

Role of Ancillary Functions on Pedagogical Content Knowledge and Teaching Performance: Perspective of Teachers

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Abstract

This study examined how ancillary functions mediate the relationship between pedagogical content knowledge (PCK) and teaching performance. It aimed to determine if involvement in ancillary functions is significantly related to both PCK and teaching performance. A predictive correlational research design was employed, gathering data from 201 teachers via a structured survey questionnaire. Statistical methods used included weighted mean, standard deviation, t-test, Pearson r, and the MACRO process. Results indicated that teachers' perceived PCK levels are significantly related to teaching performance and involvement in ancillary functions. Moreover, the perceived extent of involvement in ancillary functions is significantly related to both perceived PCK levels and performance. The study found that involvement in ancillary functions partially mediates the relationship between perceived PCK levels and performance. Further research should investigate specific PCK components that influence teacher effectiveness and explore interventions and professional development programs to enhance teaching quality and student outcomes. Additionally, incorporating extra tasks into teacher training and professional development can help optimize task management. Providing teachers with the necessary resources, support, and training to manage ancillary tasks while maintaining their core instructional duties is also crucial. These recommendations aim to improve teaching effectiveness by balancing core instructional responsibilities with ancillary functions, thereby enhancing overall teaching performance and student learning outcomes.

Keywords: pedagogical content knowledge, ancillary functions, teaching performance

1. Introduction

As teachers play multi-faceted roles, they serve as pillars of hope and strength of every country in molding and building the future of every learner and deserve great admiration. However, manifold ancillary functions of teachers may bring strong advantages or disadvantages in their personal and professional development, and these depend on the characteristics of teachers according to scholars which either emphasized positive impacts on teachers' individual well-being or considered as one of the problems encountered by them (Into & Gempes, 2018).

Yet, Salise et al, (2021) mentioned that these ancillary services are essential for school's operations every day, like in Indonesia, these used "to support the implementation of their national standards of education to the national goal of education". As outlined in DepEd Order No. 5, s. 2024, teacher ancillary tasks include: curriculum planning and development, preparation of instructional materials, student assessment and evaluation, homeroom guidance and management, parent-teacher conferences and home visits, participation in school programs and activities, professional development, and training. According to Into and Gempes (2018), teachers who effectively manage various ancillary functions have a broader impact on all educators in a country. However, most teachers perceived ancillary functions as additional tasks Arañas (2023).

Because teachers hold a pivotal role in the educative journey, as such, it is emphasized that teachers necessitate expert knowledge and specialized skills to guarantee the attainment of high-quality learning outcomes. Teaching performance refers to what teachers do, inside and outside the classroom, and how it affects student academic success (Werang, et al., 2022). In addition, the concept of teaching performance delineates the tangible manifestations within the classroom arising from training and development, or the absence thereof. In essence, it encompasses the array of actions, attitudes, and behaviors exhibited in the teaching-learning milieu, ultimately leading to the realization of educational objectives for students.

1.1. Conceptual Framework

The study is based on the Pedagogical and Content Knowledge (PCK) framework which describes how teachers' understanding of educational technologies and PCK interact with one another to produce effective teaching with technology (Koehler & Mishra, 2006). In Shulman's view (1986), this transformation materializes when the educator interprets the subject matter, identifies various approaches for its representation, and adjusts instructional materials to accommodate diverse conceptualizations and the prior knowledge of students. Gamayao and Biñas (2021) concluded that teaching skills are substantially related to pedagogical content knowledge among teachers. The more learned and skilled the teachers are, the more competent they are in their field.

The extent of ancillary function involvement as the mediating variable is explained by both the Job enlargement and Self-Determination theories. Job enlargement theory involves adding tasks at the same level of skill and responsibility widening the scope of individual team members' positions, thereby broadening their horizons, and enabling them to develop the ability to work proficiently (Firestone, 1991). Self-Determination theory assumes that human beings are active beings driven by three psychological needs that define intrinsic and varied extrinsic sources of motivation (Deci & Ryan, 2012). David et al. (2019) documented that public-school teachers in the Philippines are often overworked and found struggling with additional duties due to time constraints, incomplete skills, and financial challenges (Villanueva et al., 2022) observed that teachers struggle. Similarly, teachers in the San Division Pablo City, handle multiple ancillary duties despite the provided guidelines.

