

The Impact of Quality Teaching Indicators on Reflective Thinking of Physical Education Teachers

Abstract

Purpose: The aim of this research was to examine the impact of quality indicators of education on the reflective thinking of physical education teachers.

Methods: The current research is applied in terms of its objectives and exploratory in nature. Data was collected in the field using a cluster sampling method, with a questionnaire employed for data gathering. The study analyzes the responses of 384 physical education teachers in Tehran province in 2024 using SEM - Smart PLS_{TM}3 to validate a theoretical model encompassing these dimensions.

Results: The findings revealed that educational support services, teaching efficacy, and goal orientation significantly enhance the reflective thinking of physical education teachers. Specifically, educational support services were identified as crucial in fostering an environment conducive to reflection, leading to improved teaching practices. Additionally, higher levels of teaching efficacy correlated positively with reflective thinking, suggesting that teachers who feel more competent are more likely to engage in reflective practices. The study highlights the necessity for educational managers and organizations to prioritize the development of robust support systems and professional development programs that focus on enhancing teachers' self-efficacy and goal orientation.

Conclusion: By implementing these strategies, educational leaders can create an environment that not only nurtures reflective thinking but also improves the overall quality of physical education. These findings provide actionable insights for policymakers and educators aiming to enhance teacher development and student outcomes in physical education settings.

Keywords: Educational Support Services, Instructional Self-Efficacy, Quality Teaching Indicators, Reflective Thinking, Teaching Efficacy.

Introduction

Teaching competence plays a crucial role in students' academic progress, the creation of effective learning environments, and the provision of appropriate tasks tailored to learners' needs (Little et al., 2009). In physical education, where diverse environments such as playgrounds and gymnasiums are prevalent, structured and professional teaching skills are particularly important for effective classroom management (Kim & Kwak, 2022).

A key aspect of teaching competence is reflective thinking, which involves critically evaluate one's teaching practices and understanding their impact on student learning. Teaching reflection evaluation is a continuous process, which helps to improve teaching quality, stimulate students' interest, meet their needs, and support the mission and objectives of educational institutions (He, 2024). This process enables educators to make informed adjustments to enhance instructional effectiveness. According to Korthagen (2017), emphasizes that reflective thinking not only improves teaching quality but also contributes to professional growth. Teachers who engage in reflective practices are better equipped to identify areas for improvement, leading to enhanced educational outcomes. Hattie (2008) found that reflective strategies can result in an effect size of 0.57 on student performance, underscoring the importance of reflection in effective teaching. In addition, the results indicated that critical thinking tendencies played a substantial role in the reflective teaching practices of Iranian English language teachers (Alinejad et al., 2024).

The quality of teaching is a critical factor in educational success, particularly in physical education, where effective instructional strategies significantly impact student engagement and learning outcomes. Researchers emphasize that reflective thinking not only improves instructional quality but also contributes to the overall development of teachers as professionals (Aslam et al., 2021; He, 2024; Tan, 2008). Reflective thinking involves critically assessing teaching practices, which facilitates self-improvement and professional growth (Gröschner et al., 2018). This process allows educators to engage in self-directed activities that enhance their teaching effectiveness (Murillo-Llorente et al., 2021). However, many physical education teachers lack essential skills, such as creating supportive learning environments and utilizing various instructional tools (Ní Chróinín et al., 2018). Thus, understanding the interplay between quality teaching and reflective thinking is crucial for developing effective educational practices. By fostering reflective thinking among educators, we can enhance teaching quality and ultimately improve student learning experiences. Research shows that effective teaching practices, including reflective thinking, are linked to better student results, as teaching competence has a large impact on students' academic progress and the provision of appropriate learning tasks tailored to their needs (YuekMing & Abd Manaf, 2014). Evidence indicates that education enhances teachers' professional identity, except in the area of job satisfaction (Rodrigues-Silva & Alsina, 2024).

Despite the acknowledged significance of quality teaching and reflective thinking, there is a notable gap in the literature regarding the specific indicators of quality teaching and their relationship with reflective practices among physical education teachers. Existing research primarily focuses on qualitative aspects of reflective thinking, often overlooking how specific quality teaching indicators influence this process (Chen & Chen, 2022). This gap highlights a pressing issue: without understanding how these indicators interact, fostering reflective practices that enhance teaching competence becomes challenging.

