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VALIDATING AN INSTRUCTIONAL COMPETENCY MODEL FOR ASSISTANT HEADTEACHERS: PRELIMINARY EVIDENCE FROM A PILOT STUDY USING CFA AND SEM

Erna Suwardi[1*], Muhamad Suhaimi Taat[2],Roslee Talip[3], Mohd Sobrye Paimin[4]

[1] Faculty of Education and Sport Studies, Universiti Malaysia Sabah, Malaysia
Email: ERNA_SUWARDI_DP23@iluv.ums.edu.my
[2] Faculty of Education and Sport Studies, Universiti Malaysia Sabah, Malaysia
Email: suhaimi@ums.edu.my
[3] Faculty of Education and Sport Studies, Universiti Malaysia Sabah, Malaysia
Email: roslee_73@ums.edu.my
[4] Faculty of Education and Sport Studies, Universiti Malaysia Sabah, Malaysia
Email: mohd_sobrye_dt24@iluv.ums.edu.my
[*] Corresponding Author

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Abstract:

This study aimed to develop and validate an Instructional Competency Model tailored for Assistant Headteachers (GPK) in Malaysian primary schools, across both rural and urban school settings in Sabah. Grounded in the KOMPAS 2.0 framework, the model conceptualised instructional competency as a multidimensional construct comprising four latent domains: Curriculum Focused Instructional Leadership (IBK), Research Culture (PP), Holistic Monitoring (PM), and Digital Ecosystem Culture (PED). A pilot survey involving 100 GPK across various districts in Sabah was conducted. The sample comprised 58 respondents from rural schools and 42 from urban schools, with balanced demographic characteristics. Data were analysed using Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) to assess construct validity and model fit. The CFA results demonstrated excellent fit indices (χ^2/df = 0.446, CFI = 1.000, RMSEA = 0.041), with standardised factor loadings ranging from 0.80 to 0.87. All constructs achieved strong composite reliability and average variance extracted. SEM analysis confirmed significant path coefficients from the main construct to its four dimensions, with Curriculum Focused Instructional Leadership (β = 0.87) emerging as the strongest contributor. These results confirm the robustness and contextual relevance of the model, while acknowledging the limitations of a pilot study. The validated model contributes theoretical novelty by extending instructional leadership theory into middle leadership domains and by adapting KOMPAS 2.0 specifically for Assistant Headteachers. It offers a practical framework that can be applied within Malaysia and in comparable international

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contexts, providing insights for education policymakers, school administrators, and training providers.

Keywords:

Instructional Competency, Assistant Headteachers, Confirmatory Factor Analysis, Structural Equation Modeling, KOMPAS 2.0

Introduction

In Malaysia's evolving education system, Assistant Headteachers (GPK) serve as key middle leaders who implement and supervise teaching and learning policies at both primary and secondary levels (Wahab & Mustapha, 2020). Besides handling administrative matters, GPK also support principals in ensuring instructional quality, particularly in contexts where school leaders face constraints. Their roles now include curriculum supervision, mentoring, and teacher performance support (Mohamed et al., 2020). Research shows that effective GPK leadership positively influences teacher professionalism, classroom practices, and school outcomes (Hassan et al., 2023). GPK also foster teacher leadership by mentoring peers and supporting the development of professional learning communities in schools. These communities help drive consistent improvements in instructional methods and school culture. Through this dual instructional–administrative role, GPK act as enablers of both policy implementation and school transformation. Their contribution is essential to improving long-term educational quality.

The Malaysian Ministry of Education (MOE) has recognised the importance of middle leaders through strategic initiatives such as the Malaysia Education Blueprint 2013–2025 and the Strategic Plan 2024–2030. These documents highlight the need to enhance teacher competency and build instructional leadership capacity at all school levels (Adams et al., 2020). GPK are tasked with supporting career-based teacher development and coordinating professional training at the school level. This includes competency-based progression and targeted upskilling aligned with national education reform goals. However, studies have noted a lack of reliable tools to evaluate GPK' instructional leadership competencies systematically (Beram et al., 2022; Samad et al., 2023). Most instruments available focus primarily on principals, leaving a gap in accurately capturing the influence of GPK as instructional leaders. This absence also affects the design of evidence based development programmes tailored to their specific roles. As a result, the strategic alignment between classroom practices and national policy expectations remains inconsistent in many schools.

