

Operationalizing Teacher Problem-Solving: The Mediating Role of Strategic Objectives in Translating Instructional Leadership Aims

Matilda Asafo-Adjei¹ and Dr. Stanley K.M. Semarco^{2*}

¹Open University of Malaysia

²University of Media, Arts and Communication

*Corresponding Author

DOI: <https://doi.org/10.47772/IJRISS.2026.100800553>

Received: 01 May 2026; Accepted: 06 May 2026; Published: 11 September 2026

ABSTRACT

This study investigated the structural relationship between instructional leadership and teacher problem solving in Ghana using a sample of 840 respondents. Through Path Analysis, the research examined how instructional leaders' aims influence their objectives, and the extent to which these aims and objectives influence teachers' problem-solving skills, further exploring the mediating role of objectives. Findings revealed that instructional leadership aims significantly drive school objectives. While both aims and objectives predict teacher problem-solving skills, results confirm a full mediation model: a leader's vision only enhances teacher skill when systematically translated through specific, supportive objectives. The study concludes that instructional leadership acts as a nexus between national goals and classroom challenges. It recommends that the Ministry of Education prioritize instructional leadership over administrative inspection, ensuring headteachers effectively transform noble educational aims into measurable school objectives and resilient teacher problem-solving competence in school.

Keywords: Instructional Leadership, Educational Aims, School Objectives, Teacher Problem-Solving, Mediation Analysis, Ghana Education Service.

INTRODUCTION

'The ultimate goal of educational administration is the improvement of learning and learning opportunities' (Esia-Donkoh, 2014, p. 68). Although Asafo-Adjei and Semarco (2024) found that teacher-led school objectives mediate the relationship between teacher-led school aims and teachers' problem-solving skills; the instructional leader who is an educational administrator is widely acknowledged as a pivotal individual who plays a key role in enhancing teaching quality and student learning outcomes. In the Ghanaian context educational leaders (headteachers) are expected to achieve the education and schools' objectives and aims (goals) in their schools by ensuring that effective teaching and learning take place (Ghana Education Service, 2010a; Ghana Education Service, 2010b). Among its various functions of the educational leaders (headteachers), influencing teachers' problem-solving skills stands out as a critical area of impact. The ability of teachers to handle unusual problems—their problem-solving abilities—has become a crucial talent for student success as classrooms are becoming more complicated. Teachers must be more than just knowledge providers in the continuously evolving demands of 21st-century education; they must be creative problem solvers who can handle challenging teaching situations in real time. Problem-solving skills are essential for teachers to navigate classroom challenges and adapt instructional strategies to meet diverse student needs.

Central to the cultivation of teacher problem-solving capacity is the role of Instructional Leadership. The function of being a school leader in contemporary educational environments has evolved beyond administrative supervision to become Instructional Leadership, a key driver of pedagogical innovation. Unlike traditional administrative models, instructional leadership focuses on the intended efforts of school leaders to improve the value of teaching and learning (Queensland Department of Education, 2022). Blase and Blase (1999) focused

on how effective instructional leaders promote professional growth through feedback, modeling, and fostering a culture of collaborative inquiry. This leadership style is characterized by the setting of high academic standards, the provision of targeted professional development, and the creation of a culture of continuous improvement. Very instrumental in instructional leadership is the development of the "Instructional Management Rating Scale," which identifies managing the instructional program and promoting a positive school learning climate (including high standards and teacher development) as core dimensions (Hallinger & Murphy, 1985). Leithwood and Riehl (2003) identified successful school leaders as persons whose fundamental practices includes the setting of goals with high expectations and are keen in developing people professionally. Adeoye et al. (2025) identify six core instructional leadership domains that influence teacher performance and student outcomes, shifting the principal's role from administrative to one focused on teaching quality. These domains according to Adeoye et al. include vision setting, instructional support, professional development, collaborative culture, data-driven decision-making, and fostering a positive school climate. Effective managerial and administrative skills are required of instructional leadership oriented headteachers to ensure the success of educational policies, programmes and goals. (Esia-Donkoh, 2014).

Despite the established link between leadership and school climate, there remains a critical gap in understanding how leadership behaviors specifically refine a teacher's cognitive and practical problem-solving frameworks. Drawing on Sherin and Russ (2011), problem-solving involves noticing classroom difficulties and interpreting student needs, which serves as the foundation for modifying teaching methods within the context of Jacobs, Lamb, and Philipp (2010)'s professional noticing which explicitly includes the "deciding how to respond" element. In line with the above, the present study's aim is to explore how instructional leadership domain of vision setting (Adeoye et al., 2025) specifically refine a teacher's cognitive and practical problem-solving skills.

While evaluation systems have traditionally focused on accountability, contemporary instructional leaders are increasingly using these evaluations as formative tools to revise how problem-solving is practiced and assessed within the classroom. For instance, Kraft and Christian (2022) found that while leaders try to use evaluations for growth, administrators often struggle to provide the high-quality feedback necessary to change instruction. The intersection of leadership and cognitive skill development is vital because, as Darling-Hammond et al. (2023) suggest, teachers who receive instructional leadership support are better equipped to engage in the iterative, inquiry-based practices necessary to address persistent learning gaps and support the whole child. While Darling-Hammond et al. (2023) argue that supportive environments empower teachers to engage in the iterative, inquiry-based practices, such as, problem-solving skills needed to close learning gaps, Kraft and Christian (2022) emphasize that this growth depends on instructional leaders providing high-quality, formative feedback rather than merely fulfilling accountability requirements in the form of schools' aims or goals or objectives. In other words, Kraft and Christian (2022) caution that for this to occur, evaluation systems must shift from punitive tools to formative ones that prioritize actionable feedback over simple compliance. The present study posit that when leaders provide supportive conditions (coaching, time for collaboration, autonomy), teachers may feel more capable of managing classroom complexities (problems) and engaging in deeper learning practices.

It is worth noting that the specific mechanisms through which leadership influences the evaluation and subsequent revision of these teacher problem-solving skills are not yet fully understood within the Ghanaian context. This study seeks to address these gaps by examining the influence of leadership on the teacher's adaptive expertise; by focusing on how instructional leadership objectives – specifically, the setting and management of school and teacher goals – affect the evaluation, revision, and achievement of teachers' problem-solving skills. By investigating the relationship between administrative guidance based on the instructional leaders aims and objectives and teacher cognition (that is problem-solving), this research aims to provide a clearer picture of how school leaders can foster a more problem-solving resilient and responsive teaching force in Ghana. Understanding this relationship is vital for educational leaders aiming to foster professional growth and improve instructional effectiveness, thereby motivating the study's aim to investigate how instructional leadership objectives influence teachers' problem-solving skills.

Research Objectives and Questions

The aim of the study is to explore the following objectives:

- RO1: To examine how instructional leaders' aims influence their objectives.
- RO2: To examine the extent to which instructional leaders' aims influence teachers' problem-solving skills.
- RO3: To examine the extent to which instructional leaders' objectives influence teachers' problem-solving skills.
- RO4: To examine the extent to which instructional leaders' objectives mediate the relationship between Instructional leaders' aims and teachers' problem-solving skills.

To achieve these aims, this study addresses the following broad question: Is there a relationship among instructional leaders' aims, objectives and teachers' problem solving? Specifically:

- RQ1: To what extent do instructional leaders' aims influence their objectives?
- RQ2: To what extent do instructional leaders' aims influence teachers' problem-solving skills?
- RQ3: How do instructional leaders' objectives influence teachers' problem-solving skills?
- RQ4: To what extent do instructional leaders' objectives mediate the relationship between Instructional leaders' aims and teachers' problem-solving skills?