Moreover, reflective thinking is closely related to sustainable learning, an educational concept rooted in the principles of sustainable development. Sustainable learning emphasizes continuous skill development and its role in fostering fairer and more sustainable living conditions (Kazlauskienė et al., 2021). Research indicates that reflective thinking can strengthen the

connection between theoretical knowledge and practical application, enhancing self-assessment in collaborative learning activities (Yang et al., 2022). Thus, emphasizing educational factors and sustainable learning within the teaching process is vital for improving traditional education reform and achieving education for sustainable development (Howell, 2021).

The primary concern of this research is to address the lack of empirical evidence linking quality teaching indicators to the development of reflective thinking among physical education teachers. This study aims to identify the key factors and mechanisms that influence reflective thinking in this context, ultimately providing insights that can inform professional development programs. By elucidating the relationship between quality teaching indicators and reflective thinking, the research will offer practical applications to enhance teaching strategies and student learning outcomes.

To clarify the focus of this research, the central question is: What is the impact of quality teaching indicators on the development of reflective thinking among physical education teachers? This question seeks to explore the relationship between teaching quality and reflective practices, contributing to the broader discourse on teacher education and professional development. Ultimately, this study aims to bridge existing gaps in the literature by providing evidence-based insights into how quality teaching indicators can enhance reflective thinking among physical education teachers. The anticipated outcomes include improved teaching practices, increased student engagement, and a more robust framework for teacher professional development.

Materials and methods

The present research was applied in terms of its objectives and exploratory in nature. The statistical population comprised physical education teachers in Tehran province in 2024. The study aimed to elucidate the model of effective teaching indicators on the reflective thinking of physical education teachers. The total population included all physical education teachers in Tehran, and a sample of 384 teachers was selected using the Cochran formula, which is appropriate for determining sample size in studies with large populations (Cochran, 1977).

To ensure a representative sample, a cluster sampling method was employed. Tehran province was divided into five geographical regions: north, south, east, west, and central. Samples were randomly selected from each of these regions to ensure diversity and representation across the province.

The research utilized two primary measurement tools: the Teaching Quality Indicators Questionnaire developed by Chen and Chen (2022) and the Reflective Thinking Scale (Larrivee, 2000). The Teaching Quality Indicators Questionnaire consists of five components: educational support services, peer feedback, teacher-student interaction, teaching self-efficacy, and personal goal orientation, totaling 19 items. The Reflective Thinking Scale adapted from Larrivee (2000) includes 6 items. Both questionnaires were designed using a five-point Likert scale, where “1” indicated “completely disagree” and “5” indicated “completely agree.”

The content validity of the questionnaires was assessed by 6 people from university professors with expertise in education and physical education. Additionally, the structural validity was evaluated through exploratory factor analysis. The reliability of the questionnaires was measured using Cronbach’s alpha coefficient, which demonstrated satisfactory internal consistency. Specifically, the Cronbach’s alpha coefficients for the components related to teaching indicators were as follows: educational support services (0.857), peer feedback (0.881), teacher-student

interaction (0.845), teaching self-efficacy (0.862), and personal goal orientation (0.872). For the reflective thinking variable, the Cronbach's alpha was 0.877, indicating strong reliability.

For data analysis, structural equation modeling (SEM) was employed to elucidate the relationships between effective teaching indicators and reflective thinking among physical education teachers. The choice of SEM is justified as it allows for the examination of complex relationships between observed and latent variables, providing a comprehensive understanding of the model's structure (Byrne, 2013). The analysis was conducted using SPSS 27.0 and PLS 3 software. Confirmatory factor analysis and reliability analysis were utilized to assess the validity of the constructs, while path analysis was employed to explore the relationships within the structural equation model.

Results

Based on the findings, the highest frequency percentage of the respondents' age variable corresponds to the age range of 30 to 40 years, with 37.60 percent. Additionally, the age range of 50 years and above allocated the lowest frequency percentage with 7.52 percent. Regarding the gender of the respondents, the highest frequency percentage belongs to males with 73.82 percent. Furthermore, skewness and kurtosis were utilized to examine the distribution of research data, the results of which are presented in the following table.