To address this gap, the present study introduces and validates an Instructional Competency construct designed specifically for GPK. The construct integrates four key domains adapted from the KOMPAS 2.0 framework: Curriculum Focused Instruction (IBK), Research Culture (PP), Comprehensive Monitoring (PM), and Digital Ecosystem Culture (PED). These domains are aligned with evolving national frameworks such as the Standard Guru Malaysia (SGM 2.0), which also emphasise culturally responsive leadership and evidence based professional growth (Mohd Razali et al., 2024). GPK play a vital role in curriculum implementation by coordinating academic standards and ensuring that classroom teaching meets national learning targets (Ambon et al., 2024). Through structured leadership practices, they help shape school culture, mentor teaching staff, and elevate the quality of student learning (Hui & Singh, 2020). Their instructional leadership is especially crucial in rural or underserved schools, where centralised

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oversight is often limited, and adaptive, context-sensitive leadership is most needed (Ambon et al., 2024).

To validate the proposed instructional competency model, this study employed Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) using data from 100 GPK in Sabah . Sabah was selected due to its diverse school contexts across Sabah, diverse challenges, and need for adaptive leadership. This study seeks to develop and validate a reliable instrument to measure the instructional competencies of GPK based on four KOMPAS 2.0 dimensions, and to examine the relationships between the construct and its core dimensions. This model aims to support performance evaluations, inform training design, and strengthen instructional leadership at the middle management level. The findings are expected to guide policy and practice in developing data driven professional development for Assistant Headteachers in Malaysian schools.

Research Objective

1. To validate the instructional competency model for Assistant Headteachers (GPK) based on the KOMPAS 2.0 framework using CFA and SEM.

2. To examine the relationships between instructional competency and its four dimensions (IBK, PP, PM, PED).

Research Hypotheses

H_o1: The proposed instructional competency model does not demonstrate a good fit based on CFA and SEM analyses.

H_o2: Each of the four instructional dimensions (IBK, PP, PM, PED) does not significantly predict the instructional competency of Assistant Headteachers.

Literature Review

Definition of Instructional Competency

Instructional competency refers to the ability of educational leaders, particularly Assistant Headteachers(GPK), to lead teaching and learning directly through teacher capacity building, effective curriculum implementation, and classroom data utilisation to enhance student achievement. It encompasses the skills to plan, supervise, and evaluate instructional strategies professionally, ethically, and in alignment with national education policies (Beram et al., 2022; Mukhtar & Razak, 2024).

Curriculum Focused Instructional Leadership (IBK)

The dimension of Curriculum Focused Instructional Leadership (IBK) highlights the competency of Assistant Headteachers (GPK) in managing the effective and holistic implementation of the national curriculum. GPK are expected to ensure that instructional planning aligns with curriculum goals and the diverse needs of students at the grassroots level. According to Mohamed et al. (2020), instructional leaders who emphasise curriculum alignment with teaching strategies have a significant impact on student achievement. Similarly, Kim & Ogawa (2023) found that middle leaders who consistently communicate curriculum vision help enhance teacher understanding of learning outcomes.

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The strength of the IBK dimension also lies in the ability of GPK to adapt curriculum implementation to the contextual needs of the school. A study by Ismail et al. (2020) showed that failure to bridge the gap between policy and classroom practice often leads to ineffective teaching and learning. GPK must therefore be adept at tailoring content to students' abilities, available teaching resources, and the socio-cultural context of their schools. This adaptive leadership is especially relevant in Malaysia, where diverse school settings demand flexible instructional strategies (Yaacob & Ishak, 2023). Moreover, indigenous instructional leadership elements are increasingly prioritised to ensure that Western-origin frameworks are contextualised to the Malaysian education landscape (Samichan et al., 2021).

In addition to contextual alignment, the IBK domain supports instructional innovation and reflective teaching. GPK who guide teachers in applying differentiated strategies help ensure the curriculum is accessible to all learners (Fanny et al., 2022). This role demands curriculum literacy, pedagogical awareness, and the ability to lead improvements in instructional design. The IBK domain thus represents a foundation for developing instructional competency among GPK, empowering them to bridge national reform goals with practical classroom realities.

Research Culture (PP)

This dimension reflects the responsibility of Assistant Headteachers (GPK) in cultivating a culture of reflective practice, professional inquiry, and data driven instruction as core elements of instructional leadership. A research culture in schools is not merely an academic exercise but must be embedded in daily teaching and learning practices to enhance pedagogical quality and promote innovation (Mukhtar & Razak, 2024). Moreover, fostering such a culture requires deliberate leadership strategies that empower teachers to engage in collaborative inquiry and evidence based improvement initiatives (Pilling, 2024). When GPK lead by modeling professional reflection and support for action research, they reinforce a sustainable culture of instructional innovation.