Significance of the Study

This study contributes valuable insights into the role of instructional leadership in teacher development, particularly focusing on problem-solving skills critical to classroom success. By clarifying how leadership aims and objectives predict teachers' problem-solving skills, the findings will inform school administrators, policymakers, and teacher educators in designing leadership strategies and professional development programs that enhance instructional quality. Moreover, elucidating this linkage offers a framework for schools to foster collaborative environments where continuous evaluation and improvement of teaching and practicing problem-solving are prioritized.

LITERATURE REVIEW

Research into instructional leadership (IL) consistently highlights its role as a primary driver for developing higher-order cognitive abilities, including problem-solving skills. The research by Jeffri and A. Hamid (2022) aligns with a growing consensus in educational leadership: school leaders shape the conditions that allow 21st-century skills—like critical thinking, collaboration, and digital literacy—to flourish. While the impact is often indirect—mediated through teacher efficacy and the school learning environment—instructional leaders are increasingly viewed as the "architects" of 21st-century competencies (Jeffri & A. Hamid, 2022). Effective leaders define a school mission that prioritizes critical thinking over rote memorization, creating a mandate for problem-solving curricula (Akomodi, 2025). Effective school leaders' mission includes the coordination of school curriculum to align with 21st-century needs; hence these instructional leaders tend to ensure that students are exposed to "real-world" challenges rather than just textbook theory (Jeffri & A. Hamid, 2022).

Theoretical Framework

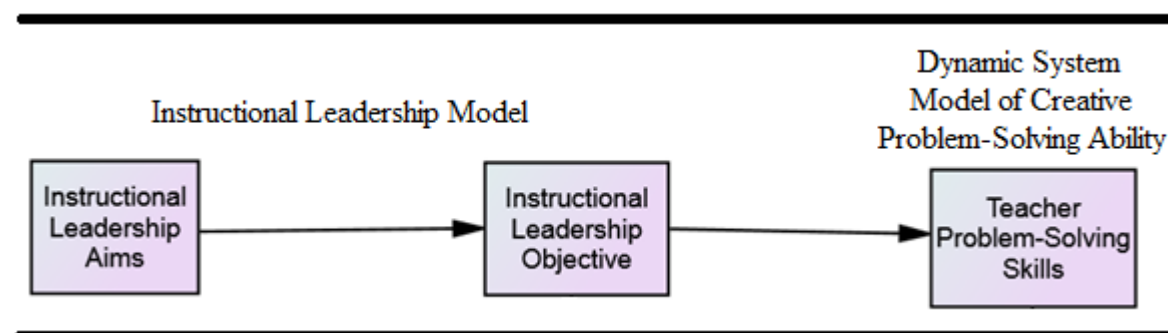
The Hallinger and Murphy's Instructional Leadership Model (1985) and Cho's Dynamic System Model of Creative Problem-Solving Ability (1999, 2003) were deemed as suitable to be employed in the present study.

Hallinger and Murphy's Instructional Leadership Model (1985): The most well-known theory of instructional leadership was developed by Hallinger and Murphy (1985) from their model of instructional management by examining the instructional leadership behavior of 10 elementary school principals and reviewing the literature on school effectiveness. According to Hallinger and Murphy (1985), instructional leadership has been seen as a strong and directive leadership that focuses directly on curriculum and instructional practices. Hallinger and

Murphy believed that instructional leaders are the people who bring about the institution's effectiveness, especially in terms of teaching and learning. The model comprises three main dimensions (defining mission, managing instructional programs and promoting positive culture). Instructional leaders act as "architects" of 21st-century competencies by designing the school culture, infrastructure, and support systems that empower teachers to foster skills such as critical thinking, collaboration, creativity, problem-solving and digital literacy. Cho (2003) defines creative problem-solving not as a single trait, but as a complex, multi-faceted process that integrates cognitive, personal, and environmental factors.

Cho's Dynamic System Model of Creative Problem-Solving Ability (1999, 2003): As reported in Lin and Cho (2011), "Cho (1999, 2003) synthesized various theories on the multi-faceted and complex nature of creativity ... and suggested a dynamic system model of creative problem-solving ability" (p.255). The model posits that creative problem-solving ability is driven by the interaction of the key attributes: divergent thinking, convergent thinking, motivation and environmental factors. The model is "dynamic" because these components interact continuously and, if well-balanced, enable successful creative problem-solving. In essence, Cho's model argues that creativity is not a random talent but a system of trainable, interacting skills and conditions. The present study employed Hallinger and Murphy's Instructional Leadership Model (1985) and Cho's Dynamic System Model of Creative Problem-Solving Ability dimensions (1999, 2003) to examine the defining mission dimension of instructional leadership and teachers' problem-solving (Figure 1).

Figure 1. Aim-Objective-Problem-Solving Instructional Alignment Model



Review of Related Studies

Instructional Leaders' Aims and Objectives

Educational aims offer high-level direction, while goals and objectives translate these ideals into specific, actionable steps (Noddings, 2007; Babalola, 2014). Despite rapid policy changes often disrupting deliberate planning (Ansong et al., 2025), headteachers remain committed to achieving organizational targets (Esia-Donkoh, 2014). This study explores the integration of these concepts, examining how overarching aims fundamentally shape the development of school objectives.

Instructional Leaders' Aims, Objectives and Teachers' Problem-Solving

Effective instructional leadership significantly enhances student outcomes by prioritizing teacher professional development and collaborative problem-solving (Robinson et al., 2008). Headteachers who act as "lead learners" facilitate the acquisition of new skills, manage essential resources like digital technologies, and provide constructive feedback to encourage inquiry-based methodologies (Esia-Donkoh, 2014; Akomodi, 2025). Furthermore, by scheduling collaborative planning periods and mastering curriculum theory, leaders foster an environment where learning gaps are treated as solvable challenges rather than permanent deficits (Darling-Hammond et al., 2023; Esia-Donkoh, 2014). Ultimately, while leadership impacts creative teaching and student problem-solving, this influence is largely mediated through teacher quality and professional growth (Suyudi et al., 2022; Akomodi, 2025).

In Ghanaian basic schools, headteachers face a significant imbalance in their roles, spending 62.2% of their time on administrative tasks compared to only 11.8% on instructional leadership (Donkor & Asante, 2016). This gap

is exacerbated by a lack of systematic training in strategic planning and frequent government policy shifts, which often force schools to adopt reactive goals rather than deliberate, long-term plans (Ansong et al., 2025). Despite these challenges, instructional leadership serves as a vital bridge between national policies and localized issues, such as infrastructure deficits, with consistent supervision directly improving student performance (Donkor & Asante, 2016). To successfully attain school goals, headteachers must transition into facilitators of cooperation, prioritizing in-service training and collaborative problem-solving to address both teaching and learning obstacles (Esia-Donkoh, 2014).

In Ghana, headteachers often prioritize administrative compliance and paperwork over active instructional coaching, which can lead teachers to rely on rote pedagogy rather than developing adaptive expertise (Esia-Donkoh, 2014; Gyamerah, 2021). While many leaders are aware of their duties, the lack of regular classroom observations and actionable feedback limits teachers' ability to navigate complex pedagogical challenges (Gyamerah, 2021). Conversely, when instructional leadership focuses on supportive supervision and real-time mentoring, it acts as a catalyst for professional growth; research indicates such practices predict over 41% of teacher professional development, knowledge, and practice (Amponsah & Mensah, 2024). Ultimately, active instructional engagement provides the scaffolding necessary to improve teacher motivation and refine problem-solving approaches within the classroom (Amponsah & Mensah, 2024; Gyamerah, 2021).