Table 1. Results of statistical data analysis

Variable	Mean	Standard Deviation	Skewness	Kurtosis
Supportive Teaching Services	3/955	0/806	-1/334	2/076
Peer Feedback	4/030	0/813	-1/349	2/004
Teacher-Student Interaction	4/067	0/776	-1/394	2/220
Educational Self-Efficacy	3/742	0/974	-0/938	2/057
Personal Goal Orientation	4/046	0/816	-1/416	2/332
Reflective Thinking	4/006	0/758	-1/637	2/648

Based on Table 1, the kurtosis coefficient exceeds the ± 2 range, indicating that the distribution does not meet the normality assumption. Consequently, the mean cannot be used as a representative measure of central tendency, and parametric statistical tests cannot be applied. Therefore, to accurately determine the data distribution, the Kolmogorov-Smirnov test was employed.

Table 2. Kolmogorov-Smirnov test results

Variable	Statistic	Degrees of Freedom	Significance
Supportive Teaching Services	0/175	357	0/001
Peer Feedback	0/171	357	0/001
Teacher-Student Interaction	0/171	357	0/001
Educational Self-Efficacy	0/176	357	0/001
Personal Goal Orientation	0/172	357	0/001
Reflective Thinking	0/155	357	0/001

The results in Table 2 indicate that based on the Kolmogorov-Smirnov test, the significance level for all components is less than $\alpha=0.05$. Therefore, the distribution of all data is non-normal, and non-parametric tests were used to examine the related statistical hypotheses. In this study, considering the non-normal distribution of the data, the complexity, and the novelty of the model (as three assumptions for using the variance-based approach), the Partial Least Squares (PLS)

method and the SMART PLS3 software were employed. The following sections provide a detailed explanation of the results obtained from this approach and the software output.

Table 3. The results of the validity and reliability analyzes of the first-order factor analysis

Variable	Average Variance (AVE)	Composite Reliability (CR)	Rho	Cronbach's Alpha
Supportive Teaching Services	0.700	0.903	0.859	0.857
Peer Feedback	0.737	0.918	0.883	0.881
Teacher-Student Interaction	0.684	0.896	0.948	0.845
Educational Self-Efficacy	0.784	0.916	0.875	0.862
Personal Goal Orientation	0.722	0.912	0.872	0.872
Reflective Thinking	0.670	0.910	0.878	0.877

The examination of the above table indicates that the indices used in this study possess high validity. Specifically, the Cronbach's alpha is above 0.7, the Rho index exceeds 0.7, composite reliability is above 0.8, and the average variance extracted (AVE) is greater than 0.5. Therefore, it is reliable to report the results related to the final research model. The evaluation of the final research model indices also indicates a high model validity. Consequently, given the model's validation, we proceed to report the path analysis results within the research model framework.

Table 4. Correlations among the first -order factors.

Variables	1	2	3	4	5	6
Peer Feedback	0.859					
Teacher-Student Interaction	0.801	0.827				
Personal Goal Orientation	0.540	0.504	0.850			
Supportive Teaching Services	0.754	0.708	0.553	0.837		
Educational Self-Efficacy	0.597	0.556	0.531	0.556	0.886	
Reflective Thinking	0.645	0.619	0.649	0.646	0.635	0.818

Note: The diagonal elements (bold) are the square roots of the AVE of each construct.

Discriminant validity refers to how the conceptually different dimensions are distinct and is achieved when an AVE square root value of a dimension is higher than correlations between the dimension and other underlying dimensions (Hair et al., 2017). The correlation coefficients among first-order factors are shown in Tables 2, respectively. The correlation coefficients among the structures were less than their related square root AVEs, satisfying discriminant validity.

In the Partial Least Squares (PLS) approach, the quality and fit of the model are assessed using several measures.

Table 5. Values of fit indices for research model variables

Variable	Q2	R2	SRMR
Self-Efficacy for Teaching	0.284	0.391	0.059
Personal Goal Orientation	0.238	0.345	
Reflective Thinking	0.379	0.609	

Based on the information in Table 4, the values obtained for the Q² and R² indices fall within the medium to strong range, and the SRMR value is less than 0.08, indicating a good quality for the tested model. The following section presents the tested research model, including the path coefficients for all model paths, as illustrated in Figure 1 and 2.