In the Malaysian context, the role of GPK in encouraging teacher engagement in research is increasingly recognised. For instance, Rahman et al. (2025) highlighted that fostering a school based research culture enhances alignment between instructional practices and learning outcomes, particularly when classroom data is empirically used to inform teaching strategies. Likewise, Samad et al. (2023) found that GPK who support collaborative inquiry models such as action research and lesson study can build learning environments that are more responsive to student needs.

Critically, embedding a research culture requires GPK to take on dual roles as facilitators of inquiry and as intermediaries between policy and classroom practice. Beyond encouraging research among teachers, GPK must also translate research findings into actions that can elevate the overall quality of teaching in schools. This aligns with international perspectives that position research engagement as a catalyst for innovation and evidence based leadership (Jude James et al., 2022).

When implemented strategically, a research culture serves as a catalyst for innovation, continuous professional growth, and instructional accountability. GPK are instrumental in institutionalising reflective practices and fostering collaborative inquiry among teachers to inform teaching decisions. These practices have been linked to improved pedagogical quality and sustainable school transformation (Choy et al., 2021). Furthermore, school leaders who

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actively promote reflection and inquiry help to build more resilient professional communities that are responsive to evolving educational demands (Dinham et al., 2020).

Holistic Monitoring (PM)
This dimension involves the ability of Assistant Headteachers (GPK) to systematically monitor and evaluate instructional implementation in a comprehensive and continuous manner. In modern instructional leadership, monitoring is no longer viewed as a compliance task, but as a mechanism for quality improvement grounded in reflection and evidence (Bush, 2024). GPK are expected to conduct regular classroom observations, deliver constructive feedback, and initiate pedagogical interventions to improve teaching effectiveness (Zhaffar & Rashed, 2022). Effective school leader feedback has been shown to enhance teacher self-efficacy and instructional quality, particularly when based on clear performance criteria and supported by targeted follow-up actions (Nachbauer et al., 2022).

Effective monitoring also increases teacher motivation and ensures alignment between curriculum delivery and learning objectives (Yee et al., 2021). In Malaysia, collaborative and non-threatening monitoring approaches have proven more effective in promoting a culture of professional growth among teachers (Yaacob & Ishak, 2023). GPK who engage teachers in open dialogue during post observation feedback sessions also help foster trust and professional ownership in instructional improvement.

Furthermore, comprehensive monitoring must include elements of reflection and systematic follow-up. GPK play the role of facilitators in helping teachers assess the strengths and weaknesses of their instruction using observation data, classroom evidence, and student performance. This aligns with the Ministry of Education's emphasis on standards based evaluation and impact focused monitoring (Raman et al., 2020).

In summary, this dimension requires GPK to demonstrate the ability to interpret instructional data critically and deliver constructive feedback within a professional environment. Monitoring should not only ensure compliance with educational policies but also act as a tool for continuous development that supports instructional excellence at the school level.

Digital Ecosystem Culture (PED)
This dimension underscores the capacity of Assistant Headteachers (GPK) to champion digital transformation in instructional leadership. Digital ecosystem culture is not limited to providing infrastructure or tools; it involves cultivating a mindset that embraces digital integration in pedagogy, assessment, and professional collaboration. According to (Abdullah et al., 2023), digital instructional leadership must promote critical awareness and ethical use of technology in teaching and learning. GPK play a key role in modelling digital competence, as evidenced by Hamid & Rahman (2025), who found that school leaders with high digital fluency influence teacher readiness to adopt digital pedagogies.

A thriving digital ecosystem also requires GPK to integrate ICT in instructional planning and delivery. Middle leaders who possess digital dexterity and leadership skills are better positioned to foster teacher acceptance of technology and align it with pedagogical needs (Naz & Rashid, 2021). Additionally, technology-enhanced learning environments are most effective when leadership focuses on instructional goals rather than simply infrastructure provision (AlAjmi, 2022). This implies that GPK must go beyond digital administration and actively lead

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in instructional design that leverages digital tools to meet learning outcomes, especially as leadership styles directly influence teacher motivation and ICT integration practices (M Mohd Siraj et al., 2023).

In addition, fostering a digital ecosystem means establishing systems for collaboration and data-sharing that support teacher learning. Digital platforms enable real time communication and personalised feedback, enhancing instructional coherence. Kim & Ogawa (2023), emphasised the importance of leadership in sustaining digital learning communities. Meanwhile, Yasir et al. (2024) linked digital leadership practices with increased teacher collaboration and innovation. This aligns with recent research by Shal et al. (2024), which highlights how virtual communities of practice empower teacher agency and distributed leadership through collaborative online engagement.

