessment, planning, capacity building, and resource mobilization.
Phase 2	January–December 2027: implementation, program rollout, training, system development, and pilot testing.
Phase 3	January–June 2028: scaling, institutionalization, sustainability, and monitoring refinement.
Monitoring	School level monthly; district level quarterly; division level semi-annually; evaluation annually.
Indicative budget	Leadership Development: ₱1,000,000; Digital Technical skills: ₱1,500,000; Addressing Challenges: ₱3,000,000; Policy and Governance: ₱500,000; TOTAL: ₱6,000,000.

The plan's priorities correspond to the five challenge domains, while its leadership development activities address the relative variation in transformational practices and the need for individualized support. The phased arrangement provides for initial assessment before wider rollout and later scaling. Its monitoring structure distributes responsibility across school, district, and division levels. These features describe the intended implementation architecture; they are not evidence that the phases, activities, or outcomes were achieved.

The proposed budget totals ₱6,000,000 across four components. Proposed funding sources include division maintenance and other operating expenses, external partnerships, local government support, and private partnerships. The amount is an indicative planning

estimate, not a measured cost of an evaluated intervention. The study's evidence supports consideration of the proposed directions but does not establish their cost-effectiveness, funding approval, or feasibility in every participating school.

4. Discussion

4.1 Leadership extent and the content of professional support

The leadership findings indicate a broad reported repertoire. Transformational and servant leadership were jointly highest in the summary, and democratic leadership followed closely. The coexistence of substantial authoritarian and transactional ratings suggests that principals reported both relational practices and formal control mechanisms. This pattern should not be forced into a simple classification of principals as belonging to one leadership type. The instrument assessed practices separately, and the aggregate results do not reveal mutually exclusive groups of leaders.

The difference between highly rated general commitments and lower-rated direct support is particularly relevant to digital change. Leading by example and making decisions for the school community were rated highly, whereas development opportunities and hands-on assistance received lower item averages. These findings suggest that professional learning should examine how supportive intentions become concrete assistance. They do not show that principals failed to support teachers, because the lower-rated items still represented reported practice and were not direct observations of behavior.

Navaridas-Nalda et al. (2020) make organizational culture and collective engagement important to interpreting the strategic role of principals in digital transformation. In Quezon, the reported combination of participatory and service-oriented practices offers a plausible foundation for that engagement. The practical implication is to connect leadership development with school routines such as consultation, feedback, and technical assistance. Whether those routines improve digital practice in this setting remains a question for subsequent evaluation.

Table 1 also matters to this interpretation. The sample was distributed across four unequal district groups, and the different profiles should not be reduced to a single division-wide narrative. A summary mean is useful for identifying common themes, but it can obscure local ordering of priorities. The Third District's comparatively high servant leadership rating, for example, identifies a descriptive emphasis rather than proof that its principals were more effective than those in other districts. Establishing comparative effectiveness would require an explicit outcome measure and an appropriate design.

4.2 Transformational leadership and variation in priorities

The study's most notable leadership contrast is that transformational leadership was rated extensively employed but did not show significant concordance. This means that a favorable overall rating and a common ordering of component practices should be treated as separate outcomes. A division-wide workshop could be relevant, but it should first establish which transformational practices require attention in each group. The result does not justify assuming that all districts need the same training content or that variation necessarily represents poor leadership.

Schmitz et al. (2023) examined enabling conditions connecting transformational leadership with more demanding uses of technology. The Quezon findings point to related practical concerns, particularly the comparatively lower rating for professional development opportunities. This comparison supports an emphasis on teachers' capabilities and the translation of leadership into usable support. The study did not measure the same mediating variables or classroom outcomes, so it cannot confirm the mechanisms identified in the Swiss teacher survey.