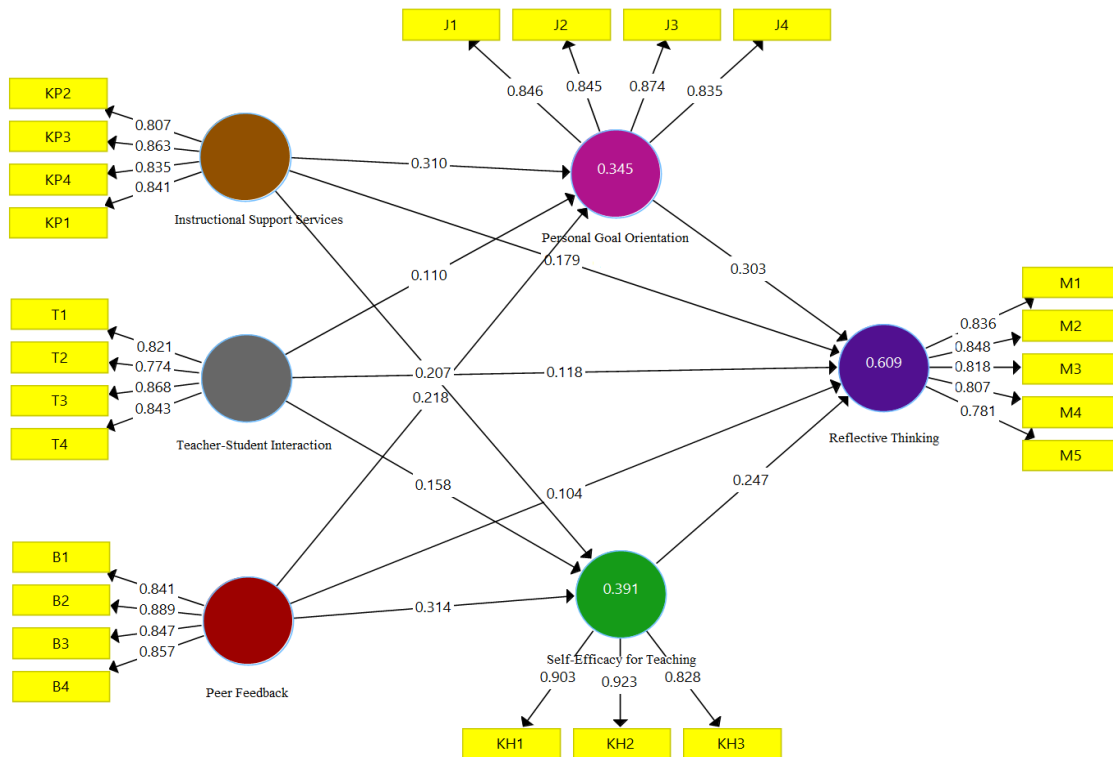


Figure 1. The final research model in the mode of path coefficient and Loading.