This study seeks to determine the extent to which the aims and objectives of instructional leadership directly influence a teacher's ability to identify, analyze, and resolve classroom-based problems. Instructional leaders impact these problem-solving skills by fostering a Collective Inquiry culture. Instead of a teacher struggling in isolation, the leader facilitates a professional learning community (PLC) where teachers collaboratively "diagnose" the root causes of low performance and "design" localized solutions (Mestry, 2017; Pietsch et al., 2025). In the Ghanaian educational landscape, teachers are increasingly confronted with "ill-structured" classroom problems—ranging from managing overcrowded classrooms to adapting curricula for students with diverse socioeconomic backgrounds. While the Ghana Education Service (GES) emphasizes instructional leadership as a means to improve student outcomes, there is a persistent gap in understanding how these leadership behaviours specifically translate into enhanced teacher problem-solving skills.

Modern instructional leadership has shifted toward collaborative partnerships where leaders function as "knowledgeable others" to tackle complex pedagogical issues (AITSL, 2022). By establishing clear benchmarks and fostering a supportive, data-driven environment, these leaders empower educators to improve performance and drive student outcomes (Akomodi, 2025; Adeoye et al., 2025; Ahmad et al., 2020, as cited in Adeoye et al., 2025).

Effective instructional leadership functions as a catalyst for professional growth by replacing isolated teaching practices with a collaborative, high-expectation culture (Pietsch et al., 2025). By prioritizing a safe and inclusive environment, leaders facilitate collective inquiry through professional learning communities, enabling teachers to collaboratively navigate systemic obstacles like resource scarcity and large class sizes (Mestry, 2017). Furthermore, high-quality leadership fosters "adaptive expertise," equipping educators with the flexibility to solve complex, non-routine classroom problems through continuous learning and peer-observation cycles (Li, 2023; Akomodi, 2025). Ultimately, when leaders model best practices, they enhance teacher confidence and psychological maturity, ensuring a persistent commitment to student outcomes (Akomodi, 2025).

Instructional Leadership Objectives as a Mediator

Effective 21st-century education requires a continuous re-evaluation of institutional goals through stakeholder dialogue to ensure broad aims are translated into actionable objectives (Noddings, 2007; Babalola, 2014). These objectives serve as essential mediators between a leadership's vision and practical classroom outcomes, particularly in enhancing teacher problem-solving capabilities (Amponsah & Mensah, 2024; Gyamerah, 2021). While school leaders in contexts like Ghana demonstrate a clear awareness of their roles in meeting these organizational targets (Esia-Donkoh, 2014), the literature emphasizes that success depends on supportive supervision and the active participation of teachers in goal-setting. When teachers are included in this process and supported through mentoring and feedback, they become more adept at identifying challenges, engaging in collaborative problem-solving, and creatively revising their instructional approaches (Amponsah & Mensah,

2024; Gyamerah, 2021). However, existing literature often addresses instructional leadership's broad impact, with limited research quantifying the direct effects of instructional leadership's aims and objectives on teacher problem-solving skill development, hence this study aims examine the following hypotheses:

- H1: There will be a relationship between Instructional leaders' aims and their objectives.
- H2: There will be a relationship between Instructional leaders' aims and teachers' problem-solving skills.
- H3: There will be a relationship between Instructional leaders' objectives and teachers' problem-solving skills.
- H4: Instructional leaders' objectives will mediate the relationship between Instructional leaders' aims and teachers' problem-solving skills.

METHODOLOGY

Research Philosophy and Design

This study used post-positivism paradigm. Post-positivism is justified because it allows for a more nuanced understanding of the relationship between instructional leaders aims and objectives and teacher problem-solving skills, considering the complexities and contextual factors associated with objectives where goals get translated into action. The researchers employed a cross-sectional research design to collect data from diverse participants simultaneously (Bell et al., 2022). This design facilitates the simultaneous collection of information on instructional leadership aims, objectives, and teacher problem-solving skills. An explanatory design was also used to explore the predictive relationships and outcomes associated with instructional leadership aims, objectives, and teacher problem-solving skills.

Research Approach: The present investigation utilized quantitative research which enabled the researchers to achieve the study's objectives through objective measurements and using numerical data analyzed through statistical methods (Mahajan, 2020).

Research Population and Target Sample

For this study, the population is the entire group of form masters and mistresses across all senior high schools in Ghana. This represents the broad group from which instructional leadership data regarding their headmasters and headmistresses could potentially be gathered.

The target sampling frame comprises form masters and mistresses from senior high schools, specifically within Ghana's five defined regions: Northern, Southern, Eastern, Western, and Central. The study aimed to sample this specific subset of the population.

Sampling Technique and Sample Size

In this study, the researchers employed stratified sampling to ensure that our sample accurately represents the diverse population of form masters and mistresses across Ghana's senior high schools who provided instructional leadership data regarding their headmasters and headmistresses. Stratified sampling was chosen because it effectively addresses potential biases by dividing the population into distinct sub-groups or strata, such as regions (Northern, Southern, Eastern, Western, and Central) or types of schools. This method allows for the proportional representation of each sub-group in the final sample, enhancing the findings' generalizability and accuracy.

Given the successful retrieval of data from a sample of 840 respondent, the stratified sampling ensured that each region or type of school is adequately represented, capturing the full spectrum of experiences and perspectives. This approach minimized the risk of skewed results and ensured that the population's diversity was reflected in the sample. The stratified sampling method enhanced the reliability (Cronbach's Alpha coefficients from $\alpha = 0.591$ to $\alpha = 0.907$, see Table 1) of the main study's conclusions by providing a balanced and representative dataset.

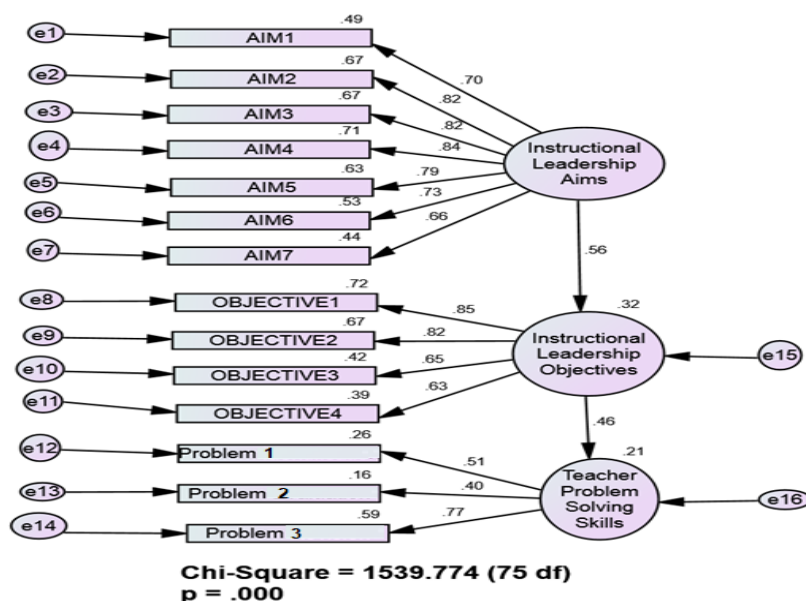
For quantitative research, particularly when using techniques like Structural Equation Modeling (SEM), a sample size of 840 is generally considered robust. It provides sufficient statistical analysis power and helps ensure the results are generalizable and reliable. SEM typically requires a larger sample size to achieve stable and reliable estimates. While specific recommendations can vary, a sample size of 300 or more is often considered adequate for SEM (Hair et al., 2010). Further using Tabanick and Fidell's (1996) formula ($n > 50 + 8m$: where m = number of independent variables and n = sample size), the sample of 840 respondents employed in the present study exceeds the threshold which support thorough and valid analyses and is appropriate to obtain a reliable regression equation and model.

