PROFESSIONAL NETWORKS, INNOVATIVE MOTIVATION, AND LEARNING INNOVATION AMONG ISLAMIC RELIGIOUS EDUCATION TEACHERS AT SCHOOLS IN INDONESIA: AN ANALYSIS OF SEM-PLS

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Article Info	Abstract
  	The purpose of this study is to explore the influence of professional networks and innovative motivation on learning innovation, especially in Islamic Religious Education (IRE/PAI, *Pendidikan Agama Islam*) teachers at schools in Indonesia. This study uses a quantitative approach with Structural Equation Modeling - Partial Least Squares (SEM-PLS) analysis. There were 241 IRE teacher respondents from various schools in Indonesia who participated in this study. The results of this analysis confirm that professional network significantly positively influences innovative motivation and learning innovation. Similarly, innovative motivation has a significant effect on learning innovation. Innovative motivation also significantly mediates the effect of social network on learning innovation. These findings mean that if professional networks are strong and innovative motivation is also great, learning innovation will increase. This research is limited to IRE teachers in Indonesia. This research adds value by focusing on the importance of professional networks and innovative motivation in encouraging increased learning innovation. It also provides new insights to education policy makers and school administrators on strategies to increase teachers' involvement in professional networks. In addition, encouraging teachers' motivation to innovate is also very important to improve their learning innovation.

How to Cite:

Introduction

Evolution in the world of education began to occur due to technological advances and changes in the needs of society. Teachers, including Islamic Religious Education (IRE/PAI, *Pendidikan Agama Islam*) teachers, must create a learning method that is relevant and interesting for their students. For this reason, learning innovation is considered very important to improve the quality of education (Purwanto et al., 2023) and meet students' diverse learning needs.

Teacher professional networks, in this case as a forum for communication between teachers, can be one of the factors that can increase learning innovation among teachers (Jones et al., 2023; Mcgregor et al., 2020; Schnellert, 2020). This is important because teachers can share their peers' knowledge, information, experiences, support, and inspiration in these professional networks. These networks can be professional forums, WhatsApp groups, workshops, seminars, or other online platforms to exchange ideas and teaching resources.

In the world of learning, learning innovation is the introduction and implementation of new ideas, methods, or tools that can improve the learning process. This can range from using digital technology when conducting classroom learning to new learning methods that can increase student engagement in competency-based learning. One concrete example is using Google Classroom and WhatsApp as learning media, which increases student involvement and motivation (Hasan, 2021; Kharismatunisa, 2023). In addition, IRE teachers use the TPACK model, which can produce innovative and effective learning (Hiyaroh et al., 2022). Not only teaching but this emphasizes how the material is taught to be more relevant and easily understood by students.

In addition to teachers' professional networks, which are external factors influencing learning innovation, internal factors such as innovative motivation from within the teachers themselves are also factors that should be considered to improve learning innovation. Some studies reveal that intrinsic motivation is a strong factor influencing teachers' innovative behavior (Akram & Rana, 2019; Bawuro et al., 2020; Klaeijsen et al., 2018; Thurlings et al., 2015). Such motivation is formed due to the desire to improve student learning and avoid personal boredom (Emo, 2015). Innovative motivation refers to an internal desire to adopt new techniques and methods or use new technology in teaching. Many things can influence this motivation, including the professional networking experience (Aangenendt et al., 2023).

This study wants to explore the influence of IRE teachers' professional networks and innovative motivation on learning innovation. In addition to testing the role of innovative motivation in influencing learning innovation, it also tested how much it is mediating the influence of IRE teachers' professional networks on learning innovation. By understanding these dynamics, this study wants to reveal how to utilize professional networks to increase learning motivation, which, in turn, will also impact learning innovation. This is important in education in Indonesia, where teachers are trying to improve the quality of their teaching. This is so that teachers can face challenges such as limited resources and students' diverse learning needs.

Research Method

This study adopts a quantitative research approach to examine the interrelationships among professional networking, innovative motivation, and learning innovation among Islamic Religious Education teachers. The primary objective of this approach is to empirically assess the causal links between the variables under investigation. By relying on statistical data and structured hypotheses, the research aims to generate objective insights that can contribute to the understanding of how professional engagement influences teachers' capacity and willingness to innovate in educational settings.

