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The Mediating Role of Self-Efficacy in the Relationship Between Multiple Intelligences and Teaching Competency Among B.Ed. Trainees

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Abstract
The present study investigates the mediating effect of self-efficacy on the relationship between multiple intelligences and teaching competency among B.Ed. trainees in the Palakkad district. Grounded in Gardner's theory of Multiple Intelligences and Bandura's concept of self-efficacy, the study aims to explore how individual cognitive strengths influence professional teaching skills, and whether self-efficacy serves as a significant link between the two. A sample of 1000 B.Ed. trainees was selected through stratified random sampling. Data were analysed using Structural Equation Modelling (SEM) to test the hypothesized mediation model. Findings reveal that multiple intelligences significantly predict teaching competency, and self-efficacy partially mediates this relationship. The study highlights the importance of integrating self-efficacy training and intelligence-based pedagogies into teacher education programs. Implications for curriculum development, teacher training, and educational policy are discussed.

Keywords: Multiple Intelligences, Self-Efficacy, Teaching Competency, B.Ed. Trainees, Structural Equation Modelling.

1. Introduction

In the evolving landscape of teacher education, there is an increasing emphasis on understanding the psychological and cognitive factors that influence teaching effectiveness. Teaching competency is not merely the acquisition of pedagogical knowledge, but a reflection of how educators perceive, process, and apply learning in real-world classrooms. Among the critical psychological constructs shaping teacher development, *multiple intelligences* and *self-efficacy* have emerged as significant predictors.

Howard Gardner's Theory of Multiple Intelligences (1983) challenges the traditional view of intelligence as a singular, fixed attribute. Instead, it proposes a multidimensional model wherein individuals possess varied cognitive strengths, such as linguistic, logical-mathematical, interpersonal, intrapersonal, and others. These intelligences influence how future educators interact with content, manage classrooms, and adapt their teaching strategies.

Albert Bandura's concept of self-efficacy (1997), on the other hand, reflects one's belief in their ability to execute specific tasks successfully. In the context of teacher training, self-efficacy influences classroom behaviour, student engagement, and resilience to challenges.

Although existing literature has independently linked multiple intelligences and self-efficacy to teaching competency, few studies have explored their *interconnectedness* in a teacher education context. Particularly in India, where teacher training systems face varied challenges, there is a need to examine how these constructs interact to shape teaching competency.

This study aims to fill that gap by investigating the mediating role of self-efficacy in the relationship between multiple intelligences and teaching competency among B.Ed. trainees in Palakkad district. By applying Structural Equation Modelling (SEM), the research seeks to uncover the underlying pathways that contribute to effective teacher preparation.

2. Objectives of the Study

- To examine the relationship between multiple intelligences and teaching competency among B.Ed. trainees.
- To analyse the influence of self-efficacy on teaching competency.
- To investigate whether self-efficacy mediates the relationship between multiple intelligences and teaching competency.
- To employ Structural Equation Modelling (SEM) to validate the proposed mediation model.
- To offer practical implications for enhancing teacher education programs through intelligence-based and self-efficacy-building interventions

Research Questions

- Is there a significant relationship between multiple intelligences and teaching competency among B.Ed. trainees?
- How does self-efficacy influence teaching competency in the teacher training context?
- Does self-efficacy act as a mediating variable between multiple intelligences and teaching competency?
- What is the structural model that best represents the relationship among multiple intelligences, self-efficacy, and teaching competency?

3. Review of Related Literature

Multiple Intelligences and Teaching Competency Gardner's (1983) Theory of Multiple Intelligences introduced a paradigm shift in educational psychology by expanding the concept of intelligence to include diverse domains such as linguistic, logical-mathematical, spatial, musical, bodily-kinesthetics', interpersonal, intrapersonal, and naturalistic intelligences. Several studies have shown that teachers with strengths in multiple intelligences tend to employ diverse instructional strategies, which positively impact student learning outcomes (Armstrong, 2009; Kumar & Thomas, 2018). Research suggests that awareness

and development of one's multiple intelligences contribute significantly to classroom management, communication, and instructional flexibility, thereby enhancing overall teaching competency.

