



Competency Development Model for Enhancing School Administrators' Innovation Leadership in Buriram Province

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Abstract

Background and Aim: Driven by 21st-century educational reforms, this study aimed to develop and evaluate a competency development model for school administrators in Buriram Province, Thailand, to enhance their innovation leadership and transform schools into innovative educational organizations.

Materials and Methods: This mixed-methods research was conducted through four sequential phases: Phase 1 (Needs Assessment): Assessing current and desired competency levels among 162 school administrators to identify critical performance gaps; Phase 2 (Model Development and Validation): Synthesizing qualitative insights from 9 key informants to draft the initial model, which was subsequently validated for appropriateness, feasibility, and utility by a panel of experts; Phase 3 (Model Implementation): Evaluating the effectiveness of the model through a pre- and post-implementation experiment with a targeted group of 40 school administrators; and Phase 4 (Model Evaluation): Assessing participant satisfaction and overall impact regarding the model's practical application. Quantitative data were gathered from 162 school administrators (with 40 participating in the implementation phase), while qualitative insights were collected from 9 key informants. Data were analyzed using mean, standard deviation, Modified Priority Needs Index (PNI_{Modified}), paired-samples *t*-test, and content analysis.

Results: The findings showed: (1) Administrators' competency was moderate ($M=3.35$) but lower than the desired level ($M=4.42$). This gap indicates a need to improve innovation leadership. The most urgent needs were: searching for and synthesizing innovations for management (PNI_{Modified}=0.53), using tools and technology for innovative organizations (PNI_{Modified}=0.45), and developing management innovations (PNI_{Modified}=0.38). (2) The systematic model used competency-based and knowledge management approaches. It had five parts: principles, objectives, development guidelines, measurement and evaluation, and success factors. The model received high ratings for appropriateness ($M=4.68$), feasibility ($M=4.56$), and utility ($M=4.76$). (3) Administrators' competency scores rose from moderate ($M=2.82$) to the highest level ($M=4.68$) after implementing the model ($t=28.95$, $p<.05$). (4) Satisfaction was highest ($M=4.78$), especially for utility ($M=4.82$). The model led to clear, measurable improvements in innovation leadership and educational quality. It provides a strong framework for sustainable improvement.

Conclusion: The competency development model (driven by the "PIE-CD Model" and "IDMS Cycle") effectively closes critical competency gaps and significantly enhances innovation leadership. It offers a promising framework that may be adapted and tested in similar educational contexts to transform schools into sustainable innovative educational organizations.

Keywords: Competency Development Model, Innovation Leadership, School Administrators, Educational Innovation, Buriram Province

Introduction

The 21st century is characterized by rapid, disruptive, and multidimensional transformations, encompassing digital disruption, climate crises, global population mobility, demographic shifts toward aging societies, and intense international competition. These interconnected dynamics are captured by the VUCA concept, signifying extreme Volatility, Uncertainty, Complexity, and Ambiguity. This ongoing turbulence has direct repercussions on educational paradigms, rendering traditional, memory-based education obsolete and ineffective in addressing modern demands (Ra-ngubtook, 2020; Rajasekaran et al, 2024). Consequently, Thailand faces an urgent imperative to overhaul its educational





system to equip citizens with robust, adaptable competencies. This requires a profound shift toward cultivating essential 21st-century skills, placing rigorous emphasis on analytical thinking, creative problem-solving, lifelong learning, collaboration, and advanced technology integration for sustainable national growth (Ministry of Education, 2017; OECD, 2023).

Educational reform in Thailand has continuously evolved from the National Education Act B.E. 2542 (1999) to its Fourth Amendment B.E. 2562 (2019), shifting the paradigm from content memorization to learner-centered approaches, life skills development, and technology-driven innovation (Office of the Education Council, 2019). Furthermore, the Ministry of Education's 2025–2026 policies explicitly focus on developing new-generation citizens, educators, and schools through decentralization, wider participation, and digital technology adoption (Limsuwannarot et al., 2024). In this context, school administrators are strategically expected to serve as change leaders who translate national policies into school-level execution.

Innovation competency in school administration has thus become an imperative professional benchmark. Under the Regulations of the Secretariat Office of the Teachers Council of Thailand on the Professional Competency Development Curriculum for School Administrators B.E. 2568 (2025). This structural standard systemically categorizes the core competency into three interconnected dimensions: 1) Finding and Synthesizing Innovations: The capacity to search, screen, evaluate, and process diverse knowledge and best practices from both internal and external institutional sources; 2) Developing New Innovations: The ability to design, generate, and adapt original administrative innovations that align perfectly with the specific realities and needs of the educational context; and 3) Selecting and Using Suitable Tools: The capability to identify, select, and effectively deploy digital tools, technologies, and resources to serve as primary drivers in supporting the broader innovation process. Furthermore, a robust body of both national and international research consistently underscores that school administrators who possess strong innovation competencies are uniquely equipped to foster institutional innovation. These competencies enable leaders to champion collaborative learning paradigms, cultivate an open and experimental environment, and ultimately deliver vastly superior outcomes for students, teachers, parents, and the organization as a whole (Khanthap, 2022; Fullan, 2022; OECD, 2023; Anwar & Saraih, 2024; Limsuwannarot et al., 2024).

However, a profound gap exists between regulatory mandates and actual operational reality. Despite stringent professional standards, empirical evidence indicates that the innovation competency of Thai school administrators remains merely at a moderate level (Boonkua et al., 2020; Sakunpatrada & Phutariyawat, 2022; Suttijit et al., 2024; Limsuwannarot et al., 2024). This deficiency is driven by three critical skill gaps: 1) Information and Knowledge Gaps (inability to systematically screen, evaluate, and synthesize research into practice); 2) Deficiencies in Risk Management (lack of capacity to navigate setbacks during innovation processes); and 3) Inadequate Network Building (difficulties in sustaining active innovation networks). Crucially, this empirical gap is further exacerbated by a significant methodological and contextual gap in existing professional development practices. Most current administrator training models rely heavily on generic, top-down, and lecture-based approaches that fail to address context-specific constraints, particularly in provincial areas dominated by small- and medium-sized schools facing severe resource inequities, restricted technological infrastructure, and weak Professional Learning Communities (PLCs). Consequently, administrators frequently revert to rigid, bureaucratic management methods that impede institutional transformation.

To bridge these critical gaps, there is an urgent need for an empirically grounded, context-responsive competency development framework. Buriram Province represents a critical site for this investigation, characterized by a high concentration of small-to-medium schools operating under diverse socio-economic constraints with limited access to modern administrative innovations. Therefore, this study aims to assess current and desired conditions, evaluate priority needs, and ultimately develop and validate a tailored Competency Development Model for school administrators in Buriram Province. By directly addressing local operational barriers while aligning with national competency standards set by the Teachers Council of Thailand, this study fills a crucial gap in empirical literature. The resulting model serves not only as a practical roadmap to empower school administrators as transformative change leaders, but also as a promising framework that may be adapted and tested in





similar primary educational service areas seeking to transition traditional schools into innovative educational organizations.