The study formulates and tests four hypotheses to address its research objectives. First (H1), it posits that professional networking has a significant and positive influence on the innovative motivation of teachers. Second (H2), it hypothesizes that professional networks also directly enhance learning innovation. Third (H3), it asserts that innovative motivation has a positive effect on learning innovation, suggesting a direct link between teachers' internal drive and their teaching practices. Lastly (H4), the research explores a mediating relationship, proposing that innovative motivation serves as a mediator in the relationship between professional networks and learning innovation. These hypotheses are developed based on theoretical assumptions and previous empirical findings in the field of educational innovation.

To evaluate the proposed hypotheses, the study utilizes Structural Equation Modeling–Partial Least Squares (SEM-PLS) as the primary analytical technique. SEM-PLS is particularly appropriate for this study due to the complex causal relationships being tested, especially the mediation effect involving innovative motivation. Moreover, the use of SEM-PLS is justified because all three key constructs—professional networking, innovative motivation, and learning innovation—are latent variables, which cannot be directly measured but are inferred through multiple indicators. As such, SEM-PLS provides a robust framework for examining the structural relationships among these constructs while accommodating the measurement error inherent in latent variables.

Variables, Indicators and Data Collection

Data were collected through a survey distributed to Islamic Religious Education teachers through WhatsApp groups. This survey is a series of statements specifically designed to measure the variables used in the study and are answered using a Likert scale approach. The Likert scale used starts from strongly disagree (1), disagree (2), undecided (3), agree (4) and strongly agree (5) (Hutchinson & Chyung, 2023; Jamieson, 2004; Kriksciuniene et al., 2019; Thomas et al., 2020). The following is a table that describes the variables, indicators, and statements.

Table 1. Variables, Indicators and Statements

Variables	Indicators	Statement	Literature
Professional Network	Participation in discussion forums	I actively participate in discussion forums with other Islamic Religious Education teachers.	(Ikhsanudin, 2021)

Variables	Indicators	Statement	Literature
	Attendance at workshops/seminars	I often attend workshops or seminars related to teaching.	(Makopoulou et al., 2019)
	Project collaboration	I engage in collaborative projects with fellow teachers to develop teaching materials.	(Ohayon, 2023)
	Online group activity	I am an active member of online discussion groups focusing on teacher professional development.	(Burdick et al., 2015)
Innovative Motivation	Openness to change	I am open to new teaching ideas and methods.	(Hutchinson & Chyung, 2023)
	Willingness to take risks	I am willing to take risks by trying teaching strategies I have never used.	(Thurlings et al., 2015)
	Application of new teaching strategies	I am motivated to implement and experiment with innovative teaching techniques in my classroom.	(Klaeijsen et al., 2018)
Learning Innovation	Use of new technology	I often integrate new technologies into the learning process.	(Lumpe, 2007)
	Adoption of new pedagogical approaches	I adopt new pedagogical approaches that are not commonly used in teaching Islam.	(Schnellert, 2020)
	Development of innovative teaching materials	I actively develop and use innovative teaching materials to improve student learning outcomes.	(Thomas et al., 2020)

The sample size required in this study can be calculated using the following Cochran formula:

$$n_0 = \frac{z^2 \times p \times (1-p)}{e^2} = \frac{1.96^2 \times 0.5 \times (1-0.5)}{0{,}1^2} = 96.04 \approx 97 \qquad (1)$$

Based on Cochran's formula, the number of respondents required in this study is a minimum of 97 people.

Data Analysis

The data collected was analyzed using SEM-PLS analysis. SEM-PLS is an analysis to see complex causal relationships between latent variables (Becker et al., 2012; Chin et al., 2020). Latent variables are variables that cannot be measured directly. Latent variables can be measured from a set of indicators (Lythgoe, 2020; VanderWeele & Vansteelandt, 2020). These indicators can be either reflexive or formative (Hanafiah, 2020; Sarstedt et al., 2019). This is the general form of the inner model:

$$y_k = \sum_{h_k=1}^{H_k} \gamma_{kh_k} y_{h_k} + u_k \qquad (2)$$

While this is for the reflective outer model:

$$z_{kj_k} = \lambda_{kj_k} y_k + \varepsilon_{kj_k} \qquad (3)$$

And the last one is for the formative outer model:

$$y_k = \sum_{j=1}^{J_k} \widetilde{w}_{kj_k} z_{kj_k} + \delta_k \qquad (4)$$

There are 2 stages in SEM-PLS analysis, namely outer model evaluation and inner model evaluation. Details of both processes can be seen in Table 2.

