

Does emotional intelligence mediate the relationship between soft skills and innovative educators' competencies in the digital era? An explanatory-predictive survey

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Abstract

This study examines the direct and indirect effects of soft skills Communicative Collaboration Competence (CCC), Creative Problem Solving (CPS), Critical Digital Competence (CDC), and Ethical Professionalism & Flexibility (EPF) on Innovative Educator Competence (IEC), with Emotional Intelligence (EQ) as the mediating variable. The research used a quantitative approach with an explanatory-predictive survey design. Data were collected from 130 Professional Teacher Education Program students through validated questionnaire. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The results showed that CCC, CPS, CDC, and EPF significantly influence IEC, either directly or through EQ mediation. However, emotional intelligence did not significantly mediate the relationship between creative problem solving and innovative educator competence, nor between critical digital competence and innovative educator competence. EQ significantly mediates the relationship between CCC and EPF against IEC. These findings show the importance of emotional intelligence and soft skills in developing innovative teachers. Teacher education programs should enhance collaboration, self-awareness, and digital competencies to meet 21st century demands.

Questo studio analizza gli effetti diretti e indiretti delle competenze trasversali: Competenza di Collaborazione Comunicativa (CCC), *Creative Problem Solving* (CPS), Competenza Digitale Critica (CDC) e Professionalità Etica e Flessibilità (EPF), sulla Competenza dell'Educatore Innovativo (IEC), considerando l'Intelligenza Emo-

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tiva (EQ) come variabile mediatrice. La ricerca ha adottato un approccio quantitativo con un disegno di indagine esplicativo-predittivo. I dati sono stati raccolti da 130 studenti del Programma di Formazione Professionale degli Insegnanti tramite un questionario validato. L'analisi è stata condotta utilizzando il metodo *Partial Least Squares Structural Equation Modeling* (PLS-SEM) con SmartPLS 4. I risultati mostrano che CCC, CPS, CDC ed EPF influenzano significativamente la IEC, sia direttamente sia indirettamente attraverso EQ. Tuttavia, EQ non media in modo significativo le relazioni CPS-IEC e CDC-IEC. Al contrario, EQ media significativamente l'influenza di CCC ed EPF sulla IEC. I risultati evidenziano l'importanza dell'intelligenza emotiva e delle competenze trasversali nello sviluppo di educatori innovativi e suggeriscono di rafforzare collaborazione, consapevolezza emotiva e competenze digitali nei programmi di formazione degli insegnanti.

Keywords: emotional intelligence; soft skills; innovative educator competence; pre-service teachers; digital education

Parole chiave: intelligenza emotiva; competenze trasversali; competenza dell'educatore innovativo; insegnanti in formazione; educazione digitale

1. Introduction

Digital transformation has fundamentally reshaped educational systems, requiring teachers to assume roles that extend beyond knowledge transmission. In the 21st century, educators are expected to act as innovative, collaborative, and student-centered facilitators capable of adapting to rapid technological and societal changes (Irkha, 2024; Zolotarova et al., 2024). Globally, Teacher Education Programs have been redesigned to prepare prospective teachers for increasingly complex professional environments. In Europe, policy frameworks emphasize social-emotional and metacognitive competencies as central components of teacher preparation (Caena & Vuorikari, 2022), while in Australia structured mentoring systems align teacher preparation with national professional standards and reflective practice (Bradbury & Fitzgerald, 2025). In Indonesia, the Professional Teacher Education Program (PPG) highlights Innovative Educator Competence (IEC) as a primary indicator of teacher readiness in contemporary classrooms (Polishchuk, 2024). Within this context, soft skills and emotional intelligence (EQ) are increasingly recognized as critical dimensions supporting innovative teaching performance; for instance, recent empirical research shows that teachers' EQ is positively associated with innovative teaching behavior, demonstrating that higher EQ helps educators generate and implement creative instructional strategies in the classroom (Jiang & Tong, 2025).

International competency frameworks identify communication, collaboration, creativity, problem solving, and digital competence as essential capacities for educators navigating digital transformation. These competencies are commonly conceptualized as foundational soft skills that enable adaptive expertise and innovative professional practice. In teacher education contexts, soft skills extend beyond pedagogical knowledge to include interpersonal, cognitive, digital, and ethical-professional capacities that shape how teachers interact, reflect, and respond to instructional challenges. Empirical research supports this expanded view of teacher competencies, showing that teacher digital competences involve not only technology use but also communication, collaboration, creativity, and problem-solving skills that contribute to effective teaching in digital environments (Aydin et al., 2024; Falloon, 2020).