Data Collection Tool: A structured questionnaire was used to collect data for the analysis, as it is an effective method for gathering large-scale data in quantitative research (Taherdoost, 2021). Respondents answered using a five-point Likert scale, which offered a balanced range of options from positive to negative, minimizing confusion (Sarstedt & Mooi, 2019). The questionnaire was distributed in person to 905 form masters and mistresses across senior high schools in Ghana's five regions: Northern, Southern, Eastern, Western, and Central. Out of the 905 questionnaires distributed, 840 were successfully retrieved, resulting in a response rate of 92.8%.

The internal consistency (Cronbach's alpha) showed reasonable internal consistency for all the variables (from $\alpha = 0.562$ to $\alpha = 0.967$) when the questionnaires were piloted on teachers of 47 schools who provided information on their heads' instructional leadership dimensions and their problem-solving skills. In the main study, the internal consistency (Cronbach's alpha) results were problem solving ($\alpha = 0.591$); and the instructional leadership dimensions: aims ($\alpha = 0.907$); and objectives ($\alpha = 0.832$), see Table 1.

The diagram below demonstrates confirmatory common factor analysis of the present study.

Figure 2. Confirmatory Common Factor Analysis with Factor Loadings for Instructional Leadership – Aims and Objectives and Teacher Problem-Solving Skills



The main study's factor loadings (path coefficients leading from the common factors: instructional leadership dimensions and problem-solving skills to the respective observed variables) which ranged from 0.40 to 0.85 are outlined in Figure 2 above. Factor loadings greater than .30 are considered statistically significant for sample sizes of 350 or greater (Hair et al., 2010). While a loading of .40 represents a minimal level of practical significance, it is acceptable for interpretation in large samples where the focus is on identifying the underlying structure (Hair et al., 2010; Stevens, 2002). While a high chi-square and significant p-value suggest model rejection, statistical hypothesis testing can be a poor tool for model selection in large samples ($n=840$), a limitation explicitly noted by Jöreskog (1967). From this perspective, the rejection of a model on purely statistical grounds is not necessarily a condemnation of its theoretical utility hence the present study's examination of instructional leadership's aims, objectives and teachers' problem-solving skills at the aggregated score levels respectively.

Data Analytic Tools: The collected data were thoroughly checked for errors and cleaned before analysis using Statistical Package for Social Sciences (SPSS) version 26.0. The research instruments were reviewed for completeness and consistency, and the data were coded before conducting statistical analyses. Descriptive statistics, including means and standard deviations, were employed to summarize instructional leadership aims, summarize instructional leadership objectives, and teachers' problem-solving skills. Pearson correlation and regression analysis were utilized to examine the relationships between these variables. Covariance Based Structural Equation Modeling (CB-SEM) was applied to investigate the predictive linkages among the constructs. CB-SEM is particularly effective for exploring the complex interplay between constructs such as teacher-led school aims, teacher-led school objectives, and teachers' problem-solving skills.

RESULTS

The study first employed correlation analysis to explore the broader research question: 'Is there a relationship among instructional leadership's aims, objectives and teachers' problem-solving skills?'. A correlation table (Table 1 below) was constructed to demonstrate the interconnection between instructional leadership's aims, objectives and teachers' problem-solving skills. The analysis revealed a weak positive correlation between instructional leadership's aims and teachers' problem-solving ($r = 0.131$, $p < 0.01$), a moderate positive correlation between instructional leadership's objectives and teachers' problem-solving ($r = 0.342$, $p < 0.01$) and a strong positive correlation between instructional leadership's aims and objectives ($r = 0.508$, $p < 0.01$). The results indicate that while instructional leadership's aims and objectives are strongly related to each other, the magnitude of their influence on teachers' problem-solving skills were moderate or less although significant, paving the way to explore the mediating role of instructional leadership's objectives (reflecting instructional leaders who are perceived to be working towards the achievement of the schools aims or mission).

Table 1. Descriptive Statistics and Correlation Coefficients and reliabilities (a) among Instructional Leadership's Aims and Objectives Dimensions and Problem Solving Skills Variables

No.	Variable	Mean	Std. Deviation	N	1	2	3
1	Problem Solving Skills	75.5500	6.06322	840	(.591)		
2	Instructional Leadership – Aims	18.0345	4.89801	840	.131**	(.907)	
3	Instructional Leadership – Objective	12.4417	2.15246	840	.342**	.508**	(.832)

The regression analysis was utilized to examine the relationships between these variables: instructional leadership's aims, and objectives as well as teachers' problem-solving skills. The regression results for Instructional Leadership - Objective as a mediator in the relationship between Instructional Leadership - Aims and Teacher Problem Solving Skills is captured in Table 2 below.

Table 2: Regression results for Instructional Leadership - Objective as a mediator in the relationship between Instructional Leadership - Aims and Teacher Problem Solving Skills

Variable	Model Block 1				Model Block 2			
	Predictor				(Predictor and Mediator)			
	<i>B</i>	β	<i>t</i>	<i>p</i>	<i>B</i>	β	<i>T</i>	<i>p</i>
(Constant)	72.615		91.666	0.000	63.836		54.730	.0001
Instructional Leadership - Aims	.163	.131	3.839	.000	-.070	-.057	-1.504	.133

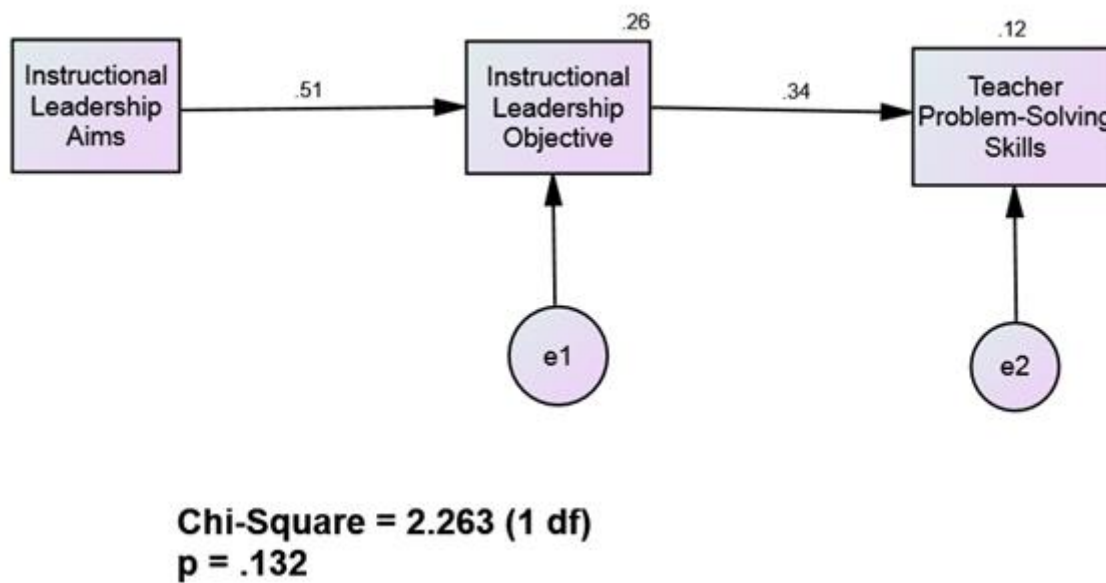
Instructional Leadership – Objectives					1.043	.370	9.832	.0001
	<i>R</i>	<i>R</i> ²	<i>R</i> ² Δ	<i>p</i>	<i>R</i>	<i>R</i> ²	<i>R</i> ² Δ	<i>p</i>
	.131	.017	.017	0.0001	.345	.119	.102	0.0001
	F Δ (1, 838) = 14.742			0.0001	F Δ (1, 837) = 96.678			0.0001
	F(1, 838) = 14.742			0.0001	F(2, 837) = 56.551			0.0001