Table 2. Criteria and Evaluation

Evaluation Type	Criteria
Evaluation of Outer Model	
Internal Consistency Reliability	CR > 0.7
Convergent Validity	AVE > 0.5
Indicator Validity	Outer Loading > 0.7
Discriminant Validity	All values in the HTMT Matrix < 0.9
Evaluation of Inner Model	
Inner VIF	VIF < 10
Significance of Path Coefficient	P-Value < 0.05
R^2	R-squared (R^2) indicates the predictive power of the model, usually >0.1 is considered adequate.
f^2	Effect size (f^2), with values of 0.02 (small), 0.15 (medium), and 0.35 (large) for predictive effect.
Q^2	Predictive Relevance (Q^2) should be greater than 0 to indicate the predictive relevance of the model.

Result and Discussion
Characteristics of Respondents

The characteristics of the respondents in this study provide an overview of the demographic and professional composition of the participants involved. This data includes gender, education level, and length of teaching experience. Understanding these characteristics is important for assessing the context and relevance of the research results and ensuring that the findings can be interpreted appropriately within the framework of the population under study. This information also helps identify factors that might influence the study's results.

Table 3. Characteristics of Respondents

Characteristics	Frequency	Percentage (%)
Gender (Person)		
Women	131	54.36%
Male	110	45.64%

Total	*241*	*100.00%*
Last Education (Person)		
S1	223	92.53%
S2	18	7.47%
S3	0	0.00%
Total	*241*	*100.00%*
Length of Teaching (Years)		
1 to 5	58	24.07%
6 to 10	67	27.80%
11 to 15	64	26.56%
16 to 20	33	13.69%
Above 20	17	7.05%
Not Filled	2	0.83%
Total	*241*	*100.00%*

The characteristics of the respondents in this study consisted of three main variables: gender, latest education, and length of teaching. Based on the table, the respondents consisted of 131 women (54.36%) and 110 men (45.64%), for a total of 241 respondents. In terms of final education, most respondents had a bachelor's degree as many as 223 people (92.53%), followed by 18 people with a master's degree (7.47%), while there were no respondents with a doctoral degree. Regarding the length of teaching, the majority of respondents had taught for 6 to 10 years (67 people or 27.80%), followed by those who had taught 11 to 15 years (64 people or 26.56%). A total of 58 people (24.07%) had teaching experience between 1 to 5 years, and 33 people (13.69%) taught for 16 to 20 years. A total of 17 people (7.05%) have teaching experience of more than 20 years, and only 2 people (0.83%) did not fill in the length of teaching data. Overall, the number of respondents in this study was 241 people.

SEM-PLS Analysis: Evaluation of Outer Model

Evaluation of the reflective measurement model (outer model) aims to assess the validity and reliability of the indicators that form the latent constructs in this study. Two measures commonly used to assess the quality of reflective models are Average Variance Extracted (AVE) and Composite Reliability (CR). AVE measures how much variance is explained by the construct indicators, while CR measures the internal consistency of the indicators. AVE values above 0.5 and CR above 0.7 indicate good convergent validity and reliability.

Table 4. Evaluation of Reflective Outer Model

Latent Construct	Outer Loading
Professional Networking (AVE = 0.721 & CR = 0.912)	
Participation in discussion forums	0.841
Attendance at workshops/seminars	0.864
Project collaboration	0.818
Online group activity	0.873
Innovative Motivation (AVE = 0.820 & CR = 0.932)	
Openness to change	0.892
Willingness to take risks	0.916
Application of new teaching strategies	0.908
Learning Innovation (AVE = 0.824 & CR = 0.934)	

Use of new technology	0.924
Adoption of new pedagogical approaches	0.897
Development of innovative teaching materials	0.903

Evaluation of the outer model for the Professional Networking construct shows that the AVE value is 0.721 and CR is 0.912, which indicates that the indicators used to measure this construct have very good validity and reliability. All outer loading indicators are above 0.8, with the indicator "Participation in discussion forums" having an outer loading of 0.841, "Attendance at workshops / seminars" of 0.864, "Project collaboration" of 0.818, and "Online group activity" of 0.873. This shows that each indicator has a strong contribution in explaining the variance of this construct.