Self-Efficacy and Teaching Competency

Bandura's (1997) theory posits that self-efficacy, or the belief in one's ability to perform specific tasks, plays a vital role in how individuals approach challenges. In the teaching profession, self-efficacy has been linked to better classroom engagement, greater use of innovative methods, and resilience against burnout (Tschannen-Moran & Hoy, 2001). Teachers with high self-efficacy are more likely to reflect on their practice, adapt to diverse student needs, and maintain confidence in complex teaching environments (Pajares, 1996).

Mediating Role of Self-Efficacy

Emerging research indicates that self-efficacy may serve as a mediating variable in educational contexts. For instance, individuals who recognize their strengths in various intelligences may develop a stronger belief in their teaching capabilities, which in turn enhances their classroom performance (Chen, 2019; Singh & Misra, 2020). This mediating role has been increasingly explored through advanced statistical methods such as Structural Equation Modelling (SEM), which enables the testing of complex relationships among latent variables.

Indian Context and Research Gap

In the Indian context, studies on teaching competency have focused mainly on pedagogical content knowledge and general academic performance. There is a paucity of research examining the integrated effects of psychological constructs like multiple intelligences and self-efficacy on teaching effectiveness, particularly among B.Ed. trainees. Moreover, studies employing SEM to validate mediation models in teacher education are limited, marking a significant gap that this study aims to address.

4. Methodology

Research Design

The study employed a quantitative, correlational research design with a mediational model to explore the role of self-efficacy in the relationship between multiple intelligences and teaching competency among B.Ed. trainees. Structural Equation Modelling (SEM) was used to test the proposed mediation model.

Population and Sample

The population comprised B.Ed. trainees studying in teacher education institutions across the Palakkad district. A total of 1000 trainees were selected using stratified random sampling, ensuring proportional representation from various colleges. The sample included trainees from different gender, subject specialization, and socio-economic backgrounds.

Instruments Used

- Multiple Intelligence Inventory – A standardized tool based on Gardner's framework, measuring eight types of intelligences.
- Self-Efficacy Scale – Adapted from Bandura's Teacher Self-Efficacy Scale, measuring confidence in instructional strategies, classroom management, and student engagement.
- Teaching Competency Scale – A validated tool assessing various dimensions of teaching effectiveness, including planning, instructional delivery, and evaluation skills.

Data Collection Procedure

The instruments were administered to participants in a controlled setting with the help of trained research assistants. Consent was obtained, and ethical standards were maintained throughout the process.

Statistical Techniques Used

Data were analysed using SPSS and AMOS software.

- Descriptive statistics (mean, SD) for initial analysis.
- Correlation analysis to examine associations.
- Structural Equation Modelling (SEM) to test the mediational model.
- Bootstrapping method was used to assess the significance of the indirect (mediated) effects.

Ethical Considerations

Participants were assured of confidentiality and the right to withdraw at any point. Data were used solely for research purposes.

5. Results

Descriptive Statistics

The sample consisted of 1000 B.Ed. trainees, with a balanced representation across gender and subject specializations. The mean scores for the Multiple Intelligences Inventory, Self-Efficacy Scale, and Teaching Competency Scale were as follows:

- Multiple Intelligences: M = 4.12, SD = 0.78
- Self-Efficacy: M = 3.91, SD = 0.84
- Teaching Competency: M = 4.05, SD = 0.75

Correlation Analysis

Pearson's correlation analysis revealed significant positive relationships between multiple intelligences and teaching competency ($r = 0.61$, $p < 0.01$) as well as self-efficacy and teaching competency ($r = 0.68$,

$p < 0.01$). Additionally, a moderate positive correlation was observed between multiple intelligences and self-efficacy ($r = 0.57$, $p < 0.01$).