Ultimately, the PED dimension requires Assistant Headteachers to act as digital catalysts, ensuring that the integration of technology enhances not disrupts instructional practices. They are responsible for fostering a school culture where digital tools are used meaningfully to improve student learning, streamline instructional supervision, and build future-ready schools. Antonopoulou et al. (2025), further demonstrates that transformational digital leadership strongly predicts improvements in teachers' digital competencies and instructional coherence in primary education contexts.

Conceptual Framework

This study adapts the KOMPAS 2.0 Model (IAB, 2020) within the instructional leadership theory of Hallinger and Murphy (1985) to suit the roles of Assistant Headteachers (GPK) as middle leaders in Malaysian primary schools. Originally designed for principals, the model is tailored to reflect GPK's instructional responsibilities, aligning with evidence that distributed leadership enhances teacher autonomy and instructional innovation (Hsieh et al., 2024; Lin, 2022).

The framework conceptualises instructional competency as four interrelated dimensions: Curriculum Focused Instructional Leadership (IBK), Research Culture (PP), Holistic Monitoring (PM), and Digital Ecosystem Culture (PED). IBK covers curriculum alignment and pedagogical guidance; PP promotes reflective and evidence based teaching; PM focuses on structured monitoring aligned with policies; and PED emphasises integrating digital tools into instruction.

This adapted framework forms the theoretical and operational basis for the measurement model tested using Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) to validate the instructional competency construct among GPK.

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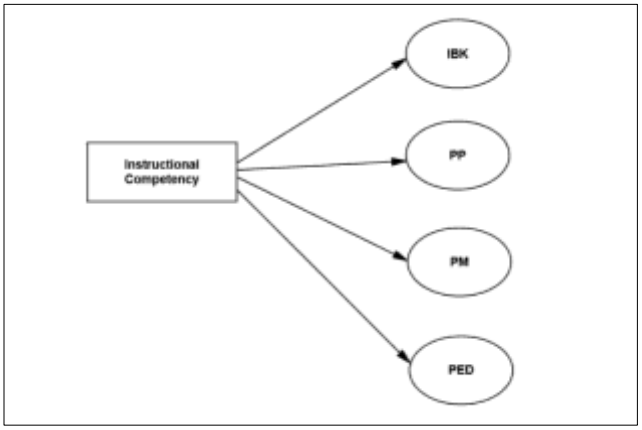

Figure 1: Proposed Instructional Competency Model for Assistant Headteachers (GPK)

Methodology

Research Design

This study adopted a non experimental quantitative design using a cross sectional survey approach. This design was selected as it allows for the collection of data from a representative sample at a single point in time, aligning with the study's objective to develop and validate the construct of instructional competency among Assistant Headteachers (GPK). It is also appropriate for examining relationships between variables without manipulation or intervention.

Research Site and Ethical Clearance

Formal ethical approval for this study was obtained from the Educational Research Application System (ERAS), the Ministry of Education Malaysia (MoE), and the Sabah State Education Department (JPN Sabah) prior to the commencement of data collection. Sabah was selected as the research site due to its unique educational context, which reflects rural diversity, resource limitations, and the pressing need for adaptive instructional leadership. This selection enhances the potential generalizability of the construct across Malaysia's diverse school settings.

Sampling and Respondents

A total of 100 Assistant Headteachers (GPK) were selected as respondents through purposive sampling across several districts in Sabah. Of these, 58 were serving in rural schools and 42 in urban schools. The sample comprised 60% female and 40% male respondents, with teaching experience ranging from 8 to 25 years. Their age distribution was primarily between 35–50 years, representing a typical demographic profile of middle leaders in Malaysian primary schools. The overall response rate was 92%, which is considered highly satisfactory for survey-based research. All respondents were academic GPK currently serving in public primary schools under the jurisdiction of the Sabah State Education Department (JPN Sabah). This sample size met the minimum requirements for Confirmatory Factor Analysis (CFA) based on widely accepted respondent-to-item ratio guidelines. Descriptive data were gathered to provide contextual insights into the respondent profile.

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Research Instrument

The research instrument was developed based on the four core dimensions of the KOMPAS 2.0 model, namely:

1. Curriculum Focused Instructional Leadership (IBK)
2. Research Culture (PP)
3. Holistic Monitoring (PM)
4. Digital Ecosystem Culture (PED)

Each dimension was operationalised through multiple items rated on a five-point Likert scale, ranging from "1 = Strongly Disagree" to "5 = Strongly Agree." The initial draft of the questionnaire was reviewed by three subject matter experts in educational leadership and refined based on their feedback. The final version of the instrument was administered online via Google Forms, considering the geographical spread and accessibility constraints of schools in Sabah.