Objectives

- 1) To examine the current conditions, desired conditions, and priority needs for developing school administrators' innovation leadership competencies in Buriram Province, Thailand.
- 2) To develop and validate a competency development model (synthesizing the "PIE-CD Model" and "IDMS Cycle") for school administrators to enhance innovation leadership and support school transformation in Buriram Province, evaluating its appropriateness, feasibility, and utility.
- 3) To evaluate the effectiveness of the developed competency development model by comparing school administrators' innovation leadership competencies before and after model implementation.
- 4) To assess school administrators' satisfaction with the implemented competency development model.

Literature review

This study reviewed relevant literature, including scholarly works, theories, frameworks, and empirical research from national and international sources. The review focused on five areas related to developing administrators' competencies to foster innovation and transform schools into innovative organizations.

Model Development

A model is a conceptual structure developed to explain or simulate real-world phenomena by systematically showing the relationships among key components. Models serve as frameworks to guide practice and support defined objectives. Developing models often uses research and development (R&D) methods involving several stages: reviewing foundational information, drafting a conceptual model, validating it through expert evaluation, and piloting to assess effectiveness. An effective model should be conceptually clear, cover relevant components, and be practically applicable. Based on relevant literature, the proposed model in this study has five core elements: (1) principles, (2) objectives, (3) processes, (4) measurement and evaluation, and (5) conditions for success. Together, these elements provide a framework for implementing a competency development model to enhance administrators' innovation capabilities (Laurillard, 2023; Carroll & Park, 2024).

Competencies of School Administrators in the Digital Era

The competencies of school administrators in the digital era play a critical role in driving educational transformation in response to technological advancement and societal change. Digital leadership competency refers to administrators' ability to integrate knowledge, skills, attitudes, and behaviours related to digital technologies to effectively manage schools, support student learning, and develop institutions into digitally enabled learning organizations. Key competency dimensions frequently identified in the literature include digital vision and leadership, digital literacy and technology integration, organizational culture development, innovation and change management, ethical and safe technology use, and collaborative networking (Hooi & Chan, 2022; Li et al., 2024; Pham & Nguyen Le, 2024). Research conducted in Thailand indicates that school administrators generally demonstrate relatively high levels of digital competency, particularly in organizational development and basic digital literacy. However, international studies emphasize the administrator's role as a change agent who integrates digital technologies with strategic leadership to promote equity and strengthen 21st-century learning outcomes. Common competency development strategies include professional workshops, coaching and mentoring programs, study visits, and PLCs. These approaches have been widely reported as effective and beneficial for enhancing leadership capacity (Sakunpatrada & Phutiriyawat, 2022; Kulsuwanwong et al., 2024; Suttijit et al., 2024). Nevertheless, challenges remain in the Thai context, particularly in small or rural schools where limited resources constrain technology adoption and innovation capacity.

Innovation Competency in School Administration

Innovation competency has become a central focus of educational reform in the digital age. According to the Regulations of the Secretariat Office of the Teachers Council of Thailand on the





Professional Competency Development Curriculum for School Administrators (2025), innovation competency is considered a key mechanism for enabling educational institutions to respond effectively to disruptive changes. Within the context of this study, innovation in school administration extends beyond the adoption of new technologies. It also involves transforming managerial mindsets and leadership paradigms to create new value for learners and educational organizations. Developing innovation competency, therefore, serves as a crucial strategy for improving administrative effectiveness and advancing professional standards for school leadership. Based on the synthesis of relevant literature, innovation competency in school administration can be conceptualized through three principal components: (1) Creating and developing administrative innovations, (2) Searching for and synthesizing innovative practices, and (3) Identifying and utilizing digital tools and technologies to support innovation processes. These competencies enable administrators to systematically generate and implement innovative practices that enhance institutional performance (Kulsuwanwong et al., 2024; Anwar & Saraih, 2024; Li et al., 2024; Limsuwanarot et al., 2024).

Empirical Studies on Innovation Competency Development in Educational Administration

Previous empirical studies have highlighted several key themes that inform the development of innovation competency models in educational leadership.

1) The Importance of Innovation Competency for Educational Quality: A growing body of research consistently demonstrates that innovative leadership among school administrators plays a critical role in improving educational quality. Kao-ian (2025) found that innovative leadership is positively associated with teachers' capacity to develop instructional innovations. Similarly, Morales (2025) reported that school administrators who demonstrate strong innovation leadership significantly contribute to the development of teachers' 21st-century competencies. In addition, Bahtiar and Qasabandiyah (2025) emphasized that innovation strategies function as key mechanisms for transforming educational administration in contemporary contexts that require visionary and adaptive leadership.

2) Digital Leadership and Contemporary Educational Management: A review of the literature further indicates that Anwar and Saraih (2024) have examined emerging directions in educational administration within the digital era. Their studies highlight several dimensions that are highly relevant to the present research.

(1) Conceptualization of Digital Leadership: Ahmed et al. (2024) reported that achieving sustainable organizational success in the digital era requires administrators to demonstrate digital leadership. This leadership involves establishing a clear digital vision, cultivating a digital culture within the organization, and strategically employing digital technologies in educational management. These competencies correspond closely with the dimension of identifying and utilizing digital tools and technologies to support innovation and organizational development.

(2) Integrated Educational Management: Anwar and Saraih (2024) proposed that modern educational management and proactive leadership should adopt an integrated management approach that connects administrative functions with technological innovation. Such integration helps reduce operational redundancy while improving organizational efficiency and effectiveness.

(3) Competencies in Accessing and Managing Innovation: Kao-ian (2025) further emphasized that future school administrators must develop advanced competencies in searching, filtering, and synthesizing large volumes of digital knowledge. These competencies enable administrators to transform diverse information sources into practical innovations that address institutional needs. This capability, therefore, constitutes a central component of the competency development model proposed in this study.

(4) Contextual Challenges and Research Gaps: Despite these advances, several studies have identified persistent challenges in the development of innovation competency among school administrators. In the Thai context, Khanthap (2022) and Suttijit et al. (2024) found that administrators' innovation competency remains moderate, particularly in establishing collaborative networks. Similarly, Chansirisira (2022) and Kulsuwanwong et al. (2024) reported that constraints related to limited resources and structural inequalities pose significant barriers to the development of innovative leadership in educational institutions. These challenges suggest that administrators must employ





creative management and strategic thinking to address complex organizational problems and foster innovation in resource-constrained environments.

Approaches to Model Development

Recent research emphasizes the importance of developing flexible models that align with specific institutional contexts. Mukhtar et al. (2025) found, through a structured literature review, that educational innovation requires organizational structures that support continuous learning and adaptive management. Similarly, Kao-ian (2025) argues that competency development models should consider multicultural and contextual diversity to ensure practical implementation across diverse stakeholder groups.