The Innovative Motivation construct also showed good results with an AVE of 0.820 and CR of 0.932, indicating convergent validity and high reliability. The outer loading of the indicators "Openness to change" is 0.892, "Willingness to take risks" is 0.916, and "Application of new teaching strategies" is 0.908. These values indicate that these indicators are highly representative in measuring respondents' motivational innovation in the context of their work.

For the Learning Innovation construct, the AVE value is 0.824 and the CR is 0.934, indicating excellent validity and reliability. The outer loading of the indicators "Use of new technology" is 0.924, "Adoption of new pedagogical approaches" is 0.897, and "Development of innovative teaching materials" is 0.903. These indicators contribute significantly in explaining the variance of the Learning Innovation construct, indicating that respondents are active in applying innovation in their learning process.

Overall, the results of the reflective outer model evaluation show that all latent constructs in this study meet the requirements of convergent validity and reliability. All AVE values are above 0.7 indicating that the variance explained by the indicators is greater than the error variance, while high CR values indicate good consistency among the indicators. Following this is the discriminant validity check.

Table 5. Fornell-Larcker criterion

	Learning Innovation	Professional Networking	Innovative Motivation
Learning Innovation	0.908		
Professional Networking	0.792	0.849	
Innovative Motivation	0.725	0.598	0.905

The Fornell-Larcker Criterion is used in structural model analysis to assess discriminant validity. Discriminant validity indicates the extent to which latent constructs differ from each other empirically. According to the Fornell-Larcker criterion, to ensure discriminant validity, the square root of the AVE (located on the diagonal of the table) must be greater than the correlation between the construct and other constructs (values that are off the diagonal). Thus, a higher value on the diagonal indicates that the construct has more variance explained by its indicators compared to the variance shared with other constructs.

The diagonal value for the Learning Innovation construct is 0.908, which is the square root of its AVE (AVE = 0.824). This value is greater than its correlation with the Professional Networking (0.792) and Innovative Motivation (0.725) constructs. This indicates that the Learning Innovation construct has good discriminant validity, where it is more correlated with the indicators that form it than the other constructs.

The diagonal value for the Professional Networking construct is 0.849, which is also the square root of its AVE (AVE = 0.721). This value is greater than its correlation with Learning Innovation (0.792) and Innovative Motivation (0.598). This indicates that the Professional Networking construct has good discriminant validity, in that it is empirically distinct from the other constructs and relates more to its own indicators.

The diagonal value for Innovative Motivation is 0.905, which is the square root of its AVE (AVE = 0.820). This value is greater than its correlation with Learning Innovation (0.725) and Professional Networking (0.598). This indicates that Innovative Motivation also has good discriminant validity, and this construct is clearly differentiated from the other constructs in the model.

Based on the Fornell-Larcker Criterion, all constructs (Learning Innovation, Professional Networking, and Innovative Motivation) show adequate discriminant validity. Each construct has a greater correlation with its own indicators (represented by the square root of AVE) than the correlation with other constructs. Thus, the model qualifies for discriminant validity, which is important to ensure that each construct measures different aspects of the study.

SEM-PLS Analysis: Evaluation of Inner Model

VIF (Variance Inflation Factor) is used in structural model analysis to assess potential multicollinearity problems, when one independent variable is highly correlated with other independent variables in the model. In PLS-SEM models, multicollinearity can cause problems in interpreting relationships between variables. VIF values lower than 5 are generally considered not to indicate a significant multicollinearity problem, and values below 3 are considered excellent.

Table 6. Inner VIF

	Inner VIF
Professional Networking → Learning Innovation	1.558
Professional Networking → Innovative Motivation	1.000
Innovative Motivation → Learning Innovation	1.558

Professional Networking → Learning Innovation (VIF = 1.558): The VIF value for the relationship between Professional Networking and Learning Innovation is 1.558. This indicates that there is no significant multicollinearity problem in this relationship. In other words, Professional Networking is not highly correlated with other variables that predict Learning Innovation, so the contribution of this variable in the model is reliable.

Professional Networking → Innovative Motivation (VIF = 1.000): The VIF value for the relationship between Professional Networking and Innovative Motivation is 1.000. This value is the lowest possible, meaning there is no

multicollinearity in this relationship. This indicates that Professional Networking is completely independent in predicting Innovative Motivation and is not affected by other variables in the model.