Herzberg's Two-Factor and Identity Process theories both provide insights into the relationship between perceived levels of Pedagogical and Content Knowledge (PCK) and teaching performance across various domains. Identity Process theory explains how identity is seen as a dynamic, social product of the interaction between the individual and the environment (Breakwell, 2012). Furthermore, Herzberg's Two-Factor Theory explains how elements in the workplace might affect job satisfaction and motivation

(Nickerson, 2023). In the context of "Ancillary Functions mediating the relationship between Pedagogical and Content Knowledge (PCK) and Teaching performance (TP)," ancillary Functions operate as motivators or hygienic elements that influence teaching performance. It is explained also by Bandura's Social Cognitive Theory, which focuses on how individuals learn and develop through observation, imitation, and social interactions.

1.2 Statement of the Problem

Specifically, this study intended to answer the given questions:

1. Is there a significant relationship between the perceived level of PCK and teaching performance?
2. Is there a significant relationship between the level of perceived extent of involvement in ancillary functions and teaching performance?
3. Is there a significant relationship between the perceived PCK level and the extent of involvement in ancillary functions?
4. Does the perceived extent of involvement in ancillary functions significantly mediate the relationship between the perceived level of PCK and teaching performance?

2. Methodology

Quantitative predictive correlational design was used to examine the relationships between variables and predict one variable based on another (Cardoso et al., 2022). Within the predictive correlational design, the focus was on understanding how Pedagogical Content Knowledge (PCK) relates to teaching performance, with the level of involvement in ancillary functions serving as a potential mediator in this relationship. Mediation analysis was employed to ascertain whether the relationship between a level of PCK and teaching performance is mediated by the influence of the extent of ancillary involvement (Hayes, 2018).

The respondents in this study were the secondary school teachers from Cluster 3 of the Division of San Pablo City. Simple random sampling was used to 201 respondents because it is suited for highly homogenous populations where the respondents are randomly selected to participate (Noor et al., 2022).

Pearson Product Moment Correlation was employed to measure the strength and direction of the linear relationship between the PCK level and teaching performance, the extent of involvement in ancillary functions and teaching performance, and the PCK level and extent of involvement in ancillary functions of the respondents with at 0.05 level of significance.

Finally, in proving the mediation, linear regression was used to estimate the direct and indirect effects of the PCK level on performance through the extent of involvement of ancillary functions on performance. Mediation analyses were initiated using PROCESS Macro v4.1 following the procedure of Hayes (2022). Hayes' procedure allowed the test for the significance of the indirect effect and to estimate its magnitude. After analysis, findings were interpreted, and the necessary conclusions were provided.

3. Results and Discussion

It can be inferred from Table 1 that a moderately significant positive relationship exists between the teachers’ perceived pedagogical content knowledge and teaching performance across various domains with p-values < .01.

Table 1. Test of Relationship Between Perceived Level of Pedagogical Content Knowledge and Performance

Pedagogical and Content Knowledge		Teaching performance				
		Content Knowledge	Creating an Inclusive Classroom	Use of Instructional Materials and Strategies	Report with and Responsiveness to Students	Impact on Learning
Subject Matter Knowledge		.466**	.383**	.434**	.482**	.431**
Instructional and Context	Objective	.478**	.455**	.465**	.535**	.454**
Knowledge of Students’ Understanding		.483**	.423**	.462**	.556**	.441**
Instructional Representations and Strategies		.534**	.480**	.518**	.597**	.520**

