

Administrative Support and Technology Access as Predictors of Digital Pedagogy Adoption in a Secondary School

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Abstract. Despite the Department of Education's sustained push for ICT integration in Philippine basic education, empirical studies that jointly model how administrative support and technology access predict teachers' adoption of digital pedagogy within a single secondary school using variance-based structural equation modeling rather than isolated descriptive or bivariate analyses remain scarce. This basic research addressed that gap by examining the relationship between administrative support, technology access, and the adoption of digital pedagogy among 196 teacher-respondents of Siocon Secondary School during School Year 2025-2026. Using a descriptive-correlational design, data were gathered through a researcher-made survey questionnaire that underwent expert content validation and pilot testing prior to administration and were analyzed using weighted means and Partial Least Squares Structural Equation Modeling (PLS-SEM) via WarpPLS 8.0. Results showed that administrative support ($M = 4.37$, $SD = 0.56$), technology access ($M = 4.16$, $SD = 0.70$), and adoption of digital pedagogy ($M = 4.31$, $SD = 0.58$) were all rated "Often" by teachers. Both administrative support ($\beta = 0.243$, $p < .001$) and technology access ($\beta = 0.482$, $p < .001$) were significant positive predictors of digital pedagogy adoption, jointly explaining 46.1% of its variance ($R\text{-squared} = 0.461$), with technology access emerging as the stronger predictor. These findings indicate that school leadership and resource infrastructure function as complementary but unequal drivers of digital teaching practice and support a dual-pronged strategy in which administrators sustain leadership-driven ICT initiatives while prioritizing investment in device provisioning and internet reliability to further strengthen digital pedagogy adoption.

Keywords: Administrative Support; Basic Education Research; Digital Pedagogy; PLS-SEM; Technology Access

Introduction

The integration of digital pedagogy has become increasingly important in secondary education as schools respond to rapid technological advancements and the evolving learning needs of students. Digital pedagogy -- teaching practices that effectively integrate digital tools and technologies to enhance learning, instruction, and assessment -- depends largely on institutional factors such as administrative support and access to technology (Timotheou et al., 2022).

In Siocon Secondary School, teachers are encouraged to integrate technology into instruction in line with the Department of Education's initiatives on ICT integration and 21st-century skills development (Department of Education, 2017). Current practice at the school reflects a common pattern in Philippine public secondary education: teachers are expected to use digital tools in planning, delivering, and assessing lessons, yet the extent to which this expectation translates into consistent classroom practice varies. This variation may be influenced by the level of support provided by school administrators -- referring to the leadership, policies, and professional development that administrators extend to teachers integrating technology into instruction -- as well as by technology access, or the availability and usability of devices, internet connectivity, and digital platforms for teaching purposes.

A gap persists in local educational research on how these two institutional factors act together, rather than in isolation, to shape digital pedagogy adoption. Much of the existing Philippine literature on ICT integration relies on descriptive accounts or single-variable correlations, and few studies employ variance-based structural equation modeling to quantify the distinct predictive contribution of administrative leadership relative to technology infrastructure within one school setting (Berongoy-Peñas & Paglinawan,



2025; Espinosa et al., 2025). This study addressed that gap by using Partial Least Squares Structural Equation Modeling via WarpPLS 8.0 to examine how administrative support and technology access relate to the adoption of digital pedagogy -- referring here to teaching practices that integrate digital tools into instructional planning, classroom implementation, and assessment and feedback -- among teachers of Siocon Secondary School. Understanding this relationship is essential to identifying gaps and formulating strategies to strengthen digital teaching practices at the school level, and the findings are intended to provide empirical evidence that may guide school leaders and policymakers in improving digital teaching and learning.

The results of this study may benefit several groups. For school administrators, the findings offer insight into how leadership practices and support systems influence teachers' use of digital pedagogy, serving as a basis for improved school management and planning. For teachers, the study may clarify which institutional factors most support or hinder their adoption of digital teaching strategies. For students, improved adoption of digital pedagogy may translate into stronger engagement, richer learning experiences, and better academic performance. For the Department of Education, the findings may inform policy formulation, capacity-building programs, and resource allocation related to ICT integration in schools. For future researchers, the study contributes to the growing body of literature on digital pedagogy and educational leadership and may serve as a reference for related studies.