Data Analysis Techniques

Data were analysed using Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) with the aid of AMOS software. These analyses aimed to evaluate the validity of the proposed measurement model, including internal consistency, convergent and discriminant validity, and model fit indices such as CFI, TLI, RMSEA, and Chi-Square/df. The application of CFA and SEM aligned with the study's goal of empirically validating the structure of the instructional competency construct and assessing the interrelationships among its dimensions.

Findings

Descriptive Statistics and Data Screening

A total of 100 valid responses were obtained from Assistant Headteachers (GPK) in several districts across Sabah. Preliminary screening indicated no missing data or outliers. Skewness and kurtosis values were within the acceptable range of ±2, indicating that the data met the assumption of normality for multivariate analysis.

Measurement Model Assessment (CFA)

Confirmatory Factor Analysis (CFA) was conducted to assess the validity of the measurement model consisting of four latent constructs: Curriculum Focused Instructional Leadership (IBK), Research Culture (PP), Holistic Monitoring (PM), and Digital Ecosystem Culture (PED). The initial model demonstrated excellent fit to the data based on the following indices:

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Fit Index	Value
ChiSq/df	0.446
df	1
P-value	.078
GFI	.998
AGFI	.978
TLI	1.016
CFI	1.000
RMSEA	.041
NFI	.991

Table 1: Fit Index for Measurement Model

All items loaded significantly onto their respective constructs, with standardised factor loading ranging from 0.80 to 0.87. These results require further interpretation to demonstrate their significance for the overall validity of the model. Beyond the numerical results, the CFA findings offer strong evidence of the robustness of the proposed model. The factor loadings ranging from 0.80 to 0.87 indicate that each item is highly representative of its respective latent construct. In CFA, loadings above 0.70 are generally considered excellent, as they demonstrate that the observed indicators strongly reflect the underlying dimensions. In this study, the four domains—Curriculum Focused Instructional Leadership (IBK), Research Culture (PP), Holistic Monitoring (PM), and Digital Ecosystem Culture (PED)—are therefore not only theoretically justified but also empirically validated as key components of instructional competency among Assistant Headteachers.

In terms of overall model fit, indices such as CFI = 1.000 and TLI = 1.016 demonstrate an almost perfect alignment between the data and the hypothesised model, while RMSEA = 0.041 indicates a very low level of approximation error. The high GFI and AGFI values, both exceeding the commonly recommended 0.95 threshold, further confirm the adequacy of the model. Collectively, these values exceed the cut off criteria frequently cited in methodological literature (e.g., Hair et al., 2019; Byrne, 2016), providing strong assurance that the measurement model is both statistically sound and contextually appropriate for assessing instructional leadership at the middle management level in Malaysian schools.

Measurement Model Assessment through CFA

Figure 2 illustrates the structural model of Instructional Competency among Assistant Headteachers based on Confirmatory Factor Analysis (CFA). The model comprises a single overarching construct—Instructional Competency—represented by four primary dimensions: Curriculum Focused Instructional Leadership (IBK), Research Culture (PP), Holistic Monitoring (PM), and Digital Ecosystem Culture (PED). All pathways were statistically significant, with standardised factor loadings ranging from 0.80 to 0.87, indicating strong associations between the latent construct and its indicators.

The CFA results demonstrated an excellent fit to the data, with fit indices exceeding commonly recommended thresholds (Hair et al., 2019; Byrne, 2016): $\chi^2(1) = 0.446$, $p = .078$, $\chi^2/df = 0.446$, GFI = .998, AGFI = .978, TLI = 1.016, CFI = 1.000, RMSEA = .041 and NFI = .991. These values confirm the robustness and adequacy of the measurement model. These values suggest that the measurement model is highly acceptable and aligns with recommended thresholds proposed by Hair et al. (2019) and Byrne (2016).