Dependent Variable: Teacher Problem Solving Skills

The model summary of Block 1 (Table 2) indicates that Instructional Leadership - Aims dimension significantly predicts Teacher Problem Solving Skills ($\beta = 0.131$, $t = 3.839$, $p = .0001$) explaining 1.7% of the variance in Teacher Problem Solving Skills ($R^2 = .017$) albeit small. This result supports the hypothesis (2) which states that Instructional leaders' aims will influence teachers' problem-solving skills. The model summary (Table 2) also shows a significant fit between the variables including Instructional Leadership - Aims dimension and Instructional Leadership – Objectives dimension: Model Block 2 ($F(2, 837) = 56.551$, $p < 0.0001$). The R-square values also show that Instructional Leadership - Aims and Instructional Leadership - Objectives dimensions explains 11.9% of the variance in Teacher Problem Solving Skills ($R^2 = .119$). Overall, the results in Model Block 2 indicate that Instructional Leadership - Objectives dimension has a significant positive effect on Teacher Problem Solving Skills ($\beta = 0.370$, $t = 9.832$, $p < 0.0001$) in support of hypothesis (3): Instructional leaders' objectives will influence teachers' problem-solving skills. Further observation of Model Block 2 (Table 2) showed that Instructional Leadership - Aims dimension has no significant effect on Teacher Problem Solving Skills ($\beta = -0.057$, $t = -1.504$, $p = .133$); a departure from Instructional Leadership - Aims dimension showing a significant effect on Teacher Problem Solving Skills when Instructional Leadership - Objectives dimension was not introduced in the model as in Model Block 1 ($F(1, 838) = 14.742$, $p < 0.0001$). Specifically, the findings provide strong support for hypothesis 4 (H4): Instructional leaders' objectives will mediate the relationship between Instructional leaders' aims and teachers' problem-solving skills; showing that instructional leaders who are perceived to be working in achieving their objectives are more likely to indirectly influence teachers' problem-solving skills when the instructional leaders' aims (adopted goals in response to government directives rather than through deliberate planning or not) are well outlined. In other words, objectives act as mediators between leadership vision and practical instructional practices, highlighting their pivotal role in influencing teachers' problem-solving skills.

The Structural Equation Modelling was employed to examine the linear relationship among the headteachers' Instructional Leadership - Aims and Instructional Leadership - Objectives and Teacher Problem-Solving Skills. Employing the AMOS path analysis Chi-square indices as shown in Figure 3, a close fit of the Integrated Model of Instructional Leadership and Problem-Solving to the sample data was hypothesized and found to fit the observed data, since a desired non-significant Chi-square test result $\chi^2 (1, n = 840) = 2.263$, $p = 0.132$ was obtained. In line with Hu and Bentler's (1999) suggestion, root mean square error of approximation = 0.039 (with its confidence intervals of 90% CI: 0.00 - 0.109), comparative fit index = .996 which is greater than 0.95 (Bentler, 1990), normed fit index = 0.994, as well as, the relative Chi-square (χ^2/df) of 2.263 (see Byrne, 1989), indicate that the overall hypothetical model adequately fit the sample aggregated data.

Figure 3. Result of the Path Analysis of Instructional Leadership- Aims and Objectives and Teacher Problem-Solving



In terms of path coefficients, the model's result is an answer to the second and third research questions: RQ1: To what extent do instructional leaders' aims impact their objectives; and RQ3: How do instructional leaders' objectives affect teachers' problem-solving skills? The results show that there exists a significant linkage between instructional leadership aims and objectives ($\beta = 0.51$, $p < 0.001$); (see Figure 3) in support of hypothesis (1): Instructional leaders' aims will influence their objectives. Furthermore, the model's results show that there exists a significant linkage between instructional leadership objectives and teacher problem-solving ($\beta = 0.34$, $p < 0.001$); further affirming hypothesis (3): Instructional leaders' objectives will influence teachers' problem-solving skills.

DISCUSSION AND CONCLUSION

Instructional leaders' aims and their objectives: The analysis confirms that instructional leaders' aims are significantly related to the objectives of the leaders, supporting the hypothesis that a clear direction (aim) is directly related to concrete, actionable plans (objectives). This finding aligns with the assertion that aims, defined as high-level, general purposes, serve to remind leaders of their ideals and directly guide the construction of specific school goals and objectives (Noddings, 2007; Ritz, 2014). The results align with the theoretical framework provided by Noddings (2007), who argued that aims serve as high-level "ideals" that direct the construction of more specific goals. By demonstrating that aims are related to objectives, this study provides empirical weight to Ritz's (2014) assertion that "aim" provides the essential direction for a school. While Anderson et al. (2001) distinguish goals as specific statements of academic intention, the finding that instructional leaders' aims are related to their objectives suggests that in the minds of instructional leaders, these distinctions are part of a singular, fluid process of translation. As Babalola (2014) noted, an objective translates a goal into "concrete action"; therefore, the finding that instructional leaders' aims are related to their objectives, indicates that leaders are effectively bridging the gap between abstract purpose and daily school activity. In this study, the integration of aims and goals into a unified "instructional leadership-aim" concept reflects Babalola's (2014) observation that target goals are often subsumed within the broader general aim, confirming that leaders view these elements as a cohesive strategic framework. However, the findings must be interpreted in the context of the operational environment described by Ansong et al. (2025), which highlights that rapid policy shifts and government directives can disrupt this alignment. Although the hypothesis is supported, it is notable that the influence of aims on objectives may be attenuated when schools are forced to adopt goals reactively rather than through deliberate planning. Despite this pressure, the results reflect the findings of Esia-Donkoh (2014), which revealed that headteachers of Ghanaian public basic schools are aware and perceived to be aware of their duties and actively strive to align their administrative and pedagogical actions with established school goals to the best of their knowledge. This addresses Noddings' (2007) concern that teachers are often commanded to have

objectives while ignoring the school's broader aims. This indicates that while external pressure exists, instructional leaders' inner objectives remain driven by their fundamental aim to improve teaching and learning (Esia-Donkoh, 2014). By linking aims to objectives, the leaders in this study appear to be fostering a more integrated and coherent instructional environment.

Instructional leaders' aims and teachers' problem-solving skills: This finding that instructional leaders' aims is significantly related to teachers' problem-solving skills suggests that a leader's vision acts as a catalyst, transforming teachers from passive implementers of a curriculum into active, creative problem-solvers.