Future Roles of School Administrators

Bahtiar and Qasabandiyah (2025) examined effective school leadership from the perspective of educational supervisors and concluded that future administrators must act as learning designers and innovation leaders who are capable of transforming educational institutions into innovative learning organizations in rapidly changing environments.

Overall, the reviewed literature suggests that leadership competencies required for transforming schools into innovative educational organizations include four key dimensions: (1) Strategic thinking and shared vision development to guide school transformation, (2) Integration of digital technologies and evidence-based decision-making to enhance learning quality, (3) Development of an organizational culture that supports collaboration and continuous learning, and (4) Establishment of collaborative networks with internal and external stakeholders. These competencies enable administrators to build inclusive, high-quality educational institutions capable of competing in a global educational landscape while also reducing educational inequalities.

However, despite extensive research on innovation leadership and competency development, there remains a lack of context-specific competency development models tailored to local educational environments, particularly in provinces such as Buriram, where many schools are small in size and face limitations in personnel, financial resources, and technological infrastructure. Furthermore, the region's strong socio-cultural characteristics may influence educational leadership practices and innovation processes.

Therefore, this study aims to address this gap by developing a competency development model tailored to the local educational context of Buriram Province. The proposed model seeks to integrate international theoretical frameworks with local educational realities, thereby providing a practical and contextually appropriate framework for strengthening administrators' innovation competencies and supporting sustainable educational transformation.

This review synthesizes theoretical frameworks, regulatory standards, and empirical research across five key domains to build a foundation for enhancing administrators' innovation leadership. First, literature on Model Development establishes that effective educational frameworks require five core components: principles, objectives, development processes, evaluation, and conditions for success. Second, Digital Era Competencies require a shift from rigid management to transformative leadership that leverages technology for school development. Third, aligned with the Secretariat Office of the Teachers' Council of Thailand (2025) standards, Innovation Competency comprises three dimensions: creating administrative innovations, searching/synthesizing practices, and utilizing digital tools. Fourth, Empirical Research confirms that innovative leadership enhances instructional quality, yet Thai administrators remain at a moderate competency level due to operational barriers. Finally, a critical Research Gap persists: existing models rely on top-down, generic training that ignores context-specific challenges in rural, small-to-medium schools facing resource constraints, such as those in Buriram Province. This study bridges this gap by integrating theoretical frameworks with local realities to deliver a context-sensitive competency development model.

Methodology

This study employed a mixed-methods research design, integrating quantitative and qualitative approaches to obtain comprehensive data that capture the breadth and depth of the research problem. The research was conducted in educational institutions under the Buriram Primary Educational Service





Area Office, Thailand. The study was implemented in four research phases, with the procedures described as follows.

Phase 1: Investigation of the Current Conditions, Desired Conditions, and Priority Needs

This phase aimed to examine the current conditions, desired conditions, and priority needs for developing school administrators' competencies in innovation creation to transform schools into innovative educational organizations in Buriram Province, Thailand. The study consisted of two steps. First, relevant literature and previous studies were reviewed and synthesized to identify key dimensions of innovation competency development in educational administration, including (1) development of administrative innovation in school management, (2) identification and synthesis of innovation in educational administration, and (3) selection and utilization of tools and technologies to develop innovative educational organizations. Second, a survey was conducted to investigate the current conditions, desired conditions, and priority needs for competency development among school administrators. The population consisted of 280 school administrators under the Buriram Primary Educational Service Area Office, and the sample included 162 administrators selected through a multi-stage random sampling procedure based on school size, according to the Krejcie and Morgan sample size table. Data were collected using a structured questionnaire with a five-point Likert scale. Content validity was verified by five experts, with IOC values ranging from 0.50 to 1.00, and the instrument's reliability was assessed using a Cronbach's alpha coefficient of 0.934. The data were analyzed using the mean, standard deviation, and the Modified Priority Needs Index ($PNI_{Modified}$).

Phase 2: Synthesis and Development of the Competency Development Model

This phase aimed to synthesize and develop a competency development model for school administrators in innovation creation to transform schools into innovative educational organizations in Buriram Province, Thailand, and to examine the model's appropriateness, feasibility, and usefulness. The phase consisted of three steps.

First, relevant policies, concepts, theories, and prior studies on innovation competency development in educational administration were reviewed and synthesized, including national education strategies, Ministry of Education policies, and educational administration theories in the digital era. The findings from Phase 1 regarding current conditions, desired conditions, and priority needs were also analyzed to determine the key components of the model, which consisted of three dimensions: (1) development of administrative innovation in school management, (2) identification and synthesis of innovation in educational administration, and (3) selection and utilization of tools and technologies to develop innovative educational organizations.

Second, qualitative data were collected through semi-structured interviews with nine purposively selected key informants. The key informants included experts in educational administration, policymakers or administrators from educational authorities, and experienced school administrators. The interview protocol consisted of three parts: general information; opinions on the proposed competency development model (including its principles, objectives, development process, evaluation, and success factors); and recommendations for improving the model. The qualitative data were analyzed using content analysis.

Third, the proposed competency development model was evaluated for appropriateness, feasibility, and usefulness. The evaluation involved nine experts selected through purposive sampling, including academics in educational administration, policymakers or administrators from educational authorities, and experienced school administrators. Data were collected using a structured evaluation questionnaire with a five-point Likert scale. Content validity was examined using the Index of Item–Objective Congruence (IOC), ranging from 0.50 to 1.00, and the reliability of the instrument showed a Cronbach's alpha coefficient of 0.948. The data were analyzed using mean and standard deviation with predefined interpretation criteria.

Phase 3: Evaluation of the Implementation of the Competency Development Model

This phase aimed to evaluate the effectiveness of the developed competency development model for school administrators in innovation creation to transform schools into innovative educational organizations in Buriram Province, Thailand. The evaluation was conducted by comparing administrators' competencies before and after the model's implementation.





The population consisted of 280 school administrators under the Office of Buriram Primary Educational Service Area 1. The sample included 40 school administrators, selected through purposive sampling based on inclusion criteria requiring participants to have received continuous professional development in educational administration and to possess relevant knowledge and experience related to innovation management in schools. The research instrument was a five-point Likert-scale questionnaire assessing administrators' competencies in innovation creation for educational administration. The instrument consisted of three competency components:

1) Development of administrative innovation in school management, including the ability to analyze problems or opportunities for development, design administrative innovations, experiment and improve innovations, apply digital technology, and foster an innovation culture in the organization.

2) Identification and synthesis of innovations in educational administration, including the ability to search for information from diverse sources, screen and evaluate information quality, analyze and synthesize knowledge, adapt innovations, and transfer or share knowledge.

3) Selection and utilization of tools and technologies to develop innovative educational organizations, including the ability to identify technological needs, select appropriate tools, use search tools for information retrieval, apply technology for data analysis, and manage and store information effectively.