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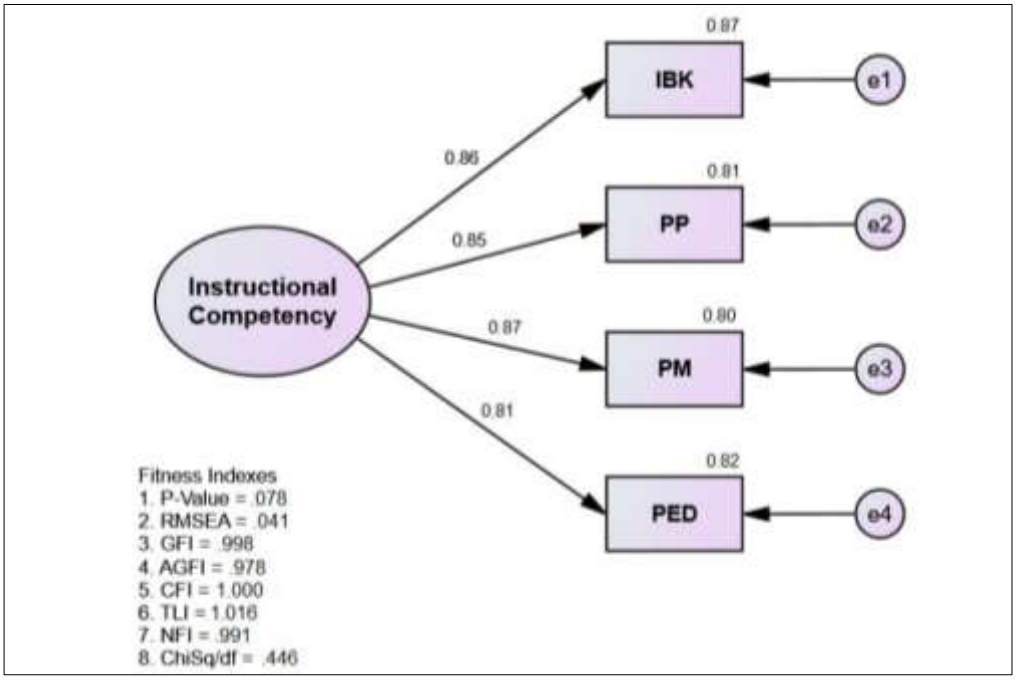

Figure 2. Confirmatory Factor Analysis (CFA) Model of Instructional Competency among Assistant Headteachers

Construct Reliability and Validity

The model demonstrated strong internal consistency and construct validity. Convergent validity was supported by factor loadings exceeding 0.6. Discriminant validity was deemed sufficient, as no excessively high correlations were detected between constructs. The table below shows the CR and AVE values for each construct, all of which were within acceptable thresholds:

Construct	Composite Reliability (CR)	Average Variance Extracted (AVE)	Status
IBK	0.86	0.87	Acceptable
PP	0.85	0.81	Acceptable
PM	0.87	0.80	Acceptable
PED	0.81	0.82	Acceptable

Table 2: Composite Reliability (CR) and Average Variance Extracted (AVE) for Each Construct

Structural Model (SEM)

The structural model examined the relationships between *Instructional Competency* and its four dimensions (IBK, PP, PM, PED). All paths were significant with strong coefficients (β = 0.80–1.00) and excellent fit indices, confirming model validity.

Table 3 presents the standardised path coefficients and interpretations, while Figure 3 illustrates the validated structural model, visually confirming the strength and direction of these relationships.

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Path	Standardised Coefficient (β)	Interpretation
Instructional Competency → IBK	1.00	Reference path (fixed value)
Instructional Competency → PP	0.80	Strong relationship
Instructional Competency → PM	0.87	Very strong relationship
Instructional Competency → PED	0.83	Strong relationship

Table 3: Standardised Path Coefficients and Interpretations (SEM Results)

Assessment of the Structural Model

The structural model was examined to assess the relationships between the main construct, Instructional Competency, and its four dimensions: Curriculum Focused Instructional Leadership (IBK), Research Culture (PP), Holistic Monitoring (PM), and Digital Ecosystem Culture (PED). The results indicate that all four dimensions have significant and strong associations with the main construct, with standardised path coefficients ranging from 0.80 to 1.00. The model demonstrated excellent fit indices, confirming the robustness and validity of the proposed relationships. The pattern of coefficients suggests that IBK and PM exhibit stronger links to the latent construct, reflecting the central role of curriculum alignment and systematic monitoring in instructional leadership. PP and PED, while moderate, remain significant, underscoring the growing importance of research engagement and digital readiness in the evolving role of middle leaders. Collectively, these findings support the multidimensional conceptualisation of instructional competency and affirm the need for leadership frameworks that integrate both traditional and contemporary dimensions of school leadership.

