A Path Analysis of Factors Influencing Expert Knowledge Acquisition in Professional Development Training

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Abstract

Background and Aim: For teachers and school leaders to implement the MATATAG Curriculum, they need to take part in proper professional development to meet new requirements in the curriculum. This study is concerned with the main aspects that influence expert knowledge through path analysis, focusing on the Regional Training of Trainers in Zamboanga Peninsula, Region IX. Because the Department of Education is focused on equipping teachers with new standards, the study analyzes how Program Management, Training Venue, and Accommodation matter for Learning Management and their relationship to Expert Knowledge. Due to the lack of resources and logistical problems in the Philippines' Geographically Isolated and Disadvantaged Areas (GIDAs), professional development must be carefully controlled to ensure that all regions benefit in the same way. Quality assurance and frequently checking training programs are needed for teachers to be held responsible and to help them build long-term skills (Dicdiquin et al., 2023). Therefore, this study helps explore how different training elements shape workers' progress, which is fundamental for carrying out the MATATAG Curriculum and for reducing gaps shown in the PISA outcomes (OECD, 2023).

Methodology: A quantitative research design employing path analysis was utilized to examine the hypothesized direct and indirect relationships between variables. The participants comprised teachers, master teachers, head teachers, principals, and supervisors from the Department of Education, Zamboanga Peninsula Region IX, who attended the Training of Trainers (TOT). All participants, when grouped, create a chain of guidance and assistance. All towards achieving learning excellence and equity, teachers work hard to teach students, master teachers guide them, head teachers oversee the work, principals direct the team, and supervisors monitor everything. Data were collected through a standardized questionnaire assessing perceptions of program management, training venue, accommodation, learning management, and self-reported expert knowledge. A total of three hundred fifty-six (356) participants were selected using purposive sampling. Path analysis was conducted using Jamovi to test the proposed model. (Navarro & Foxcroft, 2025).

Results: All training components—Program Management, Training Venue, Accommodation, Learning Management, and Expert Knowledge—were consistently valued, with excellent consistency, which supports including these in the study analysis. Analysis indicated that Learning Management became much more effective due to Program Management, with the outcomes of the course strongly determining an employee's Expert Knowledge. The path model performed very well with remarkable fit indicators (e.g., RMSEA = 0.000, CFI = 1.000). Generally, program delivery and instruction are more important than issues like venue and lodging for developing expertise, which should be further confirmed using different samples.

Conclusion: The result showed that effective program management plays a more significant role in knowledge gain than aspects like the venue and available accommodation. The results indicate that our proposed framework is appropriately founded and fits the data well. Nevertheless, the suitable fit measures found here suggest that the model should be properly tested on different groups to avoid making it too simple by mistake.

Keywords: Accommodation, Expert Knowledge, Learning Management, MATATAG Curriculum, Path Analysis, Professional Development, Program Management, Training Venue

Introduction

The implementation of the MATATAG Curriculum provided a major shift in Philippine basic education by keenly balancing learning materials, developing basics, and inculcating core values in students. It is important to have prepared and developed teachers through programs such as the Regional Training of Trainers (RTOT) in Zamboanga Peninsula, Region IX. The purpose of these efforts is to ensure that Teachers, Master Teachers, Head Teachers, and Principals have the appropriate knowledge for the new curriculum delivery. It follows the National Framework for Continuing Professional

Development (CPD) published by the Department of Education and the Professional Regulatory Commission (PRC), which outlines how teachers should be coached over time and how learning systems should be built in schools to address new educational needs. According to the MATATAG plan, all education staff must be trained to address challenges caused by a crowded curriculum and poorer results in both national and global exams (DepEd, 2023). Even so, maintaining the quality, equality, and uniformity of big educational training programs is still a major problem in the Philippine education system. The involvement of instructional leaders, teamwork with colleagues, and motivation matter a lot in the process of picking up and using expert skills. Knowing about these factors makes sure professional development leads to real, valuable learning experiences for both teachers and learners.

The latest evidence points to how a professional development agency improves teachers' skills and effectiveness. That is, research reveals that teaching guidance, meeting with colleagues regularly, and focusing on students through professional development all have a positive effect on how skilled teachers are (Li et al., 2023). Also, teaching that trains people to be creative and flexible results in continued innovation in schools (Skrbinjek et al., 2024). This research stresses the many sides of professional development and shows the importance of a broad method of training. Educators may gain new information and self-assurance by engaging in professional development courses. Enhancing their teaching skills allows teachers to strengthen the teaching of math in the country. (Dicdiquin et al., 2023).