Ruloff and Petko (2025) also underscore the importance of educational goals in leadership for digital transformation. Their qualitative work helps frame a practical question arising from the Quezon results: whether digital initiatives are organized around instructional purposes or predominantly around tool use and administrative requirements. The study's higher rating for strategic planning than for monitoring and evaluation does not answer that question directly. It does, however, support closer examination of how plans are connected to observable teaching processes.

4.3 Digital activity and instructional monitoring

Tables 4 and 5 show that the digital domain with the highest mean was not the domain with the strongest concordance. Strategic planning and ICT-based technical assistance had the highest extent rating, while reports and administrative processes had the greatest rank agreement. This distinction suggests that common administrative expectations and high strategic engagement may coexist without an identical pattern of implementation across schools. The results do not identify whether any observed pattern was driven by division requirements, available software, or local leadership choices.

Monitoring and evaluation's lowest relative mean provides a practical priority because this function connects digital activity with evidence about teaching. The appropriate implication is to strengthen the quality and usefulness of instructional monitoring, rather than merely increasing the number of digital reports. The survey did not assess the content of monitoring records or whether feedback led to changed practice. Additional records review and classroom evidence would therefore be needed before concluding that digital monitoring improved instruction.

Mogas et al. (2022) describe school transformation as broader than the acquisition of advanced technology. Their findings support viewing management systems and pedagogical change together. For Quezon, this means that strategic plans, reporting systems, and monitoring routines should be considered as related organizational functions. The reported scores identify perceived strengths and relative weaknesses within those functions, but they cannot demonstrate that the division had reached a particular level of digital maturity. The nonsignificant information-dissemination concordance result also merits a practical response. Consistency in essential communication standards could be useful while allowing schools to use locally workable channels. The evidence does not support prescribing a single platform solely to produce more uniform rankings. Any communication initiative would need to consider whether messages reach intended users, whether users can respond, and whether connectivity requirements are realistic. These are implementation questions prompted by the result, not outcomes already measured by the study.

4.4 Teacher capability and infrastructure as concurrent priorities

Table 6 identifies teacher skills as the highest-rated challenge. This finding makes sustained professional learning central to the proposed response. It also helps explain why a high principal digital skill rating should not be treated as a complete measure of school readiness. Principals' own reported practices and the capabilities of teachers are related administrative concerns, but they are not interchangeable measures. The study assessed the teacher skill challenge through principals' perceptions, so teachers' actual proficiency remains unverified by direct assessment.

Hamzah et al. (2021) connect attention to principals' digital leadership with teachers' digital teaching. The Quezon findings add a local caution: positive leadership and digital practice ratings can coexist with substantial perceived teacher skill difficulties. The proposed tiered training and peer mentoring therefore respond to a reported need for support. Their effectiveness cannot be assumed from their fit with the problem; it would have to be evaluated through evidence of skill use and implementation.

Okunlola and Naicker (2025) examined digital leadership competencies from teachers' perspectives in a setting affected by a digital divide. Their use of teacher perspectives is relevant to a limitation of the study, which relies on principals' reports. A subsequent assessment incorporating teachers and ICT coordinators could determine whether different groups identify the same strengths and needs. Such triangulation would complement the principal survey rather than retroactively validate every self-reported rating.

The contrast within the teacher skill domain is equally consequential. Three districts rated it Very Much Challenging, while the Third District ranked it fifth among the five challenges. A uniform training program based only on the division average could underemphasize organizational processes in the Third District. The findings support retaining a common improvement framework while conducting local needs assessment before committing resources to specific activities. The descriptive contrasts do not establish the causes of those differing priorities.

Connectivity and resources require attention alongside teacher learning. Training can be difficult to apply when access is unreliable, but providing equipment alone cannot establish effective use. Marmoah et al. (2023) address principals' management in supporting elementary teachers' digital literacy, reinforcing the relevance of organized support. In the study, the joint presence of teacher skill, infrastructure, and process challenges supports coordinated planning rather than an isolated training response. The survey does not quantify the contribution of each barrier to actual performance.