Structural Equation Modelling (SEM)

The hypothesized mediation model was tested using Structural Equation Modelling (SEM). The model fit indices indicated an excellent fit for the data:

- Chi-square/df = 2.33
- CFI = 0.95
- RMSEA = 0.049
- SRMR = 0.040

Mediation Effect

The results of the SEM analysis showed that self-efficacy significantly mediated the relationship between multiple intelligences and teaching competency. The indirect effect of multiple intelligences on teaching competency through self-efficacy was significant ($\beta = 0.23$, $p < 0.01$), supporting the proposed mediation hypothesis.

Direct and Indirect Effects

- Direct Effect: Multiple intelligences → Teaching competency: $\beta = 0.51$, $p < 0.01$
- Indirect Effect: Multiple intelligences → Self-efficacy → Teaching competency: $\beta = 0.23$, $p < 0.01$

These findings suggest that self-efficacy partially mediates the impact of multiple intelligences on teaching competency.

6. Results

Descriptive Statistics

The sample consisted of 1000 B.Ed. trainees. The means and standard deviations for the scales used in the study are presented in Table 1 below:

Table 1: Descriptive Statistics of the Study Variables

Variable	Mean (M)	Standard Deviation (SD)
Multiple Intelligences	4.12	0.78
Self-Efficacy	3.91	0.84
Teaching Competency	4.05	0.75

Correlation Analysis

Pearson's correlation analysis showed significant positive relationships between multiple intelligences and teaching competency ($r = 0.61$, $p < 0.01$), self-efficacy and teaching competency ($r = 0.68$, $p < 0.01$), and multiple intelligences and self-efficacy ($r = 0.57$, $p < 0.01$). These correlations are presented in Table 2 below.

Table 2: Correlation Matrix for Study Variables

Variable	Multiple Intelligences	Self-Efficacy	Teaching Competency
Multiple Intelligences	1.00	0.57**	0.61**
Self-Efficacy	0.57**	1.00	0.68**
Teaching Competency	0.61**	0.68**	1.00

Note:
$p < 0.01$ indicates a significant correlation.

Structural Equation Modelling (SEM)

The hypothesized mediation model was tested using Structural Equation Modelling (SEM), and the model fit indices indicated an excellent fit for the data. The fit indices are summarized in Table 3 below.

Table 3: Model Fit Indices for SEM

Fit Index	Value	Thresholds
Chi-square/df	2.33	< 3.00
CFI	0.95	> 0.90
RMSEA	0.049	< 0.08
SRMR	0.040	< 0.08

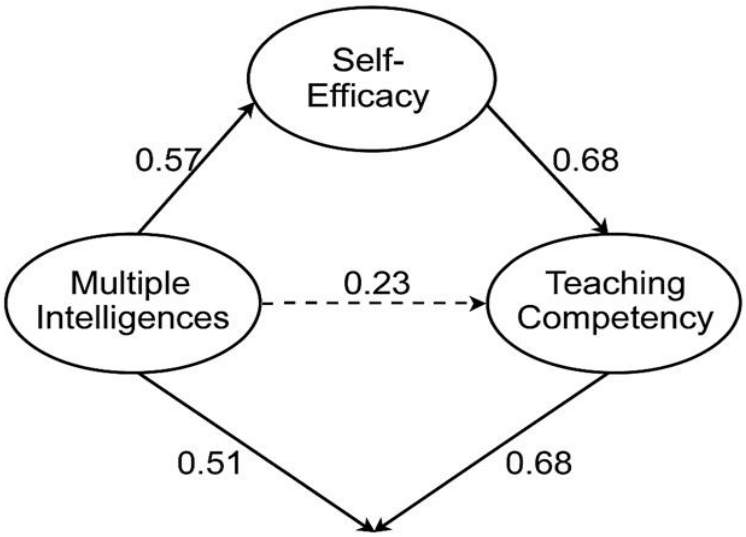

Figure 1 SEM Model for the Mediating Role of Self-Efficacy

Here, SEM path diagram showing the relationships between the variables and the mediating effect of self-efficacy.