Innovative Motivation → Learning Innovation (VIF = 1.558): The VIF value for the relationship between Innovative Motivation and Learning Innovation is also 1.558. This is the same as the VIF value for the relationship between Professional Networking and Learning Innovation, indicating no significant multicollinearity problem. Innovative Motivation has a fairly independent contribution to influencing Learning Innovation without any strong correlation with other variables that could affect this result.

Based on the inner VIF results, this model has no multicollinearity problem. All VIF values are well below the threshold of 3, indicating that the relationship between independent variables in the model can be interpreted clearly and without distortion due to multicollinearity. This indicates that each construct in the structural model contributes independently in explaining the relevant dependent variable. After the multicollinearity test on the inner model, the next is a discussion of the results of the path coefficient and its significance test.

Path coefficients in path analysis measure the strength and direction of the relationship between the independent and dependent variables in the structural model. This value shows how much influence the independent variable has on the dependent variable. In addition, p-values are used to determine whether the relationship is statistically significant. The relationship is considered significant if the p-value is smaller than 0.05. In this case, all p-values are smaller than 0.0001, which indicates that all relationships in this model are highly significant.
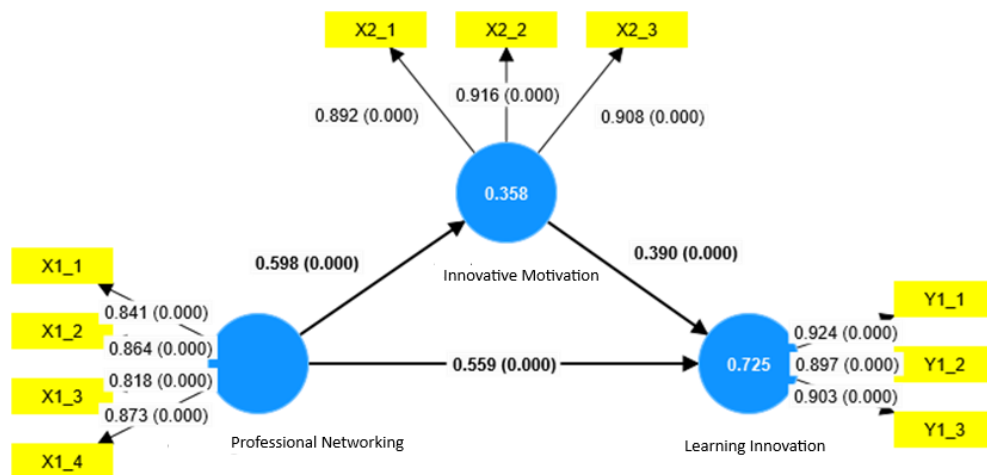
Figure 1. SEM-PLS Analysis Results

The path coefficient of 0.559 indicates that Professional Networking positively and significantly influences Learning Innovation. With a p-value < 0.0001, this effect is highly statistically significant. The coefficient of 0.559 indicates that any increase in professional networking activities will increase learning innovation by 55.9%. This suggests that respondents who are more active in networking activities tend to be more innovative in adopting new methods and strategies in learning.

The path coefficient of 0.598 shows that Professional Networking also strongly influences Innovative Motivation, with a significant effect (p < 0.0001). This coefficient indicates that any increase in Professional Networking activities will increase the motivation to innovate by 59.8%. This indicates that networking

expands professional relationships and encourages individuals to be more open to innovation and change.

The path coefficient of 0.390 shows that Innovative Motivation positively and significantly influences Learning Innovation (p < 0.0001). With a coefficient of 0.390, any increase in innovative motivation will increase innovation in learning by 39.0%. Although the effect is not as large as that of Professional Networking, innovative motivation remains an important factor that encourages respondents to adopt more innovative teaching approaches.

The results of the path analysis show that all three evaluated paths have a positive and significant influence on the dependent variable. The influence of Professional Networking on Learning Innovation and Innovative Motivation is stronger than that of Innovative Motivation on Learning Innovation. However, all relationships are statistically significant, indicating that professional networking activities and innovative motivation are important in driving innovation in learning.