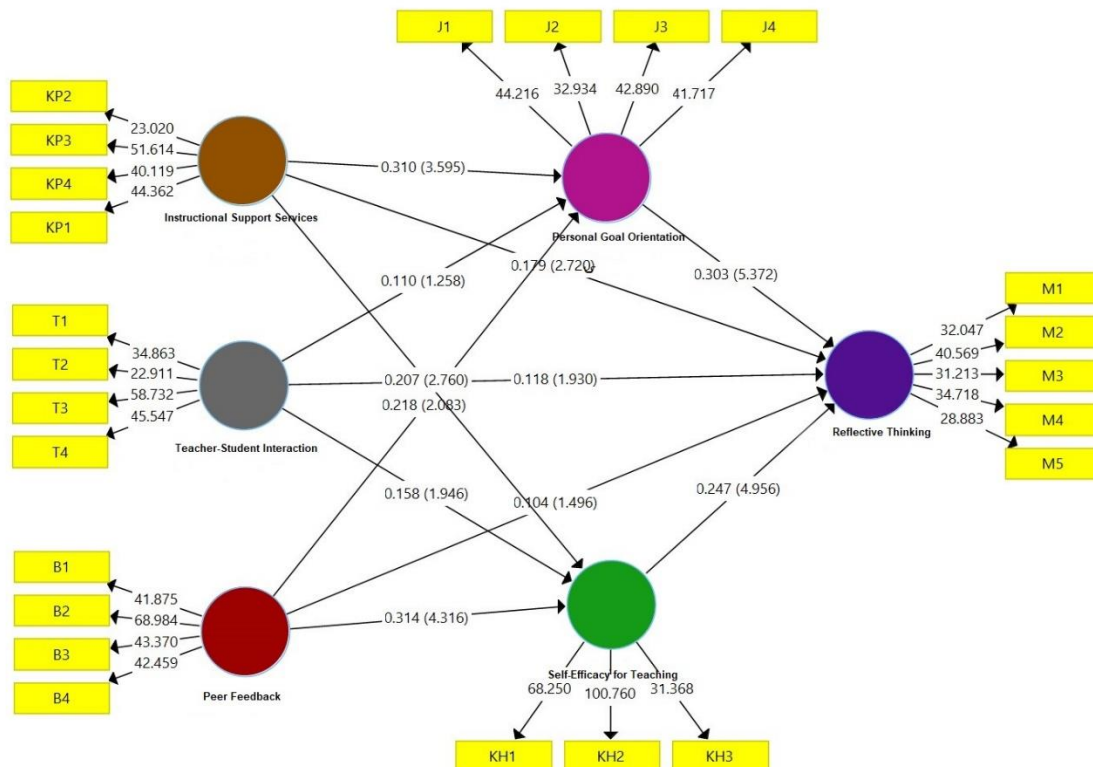


Figure 2. The final research model in the mode of path coefficient and significance values.

Table 6. Path coefficient values and t-statistics of hypotheses related to research model paths

Relationship	Path Coefficient (β)	t-statistic	Significance (p-value)	Decision
Instructional Support Services → Self-Efficacy for Teaching	0.207	7.602	0.006	Supported
Peer Feedback → Self-Efficacy for Teaching	0.314	3.164	0.001	Supported
Teacher-Student Interaction → Self-Efficacy for Teaching	0.158	0.946	0.052	Not Supported
Instructional Support Services → Personal Goal Orientation	0.310	5.953	0.001	Supported
Peer Feedback → Personal Goal Orientation	0.218	2.083	0.038	Not Supported
Teacher-Student Interaction → Personal Goal Orientation	0.110	1.258	0.209	Not Supported
Instructional Support Services → Reflective Thinking	0.179	3.720	0.007	Supported
Peer Feedback → Reflective Thinking	0.104	1.496	0.135	Not Supported
Teacher-Student Interaction → Reflective Thinking	0.118	1.930	0.054	Not Supported
Self-Efficacy for Teaching → Reflective Thinking	0.247	2.956	0.001	Supported
Personal Goal Orientation → Reflective Thinking	0.303	2.372	0.001	Supported
Peer Feedback → Personal Goal Orientation → Reflective Thinking	0.066	2.033	0.043	Supported
Teacher-Student Interaction → Personal Goal Orientation → Reflective Thinking	0.033	1.222	0.222	Not Supported
Instructional Support Services → Personal Goal Orientation → Reflective Thinking	0.094	2.947	0.003	Supported
Peer Feedback → Self-Efficacy for Teaching → Reflective Thinking	0.078	3.201	0.001	Supported
Teacher-Student Interaction → Self-Efficacy for Teaching → Reflective Thinking	0.039	1.782	0.075	Not Supported
Instructional Support Services → Self-Efficacy for Teaching → Reflective Thinking	0.051	2.412	0.016	Supported

According to the interpretive pattern in structural equation modeling, the t-statistic for four paths is less than 1.96, indicating that these paths are not significant at the 95% confidence level. Therefore, four hypotheses are not supported, while the remaining hypotheses are confirmed.

Discussion

The significance of reflective thinking in the learning process and professional development is well-documented, underscoring its critical role in enhancing educational quality. This study aimed to explore the impact of teaching quality indicators on the reflective thinking of physical education teachers. Understanding these indicators can aid educational managers, educators, and policymakers in designing and implementing programs that foster reflective thinking, ultimately improving the quality of education.

The findings of this study indicate that educational support services significantly enhance teachers' reflective thinking skills. This aligns with previous research by [Dornan et al. \(2019\)](#) and [\(Loughland & Ryan, 2022\)](#), which emphasizes that robust support systems within educational settings are crucial for fostering reflection among educators. When teachers perceive adequate

support from their institutions, they are more likely to engage in reflective practices. Conversely, a lack of support can diminish their inclination to reflect on their teaching, leading to a decline in reflective thinking. This suggests that educational support services, including professional counseling, constructive feedback, and relevant training, play a vital role in creating opportunities for teachers to reflect on their practices and improve their pedagogical skills.