The results strongly align with the assertions of Esia-Donkoh (2014), who argued that headteachers must be grounded in curriculum theory to influence the selection of learning experiences. When a leader's aim is centered on high-quality instructional outcomes, they naturally encourage teachers to adopt inquiry-based methodologies. As noted by Akomodi (2025), these methodologies—which require exploring new ideas and taking risks—are the "foundational elements" of problem-solving. The finding that instructional leaders' aims significantly influence teachers' problem-solving skills proves that when a leader sets a clear directional aim, it creates a "safe space" for teachers to experiment with solutions rather than sticking to rote, isolated practices. A key mechanism revealed by this finding is the leader's role in professional development. According to Esia-Donkoh (2014), headteachers guided by school goals are inherently concerned with the "professional problems of their staff." The finding suggests that leaders in this study are facilitators of collaborative brainstorming and training. This moves teachers away from what Pietsch et al. (2025) describe as "isolated practice" toward a collaborative culture. In such a culture, the leader's long-term vision (aim) is realized through the collective ability of the staff to identify issues and brainstorm solutions to improve learning outcomes.

In the specific context of Ghana, the finding that instructional leaders' aims significantly influence teachers' problem-solving skills validates the "bridge" concept proposed by Donkor and Asante (2016). Instructional leaders act as the link between broad national goals and localized challenges, such as shortages of textbooks or infrastructure. The findings suggest that leaders use their aims to help teachers prioritize issues and identify specific actions (Esia-Donkoh, 2014). Instead of being overwhelmed by resource gaps, teachers influenced by strong instructional aims develop the skills to innovate and find alternative approaches to ensure teaching continues effectively. Finally, the finding highlights the leader's role in assigning responsibilities and identifying resources. When a leader's aim is clear, they don't just identify problems; they empower teachers to take ownership of the solutions. By assigning responsibilities for various actions (Esia-Donkoh, 2014), the leader effectively builds the problem-solving capacity of the teacher. The teacher is no longer just a user of resources but a strategic agent who aligns their problem-solving efforts with the school's overarching purpose.

Instructional leaders' objectives and teachers' problem-solving skills: The statistical support for the relation between instructional leaders' objectives and teacher problem-solving confirms that the specific objectives set by instructional leaders are a significant predictor of teachers' problem-solving capabilities. While aims provide the general direction, it is the translation of these aims into tangible objectives—such as providing feedback, modeling practices, and fostering collaboration—that equips teachers with the tools to navigate classroom challenges.

The results strongly align with Akomodi (2025), who posits that when a leader's objective is to provide constructive feedback, it creates a psychological safety net. This encourages teachers to move away from rigid, traditional instruction toward inquiry-based methodologies. By setting objectives that value the process of exploring new ideas, instructional leaders empower teachers to take the risks necessary for effective problem-solving. This finding suggests that a leader's objective isn't just a target to hit, but a standard that defines how a teacher should approach a problem.

The support for the relationship between instructional objectives and teacher problem-solving further validates the findings of Amponsah and Mensah (2024) and Gyamerah (2021), who noted that when leaders prioritize supportive supervision—including real-time feedback and mentoring—within their school objectives, there is a marked improvement in a teacher's capacity to adapt and solve problems. By making "instructional support" a core objective (Adeoye et al., 2025), leaders transition from being distant managers to what the AITSL (2022)

describes as a knowledgeable other. This shift allows the leader to walk alongside staff, transforming an instructional hurdle into a collaborative learning opportunity.

A critical insight from this finding is the role of collaborative, data-driven cultures. According to Mestry (2017), when a leader's objective is to foster "shared responsibility," it creates a collective inquiry. In the Ghanaian context, where teachers often face "limited resources or large class sizes," the leader's objective to facilitate teamwork ensures that teachers do not tackle these obstacles in isolation. The support for the relationship between instructional objectives and teacher problem-solving indicates that by setting the objective of collaboration, leaders effectively pool the intellectual capital of the school, making problem-solving a shared professional habit rather than an individual burden. This empirical link suggests that high-quality objectives lead to high-functioning teachers who view classroom obstacles not as dead-ends, but as problems they are equipped to solve.

Instructional leader's objective as a mediator: The combined support for instructional leaders' aims significantly related to teachers' problem-solving skills and the relationship between instructional objectives and teacher problem-solving being significant reveals a dual effect: while a leader's aims provide the philosophical spark for teacher growth, it is their specific objectives that provide the mechanical tools for daily execution. The findings suggest that instructional leadership is most effective when there is a tight alignment between the instructional leader's aims and objectives. In this study, these ideals of instructional leaders' aims (Noddings, 2007) and teachers' problem-solving skills showing significant relationship create a culture of inquiry and risk-taking (Akomodi, 2025). However, the support for the relationship between instructional objectives and teacher problem-solving proves that vision alone is insufficient; teachers require the concrete action of well-coordinated objectives (Babalola, 2014) to solve problems. When an instructional leader acts as a knowledgeable other (AITSL, 2022) by setting objectives like real-time feedback and mentoring, they provide the practical bridge that turns an abstract aim into a teacher's lived reality. Together, these results indicate that problem-solving in schools is a shared responsibility (Mestry, 2017). A leader's aim of a collaborative culture (Pietsch et al., 2025) provides the long-term purpose, while their objective of instructional support (Adeoye et al., 2025) facilitates the daily brainstorming sessions needed to tackle "common obstacles" like resource shortages (Donkor & Asante, 2016). This synergy ensures that teachers do not just "perform duties" to the best of their knowledge (Esia-Donkoh, 2014), but actively innovate and adapt to "diverse classroom challenges" (Amponsah & Mensah, 2024).

The statistical support for the mediating role of school objectives provides a critical missing link in instructional leadership theory: it confirms that instructional leaders' aims do not automatically result in improved teacher problem-solving skills. Instead, this relationship is mediated by the specific objectives the leader establishes. This suggests that while a leader's "aim" provides the "why," the "objective" provides the "how," making it the active vehicle for school improvement. The findings directly address the theoretical gap identified by Noddings (2007), who questioned which specific goals educators should establish to ensure they contribute to the broader "aims" of 21st-century education. The support for the mediating role of school objectives suggests that in the absence of clear objectives, a leader's general aim remains a static ideal. By functioning as a mediator, objectives provide the necessary structure that breaks down "general, fixed, and universal" aims into manageable, actionable steps. This mediation ensures that a leader's vision for an inquiry-based or collaborative culture is translated into concrete action (Babalola, 2014) required for teachers to solve real-world classroom challenges.

Noddings (2007) further argued that regardless of how universal an educational aim might be, stakeholders must engage in the process of constructing goals and objectives. The mediating role of objectives in this study suggests that this process is where the real growth in teacher problem-solving occurs. When a leader sets an objective—such as providing real-time feedback or mentoring (Amponsah & Mensah, 2024)—they are essentially operationalizing their aim. This mediation allows teachers to move away from simply following directives and toward a state of collective inquiry (Mestry, 2017). The objective acts as the instructional support mechanism (Adeoye et al., 2025) that turns a leader's high-level aspiration into a teacher's localized problem-solving skill set.