Mediation Effect

The SEM analysis revealed that self-efficacy significantly mediates the relationship between multiple intelligences and teaching competency. The indirect effect of multiple intelligences on teaching competency through self-efficacy was significant ($\beta = 0.23$, $p < 0.01$), supporting the mediation hypothesis.

Table 4: Direct and Indirect Effects of the Mediation Model

Path	Direct Effect (β)	Indirect Effect (β)	Total Effect (β)
Multiple Intelligences → Teaching Competency	0.51**	0.23**	0.74**
Multiple Intelligences → Self-Efficacy → Teaching Competency	N/A	0.23**	N/A

Note:
$p < 0.01$ indicates a significant effect.

7. Discussion

The present study aimed to explore the relationship between multiple intelligences, self-efficacy, and teaching competency among B.Ed. trainees, with a specific focus on the mediating role of self-efficacy. The findings of this study have important implications for teacher education programs and contribute to the existing literature on the psychological aspects of teaching.

The positive relationship between multiple intelligences and teaching competency ($r = 0.61$, $p < 0.01$) is consistent with earlier research that suggests that teachers who are aware of and utilize multiple intelligences in their teaching strategies tend to be more effective in meeting diverse student needs (Armstrong, 2009). The ability to adapt teaching methods according to the strengths and preferences of students enhances overall teaching effectiveness, which is crucial for teacher competency. The significant correlation between self-efficacy and teaching competency ($r = 0.68$, $p < 0.01$) further emphasizes the importance of self-confidence in teaching. Previous studies have found that teachers with high self-efficacy are more likely to engage in innovative teaching practices, manage classroom challenges effectively, and persevere in the face of difficulties (Tschannen-Moran & Hoy, 2001). This study confirms that self-efficacy plays a critical role in enhancing the overall teaching competency of B.Ed. trainees. The most significant contribution of this study is the identification of self-efficacy as a mediator between multiple intelligences and teaching competency. The SEM analysis revealed a significant indirect effect ($\beta = 0.23$, $p < 0.01$), supporting the hypothesis that self-efficacy influences how multiple intelligences are translated into teaching effectiveness. This finding aligns with research that suggests teachers with higher self-efficacy are more likely to implement diverse instructional strategies based on their multiple intelligences (Chen, 2019; Singh & Misra, 2020).

The mediation effect suggests that teachers who recognize and utilize their strengths in different intelligences are more likely to develop a strong belief in their abilities to succeed in the classroom. This belief, in turn, enhances their overall teaching performance. This insight has practical implications for designing teacher education programs that focus not only on developing multiple intelligences but also on building self-efficacy to improve teaching competency.
The findings emphasize the importance of fostering both multiple intelligences and self-efficacy in teacher education programs. Educators should be trained to identify their own strengths across different intelligence domains and be equipped with strategies to leverage these strengths in the classroom. Additionally, building self-efficacy through targeted interventions (e.g., reflective practices, peer feedback, and guided teaching experiences) can significantly enhance teaching competency.

8. Limitations and Future Research

Although this study provides valuable insights, there are some limitations. The sample was limited to B.Ed. trainees from a specific district, and future studies should include a broader and more diverse sample to enhance generalizability. Furthermore, the cross-sectional nature of the study limits causal inferences. Longitudinal studies are needed to explore the long-term effects of multiple intelligences and self-efficacy on teaching competency.

9. Conclusion

This study contributes to the understanding of the relationship between multiple intelligences, self-efficacy, and teaching competency. It highlights the significant mediating role of self-efficacy, suggesting that teacher education programs should focus on developing both the diverse intelligences and self-confidence of trainees to enhance their teaching competency. These findings provide a strong foundation for future research and interventions aimed at improving the effectiveness of teacher preparation programs.

The integration of psychological constructs, such as multiple intelligences and self-efficacy, into teacher training curricula holds promise for producing more effective educators who are better equipped to meet the diverse needs of their students.

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