Research Questions

This study aimed to determine the relationship between administrative support, technology access, and the adoption of digital pedagogy among teachers in Siocon Secondary School. Specifically, it sought to answer the following questions:

1. What is the level of administrative support perceived by teachers in Siocon Secondary School in terms of:
 - 1.1 leadership and vision;
 - 1.2 professional development and training; and
 - 1.3 policy and technical support?
2. What is the level of technology access of teachers in terms of:
 - 2.1 availability of devices;
 - 2.2 internet connectivity; and
 - 2.3 access to digital learning platforms and software?
3. What is the level of adoption of digital pedagogy among teachers in terms of:
 - 3.1 instructional planning;
 - 3.2 classroom implementation; and
 - 3.3 assessment and feedback?
4. Is there a significant relationship between administrative support and the adoption of digital pedagogy?
5. Is there a significant relationship between technology access and the adoption of digital pedagogy?

Scope and Delimitation of the Study

This study focused on the relationship between administrative support, technology access, and the adoption of digital pedagogy among teachers of Siocon Secondary School during School Year 2025-2026. The study was limited to teachers currently employed in the school and did not include students' perspectives or other external factors such as home technology access. The study assumed that respondents answered the survey questionnaire honestly and independently, that conditions surrounding administrative support and technology access at the time of data gathering were representative of typical school-year conditions, and that self-reported levels of digital pedagogy adoption reasonably reflect actual classroom practice; these assumptions informed the data gathering procedure described in the Methodology section.

Literature Review

Legal and Policy Basis

The present study is anchored on several legal issuances and policy frameworks of the Philippine government and the Department of Education (DepEd) that collectively establish both the administrative and the technological dimensions of the study's variables. Republic Act No. 9155, otherwise known as the Governance of Basic Education Act of 2001, provides the foundational legal basis for administrative support as a variable of this study. The law decentralized authority within DepEd and designated the school head as both instructional leader and administrative manager, directly accountable for the school's performance and for mobilizing the resources needed to create a conducive learning environment. Under the law's implementing



rules, the school head is expected to form a team with teachers for the delivery of quality educational programs, projects, and services, a mandate that extends naturally to decisions on how technology is introduced, resourced, and sustained at the school level. On the technology access dimension, DepEd Order No. 16, s. 2023, which sets out the Revised Guidelines on the Implementation of the DepEd Computerization Program (DCP), provides the primary policy basis. The order directs DepEd offices and public schools to be equipped with appropriate, equitable, and quality technologies to enhance teaching, learning, governance, and operations, and it repealed the earlier DepEd Order No. 78, s. 2010 to update the program's implementation, monitoring, and evaluation mechanisms. Relatedly, the Department's Digital Rise Program, launched under the Public Schools of the Future framework pursuant to Sulong Edukalidad, anchors technology access in three components, namely digital literacy integration in the K to 12 curriculum, ICT-assisted teaching through e-learning resources made available to teachers, and ICT-assisted learning through devices and platforms made available to learners, alongside earlier ICT4E Strategic Plan thrusts to strengthen curriculum integration, teacher and administrator capacity, and school-level ICT infrastructure and governance. Taken together, these issuances confirm that administrative support and technology access are not merely descriptive variables but are grounded in specific legal mandates: RA 9155 obligates school heads to exercise administrative leadership over school resources, while DepEd Order No. 16, s. 2023 and the Digital Rise Program obligate the Department to provide the technological infrastructure that teachers required to adopt digital pedagogy.

Administrative Support and Teachers' Technology Integration

A growing body of research affirms that administrative support is a consistent predictor of teachers' readiness and actual practice of integrating technology into instruction. In a correlational study of 94 public elementary school teachers in a rural district of San Carlos City, Philippines, Yap and Ramirez (2026) found a very high level of administrative assistance in terms of leadership, resources, and training, and reported that this assistance was strongly and positively correlated with teachers' readiness and actual technology integration in teaching. Their findings indicated that when school administrators consistently provide leadership, resources, and structured training, teachers report greater confidence and are more able to move beyond basic tool use toward instructionally meaningful integration. A related study by Nicolas and Santos (2024), conducted among public elementary school administrators and teachers in the District of Guiguinto, Bulacan, similarly found a statistically significant relationship between school administrators' technology management practices and teachers' technology experience, even though administrators in their sample continued to face persistent constraints in infrastructure and equipment. Their findings reinforce that administrative support functions not simply as the provision of hardware, but as an ongoing exercise of leadership, planning, and troubleshooting that shapes how far teachers are able to translate available technology into classroom practice.