In the Ghanaian educational system, characterized by frequent policy shifts (Ansong et al., 2025), the mediating role of objectives is vital. While an instructional leader's aim might be influenced by broad national educational

reforms, the objectives they set locally serve as the bridge (Donkor & Asante, 2016) that filters these reforms into specific, solvable tasks for the teacher. Without this mediation, teachers might find a leader's aims too abstract or disconnected from the lack of textbooks or infrastructure issues they face daily. The support for the mediating role of school objectives confirms that by refining aims into specific objectives, leaders provide teachers with the adaptive capacity needed to solve problems despite external disruptions. Ultimately, the mediating role of school objectives as observed in this study validates the idea that Instructional Leadership is a multi-step process. A leader's aim influences their objectives (essential filters that refine a leader's philosophy into professional competence), which in turn directly builds the teacher's problem-solving skills. In the Ghanaian context, this combined support for instructional leaders' aims significantly influence teachers' problem-solving skills and the influence of instructional objectives on teacher problem-solving being significant is a critical buffer against policy shifts (Ansong et al., 2025). While national directives may change, a leader who maintains clear internal aims and translates them into supportive, feedback-oriented objectives builds a resilient teaching staff who are less dependent on external commands for every lesson (Noddings, 2007) and more capable of autonomous, high-level problem-solving.

IMPLICATIONS AND RECOMMENDATIONS

Theoretical Integration: The present study's Instructional Alignment Model view provides a process-oriented hierarchy that explains how leadership aim (vision) translates into teacher performance, specifically problem-solving, within the Ghanaian educational context. This framework transitions the understanding of instructional leadership from a singular event to a three-stage chain reaction—philosophical, tactical, and cognitive. The study bridges the leadership level (the headteacher's philosophical "Aims") directly with a high-order cognitive skill (teacher "Problem-Solving"). This indicates that aim (vision) alone is insufficient; leadership efficacy depends entirely on translating the systematic objective-setting into concrete actions. Theoretically, this implies that an instructional leader's aim (personal, adopted or adapted vision) only impacts classroom outcomes when bridged by systematic objective-setting, moving the discourse beyond what leaders *possess* to how they operationalize their influence.

Practical Recommendation: The findings from the Instructional Alignment Model necessitate a systematic shift in how educational leadership is operationalized within the Ghanaian school system. To capitalize on the aims-objectives-problem solving hierarchy, the Ministry of Education (MoE) and Ghana Education Service (GES) should mandate that School Improvement Plans (SIPs) explicitly decompose high-level philosophical aims into measurable, termly instructional objectives. This "vision-to-action" institutionalization ensures that leadership intent is not lost in translation.

Furthermore, the National Teaching Council (NTC) should integrate "Pedagogical Sense-Making" into leadership certification, equipping headteachers to act as "knowledgeable others" who translate national reforms into localized classroom strategies. This transition requires a fundamental shift in supervision from "fault-finding" inspections to supportive mentoring and clinical peer observation. By formalizing Professional Learning Communities (PLCs) centered on collective inquiry, leaders can provide teachers with "guided autonomy" —setting clear tactical objectives while granting the professional freedom necessary to foster high-order problem-solving and adaptive classroom practices.

Policy Implications: Based on the empirical validation of the Instructional Alignment Model, these policy recommendations target the Ministry of Education (MoE), Ghana Education Service (GES), and National Teaching Council (NTC) to institutionalize effective instructional leadership.

The MoE and GES should mandate "Standardized Instructional Leadership Plans" within the Head Teachers' Handbook, requiring School Improvement Plans (SIPs) to explicitly align broad pedagogical aims with measurable termly objectives. Given that objectives act as a full mediator (H4), policy must shift from administrative inspection toward "Clinical Supervision" and results-based mentoring.

Furthermore, the NTC should integrate "Pedagogical Sense-Making" as a mandatory pillar for licensing and promotion, ensuring leaders can translate national reforms into localized school aims. Finally, institutionalizing Professional Learning Communities (PLCs) as results-oriented platforms for collective inquiry will bridge the

gap between leadership vision and teacher problem-solving. These reforms transition Ghanaian school leadership from a static oversight role to an architectural process of professional development.

Limitations

Despite a robust sample ($n=840$) and stratified representation, this study acknowledges several methodological limitations. The cross-sectional design allows for simultaneous data collection but precludes definitive causal inferences regarding the relationships between leadership variables and teacher problem-solving. Furthermore, reliance on self-reported questionnaires may introduce social desirability bias.

Psychometrically, while "Aims" and "Objectives" showed high consistency, the Cronbach's alpha for "Problem-Solving" ($\alpha = 0.591$) sits at the lower threshold. However, this is deemed acceptable for exploratory research involving complex, multi-dimensional constructs within a post-positivist paradigm; authorities like Hair et al. (2010) and Hinton et al. (2004) suggest values between 0.50 and 0.70 provide "moderate reliability" sufficient for large-scale Structural Equation Modeling (SEM). Finally, the significant Chi-square p-value is likely a statistical artifact of the large sample size rather than a theoretical failure, requiring a nuanced interpretation of absolute model fit.

Future Directions for Research

Future research should employ longitudinal designs to examine how school demographics moderate the aims-objectives-problem solving hierarchy and its ultimate impact on student outcomes. Implementing a mixed-methods approach would further bridge the gap between statistical trends and the specific human side of conversations, emotions, or daily struggles of leadership, specifically exploring how school-level moderating variables influence teacher problem-solving.

Conclusions

This research validates the Instructional Alignment Model, characterizing leadership in Ghanaian schools as a deliberate, hierarchical process rather than a fragmented administrative function. The core contribution lies in the empirical support that "Objectives" act as a full mediator between leadership "Aims" and teacher "Problem-Solving Skills." This proves that a leader's philosophical vision only impacts teacher capacity when operationalized through concrete, tactical actions (objectives).

The findings conclude that teacher problem-solving is a mentored outcome fostered by a culture of collective inquiry. By acting as knowledgeable instructional leaders, headteachers bridge the gap between abstract ideals and classroom reality, particularly in resource-constrained environments. Ultimately, this study provides a robust evidence base for the Ministry of Education and National Teaching Council to transition from traditional inspection to instructional leadership, prioritizing the systematic instructional paths to ensure that visionary aims translate into measurable professional resilience and adaptive teaching success. The research indicates that Ghanaian leadership thrives when abstract aims become actionable objectives, directly driving and improving teacher problem-solving.

Funding: The researchers did not receive any support for this work.

Conflict of Interest: The study's authors affirm no conflict of interest.

Data Availability: Data is available upon request from the corresponding author.

Declaration of generative AI and AI-assisted technologies in the writing process: During the preparation of this work, the authors used Google AI Mode in order to identify the authentic related articles for review, summarise text and improve readability. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the published article.