The instrument was validated by experts for content validity, with an Index of Item–Objective Congruence (IOC) of 0.50 or higher. Data were analyzed using a dependent-samples t-test to compare competency levels before and after the model's implementation.

Phase 4: Satisfaction Evaluation of the Competency Development Model

This phase aimed to evaluate school administrators' satisfaction with the competency development model for innovation creation in educational administration, designed to transform schools into innovative educational organizations in Buriram Province, Thailand. The population consisted of 280 school administrators under the Office of Buriram Primary Educational Service Area 1. The sample included 40 school administrators, selected through purposive sampling based on inclusion criteria requiring participants to have participated in continuous professional development in educational administration and to possess relevant knowledge and experience in the research area. The research instrument was a five-point Likert-scale questionnaire assessing administrators' satisfaction with the competency development model. The instrument was validated by experts to ensure content validity, with the Index of Item–Objective Congruence (IOC) ranging from 0.50 to 1.00. Data collection was conducted by obtaining institutional permission, distributing the satisfaction questionnaire via a QR code for online responses, and collecting responses via Google Forms. The data were analyzed using the mean (M) and standard deviation (SD). The interpretation criteria were as follows: 4.51–5.00 = very high satisfaction; 3.51–4.50 = high satisfaction; 2.51–3.50 = moderate satisfaction; 1.51–2.50 = low satisfaction; 1.00–1.50 = very low satisfaction.

Results

This section presents the study's empirical findings in accordance with the research objectives. The results include the analysis of the current level of competencies in innovation creation for educational administration, the development of the competency development model, the evaluation of the model implementation, and the satisfaction of participants with the model.

1. Current Level of Competencies in Innovation Creation for Educational Administration

The first objective of this study was to examine the current level of competencies in innovation creation for educational administration among school administrators in Buriram Province, Thailand. The analysis focused on three key competency dimensions: (1) development of administrative innovation in school management, (2) searching and synthesizing innovations in educational administration, and (3) selection and utilization of technological tools to support innovative educational organizations. The results indicate that the overall level of competencies in innovation creation was moderate ($M=3.22$, $S.D.=0.48$), whereas the expected or desired level was high ($M=4.68$, $S.D.=0.42$). This discrepancy suggests a clear need for competency development among school administrators to





effectively support innovation-driven educational management. The detailed results of the current condition, desired condition, and priority need analysis are presented in Table 1.

Table 1: Current Conditions, Desired Conditions, and Priority Needs for Developing School Administrators' Competencies in Innovation Creation for Educational Administration

Competency Dimension	Current Condition		Desired Condition		Mean Difference	Priority Needs Analysis
	M	S.D.	M	S.D.	ΔM (Desired–Current)	$PNI_{Modified}$
Development of Administrative Innovation in School Management	3.35	0.52	4.62	0.48	1.27	0.38
Searching and Synthesizing Innovations in Educational Administration	3.10	0.55	4.75	0.45	1.65	0.53
Selection and Utilization of Technological Tools for Developing Innovative Educational Organizations	3.20	0.50	4.65	0.49	1.45	0.45
Overall	3.22	0.48	4.68	0.42	1.46	0.45

Note. $PNI_{Modified}$ = Modified Priority Needs Index; ΔM = Mean Difference between desired and current conditions.

Table 1 presents the comparison between the current and desired conditions of administrators' competencies in innovation creation for educational administration. The findings show that the overall current competency level was moderate ($M=3.22$, $S.D.=0.48$), while the desired competency level was high ($M=4.68$, $S.D.=0.42$), indicating a substantial development gap ($\Delta M=1.46$). Among the three competency dimensions, searching and synthesizing innovations in educational administration exhibited the highest priority need ($PNI_{Modified}=0.53$), with the largest mean difference ($\Delta M=1.65$). This finding suggests that administrators require greater capacity to identify, analyze, and integrate innovative practices within educational administration. The second priority was the selection and utilization of technological tools for developing innovative educational organizations ($PNI_{Modified}=0.45$; $\Delta M=1.45$), highlighting the importance of strengthening digital and technological competencies among school leaders. Meanwhile, the development of administrative innovation in school management showed the lowest priority need ($PNI_{Modified}=0.38$; $\Delta M=1.27$), although the gap between the current and desired conditions remains evident. Overall, these results emphasize the need for systematic competency development programs that focus on innovation exploration, knowledge synthesis, and the effective integration of technological tools in educational administration.

2. Development of the Competency Development Model

The results revealed that the competency development model for school administrators in creating educational administrative innovation comprised five key components: (1) principles, (2) objectives, (3) development process, (4) measurement and evaluation, and (5) success factors. The model was designed as an integrated, systematic framework to strengthen administrators' competencies in innovation creation and to support schools in transforming into innovative educational organizations.

The model emphasizes the development of core competencies related to creative innovation, the exploration and synthesis of innovative practices, and the effective application of digital technologies in educational administration. The development process integrates active learning strategies and collaborative professional development approaches, particularly through action learning and PLCs. These approaches encourage collaborative knowledge exchange, reflective practice, and continuous professional development among school administrators.





To assess the quality of the developed model, an evaluation was conducted with experts and practitioners focusing on three key aspects: appropriateness, feasibility, and usefulness. The evaluation results are presented in Table 2.

Table 2: Evaluation of the Competency Development Model in Terms of Appropriateness, Feasibility, and Usefulness (n = 162)

Model Components	Appropriateness Mean (S.D.)	Feasibility Mean (S.D.)	Usefulness Mean (S.D.)
Principles	4.64 (0.48)	4.56 (0.52)	4.74 (0.44)
Objectives	4.72 (0.45)	4.58 (0.50)	4.79 (0.41)
Development Process	4.64 (0.48)	4.53 (0.54)	4.73 (0.44)
Measurement and Evaluation	4.67 (0.47)	4.57 (0.51)	4.76 (0.42)
Success Factors	4.71 (0.45)	4.58 (0.50)	4.79 (0.40)
Overall	4.68 (0.47)	4.56 (0.51)	4.76 (0.42)

Note. Mean scores were interpreted using a five-point Likert scale, where 4.51–5.00 indicates a very high level.

The evaluation results indicate that the competency development model was rated very high across all dimensions. Overall appropriateness was $M = 4.68$ ($S.D. = 0.47$), feasibility was $M = 4.56$ ($S.D. = 0.51$), and usefulness was $M = 4.76$ ($S.D. = 0.42$). When considering individual components, the model's objectives and success factors obtained the highest usefulness ratings ($M = 4.79$), indicating strong alignment between the model design and practical needs in educational administration. In addition, all components demonstrated high feasibility for implementation, suggesting that the model is applicable within real school contexts. These findings confirm that the developed competency development model is appropriate, feasible, and highly useful for enhancing school administrators' competencies in innovation creation and for supporting the development of innovative educational management practices.