In this analysis, we investigate the relationship between the latent constructs of Innovative Motivation and Learning Innovation with independent variables such as Professional Networking. We used three main statistical measures to evaluate this model: R^2 (coefficient of determination), f^2 (effect size), and Q^2 (predictive coefficient). R^2 indicates how well the independent variables explain the variability in the latent construct, f^2 measures the strength of the independent variables' influence on the latent construct, and Q^2 assesses the model's ability to predict new values. The results of this analysis provide an in-depth look at the contribution of these variables in influencing Innovative Motivation and Learning Innovation.

Table 6. Inner VIF

Latent Construct	F Square
Innovative Motivation (R Square = 0.358 & Q Square = 0.290)	
Professional Networking	0.558
Learning Innovation (R Square = 0.725 & Q Square = 0.592)	
Professional Networking	0.730
Innovative Motivation	0.356

The analysis results show that Innovative Motivation has an R^2 of 0.358 and a Q^2 of 0.290. This means that 35.8% of the variability in Innovative Motivation can be explained by Professional Networking, and the model has good predictive ability with the Q^2 value, indicating that the model can predict 29% of the variability in the data not explained by the model. The effect size (F^2) for Professional Networking on Innovative Motivation is 0.558, which indicates a significant and large effect of Professional Networking on Innovative Motivation. Meanwhile, Learning Innovation has an R^2 of 0.725 and Q^2 of 0.592, indicating that the independent variables in the model can explain 72.5% of the variability in Learning Innovation. The model has excellent predictive ability with the Q^2 value, indicating that the model can predict 59.2% of the variability in the data not explained by the model. The effect size (F^2) for Professional Networking on Learning Innovation was 0.730, indicating a very large effect, while the F^2 for Innovative Motivation was 0.356, indicating a significant effect but smaller than the effect of Professional Networking. These results underline that Professional Networking is very strong in driving

Learning Innovation and Innovative Motivation. At the same time, Innovative Motivation also contributes significantly to Learning Innovation with a smaller influence.

Analysis

The influence of professional networks and innovative motivation on learning innovation, particularly among IRE/PAI teachers, reveals that the results of our SEM-PLS analysis provide valuable insights into the factors impacting Innovative Motivation and Learning Innovation within the context of professional networks. Specifically, our findings indicate that Professional Networking has a strong influence on both Learning Innovation and Innovative Motivation. Furthermore, while Innovative Motivation significantly contributes to Learning Innovation, its effect is less pronounced compared to that of Professional Networking

The results of the path coefficient test in this study show that Professional Networking significantly affects Innovative Motivation (path coefficient = 0.598) and Learning Innovation (path coefficient = 0.559), and Innovative Motivation affects Learning Innovation (path coefficient = 0.390). These findings are in line with several previous studies but also make new contributions in a more specific context.

Hofman & Dijkstra (2010) and Chotibuddin et al. (2023) support the result that professional networks positively influence Innovative Motivation and Learning Innovation. They showed that involvement in professional networks can increase motivation to innovate and adopt new learning methods, similar to the findings of this study. Xi & Li (2023) and Li & Qin (2022) also showed that professional networks influence innovation, which is in line with the results of this study, which revealed a significant effect of professional networking on learning innovation. Although not all previous studies assessed the relationship between professional networks and innovative motivation, these findings underscore the importance of professional networks in enhancing innovation adoption.

On the other hand, Lieberman & Mace (2010) identified the influence of professional networks on Innovative Motivation but did not focus on the direct relationship with learning innovation. This research extends the understanding that Innovative Motivation significantly influences Learning Innovation, supported by Shah & Siddiqui (2015).

This study makes a new contribution by confirming that Professional Networking not only influences innovative motivation but also directly increases innovation in learning. This mirrors the results of Hanraets et al. (2011), who showed that professional networks and innovative motivation jointly drive innovation. This finding strengthens the argument that professional networks serve as a key catalyst in the innovation process, which is a significant addition to the existing literature.

The results of this study support previous findings and extend the understanding of the role of professional networks in promoting innovative motivation and learning innovation. Strategies that strengthen engagement in professional networks and motivate individuals to innovate remain an effective approach to enhancing innovation in educational contexts. The practical implications of these findings highlight the importance of focusing on strategies that strengthen professional networking to enhance innovative motivation and learning innovation in the future.