REFERENCES

1. Adeoye, M.A., Mohammed, A., & Onikoyi, O.A. (2025). The Role of Instructional Leadership in Enhancing Teacher Performance in Primary Schools. *Al Ibtida: Jurnal Pendidikan Guru Mi*, 12 (1), 219 – 231. <http://dx.doi.org/10.24235/al.ibtida.snj.v12i1.21775>
2. Akomodi, J. O. (2025). In-depth analysis: The importance of instructional leadership in education. *Open Journal of Leadership*, 14, 177-193. <https://doi.org/10.4236/ojl.2025.142008>
3. Amponsah, N., & Mensah, D. K. D. (2024). Headteachers' instructional leadership practices as predictors of teachers' continuous professional development in Ghanaian public basic schools: Structural equation modelling approach. *International Journal of Research and Innovation in Social Science*, 8(3s), 4644-4663. <https://dx.doi.org/10.47772/IJRISS.2024.803339S>
4. Anderson, L. W., Krathwohl, D. R., Airasian, P. W., Cruikshank, K. A., Mayer, R. E., Pintrich, P. R., Rath, J., & Wittrock, M. C. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives*. Longman.
5. Ansong, J., Addo-Fordwour, M., Kenney, K. C., & Sarfo, F. K. (2025a). Instructional leadership challenges of headteachers: Acquiring knowledge of curriculum and promoting curriculum instruction. *Journal of Education Management & Leadership*, 4(1), 46–57. <https://doi.org/10.51317/JEML.V4I1.704>
6. Ansong, J., Sarfo, F. K., & Oti-Agyen, P. (2025b). Challenges faced by headteachers in setting school goals and expectations in basic schools: A case study of Asante Akim North Municipality, Ghana. *African Journal of Empirical Research*, 6(4), 1231–1240. <https://doi.org/10.51867/ajernet.6.4.109>
7. Asafo-Adjei, M., & Semarco, S. K. M. (2024). The effect of teacher-led school aims and objectives on teacher problem-solving skills in Ghana. *International Journal of Research and Innovation in Social Science (IJRISS)*, 8(11), 2687–2706. <https://dx.doi.org/10.47772/IJRISS.2024.8110206>
8. Australian Institute for Teaching and School Leadership [AITSL]. (2022). *Instructional leadership – leading the teaching and learning*. Queensland Government. <https://schoolreviews.education.qld.gov.au/res/Documents/spotlight-paper-instructional-leadership.pdf>
9. Babalola, O. (2014). Aims, goals and objectives: A tripod of educational focus in curriculum development. *Journal of Social Science Research*, 5 (3), 803 – 810.
10. Blase, J., & Blase, J. (1999). Principals' instructional leadership and teacher development: Teachers' perspectives. *Educational Administration Quarterly*, 35(3), 349–378. [doi.org](https://doi.org/10.1177/0013164499353003)
11. Cho, S. (1999, July) Education of creativity in Confucian society. Keynote speech at the 8th International Conference on Thinking, Edmonton, Canada.
12. Cho, S. (2003, June). Creative problem solving in science: Divergent, convergent, or both? In U. Anuruthwong & C. Piboonchol (Eds.), *7th Asia-Pacific Conference on Giftedness* (pp. 169–174). Bangkok, Thailand: October Printing.
13. Darling-Hammond, L., Flook, L., Schachner, A., & Wojcikiewicz, S. (2023). Educating teachers to enact the science of learning and development. *Applied Developmental Science*, 27(2), 153–174.
14. Donkor, A. K., & Asante, J. (2016). Instructional leadership of basic schools in Ghana: The case study of schools in Kwaebibirem district. *American International Journal of Contemporary Research*, 6(4), 57–67. https://ajcr.thebrpi.org/journals/Vol_6_No_4_August_2016/8.pdf
15. Esia-Donkoh, K. (2014). Attaining school and educational goals: Duties of headteachers of public basic schools in Ghana. *Journal of Education and Practice*, 5(1), 64–72. <https://www.iiste.org/Journals/index.php/JEP/article/view/10413>
16. Ghana Education Service (2010a), *Headteachers' handbook* (2nd ed.). Accra: Ministry of Education.
17. Ghana Education Service (2010b), *School management committee resource handbook* (2nd ed.). Accra: Ministry of Education.
18. Gyamerah, A. K. (2021). *Instructional leadership practices that support increased student achievement in Ghana's rural districts* [Doctoral dissertation, Walden University]. Walden Dissertations and Doctoral Studies. <https://scholarworks.waldenu.edu/dissertations/11192/>
19. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective* (7th ed.). Pearson Education.
20. Hallinger, P., & Murphy, J. (1985). Assessing the instructional management behavior of principals. *The Elementary School Journal*, 86(2), 217–247.

21. Hallinger, P., Wang, W.C., & Chen, C.W. (2013). Assessing the measurement properties of the Principal Instructional Management Rating Scale: A meta-analysis of reliability studies. *Educational Administration Quarterly*, 49(2), 272–309. <https://doi.org/10.1177/0013161X12468149>
22. Hinton, P. R., Brownlow, C., McMurray, I., & Cozens, B. (2004). *SPSS explained*. Routledge.
23. Jacobs, V. R., Lamb, L. L. C., & Philipp, R. A. (2010). Professional noticing of children’s mathematical thinking. *Journal for Research in Mathematics Education*, 41(2), 169–202. <https://doi.org/10.5951/jresmetheduc.41.2.0169>
24. Jeffri, A. I., & A. Hamid, A. H. (2022). The relationship between 21st-century instructional leadership and teachers' self-efficacy. *International Journal of Academic Research in Business and Social Sciences*, 12(9). <https://doi.org/10.6007/ijarbss/v12-i9/14569>
25. Jöreskog, K. G. (1967). Some contributions to maximum likelihood factor analysis. *Psychometrika*, 32(4), 443–482.
26. Kraft, M. A., & Christian, A. (2022). Can teacher evaluation systems produce high-quality feedback? An administrator training field experiment. *American Educational Research Journal*, 59(3), 500–537.
27. Leithwood, K. A., & Riehl, C. (2003). *What we know about successful school leadership*. Laboratory for Student Success, Temple University.
28. Li, Y. (2023). Linking instructional leadership and school support to teacher expertise: The mediating effect of teachers’ professional development agency. *Sustainability*, 15(4), 3440. <https://doi.org/10.3390/su15043440>
29. Lin, C., & Cho, S. (2011). Predicting Creative Problem-Solving in Math from a Dynamic System Model of Creative Problem Solving Ability, *Creativity Research Journal*, 23(3), 255-261: <http://dx.doi.org/10.1080/10400419.2011.595986>
30. Mestry, R. (2017). Empowering teachers as leaders through professional development. *South African Journal of Education*, 37(1).
31. Noddings, N. (2007). Aims, Goals, and Objectives. *Encounters on Education*. 8, 7 - 15
32. Pietsch, M., Aydin, B., & Gümüş, S. (2025). Putting the instructional leadership–student achievement relation in context: A meta-analytical big data study across cultures and time. *Educational Evaluation and Policy Analysis*, 47(1), 29-64. <https://doi.org/10.3102/01623737231197434>
33. Queensland Department of Education. (2022). *Instructional leadership – Leading the teaching and learning [Spotlight paper]*. <https://schoolreviews.education.qld.gov.au/res/Documents/spotlight-paper-instructional-leadership.pdf>
34. Ritz, J. (2014). *Note taking Guide: Aims, Goals and objectives*. Old Dominion Universit.
35. Robinson, V. M., Lloyd, C. A., & Rowe, K. J. (2008). The impact of leadership on student outcomes: An analysis of the differential effects of leadership types. *Educational Administration Quarterly*, 44(5), 635–674.
36. Sherin, M. G., & Russ, R. S. (2011). Teacher noticing via video: The role of interpretive frames. In E. T. van Es & M. G. Sherin (Eds.), *Mathematics teacher noticing: Seeing through teachers' eyes* (pp. 3–20). Routledge.
37. Stevens, J. P. (2002). *Applied multivariate statistics for the social sciences* (4th ed.). Lawrence Erlbaum Associates.
38. Suyudi, M., Suyatno., Rahmatullah, A. S., Rachmawati, Y., & Hariyati, N. (2022). The effect of instructional leadership and creative teaching on student actualization: Student satisfaction as a mediator variable. *International Journal of Instruction*, 15(1), 113-134. <https://doi.org/10.29333/iji.2022.1517a>