3. Evaluation of the Implementation of the Competency Development Model

The third objective aimed to evaluate the effectiveness of the competency development model for school administrators in fostering innovation in educational administration. The developed model was implemented with 40 school administrators under the Buriram Primary Educational Service Area Office. A pre-test and post-test design was employed to measure administrators' competency levels before and after the model's implementation. The data were analyzed using a paired-samples *t*-test to determine whether there were statistically significant differences between the two measurement points. The competency evaluation focused on three major dimensions: (1) creating or developing school management innovation, (2) searching and synthesizing school management innovation, and (3) recruiting and utilizing technological tools for innovation development. The results of the competency comparison before and after the implementation are presented in Table 3.

Table 3: Paired Sample *t*-test Results of School Administrators' Competency Development Before and After Model Implementation (n = 40)

Competency Components	Pre-test M (S.D.)	Post-test M (S.D.)	Mean Difference	95% CI	<i>t</i>	<i>p</i>	Cohen's <i>d</i>
Creating or Developing School Management Innovation	2.88 (0.55)	4.67 (0.42)	1.79	[1.65, 1.93]	25.85	< .001	4.09





Competency Components	Pre-test M (S.D.)	Post-test M (S.D.)	Mean Difference	95% CI	t	p	Cohen's d
Searching and Synthesizing School Management Innovation	2.80 (0.55)	4.69 (0.43)	1.89	[1.75, 2.03]	26.42	< .001	4.18
Recruiting and Utilizing Technological Tools	2.79 (0.55)	4.69 (0.42)	1.90	[1.76, 2.04]	26.80	< .001	4.24
Overall	2.82 (0.55)	4.68 (0.42)	1.86	[1.72, 2.00]	28.95	< .001	4.58

Note. M = Mean; SD = Standard Deviation; CI = Confidence Interval. Cohen's d values greater than 0.80 indicate a large effect size.

The results indicate that school administrators' competencies significantly improved after the implementation of the competency development model. The overall competency score increased from M=2.82 (S.D.=0.55) before implementation to M=4.68 (S.D.=0.42) after implementation, with a statistically significant difference ($t(39) = 28.95, p < .001$). The effect size was extremely large (Cohen's $d=4.58$), indicating that the model had a substantial impact on administrators' competency development. When examining individual competency dimensions, significant improvements were observed across all areas. The largest post-test mean scores were found in searching and synthesizing school management innovation and recruiting and utilizing technological tools (M=4.69), followed by creating or developing school management innovation (M=4.67). These findings demonstrate that the competency development model effectively enhanced administrators' abilities to explore, synthesize, and apply innovations in educational administration. Overall, the results confirm that the developed model is highly effective in strengthening innovation-related competencies among school administrators and supports the integration of innovative practices and digital technologies in educational management contexts.

4. Satisfaction Evaluation of the Competency Development Model

The fourth objective aimed to examine school administrators' satisfaction with the competency development model for fostering innovation in educational administration. After completing the competency development programme, the participating administrators were asked to evaluate their satisfaction with the model. The evaluation focused on four aspects: (1) the content of the manual and the competency development model, (2) the development process and learning activities, (3) media, speakers, and supporting resources, and (4) the usefulness and practical applicability of the model in real educational contexts. The satisfaction evaluation was conducted using a five-point Likert scale questionnaire. The results of the satisfaction assessment are presented in Table 4.

Table 4: School Administrators' Satisfaction with the Competency Development Model (n = 40)

Satisfaction Evaluation Items	Mean (SD)	Rank
Content of the manual and the competency development model	4.76 (0.43)	3
Development process and learning activities	4.80 (0.40)	2
Media, speakers, and supporting resources	4.74 (0.44)	4
Usefulness and practical application of the model	4.82 (0.39)	1
Overall	4.78 (0.42)	-

Note: Mean scores were interpreted using a five-point Likert scale, where 4.51–5.00 indicates a very high level of satisfaction.





The results indicate that school administrators reported a very high level of satisfaction with the competency development model ($M=4.78$, $S.D.=0.42$). Among the evaluation items, the highest satisfaction was observed for the model's usefulness and practical application ($M=4.82$), suggesting that administrators perceived it as highly applicable to real school management contexts. High levels of satisfaction were also found for the development process and learning activities ($M = 4.80$) and for the manual's content and the competency development model ($M=4.76$). Satisfaction with media, speakers, and supporting resources ($M=4.74$) was slightly lower but still very high. Overall, these findings indicate that the competency development model was well received by school administrators and was perceived as both practical and beneficial for enhancing their professional competencies in innovation creation and educational administration.

The empirical findings are presented sequentially according to the four research phases:

First, the Needs Assessment (Phase 1) among 162 school administrators revealed that the overall current level of innovation competencies was moderate ($M = 3.22$, $SD = 0.48$), whereas the desired level was extremely high ($M = 4.68$, $SD = 0.42$), demonstrating a significant performance gap ($\Delta M = 1.46$). Priority need analysis using the Modified Priority Needs Index ($PNI_{Modified}$) identified searching and synthesizing innovations as the most urgent development requirement ($PNI_{Modified} = 0.53$), followed by selecting and utilizing technological tools (0.45) and developing administrative innovations (0.38).

Second, the Model Synthesis and Validation (Phase 2) established a framework comprising five core components: principles, objectives, development process, measurement and evaluation, and success factors. Expert evaluation confirmed the model's high quality across all dimensions, with the highest ratings for utility ($M = 4.76$), followed by appropriateness ($M = 4.68$) and feasibility ($M = 4.56$).

Third, the Experimental Implementation (Phase 3) with 40 school administrators demonstrated remarkable competency growth. Post-test mean scores ($M = 4.68$) were significantly higher than pre-test scores ($M = 2.82$) at $p < .001$ ($t = 28.95$), yielding an exceptionally large effect size (Cohen's $d = 4.58$). The highest post-implementation gains occurred in knowledge synthesis and technology integration ($M = 4.69$).

Finally, the Satisfaction Evaluation (Phase 4) indicated very high overall participant satisfaction ($M = 4.78$, $SD = 0.42$), with the highest score awarded to the model's practical utility and applicability in real school contexts ($M = 4.82$).

Conclusion

Framed by four research objectives, this study titled 'Competency Development Model for Enhancing School Administrators' Innovation Leadership in Buriram Province' utilized a sequential four-phase mixed-methods approach. Data were derived from 162 school administrators across the needs assessment and model validation stages (Phases 1–2), followed by a targeted sample of 40 administrators participating in the experimental implementation and evaluation phases (Phases 3–4). The key empirical findings are summarized as follows.

1) Current Situation, Desired Conditions, and Priority Needs (Phase 1)

The results indicated that the overall competency level of school administrators was moderate ($M=3.22$), whereas the desired level was the highest ($M=4.68$). The priority needs analysis using the Modified Priority Needs Index ($PNI_{Modified}$) revealed that the highest development need was the search and synthesis of innovations for educational administration ($PNI_{Modified}=0.53$). This was followed by identifying and applying technological tools (0.45) and innovation creation or development (0.38).