Technology Access and Infrastructure as a Determinant of Adoption

Separately from administrative support, the physical availability of devices, connectivity, and technical maintenance has been repeatedly identified as a distinct barrier to teachers' technology use, particularly in rural and under-resourced settings. Aldave and Obiso (2025), in a descriptive-correlational study of teachers in three rural elementary schools in Cebu Province, reported that while teachers generally expressed a high degree of acceptance of technology, unstable internet connectivity at school and unequal access to devices emerged as the most significant perceived obstacles to actual technology deployment in the classroom. This finding suggests that positive teacher attitudes toward technology are not, by themselves, sufficient to guarantee adoption when infrastructure remains inconsistent. Nicolas and Santos (2024) likewise found that among the dimensions of school technology management they examined, the number of available computers and the adequacy of computer laboratories obtained the lowest ratings, and that teachers cited insufficient hardware, unreliable connectivity, and a lack of technical maintenance support as recurring problems limiting classroom technology use. In a related descriptive-quantitative study of 109 junior and senior high school students in rural Nueva Ecija, Olipas and Alegado (2025) similarly documented persistent gaps in access to digital devices and internet connectivity in Philippine public schools, even as students demonstrated reasonably strong foundational digital literacy skills where access existed. Although their study examined learners rather than teachers, it's finding that infrastructure gaps, rather than skill or willingness, remain the binding constraint on digital access in rural Philippine public education reinforces the case for treating technology access as a determinant distinct from user readiness. Taken together, these Philippine-based findings support treating technology access as a variable conceptually distinct from, though closely related to, administrative support: a school head may exhibit strong leadership and provide training, yet teachers' adoption may still be constrained if the underlying infrastructure is inadequate.



Technology Acceptance and Teachers' Adoption of Digital Tools

At the level of individual teacher psychology, the Technology Acceptance Model continues to be the dominant framework used to explain why some teachers adopt digital tools more readily than others. Since its original formulation, TAM has been widely applied across educational contexts, with perceived usefulness and perceived ease of use consistently emerging as significant predictors of teachers' behavioral intention to use technology and, ultimately, of their actual instructional practice. Aldave and Obiso (2025) applied a modified version of the related Unified Theory of Acceptance and Use of Technology to Philippine elementary teachers and found generally high acceptance scores, even as external constraints such as infrastructure limited translation of that acceptance into consistent classroom use, a pattern consistent with TAM's premise that favorable beliefs about a technology do not automatically produce use in the absence of supporting conditions. This body of work collectively suggests that teachers' adoption of digital pedagogy cannot be fully explained by psychological readiness alone. Perceived usefulness and perceived ease of use operate as the proximate, individual-level determinants of adoption, but they are themselves shaped by external, organizational-level conditions, namely the administrative support and technology access made available within a given school.

Transformational Leadership and Technology Integration in Schools

A separate strand of research has examined how school leadership style, rather than resource provision alone, shapes the organizational conditions for technology integration. Schmitz et al. (2023), in a large-scale study of 2,247 upper-secondary teachers in Switzerland, found through structural equation modeling that principals' transformational leadership had a significant and positive impact on the digital infrastructure of schools, on teachers' positive beliefs about digital technology, and on teachers' skills in teaching with digital tools, each of which in turn significantly predicted the extent of technology integration in the classroom. Notably, their findings positioned transformational leadership as an antecedent that operates by shaping intervening conditions, including infrastructure and teacher beliefs, rather than by directly producing technology use on its own. These findings lend empirical support to the theoretical link, drawn earlier in this study, between transformational leadership and the independent variables of administrative support and technology access: a school head's leadership behavior does not act on teachers' adoption of digital pedagogy directly, but through the support structures and resource conditions that leadership makes possible. This is consistent with the mandate under RA 9155 for school heads to function as instructional leaders and administrative managers and gives an empirical basis for expecting that Siocon District school heads who exercise stronger leadership will be associated with stronger administrative support and, indirectly, better technology access for their teachers.

Methodology

Research design

This study utilized a descriptive-correlational research design using Partial Least Squares Structural Equation Modeling (PLS-SEM). This design allowed for the concurrent description of variable levels and the structural testing of direct predictive relationships without experimental manipulation.

Research Locale

The study was conducted at Siocon Secondary School in the Division of Zamboanga del Norte, Philippines. The target population comprised all full-time public secondary school teachers employed at the school during School Year 2025–2026. A total enumeration approach was used ($N = 196$), eliminating sampling error and ensuring full institutional representation.