Contrary to our initial assumptions, the results indicated that peer feedback does not significantly influence the development of teachers' reflective thinking skills. This finding contrasts with the studies of [Thompson et al. \(2019\)](#) and [Weber et al. \(2018\)](#), which suggested a positive correlation between peer feedback and reflective practices. The discrepancy may arise from various factors, such as individual motivation, personal circumstances, and the contextual nature of peer interactions. While peer feedback can be beneficial, it may not universally enhance reflective thinking due to its reliance on personal interpretations and the subjective nature of feedback. This highlights the need for a more nuanced understanding of how peer interactions contribute to reflective practices.

The study also found that teacher-student interactions in external environments do not have a significant positive impact on reflective thinking. This finding contradicts the results of [Kazhikenova et al. \(2021\)](#); [\(Mohan & Chand, 2019\)](#), who reported that such interactions could positively influence reflective practices. The lack of a significant effect may be attributed to factors such as organizational culture, teaching methods, and the quality of teacher-student relationships. The variability in findings across studies suggests that the influence of teacher-student interactions on reflective thinking is complex and may be moderated by contextual variables.

In contrast, educational self-efficacy emerged as a significant predictor of teachers' reflective thinking skills, consistent with the findings of [Runhaar et al. \(2010\)](#) and [Loughland and Ryan \(2022\)](#). Increased self-efficacy encourages teachers to engage more actively in reflective practices, suggesting that enhancing self-confidence should be a priority in professional development programs. Strategies to improve educational self-efficacy could include targeted training workshops, counseling groups, and positive reinforcement methods, all aimed at fostering an environment conducive to reflection.

Additionally, the findings indicate that goal orientation positively impacts the development of teachers' reflective thinking skills, aligning with research by [Barrett et al. \(2020\)](#) and [Daumiller et al. \(2019\)](#). Personal goal orientation enables teachers to approach reflective thinking with a focus on self-improvement and professional growth. Training programs that emphasize personal goal setting and reflective strategies can provide teachers with the tools needed to enhance their reflective practices.

Finally, this study highlights the importance of educational support services, self-efficacy, and goal orientation in fostering reflective thinking among physical education teachers. While peer feedback and teacher-student interactions did not show significant effects, understanding the nuances of these relationships is essential for developing effective educational practices.

Conclusion

In conclusion, this research highlights the notable impact of quality teaching indicators on promoting reflective thinking among physical education teachers. The findings show that improved educational programs and detailed support systems are important for developing reflective practices, which lead to better teaching effectiveness and student outcomes. Specifically, the study identifies the need for active learning programs and ongoing professional development workshops focused on reflective thinking. Additionally, mentorship and coaching initiatives are crucial for providing personalized support, helping teachers navigate the challenges of improving their instruction. The results emphasize the importance of addressing individual and environmental differences that may affect teachers' reflective thinking abilities. This ensures that training programs are tailored to meet diverse needs. By implementing these strategies, educational leaders can create an environment that nurtures reflective thinking and enhances the overall quality of physical education curricula. Ultimately, investing in the development of reflective practices among teachers will empower them to inspire a passion for physical activity and healthy lifestyles in students, contributing to their well-being and laying the groundwork for a healthier society.

To encourage reflective thinking among teachers and improve educational outcomes, schools should prioritize enhancing educational support services by setting up strong systems for professional counseling and constructive feedback. Additionally, implementing targeted training programs, such as workshops focused on increasing self-confidence and goal orientation, can empower teachers in their reflective practices. While peer feedback alone may not greatly improve reflective thinking, creating a collaborative environment where teachers can share experiences and strategies can still provide valuable support.

Furthermore, future research should explore the contextual factors that influence how effective peer feedback and teacher-student interactions are on reflective thinking, offering deeper insights into these dynamics. Finally, educational policymakers should include reflective thinking in teacher training programs and ongoing professional development to raise the overall quality of education. By addressing these areas, educational institutions can create a supportive environment that promotes reflective thinking, ultimately leading to better teaching practices and improved student outcomes.

This research serves as a call to action for educators and policymakers to prioritize reflective thinking as a key part of teacher development. By doing so, they can maximize learning outcomes and shape a more effective educational landscape.

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