Using path analysis, it is possible to find out both the direct and indirect connections among several variables affecting expert knowledge in the workplace. In the context of the MATATAG Curriculum's Regional Training of Trainers (RTOT), using this theory helps because aspects like management, the training environment, support for instructors, and how participants take part play a big role in determining the results. While the importance of these factors for teacher professional development is recognized, few studies explain their impact and significance on obtaining expert knowledge, particularly when it comes to major curriculum reforms like MATATAG in the Philippines. It studies how these elements relate to and affect learning results during regional training programs. The study's outcomes are intended to offer useful suggestions on how to enhance how professional development programs are managed in DepEd. Focusing on these connections can show administrators how to allocate resources, design instruction, and decide on policies so that forthcoming training is in line with changes in the curriculum and helpful for a larger number of teachers.

Objectives

This study aims to explore the pathways through which various training-related factors influence expert knowledge acquisition among participants of the MATATAG Curriculum TOT in Zamboanga Peninsula Region IX. Specifically, it focuses on the direct and indirect effects of program management, training venue, and accommodation, with learning management serving as a potential mediating variable:

1. To determine the demographic profile of the respondents.
2. To understand how variables (program management, training venue, accommodation, learning management, and expert knowledge) affect each other directly and indirectly within a hypothesized causal structure.
3. To validate the overall path model of factors influencing expert knowledge acquisition, including both direct and mediated pathways through learning management.
4. To identify final pathways through a validated path model.

Literature review

The main approach in this study is a system known as the Input–Process–Output (IPO), which relies on systems theory and is designed to systematize professional development training. The IPO model is effective for reviewing programs like the MATATAG RTOT since it helps analyze how important ingredients (e.g., managing the program, finding suitable venues, and including the right participants), daily activities (e.g., training sessions, collaborating in pairs, applying different learning techniques), and learning outcomes (e.g., acquiring the essential skills) are linked in the process. Aside from organizing functions, the IPO model makes it easy to determine key parts of the training that

contribute the most, providing useful ideas for strengthening instructional design, preparing resources, and building capacity. More and more, both educational researchers and DepEd evaluators rely on it to measure training results and suggest methods for better training (Dicdiquin et al., 2023). Applying IPO, in this case, boosts the study's relevance to the community and helps make the MATATAG curriculum effective nationwide.

Figure 1: Input–Process–Output (IPO) Model for Professional Development

Program Management, the training venue, and accommodation are the main parts of the IPO input section for professional development. They support any training program's foundation and have a major influence on participants' learning experiences. When managers plan, coordinate, distribute resources, and monitor the program, sessions are set up properly, have set objectives, and instructors are qualified. It has been confirmed that better program management leads to more engagement among participants and better outcomes in learning (Hilkenmeier et al., 2021; Guskey, 2020). The National Educators Academy of the Philippines (NEAP) is in charge of making sure quality assurance standards are properly implemented in professional development in the Philippines. The reforms put emphasis on strategic planning, using a planned approach to learning, and managing logistics as important for teacher training's success (DepEd, 2022). Still, differences between regions may make it difficult to put the policy into practice. As an example, in the geographically varied Zamboanga Peninsula, challenges linked to training centers and rooms can influence teachers' desire to join sessions, how much they participate, and how well they keep their focus.

Part of professional development training looks at dynamic ways of helping participants learn and work with others as they engage with educational resources. According to the MATATAG RTOT, Learning Management is especially important for turning input resources into real progress in participants' careers. An effective learning management approach includes teaching as well as encouraging students to take part, think about things, and collaborate. It is emphasized in adult learning theory that professional development should be related to the person's work, deal with specific challenges, and be based on their earlier knowledge (Knowles et al., 2020). Therefore, classes that rely on peer-to-peer sharing, discussions on experiences, and hands-on activities tend to promote learning and better use of skills (Desimone & Garet, 2015).

Here in the Philippines, the Department of Education accepts Learning Action Cells (LACs)—informal and group-run meetings inside schools—as a way for teachers to learn and improve their skills consistently (DepEd Order No. 35, s. 2016). Supporting collaboration between educators in region-based training is in keeping with DepEd's approach to professional development and helps teachers develop similar capabilities at every school level. Also, utilizing technology-supported learning tools in professional development helps personalize learning, eases the exchange of resources, and improves learning effectiveness at school (Lai, 2018). All in all, good management of learning is achieved by arranging interesting and contextual activities that equip teachers to make improvements.