2) Model Synthesis and Development (Phase 2)

The developed framework was designed as a systematic model consisting of five key components: (1) principles, (2) objectives, (3) development process, (4) measurement and evaluation, and (5) success factors. The model integrates three major competencies—innovation creation, innovation searching and synthesis, and the use of technological tools—with experiential learning, coaching, and PLCs. The evaluation conducted by experts and school administrators indicated that the model demonstrated very high levels of appropriateness ($M=4.68$), feasibility ($M=4.56$), and usefulness ($M=4.76$).

3) Results of Model Implementation (Phase 3)





After implementing the model with 40 school administrators, the results showed a statistically significant improvement in overall competency at the .05 level. The mean score increased from 2.82 (S.D.=0.55) before the intervention to 4.68 (S.D.=0.42) after the intervention ($t=28.95$). All competency components improved, particularly innovation searching, synthesis, and the use of technology, with a post-test mean score of 4.69. The most notable improvements were observed in competencies related to advanced search techniques, the use of cloud storage technologies, and the creation of supportive environments for innovation development.

4) Administrator Satisfaction with the Model (Phase 4)

The results showed that school administrators reported very high overall satisfaction with the competency development model ($M=4.78$, $S.D.=0.42$). The highest satisfaction was found in utility and practical application ($M=4.82$), followed by the development process and activities ($M=4.80$). Overall, the findings indicate that the developed model is highly effective in enhancing administrators' competencies, particularly in addressing critical gaps in innovation searching and synthesis skills. The model also generated high levels of satisfaction and readiness for practical implementation among school administrators, especially in small and medium-sized schools within the Buriram Province educational service area. The study suggests that the model can serve as a sustainable guideline for developing educational personnel, particularly for strengthening leadership capacity in innovation-oriented educational organizations.

This study successfully developed and evaluated a context-responsive Competency Development Model to enhance school administrators' innovation leadership in Buriram Province. The initial needs assessment revealed a substantial performance gap between administrators' current competency levels and desired standards, identifying the ability to search for and synthesize educational innovations as the most critical operational deficit. To bridge these gaps, a systematic framework driven by the macro-level PIE-CD Model and operational IDMS Cycle was synthesized and validated by experts, confirming its high utility, appropriateness, and feasibility. Experimental implementation with school leaders demonstrated substantial, statistically significant competency gains across all dimensions, accompanied by extremely high participant satisfaction regarding its practical application. By shifting professional development from passive lectures to active, problem-based learning within local contexts, the model successfully empowers traditional, compliance-driven school leaders to become proactive innovation champions. Ultimately, this research provides a promising framework that may be adapted and tested in similar educational contexts to transform resource-constrained schools into sustainable, innovative learning organizations.

Discussion

The findings across the four research phases systematically correspond to the study's core objectives, offering a cohesive foundation for interpreting the mechanisms behind administrative competency development.

1) Examination of the Current Situation, Desired Conditions, and Needs

The results indicated that the overall competency level of school administrators was moderate ($M=3.22$), whereas the desired competency level was at the highest level ($M=4.68$). When analyzed using the Modified Priority Needs Index ($PNI_{Modified}$), the highest priority need was identified as searching and synthesizing innovations ($PNI_{Modified}=0.53$), followed by the use of tools and technologies ($PNI_{Modified}=0.45$) and innovation creation and development ($PNI_{Modified}=0.38$). These findings are consistent with Sakunpatrada and Phutiriyawat (2022), Harris et al. (2023), Suttijit et al. (2024), and Anwar and Saraih (2024), who reported that school administrators in the digital era still demonstrate clear gaps in competencies related to information searching, screening, and synthesizing knowledge from digital sources. These competencies serve as essential foundations for developing innovations in educational administration.

2) Model Development and Validation

The results of the synthesis and development process indicated that the developed framework was a systematic model consisting of five key components: principles, objectives, development process, measurement and evaluation, and success factors. The model integrates competency-based concepts





with knowledge management and experiential learning approaches. The evaluation conducted by experts and school administrators revealed that the model demonstrated very high levels of appropriateness, feasibility, and usefulness ($M=4.68$, 4.56 , and 4.76 , respectively). These findings support the theoretical perspectives of Laurillard (2023), Prachuapwan et al. (2024), Kulsuwanwong et al. (2024), and Carroll and Park (2024), who emphasized that effective competency development models must be systematic, flexible, and contextually adaptable, particularly in small and medium-sized schools with limited resources.

3) Evaluation of Model Implementation

The results of the model implementation evaluation indicated that, after the model was applied to 40 school administrators, the overall competency level increased significantly at the .05 level of statistical significance, from $Mean=2.82$ ($S.D.=0.55$) to $Mean=4.68$ ($S.D.=0.42$), with a t -value of 28.95. Improvements were observed across all competency dimensions and sub-competencies, particularly in the use of digital technologies for data analysis and innovation development. These findings are consistent with Khanthap (2022), Harris et al. (2023), OECD (2023), Prachuapwan et al. (2024), and Kulsuwanwong et al. (2024), which highlight that development processes that emphasise inquiry-based learning, coaching, and PLCs can lead to clear and sustainable competency transformation.

4) Evaluation of Satisfaction

The results of the satisfaction evaluation indicated that school administrators reported very high overall satisfaction with the competency development model ($M=4.78$, $S.D.=0.42$). The highest satisfaction was found in utility and practical application ($M=4.82$), followed by the development process and activities ($M=4.80$). These findings indicate that the model not only enhances administrators' competencies but also strengthens confidence and readiness for practical implementation. This result aligns with Harris et al. (2023), Kulsuwanwong et al. (2024), and Morales (2025), who emphasize that high levels of satisfaction with utility are a critical indicator of the effectiveness of leadership development models.

The statistically significant enhancement in school administrators' innovation leadership competencies following model implementation ($M = 2.82$ to $M = 4.68$, $p < .001$, Cohen's $d = 4.58$) can be deeply analyzed through two primary dimensions: the underlying reasons for administrator improvement and the specific structural elements of the model that drove this transformation. The substantial leap in administrator development stems primarily from a fundamental paradigm shift—moving from passive learning to active, practical engagement. Traditional administrator development often suffers from top-down, policy-driven lecture approaches that fail to connect with local, on-the-ground realities. In contrast, providing opportunities for administrators to apply concepts directly to real-world challenges within their own institutional contexts mitigated their fear of risk and created a psychologically safe environment for experimentation. Furthermore, the model was explicitly targeted at resolving critical performance gaps—specifically the competency in searching and synthesizing educational innovations, which exhibited the highest priority need ($PNI_{Modified} = 0.53$). This ensured that interventions directly unlocked operational bottlenecks rather than offering a generic, blanket curriculum.