Research Instrument

Data were collected using a structured, researcher-made survey questionnaire divided into four parts: Part I: Respondent Demographic Profile. Part II: Administrative Support Scale (9 items; covering leadership/vision, professional development, and policy/technical support). Part III: Technology Access Scale (9 items; covering device availability, internet connectivity, and platform access). Part IV: Adoption of Digital Pedagogy Scale (9 items; covering instructional planning, classroom implementation, and assessment/feedback). All items were scored using a 5-point Likert scale (5 = Always / Strongly Agree, 4 = Often / Agree, 3 = Sometimes / Neutral, 2 = Rarely / Disagree, 1 = Never / Strongly Disagree). The instrument underwent content validation by a panel of three experts in educational management and educational technology. Pilot testing was conducted with 10 non-respondent teachers at Canatuan National High School. Pilot test reliability analysis showed high internal consistency across all construct scales (Composite Reliability = 0.929–0.931; Cronbach's $\alpha = 0.915$ –0.918).

Results and Discussions

Research Question 1: What is the level of administrative support perceived by teachers in Siocon Secondary School in terms of leadership and vision, professional development and training and policy and technical support?

Table 1. Level of Administrative Support (N = 196)

Indicator	M	SD	Interpretation
Leadership and vision	4.38	0.67	Often
Professional development and training	4.35	0.68	Often
Policy and technical support	4.39	0.66	Often
Overall mean	4.37	0.56	Often

The overall mean for administrative support was 4.37 (SD = 0.56), interpreted as "Often." All three sub-indicators -- leadership and vision (M = 4.38), professional development and training (M = 4.35), and policy and technical support (M = 4.39) -- consistently fell within the "Often" range. The item on sufficiency of training on digital tools obtained the highest item mean (M = 4.48), while the item on opportunities to enhance digital teaching skills was the lowest (M = 4.25). These results indicate that teachers of Siocon Secondary School generally perceive a high and consistent level of administrative support for digital pedagogy integration, with school leadership providing a coherent and reinforcing support system, consistent with findings that school heads who actively demonstrate digital competency tend to sustain stronger institutional support for technology integration (Maala & Lagos, 2022).

Research Question 2: What is the level of technology access of teachers in terms of availability of devices, internet connectivity and access to digital learning platforms and software?

Table 2. Level of Technology Access (N = 196)

Indicator	M	SD	Interpretation
Availability of devices	4.09	0.81	Often
Internet connectivity	4.19	0.78	Often
Access to digital learning platforms and software	4.19	0.77	Often
Overall mean	4.16	0.70	Often

The overall mean for technology access was 4.16 (SD = 0.70), interpreted as "Often." Availability of devices (M = 4.09), internet connectivity (M = 4.19), and access to digital learning platforms and software (M = 4.19) were all interpreted as "Often," though technology access registered the lowest overall mean among the three constructs (administrative support = 4.37; adoption of digital pedagogy = 4.31; technology access = 4.16). Access to functional computers or laptops was the lowest-rated item overall (M = 3.93), while reliability of school internet was the highest (M = 4.33). This finding echoes reports from other Philippine public schools where device availability, rather than connectivity or platform access, is the most persistently cited constraint on technology use (Berongoy-Peñas & Paglinawan, 2025), and suggests that while technology access at Siocon Secondary School is satisfactory, it represents the most pressing area for improvement relative to administrative support and digital pedagogy adoption.

Research Question 3: What is the level of adoption of digital pedagogy among teachers in terms of instructional planning, classroom implementation and assessment and feedback?

Table 3. Level of Adoption of Digital Pedagogy (N = 196)

Indicator	M	SD	Interpretation
Instructional planning	4.30	0.70	Often
Classroom implementation	4.39	0.66	Often
Assessment and feedback	4.23	0.74	Often
Overall mean	4.31	0.58	Often

The overall mean for adoption of digital pedagogy was 4.31 (SD = 0.58), interpreted as "Often." Classroom implementation (M = 4.39) emerged as the strongest sub-indicator, followed by instructional planning (M = 4.30) and assessment and feedback (M = 4.23). Regular use of digital tools during instruction obtained the highest item mean (M = 4.43), while using technology to monitor student progress was the lowest (M = 4.22). This pattern -- stronger performance in delivery than in digital assessment -- is consistent with the broader literature on digital pedagogy adoption, which similarly finds that teachers exhibit greater confidence in lesson delivery than in maximizing digital platforms for structured tracking and feedback (Arcueto et al., 2021).