According to Malcolm Knowles in 1980, four main ideas help explain adult learning: adults want to see the meaning in their learning, prefer to guide their education, base it on past knowledge, search for results they can use now, and are self-driven. The use of these principles is very useful for developing and guiding programs like the MATATAG Regional Training of Trainers (RTOT). Expert knowledge, in this sense, is when a teacher has a strong and practical understanding of the content, ways of teaching, forms of assessment, and their professional role, as stated in the Philippine Professional Standards for Teachers or PPST (DepEd, 2017). In the MATATAG Curriculum, expert knowledge encourages teachers to deliver reformed learning competencies, use 21st-century knowledge, and support the demands of different students. So, relying on adult learning theory, managers should focus on the right professional development program to develop employees' expertise. Such outcomes are

consistent with the bigger aims of the MATATAG Curriculum, focused on improving key skills, organizing learning, and supporting all-around professional development. Most of the training outputs focus on developing expert knowledge. The inputs and processes must be strong to achieve such a scenario. Several studies have proved that when such programs are properly run and helpful, participants tend to use the important skills they learn at work (Hilkenmeier et al., 2021; Lai, 2018).

Bandura's Social Cognitive Theory (SCT) focuses on the fact that learning results from the way a person acts, the environment, and their beliefs interact (Bandura, 1986). Things like observational learning, self-efficacy, and factors in the environment play an important role in explaining how teachers improve their skills in training. The principles assist the participants of the MATATAG RTOT in gaining new information and changes in behavior. The way program management is managed usually impacts training sessions and makes it easier for students to observe others and copy the approaches shown. Proper management of the program promotes vicarious learning and inspires teachers to think deeply while also letting them experience helpful feedback that increases their confidence in trying out new methods.

At the same time, the surroundings of the training and where participants stay play a major role in influencing their motivation and self-confidence. Research from SCT shows that an environment that is operated safely and equipped well supports and improves a person's confidence to do well (Bandura et al., 1997). If places in the Philippines are crowded, their facilities are lacking, or there are logistical issues, it may be harder for scientists to apply what they learn. Applying SCT, in this case, gives a greater insight into how various professional development measures impact learning within educators and how they act toward others. It becomes clearer that this perspective supports DepEd's intention to make teacher training programs that supply content and encourage teachers to lead confidently in the implementation of the MATATAG Curriculum.

Conceptual Framework

The proposed model, presented in Figure 2, shows that factors other than natural ability significantly influence supervisors, principals, head teachers, master teachers, and teachers in developing Expert Knowledge during training. Both internal and external influences most affect training outcomes and experiences.

According to the proposed path model, Program Management, Training Venue, and Accommodation play a big role in acquiring expert knowledge during professional development activities. All these factors match the structures in teaching and organizations that make training effective.

Planning, organization, execution, and supervision of professional development programs are a part of Program Management. All of this refers to choosing appropriate and up-to-date training content, helping and supporting those leading the session, organizing sessions well, and handling logistical aspects. According to the DepEd NEAP Framework, these elements should focus on effectiveness and educators' professionalism by using relevant and coherent strategies that match the acknowledged national teacher standards, such as the PPST (DepEd, 2021). Proper management of an education program also follows systems theory, and this means that the success of the program is linked to how efficiently the various activities are performed (Senge, 2006). The Training Venue includes the place where lessons are given. Environmental psychology holds that learning areas that are agreeable, packed with what is needed, and suitable for attention help boost students' engagement and mental effort (Barrett et al., 2015). Ensuring comfort and easy access to the learning environment promotes effective collaboration, attention, and reflection among learners, mainly in intensive professional development events. Accommodation is the place where participants are given housing during their training. Referring to the concept of Maslow's Hierarchy of Needs, participants require safety, time to rest, and comfort before they can be ready for more advanced learning (Maslow, 1943). It is hypothesized in this study that better accommodation has a positive impact on Learning Management by reducing stress, helping people rest, and strengthening their thinking so they are ready for work-related activities. Learning Management covers the process that people take in, review, and use what they learn during the training. It is based on constructivism and Andragogy ideas, which underline that adults require independence, usefulness, and practical skills in the learning process (Knowles et al., 2020). Good