Another pivotal driving factor lies in the robust structural framework of the model, which synthesizes the macro-level “PIE–CD Model” with the operational-level “IDMS Cycle”. Structurally, the PIE–CD Model provided clear direction and overarching principles across its five core components, earning exceptionally high validation ratings from experts ($M = 4.68–4.76$) and ensuring alignment with the professional standards set by the Teachers Council of Thailand. Simultaneously, the IDMS Cycle (Identifying, Designing, Managing, Scaling/Sharing) functioned as a practical engine, translating complex administrative concepts into manageable, step-by-step actions. Given that the model was intentionally tailored to the context of Buriram Province—where small-to-medium schools face distinct resource and technological constraints—its high contextual relevance and practical utility ($M = 4.82$) enabled immediate application. This was further amplified by the establishment of active Professional Learning Communities (PLCs) among the 40 participating administrators, fostering collaborative problem-solving and sustained peer support throughout the implementation phase. In summary, the





pronounced improvement observed in administrators was not merely the product of receiving training, but rather the result of a synergistic interaction between problem-based active learning, peer support networks, and a context-sensitive, flexible model with actionable operational steps. Together, these mechanisms successfully transformed traditional, compliance-driven school leaders into proactive, sustainable innovation leaders.

Overall, the findings across the four phases demonstrate that the developed model is highly effective in enhancing administrators' competencies and achieving high levels of satisfaction. Importantly, the model addresses the most critical competency gap—searching and synthesizing innovations, which is considered a core component of innovation leadership in the digital era (Chansirisira, 2022; Li et al., 2024; Pham & Nguyen Le, 2024; OECD, 2025). The results also indicate that the model has both academic and practical significance, as it can be applied as a framework for developing educational personnel in other educational service areas or provinces with similar contexts. However, the study has limitations regarding the sample size and the duration of the experimental implementation. Therefore, future research should consider long-term follow-up studies to examine the sustainability of competency development and organizational change.

Knowledge Contribution

This research generated new knowledge through a competency development model for school administrators to foster innovation in educational administration in Buriram Province, Thailand. The model represents an innovative framework for systematically developing leadership competencies by integrating context-based approaches with digital-driven strategies to promote sustainable innovation in educational administration. The model's structural components and systemic relationships are illustrated in Figure 1. The knowledge contribution is structured into the three core academic dimensions, based on the findings and design of this study:

1. Empirical Contribution

1) Baseline Evidence on Innovation Leadership Gaps: The study provides concrete, empirical evidence regarding the current state ($M = 3.22$) versus the desired state ($M = 4.68$) of school administrators' innovation competencies within the local context of Buriram Province.

2) Identification of Specific Priority Needs: It pinpoints exact skill deficits through quantitative metrics, revealing that searching and synthesizing educational innovations represents the most critical operational gap ($PNI_{Modified} = 0.53$) among regional school leaders.

3) Measurable Impact of Targeted Interventions: The empirical data validates that a structured development model yields significant, measurable gains in leadership competency ($t = 28.95$, $p < .001$, Cohen's $d = 4.58$), providing robust statistical proof of concept in a real-world educational setting.

2. Methodological Contribution

1) A Four-Phase Mixed-Methods Framework: The research establishes a comprehensive, reproducible 4-phase methodology—integrating Needs Assessment (Phase 1), Model Development & Validation (Phase 2), Experimental Implementation (Phase 3), and Satisfaction Evaluation (Phase 4).

2) Integration of Process-Driven Cycles: The study bridges theoretical competency frameworks with practical execution by synthesizing the “PIE–CD Model” alongside the iterative “IDMS Cycle,” offering a structured methodological blueprint for competency-based intervention design.

2) Context-Responsive Model Validation: It demonstrates a rigorous validation protocol involving expert panels (evaluating appropriateness, feasibility, and utility) combined with pre- and post-implementation experimental design ($n = 40$) tailored specifically for regional educational service areas.

3. Practical and Policy Contribution

1) Context-Adaptable Framework for School Transformation: The finalized Competency Model serves as an actionable, field-tested toolkit that provides a promising framework to be adapted and tested by administrators in similar educational contexts, particularly small-to-medium rural schools facing resource constraints.



2) Alignment with National Policy Mandates: The study directly operationalizes the national standards set by the Teachers Council of Thailand (B.E. 2568 / 2025), offering educational authorities a concrete pathway to implement policy mandates at the local school level.

3) Policy Guidance for Educational Service Areas: It offers Primary Educational Service Area Offices nationwide a strategic roadmap and curriculum model for professional development programs, ensuring that future leadership training moves away from generic lectures toward outcome-driven innovation management.

Driving Sustainable Education through the IDMS Cycle Development Framework

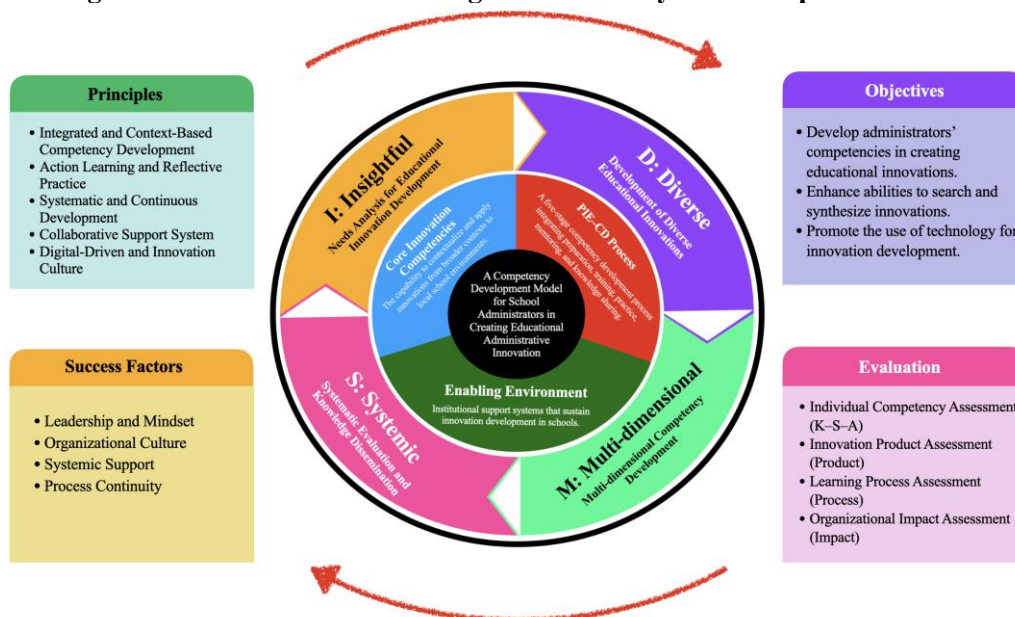


Figure 1 A Competency Development Model for School Administrators to Foster Innovation and Transform Schools into Innovative Educational Organizations in Buriram Province