**Correlation is significant at the 0.01 level (2-tailed).

The correlation suggests that teachers who perceive themselves to have a higher level of subject matter knowledge showing a higher proficiency in understanding instructional objectives and contexts also tend to perform better across different aspects of teaching. Similarly, teachers who perceive themselves as more skilled in selecting appropriate instructional strategies and representations tend to perform better across different teaching tasks. Moreover, teachers who believe they better understand their student's learning needs and misconceptions tend to perform better in teaching. Specifically, a deeper understanding and effective application of subject matter knowledge, instructional objectives and context, knowledge of students’ understanding, and instructional representations and strategies are associated with better teaching performance. This finding emphasizes the importance of PCK in facilitating effective teaching practices and improving overall teaching performance. This result conforms to the findings of Owusu et al. (2022) and Suglo et al. (2023) that teachers with high levels of PCK perform better in the classroom. Moreover, Gamayao and Biñas (2021) concluded that teaching skills are substantially related to pedagogical content knowledge among teachers. The more skilled the teachers are, the more competent they are in their field.

The correlation analysis in Table 2 suggests that teachers' involvement in ancillary functions, particularly Professional Development, Committee Work, Mentoring, and Professional Service, is positively associated with their performance across various domains at p – values < .01.

Table 2. Test of Relationship Between Perceived Extent of Involvement in Ancillary Functions and Performance

Ancillary Functions	Teaching performance				
	Content Knowledge	Creating an Inclusive Classroom	Utilization of Instructional Materials & Strategies	Rapport with and Responsiveness to Students	Impact on Learning
Administrative Task	.296**	.273**	.253**	.227**	.218**
Committee Work	.339**	.290**	.304**	.271**	.262**
Professional Development	.483**	.480**	.474**	.460**	.477**
Mentoring	.318**	.232**	.280**	.225**	.209**
Professional Service	.367**	.255**	.349**	.277**	.262**

**Correlation is significant at the 0.01 level (2-tailed).

A weak positive association between administrative task involvement and teaching performance in all domains measured suggests that teachers who are more involved in administrative tasks tend to have slightly higher performance scores. This suggests that while administrative duties play a role in teaching performance, their impact may not be as strong as activities directly related to professional growth and student engagement. This result somewhat contradicts the study cited by Deepthi et al. (2023), that excessive administrative duties negatively impacted teacher motivation and performance. mentioned that this increased workload detracts from teachers' ability to address familial responsibilities, personal well-being, and the core task of teaching (Tarraya, 2023).

In addition, Committee Work, Mentoring, and Professional Service also show moderate positive correlations with teaching performance across domains. These activities, which involve collaboration, support, and service within the educational community, are linked to moderately higher performance scores. The strong correlations between Professional Development involvement and teaching performance underscore the importance of ongoing learning and skill development. Attendance to training, workshops, and other learning events supports teachers' ongoing development and helps them stay updated with the latest pedagogical practices, subject matter knowledge, and technological advancements. This continuous professional development positively impacts the quality of education delivered in the classroom. School and educational institutions may benefit from prioritizing and providing ample opportunities for teachers to engage in high-quality professional development activities.

The findings of this research are in congruence with the conclusion of Dichos (2023) and Villanueva (2022) that the higher the ancillary functions of teachers, the higher their teaching performance appraisal. On the contrary, On the contrary, Retubada (2014) and Parcon (2023) concluded that multiple ancillary functions of teachers resulted in poor performance often leading to losing their motivation, satisfaction, and competencies and even feeling burnt out.

The findings in Table 3 shows that there are positive correlations with the involvement in ancillary

functions across all domains of PCK (Subject Matter Knowledge, Instructional Objective and Context, Knowledge of Students’ Understanding, Instructional Representations and Strategies) at p-values < .01. The strong correlations with Professional Development suggest that teachers with a higher perceived level of PCK are likelier to engage in ongoing learning and professional growth activities. Similarly, the positive associations with Committee Work and Mentoring indicate that teachers with stronger PCK are likelier to participate in collaborative efforts and mentorship activities. This suggests that teachers who feel confident in their pedagogical and content knowledge are more willing to engage with their peers and support their colleagues.