One effective strategy is organizing networking events such as conferences, seminars, and workshops, which allow professionals to meet, share ideas, and build relationships that stimulate innovative motivation and learning innovation. Facilitating professional communities by building online platforms or communities that support the exchange of information and experiences between professionals can also help expand networks and strengthen innovative motivation. Encouraging collaboration through the establishment of teams or working groups consisting of individuals with diverse backgrounds fosters brainstorming and the adoption of innovative ideas in learning. Additionally, providing training focused on networking skills and professional relationship management can maximize the benefits of networking activities. Because professional networks not only enhance IRE teachers' access to resources and expertise but also facilitate changes in instructional practices through collaborative learning and peer support. Therefore, professional networks can also be regarded as a best practice organized by teachers, enriching members' understanding of the dynamics of professional development (Mcdonald, J., & Klein, 2003; Mulcahy, 2011). Consequently, teacher professional networks can facilitate changes in instructional practices through collaborative learning and peer support.

To increase innovative motivation, institutions or organizations can implement several approaches. Recognizing and rewarding individuals or teams who demonstrate high innovative motivation and significant contributions to innovation in learning is one effective method. Creating a supportive environment that fosters experimentation and the implementation of new ideas allows individuals to explore innovative approaches without fear of failure. Integrating the latest technology to facilitate learning and innovation also motivates individuals to explore new tools that can enhance their teaching and learning practices.

The role of professional networking in education has shown a significant impact on innovative motivation. Teachers engaged in professional networks often gain exposure to new pedagogical methods and technologies, which can drive them to adopt innovative practices. These networks serve as platforms for collaboration, enabling educators to learn from peers and access shared resources. For instance, participants in this study reported that their involvement in workshops and seminars encouraged them to experiment with creative teaching strategies. Similarly, online platforms provided an avenue for exchanging teaching materials and ideas. Previous research also supports these findings, demonstrating that professional networks can enhance both motivation and skills. Thus, professional networking proves to be a cornerstone in fostering innovation within educational settings.

Innovative motivation acts as a bridge between professional networking and learning innovation. Teachers who feel inspired and supported by their professional communities are more likely to take risks and explore new teaching techniques. This intrinsic motivation often results in meaningful changes in classroom practices. For example, respondents in this study highlighted that networking opportunities increased their confidence in trying untested methods. Evidence from previous literature indicates that intrinsic motivation is closely tied to a teacher's willingness to innovate. Notably, studies have found that motivated educators tend to outperform their less motivated counterparts in adopting technological tools.

Consequently, enhancing innovative motivation through professional networks is critical for educational improvement.

The study confirms that professional networks directly enhance learning innovation. Educators who actively participate in professional forums often gain insights that lead to the development of new teaching strategies. These strategies are tailored to meet the diverse needs of students, making learning more effective and engaging. Respondents in this study who attended regular workshops or seminars reported a higher likelihood of integrating new technologies into their classrooms. This aligns with findings from Schnellert (2020), which demonstrated that teachers involved in professional networks were more inclined to adopt competency-based learning approaches. Furthermore, case studies on collaborative teaching practices highlight how shared experiences in networks lead to creative problem-solving. These results underline the importance of fostering robust professional networks to drive learning innovation.

The mediating role of innovative motivation strengthens the impact of professional networking on learning innovation. Teachers often require both external support from networks and internal drive to implement innovations successfully. Without motivation, the benefits of networking might not translate into actionable outcomes. This study found that educators with high motivation levels were better at transforming insights from networks into classroom practices. Akram & Rana (2019) also observed similar patterns, emphasizing that motivated teachers are more proactive in adopting novel techniques. Moreover, intrinsic motivation helps sustain long-term engagement with innovative practices, even in challenging situations. Therefore, fostering motivation is essential for maximizing the effectiveness of professional networking.

Diverse forms of professional networking have varying impacts on innovation. Formal networks, such as workshops, provide structured learning opportunities, while informal networks, such as WhatsApp groups, offer flexible and spontaneous support. Each form caters to different aspects of teacher development. In this study, formal events like seminars were found to significantly boost technical skills and confidence in implementing digital tools. Meanwhile, informal networks fostered collaborative problem-solving and emotional support among teachers. These findings are supported by Mcgregor et al. (2020), who noted that hybrid networking models yield the best results for teacher innovation. This diversity in networking forms highlights the need for integrated approaches in professional development programs.