learning management makes it possible to gain Expert Knowledge in the MATATAG Curriculum context, meaning a solid grasp of the important curriculum, teaching strategies, and leadership standards set by PPST (DepEd, 2017). Based on this path, applying well-structured material and competent facilitators to Program Management is expected to have a noticeable effect on Expert Knowledge. The Department of Education's research shows that including school planning in a quality assurance framework helps students improve their learning (DepEd, 2021).
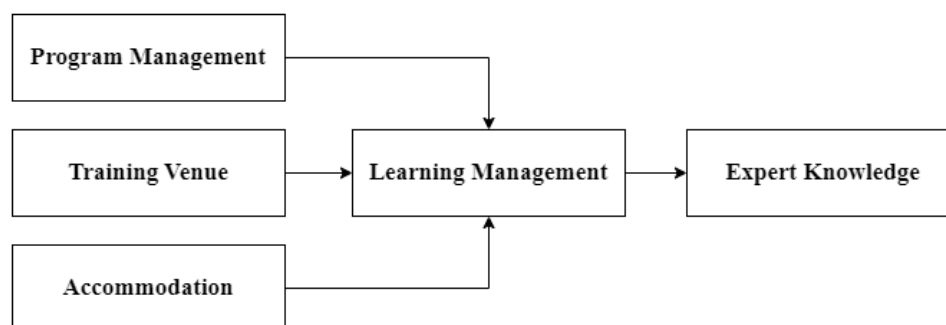

Figure 2: Schematic Diagram of the Study

The lines in the framework point out the suggested directions of influence. The model proposes that Program Management, Training Venue, and Accommodation directly affect Learning Management. Next, Learning Management directly contributes to Expert Knowledge. Additionally, the model suggests that the relationship between Program Management, Training Venue, accommodation, and Expert Knowledge goes mainly through the performance of Learning Management. With this framework, it is possible to investigate how training influences actual learning.

Methodology
1. Research Design
The researchers carried out the study using a quantitative design and applied path analysis. Path analysis is designed to analyze the joint influence of several variables and to test complicated theories at once. Since it comes with both direct and indirect influences of factors, it is best suited to investigate learning management's suppositious intermediary role in learning experts' skills. This design matters a lot in the Philippines because grasping the relationship between the institution, surrounding factors, and learners helps improve training effectiveness. Due to the adoption of outcome-based frameworks as part of the Department of Education (DepEd) programs that follow the Philippine Professional Standards for Teachers (PPST), it is necessary to analyze methods that can show how many factors can affect the performance of educators.

2. Sampling
Everyone who attended the RTOT on the MATATAG Curriculum in Region IX was included as a part of the target population for this research. This also refers to teachers, master teachers, head teachers, principals, and education supervisors from many different parts of the region who all finished the professional development program. Using a purposive sampling technique ensured that the research collected data from relevant cases. Because of the non-probability approach, the researchers were able to make sure that there were educators from each major category involved in implementing the curriculum. Those chosen for the focus group had to meet the following: (1) complete the RTOT, (2) be working in a DepEd-sanctioned public school in Region IX, and (3) represent elementary, junior high school, and senior high school students.

In total, there were 356 participants who completed the RTOT during the implementation phase. Having analyzed four major constructs and several paths in the model, the recommended size of the sample for reliable and proper statistical analysis was reached (Wolf et al., 2013). Furthermore, choosing teachers from the Zamboanga Peninsula makes the study more important for all educators in the Philippines. Since there are urban and rural schools in the region, it gives a good insight into the practical side of nationwide educational policies, for example, MATATAG. These observations are

going to help enhance learning in local areas and guide DepEd in its nationwide efforts to build capacity in inequitable conditions.

3. Data Collection

The team depended on a structured questionnaire created by the National Educators Academy of the Philippines (NEAP) as the main source of information. The instrument relied heavily on the five important areas in the conceptual model: Program Management, Training Venue, Accommodation, Learning Management, and Expert Knowledge. Respondents answered questions about all these variables on a scale from 1 (Strongly Disagree) to 4 (Strongly Agree) using a Likert scale. The scale was picked to help participants choose clearly, preventing them from being neutral in favor of getting stronger feedback from adult learners such as educators (Joshi et al., 2015).

The NEAP questionnaire has a set format used to assess the impact of professional development training, and it matches the framework used in NEAP. The NEAP and DepEd regional offices have examined the questionnaire to verify its reliability and make it valid. The education supervisors and researchers in Region IX also reviewed the content to guarantee that the questions were in line with the program's main objectives and what is covered in the MATATAG curriculum. An overall Cronbach's alpha of 0.88 proves that the instrument has high reliability. Having everything at this point aided in accurate memory of the skills and reduced any bias after the training. After the RTOT sessions, the data collection process took place using Microsoft Forms.