Research Question 4: Is there a significant relationship between administrative support and the adoption of digital pedagogy?

Table 4. Measurement Model Reliability and Validity

Construct	CR	CA	AVE	sqrt(AVE)	VIF
Administrative support	0.931	0.918	0.576	0.759	1.811
Technology access	0.930	0.915	0.574	0.757	2.102
Adoption of digital pedagogy	0.929	0.915	0.567	0.753	1.819

Note. CR = composite reliability (acceptable $\geq .70$); CA = Cronbach's alpha (acceptable $\geq .70$); AVE = average variance extracted (acceptable $\geq .50$); sqrt(AVE) = square root of AVE, used in the Fornell-Larcker criterion; VIF < 3.3 confirms absence of multicollinearity. These coefficients were obtained from the main-study sample (N = 196); corresponding pilot-phase reliability coefficients are reported in the Methodology section.

To answer the questions on significant relationships, the study employed PLS-SEM using WarpPLS 8.0. Prior to testing the structural relationships, the measurement model was assessed for reliability and validity, as presented in Table 4. All three constructs demonstrated strong internal reliability (CR = .929-.931; alpha = .915-.918), well above the .70 threshold, indicating that items within each construct consistently measured the same underlying dimension. Convergent validity was confirmed, with AVE values exceeding .50 for all constructs, indicating that each construct explained more than half of the variance in its indicators. Discriminant validity was established through the Fornell-Larcker criterion and confirmed by HTMT ratios, all below .85. Full collinearity VIF values (1.811-2.102) were all below 3.3, confirming the absence of multicollinearity between administrative support and technology access. The measurement model thus met all required psychometric standards for proceeding to structural path analysis.

Research Question 5: Is there a significant relationship between technology access and the adoption of digital pedagogy?

Table 5. Structural Path Coefficients

Hypothesis / path	beta	SE	f2	p	Decision
H01: Administrative support -> Adoption of digital pedagogy	0.243	0.068	0.144	< .001	Rejected
H02: Technology access -> Adoption of digital pedagogy	0.482	0.065	0.317	< .001	Rejected

Note. beta = standardized path coefficient; SE = standard error; f2 = effect size (small $\geq .02$; medium $\geq .15$; large $\geq .35$). p-values generated via WarpPLS 8.0 bootstrapping (5,000 resamples) at alpha = .05. R2 for adoption of digital pedagogy = 0.461. Overall model goodness-of-fit = 0.518 (large).

Table 5 presents the structural path coefficients, standard errors, effect sizes, p-values, and hypothesis-testing decisions. Because PLS-SEM relies on a nonparametric bootstrapping procedure to generate the standard errors and p-values reported below, it does not require the multivariate normality assumption associated with covariance-based structural equation modeling or ordinary correlation testing; bootstrapping resamples the observed data repeatedly, which relaxes the distributional assumptions that a conventional Pearson correlation would otherwise require. H01 states that there is no significant relationship between administrative support and the adoption of digital pedagogy. The analysis revealed a statistically significant positive path (beta = 0.243, SE = 0.068, f2 = 0.144, p < .001); H01 is therefore rejected. A one-unit increase in perceived administrative support is associated with a 0.243 standard deviation increase in digital pedagogy adoption, holding technology access constant -- a small-to-medium effect. This finding is consistent with leadership-focused studies showing that visible administrative support functions as an enabling, though not the sole, driver of teachers' technology-related practice (Maala & Lagos, 2022; Timotheou et al., 2022). H02 states that there is no significant relationship between technology access and the adoption of digital pedagogy. The analysis revealed a statistically significant and stronger positive path (beta = 0.482, SE = 0.065, f2 = 0.317, p < .001); H02 is therefore rejected. Technology access emerged as the stronger direct predictor, with a



medium-to-large effect size. Together, administrative support and technology access explained 46.1% of the variance in digital pedagogy adoption ($R^2 = 0.461$) -- meaning that just under half of the variability in how consistently teachers adopt digital pedagogy at Siocon Secondary School can be statistically accounted for by these two institutional factors alone, with the remainder attributable to variables outside this model, such as individual digital self-efficacy or school culture. That technology access carried roughly twice the predictive weight of administrative support suggests that, at the current stage of digital pedagogy adoption in this school, material infrastructure constraints are a more binding limitation on practice than leadership or policy gaps, a pattern consistent with access-barrier findings from other Philippine public schools (Berongoy-Peñas & Paglinawan, 2025).