4.5 Agreement on challenges and the status of proposed solutions

Table 7 provides a basis for discussing common concern across district groups, but it does not establish uniformity in every school. Kendall's W was computed from four groups ranking items, not from a demonstrated common ranking by all 205 principals. District-level concordance can coexist with important within-district variation. Reporting the result as broad stakeholder unanimity would therefore exceed the analysis. Its strongest practical implication is that several challenge domains warrant coordinated attention at the division level. The distinction between challenge intensity and rank agreement also prevents a misleading priority decision. Resources had the strongest concordance, while teacher skills had the highest mean challenge rating. A planning group can consider both: the mean identifies perceived degree of difficulty, while W indicates consistency of item ordering under the reported procedure. Neither statistic is a substitute for a feasibility assessment, a costing exercise, or a direct review of which schools have the greatest unmet need.

The proposed solutions respond logically to the reported difficulties, but their status must remain clear. A help desk, digital mentoring, offline access, resource sharing, and a pilot-and-scale approach were recommendations and planning outputs. The study did not report experimental tests, implementation comparisons, or follow-up measurements of these interventions. The reference to solutions in the concordance table does not provide such evidence. The action plan is therefore a basis for prospective work rather than a demonstrated remedy.

4.6 Implications for policy and professional development

The proposed action plan translates the findings into complementary responsibilities. School teams would support day-to-day mentoring and workflow implementation; district personnel would monitor progress and identify local constraints; and division leadership would coordinate resources, policy, and wider review. This division of responsibilities is useful because principals cannot independently resolve every infrastructure or budget problem. The study's findings support shared consideration of these responsibilities, without establishing that the proposed governance arrangement is superior to alternatives.

The Philippine Professional Standards for School Heads provide an established professional context for leadership development (Department of Education, 2020). The study suggests linking professional learning with specific tasks that principals report performing and with difficulties they identify in implementation. Training can therefore be organized around practical needs such as supporting teachers, using monitoring information, and improving administrative processes. The study does not support using its scores as a comprehensive assessment of compliance with the professional standards.

Table 8's phased approach also makes evaluation an integral next step. The first phase provides for assessment and planning, the second for implementation and pilot testing, and the third for scaling and sustainability. Decisions to expand activities should follow evidence from implementation rather than the favorable language of expected outcomes. The proposed monitoring frequencies create opportunities to review progress, but the study does not report that these monitoring processes were operating or that the budget had been secured. The recommended focus on support has implications for the way success is judged. More workshops, devices, or digital submissions would show activity, but they would not by themselves demonstrate stronger skills or improved teaching. Evaluation should examine whether intended users can perform relevant tasks and whether support arrangements address identified barriers. These implications extend the practical reasoning of the study; no new performance targets, achieved outcomes, or financial benefits are claimed here.

5. Conclusion

The study found that public elementary school principals in the Division of Quezon reported leadership styles as Much Employed and digital technical skills as Much Evident during School Year 2025–2026. Transformational and servant leadership shared the

highest summary mean, while strategic planning and ICT integration in technical assistance was the highest-rated digital domain. Monitoring and evaluation was the lowest-rated digital domain, although it remained within Much Evident. Challenges were rated Much Challenging overall, with Teacher's Skill receiving the highest average.

Significant rank agreement was reported for four leadership styles, three digital technical skill domains, and all five challenge domains. Transformational leadership and information dissemination did not show significant agreement under the reported tests. The findings distinguish the extent of reported practice from consistency in the ordering of its indicators. They do not establish that one leadership style caused digital technical skill improvement or produced better educational outcomes than another.

The study supports coordinated attention to teacher development, connectivity, resources, organizational processes, and digital strategy. Its June 2026–June 2028 action plan provides a proposed structure for addressing these needs, with an indicative budget of ₱6,000,000. Implementation remains contingent on resources, participation, and local conditions. Evaluation is required to determine whether the proposed activities strengthen actual capabilities and improve school processes.

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