4. Data Analysis

The examination of data took place according to a fixed pattern to secure the validity and reliability of the findings. The first step was to compute descriptive statistics to discover the background of the participants. Subsequently, Cronbach's alpha was used to evaluate the instrument's internal consistency reliability, and a score of 0.70 or more was regarded as satisfactory (Tavakol & Dennick, 2011). To check if normality was present, the Shapiro-Wilk test was performed; it is designed for samples that are moderate in size. To understand the first connections between variables, a correlation matrix was made to see the strength and sign of each relationship between two variables. At this stage, the paths suggested in the model were evaluated for how likely they were. Directly after, linear regression was used to estimate the role of every independent variable on the mediating and dependent variables separately. Thanks to the regression coefficients, it was possible to set up the path diagram and then calculate both direct and indirect effects in the model.

Path analysis, which is a type of multivariate analysis, was used for the analysis by the team. The prior regression and correlational studies were combined in this method through a single structural model. The following measures were adopted according to Hu and Bentler (1999) to check model fit: (1) χ^2's p-value should be insignificant for a good fit, (2) CFI should reach at least 0.95, (3) TLI should be 0.95 or above, (4) RMSEA must be 0.06 or less, and (5) SRMR's result should meet 0.08 or less. To verify the indirect effects, especially involving Learning Management, the bootstrapping technique was applied according to what Preacher and Hayes (2008) recommend. Using this method, it is possible to get reliable information about mediation effects, even when the data follows a non-normal distribution. All the statistical computations, such as descriptive statistics, correlation, regression, and path analysis, were done in Jamovi version 2.6.26.0.

5. Ethical Considerations

Regional Research Committee and the relevant Functional Division of the Department of Education, Region IX, granted ethical approval for the study. All those participating in the research were told in advance about its design, reasons, and ways of operating, and they gave informed consent before taking part. They were given the option to drop out of the study at any time. To comply with the Data Privacy Act of 2012 (RA 10173), everyone's answers were handled with complete confidentiality and anonymity. The report does not present any details that could identify a person. All the data was safely stored under passwords so that only team members could access it. Since teachers, master teachers, head teachers, principals, and supervisors have different roles in the educational system, actions were taken to reduce the chance of power inequalities. Participants' answers would never be shown to their supervisors or peers.

Results

Demographic Profile of the Respondents

The demographic characteristics of the respondents provide valuable insight into the context in which professional development occurs. In this study, the majority of participants were female, comprising 66.9% (n = 238) of the sample, while male participants made up 33.1% (n = 118). This distribution reflects broader national trends in the Philippine teaching workforce, where women continue to represent a significant majority, particularly in public education. A closer look at the participants' roles reveals that a large proportion held leadership or specialized instructional positions. Master Teachers accounted for the highest percentage at 35.7% (n = 127), followed by School Principals (24.7%, n = 88) and Education Program Supervisors (20.2%, n = 72). Meanwhile, Head Teachers made up 14.0% (n = 50), and classroom teachers constituted the smallest group at 5.3% (n = 19).

This distribution reflects the focus of the MATATAG Regional Training of Trainers (RTOT), which was designed to build the capacity of school leaders and instructional specialists. In particular, the inclusion of Master Teachers, Principals, and Supervisors aligns with the Department of Education's (DepEd) common strategy of cascading training through leaders who can champion the curriculum and guide its implementation at the school level. This approach, promoted through the National Educators Academy of the Philippines (NEAP), ensures that key personnel are equipped not just with content knowledge but also with the ability to support and sustain school-wide instructional change.

Given the leadership-heavy composition of the sample, it is likely that the study's findings will highlight a strong relationship between effective program management and the acquisition of expert knowledge. These roles often entail responsibilities that extend beyond individual learning—such as overseeing school improvement initiatives and mentoring peers—thereby placing them in a position to directly influence how professional development is interpreted and enacted at the ground level (Darling-Hammond et al., 2022).