The study found that educational administration within schools under the Buriram Primary Educational Service Area Office can be effectively enhanced through a dynamic development framework referred to as the IDMS Cycle, which consists of four interconnected stages: (1) Insightful Diagnostic and Strategic Alignment (I) – This stage involves in-depth analysis and strategic goal setting using data-driven approaches to identify competency gaps and determine directions for innovation development, (2) Diverse Experiential Development (D) – This stage emphasizes experiential learning through action learning, combined with digital technology integration and reflective practice to enhance administrators' practical competencies., (3) Multi-dimensional Performance Assessment (M) – This stage involves comprehensive evaluation of competency development across multiple dimensions, including knowledge, skills, and attitudes (KSA), innovation outputs (product), development processes, and broader organizational impact, and (4) Systemic Reflection and Sustainable Scaling (S) – This stage focuses on systemic reflection and sustainable expansion through PLCs to strengthen an innovation-oriented organizational culture.

The IDMS development cycle operates within a framework composed of five major components: (1) foundational principles emphasizing integration and supportive systems, (2) clearly defined objectives focusing on innovation creation, synthesis, and technology utilization, (3) structured development guidelines incorporating three competency domains and the four development stages, (4) comprehensive evaluation mechanisms, and (5) success factors involving leadership, systemic support, and an enabling organizational culture.

Furthermore, the newly generated knowledge can be conceptualized as a practice-oriented development framework, the "PIE-CD Model," for innovation leadership. Based on the synthesis of



findings from all four research phases, the model emphasizes experiential and participatory learning processes. The framework includes the following key elements:

1) Core Innovation Competencies: The study identified contextual innovation synthesis as the most critical competency for school administrators in the digital era. This competency refers to the ability to adapt and apply innovations from national or international contexts to local school environments with limited resources, rather than merely adopting ready-made innovations.

2) The 5-Step Development Process (PIE–CD): The newly developed competency development process consists of five stages:

P (Preparation) – Self-assessment and competency gap analysis using the Modified Priority Needs Index (PNI Modified).

I (Instructional Workshop) – Knowledge transfer and training on essential digital tools and technologies for educational administration.

E (Experiential Learning) – Learning through real practice using action learning, in which administrators develop their own innovation projects.

C (Coaching and Mentoring) – Structured mentoring support from experts and educational leaders within the local context.

D (Dissemination and Reflection) – Knowledge sharing and reflective learning through Show and Share activities to refine and improve innovations.

3) Enabling Environment for Innovation Development: The findings highlight that newly generated knowledge does not operate solely at the individual level. Instead, it requires institutional support mechanisms, particularly from educational service area offices. The model's effectiveness is enhanced by strong connections between policy-level strategies and school-level implementation, fostering a sense of ownership among administrators and supporting long-term sustainability.

The research provides three key academic insights:

1. From Passive to Proactive Leadership: The study demonstrates a shift in administrators' roles from innovation users toward becoming innovation creators, emphasizing proactive leadership in innovation development.

2. Systemic Synergy in Leadership Development: The findings confirm that competency development is most effective when implemented through a systemic and integrated process, beginning with needs assessment and extending through competency development, implementation, evaluation, and satisfaction assessment.

3. Integration of Digital Leadership: The study highlights the importance of integrating digital leadership competencies with national professional standards for school administrators, ensuring that leadership development aligns with emerging technological and educational transformation.

Overall, the newly generated knowledge provides a prototype model that can be adapted by other educational service areas with similar contexts. The model offers a practical framework for developing school administrators as transformational leaders capable of driving innovation in the digital era.

Recommendations

The researchers put forward two kinds of feedback as follows:

Recommendations for Practical Application

Based on the empirical findings aligned with the research objectives, the following recommendations are proposed for practical implementation:

1) Data-Informed Strategic Planning: Educational service area authorities, particularly the Buriram Primary Educational Service Area Office, should integrate the baseline findings and Modified Priority Needs Index (PNI_{Modified}) into their annual professional development frameworks. Immediate priority should be directed toward closing critical performance gaps, specifically in searching and synthesizing educational innovations and deploying digital tools. Professional development initiatives should emphasize building capacity in evidence-based management, academic database navigation, and actionable knowledge synthesis.

2) Contextualized Framework Adoption: The competency development model—encompassing principles, objectives, development processes, evaluation mechanisms, and success factors—should





serve as a foundational framework for administrator training programs. To ensure high feasibility and utility, local educational authorities should adapt implementation activities to accommodate the operational constraints of small- and medium-sized regional schools, which constitute the majority of educational institutions in the area.

3) Systemic Program Expansion and Monitoring: Educational authorities should scale the implementation of the model across regional schools through sustained, multi-phase development programs spanning at least one academic year. These programs should institutionalize active learning strategies, formal coaching and mentoring systems, and Professional Learning Communities (PLCs). Furthermore, rigorous pre- and post-implementation evaluation metrics should be embedded to systematically track competency progression over time.

4) Knowledge Transfer and Peer Mentorship: Leveraging the high participant satisfaction and perceived utility of the model, school leaders who have completed the development process should be empowered to act as innovation mentors, peer coaches, or facilitators for newly appointed administrators. Additionally, regional education offices should establish knowledge-sharing platforms—such as innovation showcases and collaborative learning forums—allowing the framework to be adapted and tested in similar educational contexts to promote sustainable leadership transformation.

Recommendations for Future Research

To advance knowledge and build upon the findings of this study, the following directions for future research are recommended:

1) Future studies should evaluate and adapt the competency development model across diverse institutional settings—such as large-sized schools, secondary educational service areas, and private educational institutions. Testing the model in varied organizational environments will enhance its external validity and generalizability.

2) Researchers should employ longitudinal designs or Participatory Action Research (PAR) to track the sustained implementation of the IDMS development cycle over time. Future inquiries should explicitly examine the downstream impacts of administrators' innovation leadership on teacher efficacy, student learning outcomes, and 21st-century skill development, thereby offering robust evidence of systemic efficacy.

3) Future research should utilize Structural Equation Modeling (SEM) to analyze the complex causal relationships and antecedent variables influencing innovation competencies, such as digital leadership, emotional intelligence, organizational culture, and risk management capacity.

4) To strengthen the psychometric rigor of competency evaluations, future studies should develop and validate multi-dimensional assessment tools using Confirmatory Factor Analysis (CFA). Additionally, incorporating multi-rater feedback mechanisms (e.g., 360-degree assessments involving teachers, supervisors, and community stakeholders) would yield more comprehensive and objective evaluations.

5) Given that technological application in data analysis remains a crucial area for growth, future research should explore integrating advanced digital technologies—such as Artificial Intelligence (AI) tools and Big Data analytics—into administrator training frameworks to support data-informed decision-making and continuous professional development.

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