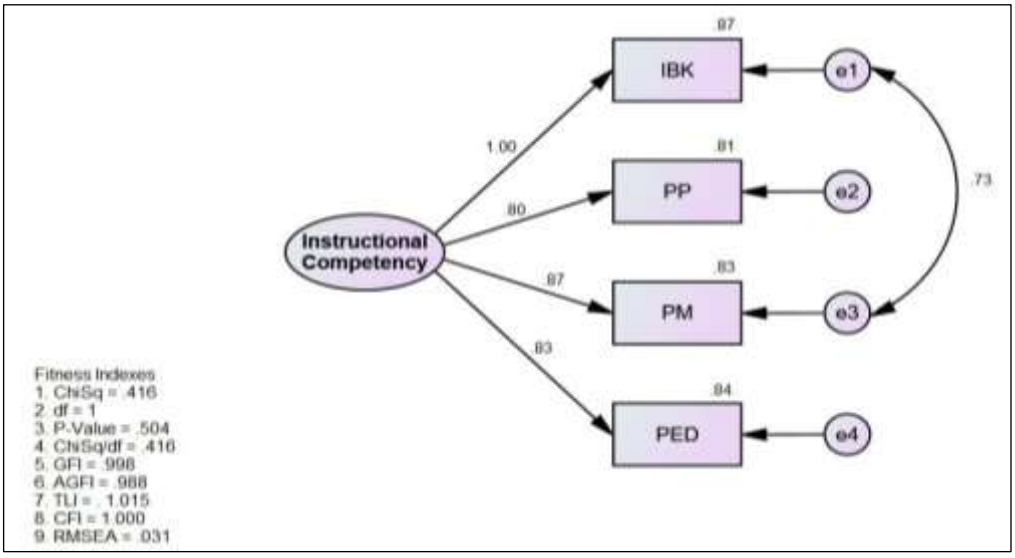

Figure 3. Structural Model of Instructional Competency among Assistant Headteachers

Summary of the Model

The findings confirm that the proposed model is valid and appropriate for measuring instructional competency among Assistant Headteachers in Sabah. The model demonstrated excellent fit, while the strong relationships between constructs, especially with PM and IBK,

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reflect the complex and multifaceted nature of instructional leadership at the middle management level. These results strengthen the structural integrity of the model and support its application in empirical evaluations and leadership development initiatives for GPK.

Discussion

The CFA results confirm the empirical validity of the proposed Instructional Competency Model for Assistant Headteachers (GPK) in the Malaysian primary school context. The model demonstrated excellent fit indices, with chi-square divided by degrees of freedom equal to 0.446, comparative fit index of 1.000, and root mean square error of approximation of 0.041. All four dimensions, namely Curriculum Focused Instructional Leadership (IBK), Research Culture (PP), Holistic Monitoring (PM), and Digital Ecosystem Culture (PED), recorded strong standardised loadings ranging from 0.80 to 0.87. These findings indicate that the model is conceptually coherent and statistically robust, supporting its use in evaluating GPK's instructional competencies in diverse educational settings.

Among the four dimensions, Curriculum Focused Instructional Leadership (IBK) recorded the highest standardised path coefficient ($\beta = 0.87$), followed by Digital Ecosystem Culture (PED) ($\beta = 0.82$), Research Culture (PP) ($\beta = 0.81$), and Holistic Monitoring (PM) ($\beta = 0.80$). These results suggest that Assistant Headteachers' instructional competency is most strongly influenced by their ability to align curriculum with instructional practices, integrate digital tools into pedagogy, foster a research-oriented school culture, and systematically monitor teaching and learning. Collectively, all four dimensions play critical and complementary roles in shaping effective instructional leadership. This pattern reinforces the need for middle leadership that is data driven, reflective, and innovative—especially within diverse school contexts across Sabah. The results are consistent with previous studies by Zaini et al. (2024) and Kenayathulla et al. (2024), which emphasised the role of high-impact monitoring and digital integration in improving instructional quality.

Beyond confirming the robustness of the model, the present findings offer important insights when considered alongside prior literature. The dominance of Curriculum Focused leadership (IBK) as the strongest predictor is consistent with evidence highlighting curriculum alignment as central to raising instructional quality (Mohamed et al., 2020; Ismail et al., 2020). However, unlike studies that primarily examined principals, this research demonstrates that Assistant Headteachers also exert a critical influence on curriculum delivery. The significant role of digital ecosystem culture (PED) further strengthens growing claims that digital fluency is a defining feature of contemporary instructional leadership (Abdullah et al., 2023; Hamid & Rahman, 2025; M. Mohd Siraj et al., 2023). By extending such evidence to the middle leadership level, this study provides empirical support for the diffusion of instructional authority within schools, moving beyond principal centric frameworks (Bush, 2024).

A distinctive contribution of this research is the validation of the KOMPAS 2.0 model as a diagnostic tool for assessing instructional competency at the middle management level. Previous frameworks often conceptualised instructional leadership narrowly, emphasising either administrative or monitoring functions. By integrating curriculum, research, monitoring, and digital culture within a single construct, the present study provides a holistic and contextually relevant representation of GPK's roles. This novelty is particularly significant in the Malaysian setting, where empirical instruments for middle leadership remain limited (Beram et al., 2022; Samad et al., 2023). Thus, the findings enrich the theoretical base of

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distributed leadership and position KOMPAS 2.0 as a practical benchmark for future empirical investigations (Yaacob & Ishak, 2023). Importantly, the novelty of this study also lies in adapting and validating the KOMPAS 2.0 framework specifically for Assistant Headteachers, thereby shifting the focus of instructional competency research from principal-centric models to middle leadership contexts.