Table 1: Demographic Profile of the Respondents

	Profile	Frequency	Percentage
Sex	Male	118	33.1%
	Female	238	66.9%
Position	Head Teacher	50	14.0%
	Master Teacher	127	35.7%
	Principal	88	24.7%
	Supervisor	72	20.2%
	Teacher	19	5.3%

Descriptive Statistics and Internal Consistency Reliability

Table 2 shows that apart from strong measurement characteristics, the participants progressively valued the study's central constructs. All the variables—Program Management, Training Venue, Accommodation, Learning Management, and Expert Knowledge—received a strong agreement rating and minimal variability from 3.897 to 3.964 (4-point Likert Scale). Because the standard deviations are all low (SD = 0.163–0.277), participants mostly agreed about how valuable each training component was. Cronbach's alpha shows that Expert Knowledge has the highest reliability (α = 0.890) and that all measurements have excellent internal consistency (α = 0.838– 0.890). Because they measure with high reliability, it is justified to use these constructs as independent variables in path analysis (Weston & Gore, 2006). It is possible that the upward concentration of responses in one part of the scale points to people trying to give favorable answers, a known issue in surveys about self-evaluation training programs (Deffuant et al., 2024).

The results highlight that understanding path analysis means looking at it from within an environment where people see training elements positively. While it is good that the measures are reliable, further studies may improve by using equal scales to avoid running up against the limits of higher scores (Creswell & Creswell, 2023).

Table 2: Descriptive Statistics and Internal Consistency Reliability

	Mean	SD	Cronbach's α
Program Management	3.945	0.216	0.838
Training Venue	3.897	0.277	0.859
Accommodation	3.936	0.227	0.843
Learning Management	3.964	0.163	0.855
Expert Knowledge	3.937	0.182	0.890

Influence of Each Variable Within a Hypothesized Causal Model

The path analysis in Table 3 gives important findings about what impacts expert knowledge (EK) in professional development training. The relationship studies show that effective program management enhances learning management ($\beta = 0.599$, $p = 0.005$). This follows research that argues that coordination in an organization is important for effective instruction (Shaked, 2022). On the other hand, Training Venue (TV) ($\beta = -0.094$, $p = 0.571$) and Accommodation (AC) ($\beta = 0.396$, $p = 0.132$) do not directly contribute to LM, likely because logistical factors need something else to impact how participants learn (Mensah, 2020).

Most importantly, Learning Management (LM) strongly influences Expert Knowledge (EK) ($\beta = 0.656$, $p < .001$) and highlights its key role in leading from program components to knowledge results. Such results back up the idea from Candela and Boston (2022) that main professional development results depend on quality teaching.

Table 3: Strength and Direction of Relationships Through Coefficient Estimates

Dep	Pred	Estimate	SE	95% Confidence Intervals Lower	95% Confidence Intervals Upper	β	z	p
LM	TV	-0.053	0.094	-0.251	0.112	-0.094	-0.566	0.571
LM	AC	0.275	0.183	-0.043	0.693	0.396	1.507	0.132
LM	PM	0.437	0.154	0.130	0.744	0.599	2.835	0.005
EK	LM	0.759	0.131	0.525	1.036	0.656	5.787	<.001

Legend: PM-Program Management; TV-Training Venue; AC-Accommodation; LM-Learning Management; EK-Expert Knowledge

Path Analysis Result

Table 4: Chi-Square Statistic of Overall Model Fit

Label	X²	df	p
User Model	0.268	3	0.966
Baseline Model	71.220	7	<.001

Based on the chi-square test of Table 4, the fit of the hypothesized path model is considered excellent (User Model: $\chi^2 = 0.268$, df=3, p=0.966), because the p-value indicates no significant differences between the model and the observed data (Kline, 2023). This shows, therefore, that the relationships indicated in the path analysis, such as the direct effects of Program Management and Learning Management on Expert Knowledge, hold firm in the data. By contrast, the Baseline Model ($\chi^2 = 71.220$, df=7, p<.001) performs poorly, proving that the model with structural pathways is far more suited than one with no pathways (Weston & Gore, 2006).

Leadership-based training programs are central to the study, as proper variables such as program design and the quality of teaching are needed to help staff learn (Darling-Hammond et al., 2022). However, testing the models with new fit metrics will strengthen their success in the future.