Ethical Considerations

Ethical approval was granted through the institutional research ethics review process of the Siocon District. Written informed consent was secured from all respondents prior to data collection, emphasizing voluntary participation and confidentiality. Data collection forms were anonymized, and raw records were securely managed in compliance with Republic Act No. 10173 (Data Privacy Act of 2012) and DepEd research guidelines.

Conclusion

This study investigated the relationship between administrative support, technology access, and the adoption of digital pedagogy among 196 teachers of Siocon Secondary School during School Year 2025-2026, using a descriptive-correlational design, a researcher-made questionnaire, and PLS-SEM via WarpPLS 8.0. Teachers of Siocon Secondary School perceive a high level of administrative support for digital pedagogy integration, affirming that school administration provides a coherent and reinforcing institutional environment; at the same time, technology access -- while satisfactory -- remains the weakest of the three constructs measured, pointing to a continuing need for targeted improvement in device provisioning and connectivity reliability. Teachers have meaningfully adopted digital pedagogy in their practice, with classroom implementation as the strongest dimension and assessment and feedback as an area for growth. Structurally, administrative support is a significant positive predictor, though comparatively modest, of digital pedagogy adoption, playing an essential enabling role, while technology access is the stronger and more direct driver of digital pedagogy adoption, confirming it as a critical determinant rather than merely a facilitating factor. Taken together, these findings suggest that digital pedagogy adoption at Siocon Secondary School is shaped jointly by institutional leadership and material infrastructure, with infrastructure currently exerting the greater influence. Because administrative support was confirmed as a significant, if comparatively modest, predictor of digital pedagogy adoption, school administrators are encouraged to sustain and strengthen visible leadership in digital integration by consistently communicating a clear school-wide ICT vision, updating training to match classroom needs, and institutionalizing technical support systems. Because availability of devices was the lowest-rated item across all three constructs and technology access was confirmed as the stronger predictor of adoption, administrators and the Department of Education should jointly prioritize investment in expanding and maintaining the school's hardware inventory and internet reliability, adopting a dual-pronged approach that strengthens leadership capacity in digital pedagogy advocacy while accelerating infrastructure provisioning. Because professional development and training showed the widest score range among the administrative support sub-indicators, professional development coordinators should diversify training beyond formal seminars to include peer coaching, learning communities, and individualized mentoring, building on the demonstrated value of structured, in-house approaches such as Learning Action Cell sessions (Javier, 2022). Because assessment and feedback were the weakest dimension of digital pedagogy adoption, teachers are encouraged to expand their use of digital tools specifically for assessment and feedback for example, form-based quizzing tools or learning-management-system gradebook features to more systematically monitor student progress. Finally, because this study's model explained less than half of the variance in digital pedagogy adoption, future researchers are encouraged to replicate this study in other public secondary schools in the Zamboanga Peninsula, extend the model with variables such as digital self-efficacy or school culture, and consider longitudinal or mixed methods designs to capture change over time.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are proposed. School administrators should sustain visible leadership and institutional support for digital pedagogy by maintaining a clear school-wide ICT vision, strengthening technical assistance, and aligning professional development programs with teachers' actual instructional technology needs. The Department of Education and school management should prioritize the provision, maintenance, and equitable distribution of functional

digital devices, reliable internet connectivity, and appropriate digital learning platforms, given that technology access emerged as the stronger predictor of digital pedagogy adoption. Teachers are encouraged to further strengthen the integration of digital technologies across instructional planning, classroom implementation, and particularly assessment and feedback, where adoption obtained the lowest dimension-level mean. Professional learning initiatives may incorporate peer coaching, Learning Action Cell activities, mentoring, and practice-oriented training to support sustained technology integration. Teacher education and professional development programs should likewise emphasize digital instructional design, technology-supported assessment, digital resource development, and effective classroom application rather than focusing solely on technical skills. For future researchers, the model may be replicated across multiple public secondary schools and geographical contexts to enhance external validity and may be extended by examining additional factors such as digital self-efficacy, school culture, teacher competence, perceived usefulness, and organizational readiness. Longitudinal, mixed-methods, or comparative research designs may also be employed to examine changes in digital pedagogy adoption over time and provide deeper explanations of the institutional and individual factors underlying teachers' technology integration. These recommendations are directly grounded in the study's finding that administrative support and technology access jointly explained 46.1% of the variance in digital pedagogy adoption, with technology access demonstrating the stronger predictive effect.

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