Theoretically, the study advances distributed leadership theory by demonstrating how Assistant Headteachers operationalise national reform agendas at the school level (Adams et al., 2020; Hui & Singh, 2020). Practically, the validated model offers policymakers and training institutions a reliable framework for designing professional development programmes that specifically target the instructional roles of GPK. Its application is especially relevant in rural and semi-urban schools, where Assistant Headteachers often act as primary instructional anchors in the absence of regular principal oversight (Ambon et al., 2024). Embedding this model into leadership appraisal systems and teacher training initiatives could therefore enhance consistency and instructional effectiveness across diverse school contexts (Raman et al., 2020; Hassan et al., 2023).

Despite these contributions, several limitations must be acknowledged. This study was conducted in a single state, Sabah, which, while educationally diverse, may not capture the full heterogeneity of Malaysia's schooling system. Future research should therefore consider replicating the study across other states, employing larger samples, and potentially adopting longitudinal designs to examine the stability of the model over time. Multi-group SEM could also be used to test measurement invariance across demographic variables such as school location or years of service, offering deeper insights into the contextual dynamics of instructional leadership. Importantly, this research must also be recognised as a pilot study due to its modest sample size of 100 respondents. While the CFA and SEM results provide strong evidence of model robustness, the relatively small sample limits the generalisability of findings. Replication with larger, more diverse samples across multiple states in Malaysia would further strengthen the stability of the model and its applicability.

Implications

This study carries both practical and theoretical implications for the advancement of instructional leadership among Assistant Headteachers (GPK). From a policy and practice standpoint, the validated model provides an evidence based framework that education authorities can adopt to design competency standards and performance indicators for middle leadership. The four domains, namely Curriculum Focused Instructional Leadership (IBK), Research Culture (PP), Holistic Monitoring (PM), and Digital Ecosystem Culture (PED), offer concrete dimensions that can be embedded into structured professional development programmes. Such programmes are particularly relevant in Sabah, where diverse school environments demand adaptive leadership approaches that balance curriculum implementation, monitoring, and digital transformation. By institutionalising this model, education policymakers can strengthen leadership appraisal systems and ensure that professional learning opportunities for GPK are closely aligned with national reform goals. Beyond the Sabah context, the validated model offers potential applicability across other Malaysian states, enabling policymakers to establish consistent competency benchmarks for middle leaders nationwide. Internationally, the model provides a framework for examining middle leadership in comparable educational systems where distributed leadership is increasingly recognised.

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This positions the study as a contribution to global debates on the role of middle leaders in advancing instructional quality.

From a theoretical perspective, the findings extend the relevance of the KOMPAS 2.0 framework beyond the traditional focus on school principals, highlighting its applicability to middle leaders who play an increasingly pivotal role in distributed leadership structures. This broadens the scope of instructional leadership theory by positioning Assistant Headteachers as essential agents of change in curriculum delivery, pedagogical innovation, and digital integration. The validated model also contributes a replicable measurement tool that can support future research examining instructional competency across varying educational contexts. Its integration of four interrelated domains underscores the complexity of instructional leadership, while offering scholars a coherent framework through which to analyse the dynamics of middle management in schools.

Conclusion

This study successfully developed and validated a robust and contextually relevant Instructional Competency Model for Assistant Headteachers (GPK) in Malaysian primary schools, particularly within the state of Sabah. Employing Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM), the model demonstrated strong construct reliability and validity across four critical dimensions: Curriculum Focused Instructional Leadership (IBK), Research Culture (PP), Holistic Monitoring (PM), and Digital Ecosystem Culture (PED). The validated model reinforces the pivotal role of GPK in instructional leadership, extending their contribution beyond administrative duties to encompass data-informed decision-making, research-driven pedagogy, and digital transformation. These findings are especially relevant in geographically diverse school settings like Sabah where adaptive and distributed leadership is essential for improving instructional quality. Theoretically, this research contributes to the expansion of instructional leadership frameworks by validating the KOMPAS 2.0 model in middle leadership contexts. Practically, it provides an evidence based tool for evaluating GPK' instructional capacity, informing leadership development programmes, and shaping policy interventions. Future studies may extend this work by testing the model longitudinally or across diverse educational contexts, contributing further to the discourse on instructional leadership effectiveness.

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