Table 5: Model Fit Indices

SRMR	RMSEA	RMSEA 95% CI Lower	RMSEA 95% CI Upper	RMSEA p	CFI	TLI	RNI	GFI	adj. GFI	pars. GFI
0.024	0.000	0.000	0.000	0.990	1.000	1.099	1.043	1.000	1.000	0.150

As shown in Table 5, the fit of the hypothesized path analysis model is outstanding. Because the SRMR (Standardized Root Mean Square Residual) is just 0.024 and below 0.08 (Hu & Bentler, 1999), the model does not have significant differences with accurate data. The low value for the RMSEA (Root Mean Square Error of Approximation) (less than 0.06) indicates a perfect fit for the model, which rarely occurs and may be due to straightforward model assumptions (Kline, 2023). While the CFI (Comparative Fit Index) is excellent and remains at 1.000, the TLI (Tucker-Lewis Index) makes complete sense at 1.099, even if a TLI higher than 1.0 may be a sign of overfitting or oversimplification (Weston & Gore, 2006). Meanwhile, the GFI (Goodness of Fit Index) and adjusted GFI are 1.000 and point to a perfect fit, but the parts are not very high. GFI (0.150) indicates that achieving a simple model can sometimes come at the expense of explaining data and a more complex model (Schreiber et al., 2006).

These findings validate the model as a driver of Expert Knowledge by Learning Management and Program Management, but the outlier fit indices should draw attention. A TLI > 1.0 and RMSEA of 0.000 indicate the risk that the model will not generalize effectively to different situations. This problem is especially true in the educational context of the Philippines, where different settings in schools, different access to resources, and distinct professional development opportunities are potentially not well understood by a narrowly defined and usually idealized model, and that consequently, any future implementations of this model will have to take into account contextual factors reflecting the complexity of actual training environments in the country.
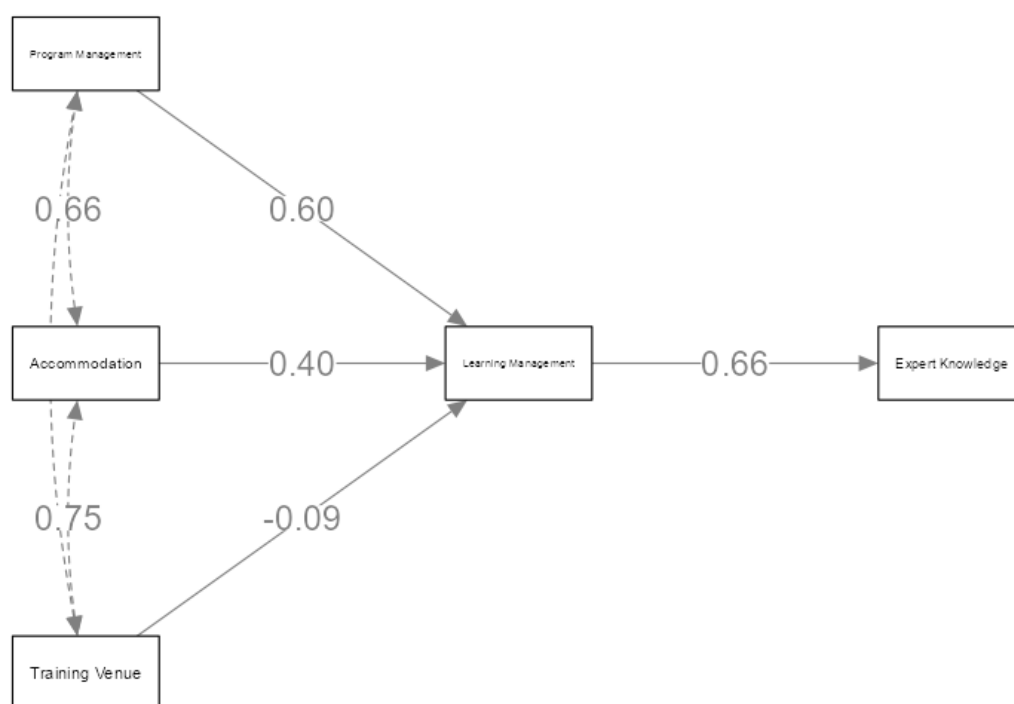

Figure 3: The Validated and Final Path Model

The validated Path Model in Figure 3 demonstrates the link between the studied variables and to development of expert knowledge. Because Program Management links positively to downstream variables (β = 0.66 and β = 0.60) and provides for training logistics and learning management, it plays a leading role in shaping training organizational practice (Darling-Hammond et al., 2022). Expert Knowledge is most strongly affected by Learning Management, proving that translating training is greatly influenced by how the facilitators conduct it. Another finding is that training venues show a limited connection to the results, indicating that location is not the main factor impacting learning and skills. However, it could affect people's comfort levels. The impact of accommodation is moderate (β = 0.40), signifying environmental comfort as secondary to core aspects of engaging with learning.