Teachers' openness to change significantly influences the effectiveness of professional networks. Educators who are willing to embrace new methods benefit more from networking opportunities. Resistance to change, on the other hand, limits the potential of these interactions. The study revealed that respondents who scored high in openness to change were more likely to utilize ideas from networks effectively. Studies by Klaeijsen et al. (2018) also support this, showing a positive correlation between openness and innovative behaviors. Moreover, workshops specifically designed to challenge traditional mindsets have proven effective in increasing adaptability among educators. Thus, fostering openness to change should be a priority in professional development initiatives.

External support from institutions enhances the role of professional networks in driving innovation. Schools and educational organizations play a

crucial role in creating an environment that supports networking and experimentation. Institutional policies can either facilitate or hinder these activities. Respondents in this study who received institutional encouragement, such as time allowances for professional development, reported higher engagement in networks. Hofman & Dijkstra (2010) similarly noted that supportive leadership enhances the impact of professional networks. Additionally, institutions that recognize and reward innovative practices see higher participation in professional learning communities. Therefore, institutional backing is vital for maximizing the benefits of professional networks.

Technological advancements have expanded the scope of professional networking. Digital platforms enable educators to connect with peers beyond geographical boundaries, fostering global collaboration. This accessibility has revolutionized how teachers engage in professional development. In this study, participants frequently cited online discussion groups as a key resource for innovative ideas. Research by Li & Qin (2022) highlights that technology-driven networks are especially effective in resource-constrained settings. Furthermore, platforms like Google Classroom and Microsoft Teams have become integral to collaborative teaching and learning. The integration of technology into professional networks offers unprecedented opportunities for innovation.

Collaborative approaches within professional networks enhance the adoption of innovative practices. Working in diverse teams allows educators to pool knowledge and co-create solutions to common challenges. This collaboration often leads to more sustainable innovations. Respondents in this study who engaged in team-based projects reported greater success in implementing new teaching methods. Hanraets et al. (2011) also emphasize the value of collaborative networks in driving collective expertise. Additionally, case studies from interdisciplinary projects show that diverse teams generate more creative and effective solutions. Collaborative initiatives within professional networks should be encouraged to maximize their innovative potential.

The findings of this study provide actionable insights for educational policymakers. By understanding the dynamics of professional networking and motivation, policies can be tailored to enhance teacher innovation. Policymakers have a critical role in ensuring the scalability of these practices. For instance, allocating resources for networking events and online platforms can significantly boost teacher engagement in professional networks. The success of government-led teacher forums in various countries, as highlighted in Schnellert (2020), demonstrates the impact of well-planned policies. Furthermore, partnerships between schools and external organizations can provide additional support for professional development. Thus, strategic policymaking is essential for fostering a culture of innovation in education.

Overall, the results of this analysis emphasize the crucial role of professional networking in influencing both innovative motivation and learning innovation. To foster sustainable innovation in learning, implementing strategies that strengthen professional networks and motivate individuals to innovate will be invaluable.

Conclusion

The study outcomes affirm that the profession network is crucial in supporting motivation innovation and learning innovation in the IRE teachers. Professional networks are possibilities for collaboration and support, tools for obtaining knowledge about new methods in the working area. In this connection, this engagement assists to meet the emerging challenges of students and keep the teachers informed and active in the advancement of education.

This insightful motivation has its source in one's professional connections where innovative motivation plays a major role in the kind of motivation that enables educators to develop creatively imaginative teaching techniques and also find ways of incorporating technology to enhance the teaching process. Professional efficacy derived from appreciative and motivational professional milieux encourages risk-taking and the application of innovative strategies for improving learning results.

The implications for policymakers and educational institutions are clear: the promotion of active engagement with the specified/other professional networks represented a significant tactic for raising up teaching practice, as well as the provision of supportive environm ents for innovation. Activities like structured workshops, seminars, formal and/or informal web based forums can further bolster these, coupled with incentives/rewards for ideas.

Subsequent studies should further examine on how other types of professional contacts and the interactivity between extraneous encouragement and self-generated motivation. Such studies can give more descriptions with issues for improving the concept of the teacher professional development programs and supporting sustainable change in teacher professional development.

Concerning the professional networks, the innovative motivation assures that stakeholders in education can create an environment that enhances teachers' capacity while enhancing the students' learning process. Such collaboration is likely to foster sustainable change to the quality and efficiency of the educational systems.

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