Table 3. Test of Relationship Between Perceived Levels of Pedagogical Content Knowledge and Extent of Ancillary Function

Pedagogical Content Knowledge	and	Ancillary Functions				
		Administrative Task	Committee Work	Professional Development	Mentoring	Professional Service
Subject Matter Knowledge		.354**	.255**	.359**	.140**	.294**
Instructional Objective and Context		.403**	.301**	.367**	.162**	.332**
Knowledge of Students’ Understanding		.393**	.312**	.371**	.210**	.338**
Instructional Representations and Strategies		.424**	.315**	.411**	.174**	.322**

***Correlation is significant at the 0.01 level (2-tailed).*

The significant relationships between perceived PCK levels and involvement in ancillary functions suggest that teachers who perceive themselves to have higher levels of PCK are also more likely to be involved in administrative tasks, committee work, professional development, mentoring, and professional service. This highlights the interconnectedness of effective teaching practices, professional growth, and collaborative efforts within educational settings. These findings highlight the importance of fostering a culture of professional development and collaboration within educational institutions. Schools and educational leaders can use these insights to design programs and initiatives that encourage teachers to enhance their PCK while actively participating in ancillary functions that contribute to the overall effectiveness of the educational Environment.

Table 4. Mediation Analysis

<i>Effect</i>	<i>Estimate</i>	<i>SE</i>	<i>95% Confidence Interval</i>		<i>T</i>	<i>P</i>
			<i>Lower</i>	<i>Upper</i>		
Direct	.4794	.0626	.3560	.6028	7.6630	.0000
Indirect	.0812	.0337	.0270	.1576		
Total	.5606	.0595	.4432	.6780	9.4192	.0000

<i>Effect</i>	<i>Estimate</i>	<i>SE</i>	<i>95% Confidence Interval</i>		<i>T</i>	<i>P</i>
			<i>Lower</i>	<i>Upper</i>		
PCK --> Ancillary F	.6141	.1071	.4030	.8252	5.7357	.0000
PCK Know --> T Performance	.4794	.0626	.3560	.6028	7.6630	.0000
Ancillary F --> T Performance	.1322	.0384	.0565	.2079	3.4453	.0007
PCK --> AF--> TP	.0812	.0337	.0270	.1576		

Legend: PCK (Pedagogical and Content Knowledge); AF (Ancillary Functions); TP (Teaching performance).

The results from table 4 reveal that the overall ancillary functions significantly mediate the relationship between pedagogical and content knowledge and teaching performance. The direct and indirect mediation of Ancillary Functions to Pedagogical Content Knowledge (PCK) and Teaching performance (TP) indicates that teachers' involvement in ancillary functions significantly translates their knowledge and skills into effective teaching practices and overall performance. The combination of direct and indirect effects (total effect) shows a strong overall influence of PCK on TP.

The results reveal that even with the numerous ancillary functions assigned to them, teachers can still effectively fulfill their teaching responsibilities and meet performance expectations. These provide valuable insights for educational institutions aiming to support and enhance teaching performance through targeted professional development and collaborative opportunities.

The study revealed a significant relationship between the perceived level of PCK and Performance, the level of perceived extent of involvement in ancillary functions and performance. Similarly, perceived PCK level and the extent of involvement in ancillary functions are significantly related. Teachers with high level of PCK tend to be more likely involved in more ancillary functions and perform better in teaching. Furthermore, teachers with high PCK perform better in teaching with or without ancillary functions. The study also revealed that the extent of involvement in ancillary functions significantly mediates the relationship between the perceived level of PCK and their performance. The results revealed that even with the numerous ancillary functions assigned to them, teachers can still effectively fulfill their teaching responsibilities and meet performance expectations. These provide valuable insights for educational institutions aiming to support and enhance teaching performance through targeted professional development and collaborative opportunities.

4. Recommendations

The study suggests that effective management of ancillary tasks is crucial for teaching performance, with perceived involvement playing a significant role. It suggests providing teachers with resources, support, and training to navigate these responsibilities while maintaining core instructional duties. Further research could inform more effective support mechanisms. This study reveals the complex relationship between ancillary functions, PCK, and teaching performance, suggesting that factors like job satisfaction, burnout, and work-life balance may influence these relationships and, thus, strategies.

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