These findings emphasize that how a program is run and taught matters more than logistics. However, the exceptionally high values for the coefficients ($\beta = 0.75$) suggest that a thorough examination should occur since the model fit index earlier showed almost a perfect fit (Kline, 2023). Groups with more extensive and diverse individuals should be studied to confirm these pathways.

Knowledge Contribution

Figure 4 describes the pathway to Expert Knowledge acquisition in Professional Development programs. The empirical evidence shows that strong teaching methods are more important than good organization in turning training into advanced expertise. Enabling effective learning systems is an indirect method by which Program Management supports knowledge acquisition. The places where learning happens and where people live are lovely, but might not contribute to the main factors of success. Rather than focusing only on logistics, as most do in professional development, these results guide policymakers.
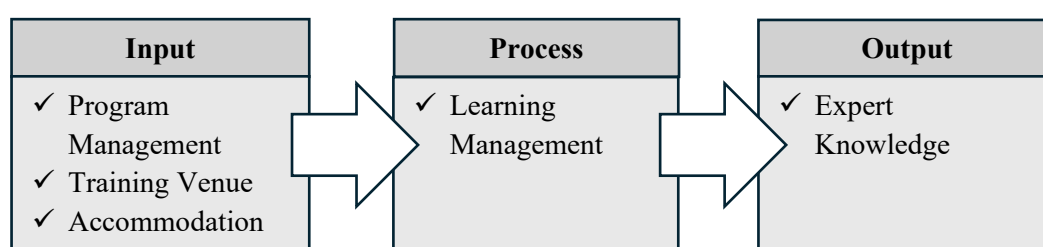

Figure 4: Pathway to Expert Knowledge Acquisition in Professional Development Training

Information collected from the Regional Training of Trainers for the MATATAG Curriculum in Region IX confirmed that expert knowledge acquisition for professional development follows a pathway that prioritizes quality instead of solely focusing on logistics. The main procedure in this flow is Learning Management, which looks at how instruction is delivered, facilitated, engaged with, and trained. The shape of Learning Management mostly depends on the Program Management, whereas venue and accommodation play only a minor role. Ultimately, Expert Knowledge Acquisition refers to the extent to which trainees have learned and understood advanced skills in instruction or leadership found in the MATATAG Curriculum. The impact of Expert Knowledge mostly depends on Learning Management and, secondarily, Program Management, since it supports learning.

Recommendation

According to the findings of the present study, several recommendations are proposed to support the improvement of professional development initiatives, such as the MATATAG Regional Training of Trainers (RTOT). These recommendations will be directed at educational policymakers, program organizers, and future researchers to inform policy and practice.

As a step forward for education policymakers, systematic training frameworks (based on proven models, such as the Input–Process–Output (IPO) framework) should be institutionalized in professional development programs as a systematic platform for developing and evaluating training interventions. Policymakers may also consider incorporating minimum requirements for training venues and accommodations into existing quality assurance mechanisms to ensure that all educators have equitable and supportive learning environments, especially in geographically diverse and resource-limited regions. Another consideration is that with the large involvement of school leaders in the RTOT – notably Master Teachers, Principals, and Supervisors – more support is needed to build capacity that focuses on leadership development. Personalized training modules and resources to enhance their capacities in curriculum implementation and instructional leadership would strengthen the sustainability and effectiveness of the MATATAG curriculum implementation.

For Training of Trainers (TOT) program planners, greater emphasis should be placed on enhancing the learning management component of training through the integration of adult learning principles, peer development, and the use of technology-enhanced learning tools. Specific opportunities for reflection and feedback during training sessions can also promote the internalization of learning and the practical application of new knowledge. The better use of adaptive planning and continuous monitoring mechanisms should also be noted to align activities with training goals and objectives more

effectively. Improvements should also be made in both physical and logistical arrangements for venues and accommodation. Standardizing these factors will help reduce distractions, improve teacher health and effectiveness, and foster a more engaged and productive learning environment.

For future researchers, the study recommends further analysis of larger, more representative samples to enhance generalizability and identify further contextual differences across geographic axes. Future studies would benefit from mixed methods when qualitative data are used to gain a deeper understanding of participants' experiences, perceptions, and the intricate challenges they face while participating in professional development programs. None of these approaches should be used exclusively, and longitudinal research may be applied to examine the long-term impact of learning expertise on instructional practices and student achievement. Longitudinal studies could provide critical feedback on how this skill-building creates measurable shifts in learning instruction.

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