This study focuses on four interrelated soft skill dimensions. Communicative Collaboration Competence (CCC) refers to the ability to communicate ideas clearly, engage in constructive dialogue, and collaborate effectively with peers and students in instructional contexts. Creative Problem Solving (CPS) denotes the capacity to generate original and context-sensitive solutions to pedagogical challenges through flexible and innovative thinking. Critical Digital Competence (CDC) involves the critical evaluation, ethical use, and pedagogical integration of digital technologies to enhance learning processes. Ethical Professionalism and Flexibility (EPF) reflects adherence to professional ethics while demonstrating adaptability and responsiveness to diverse classroom needs and evolving educational demands. These constructs are operationalized using validated instruments adapted from (Mudarris et al., 2022; Groeneveld et al., 2026; Tzafilkou et al., 2023), ensuring conceptual clarity and alignment between theoretical definitions and measurement indicators.

Innovative Educator Competence (IEC) refers to the ability of prospective teachers to design and implement original, adaptive, and student-centered instructional practices that integrate collaboration, creativity, and digital technologies. IEC emphasizes digital pedagogical competence and creative instructional design to develop interactive, personalized learning environments that promote student engagement and higher-order thinking. Teachers with high IEC apply approaches such as project-based and game-based learning to foster creativity, critical thinking, communication, and collaboration while maintaining learner-centered principles (Nafasabilla,

2025). Additionally, integrating digital competence into teacher preparation supports meaningful use of technology in instructional processes, enhancing readiness to address changing educational demands and digital transformation in education (Köstler & Wolff, 2025).

The present study positions Emotional Intelligence (EQ) as a central psychological construct within this framework. Emotional intelligence is defined as the ability to perceive, understand, regulate, and utilize emotions effectively in personal and professional contexts, supporting adaptive functioning and professional performance in educational settings (Calandri et al., 2025; Matjie, 2025). In teacher education, EQ extends beyond pedagogical knowledge to include emotional awareness, empathy, interpersonal sensitivity, and emotion regulation competencies that shape teachers' interactions in collaborative, project-based, and digitally mediated learning environments. Empirical evidence further suggests that emotionally intelligent teachers demonstrate stronger reflective practice and creative instructional behaviors, enabling them to respond effectively to instructional challenges and foster innovative teaching practices (Shi et al., 2025).

While much of the existing literature conceptualizes EQ as a direct antecedent of professional performance, theoretical reasoning suggests that emotional intelligence may also function as a mediating psychological mechanism that channels foundational soft skills into innovative competence. Effective communication and collaboration may strengthen emotional awareness and interpersonal sensitivity, which subsequently facilitate innovative instructional practices. Similarly, ethical professionalism and flexibility require emotional regulation and empathy to respond constructively to change (Fernández-Morante et al., 2023; Firmanto & Martinouva, 2020). Thus, EQ is conceptualized in this study not merely as a predictor, but as an explanatory process linking soft skills to Innovative Educator Competence.

Recent empirical studies further support this mediating perspective. Research with pre-service teachers demonstrates that emotional intelligence influences innovative teaching behaviors through mediating mechanisms such as psychological empowerment and career commitment (Jiang & Tong, 2025). Likewise, emotional competence has been shown to promote innovative instruction through mediators such as teaching efficacy and work vitality (Li et al., 2025). These findings suggest that emotional capacities operate as internal regulatory processes that facilitate the transformation of professional competencies into innovative teaching practices.

However, empirical findings regarding the role of EQ in educational contexts remain mixed. Recent studies suggest that EQ functions as a psychological mechanism linking educators' professional and collaborative competencies with innovative teaching practices (Jiang & Tong, 2025; Su et al., 2022). In contrast, studies conducted in different contexts report non-significant relationships between EQ and certain academic outcomes (Nieto-Carracedo et al., 2024). Although these studies examine different populations and dependent variables, the variation in findings underscores the need for further empirical clarification regarding the functional role of EQ. Furthermore, Sydorenko et al. (2022) provide a conceptual discussion on the contribution of soft skills to innovative teaching practice, yet empirical investigations explicitly examining EQ as a mediating mechanism remain limited.

Despite the growing body of research on soft skills and emotional intelligence in teacher education, several important gaps remain. Most empirical studies examine these competencies separately or primarily focus on their direct relationships with professional outcomes such as teaching creativity and innovative teaching behavior (Jiang & Tong, 2025; Su et al., 2022). Although conceptual discussions emphasize the contribution of soft skills to innovative teaching (Sydorenko et al., 2022), limited research has simultaneously integrated multiple soft skill dimensions and positioned emotional intelligence as a mediating psychological mechanism explaining how these competencies translate into Innovative Educator Competence. Furthermore, empirical evidence from Southeast Asian teacher education contexts, particularly within Indonesia's Professional Teacher Education

Program (PPG), remains scarce. Consequently, the underlying psychological processes linking soft skills to Innovative Educator Competence have not been comprehensively clarified.

To address these gaps, this study investigates the mediating role of Emotional Intelligence (EQ) in the relationship between soft skills (CCC, CPS, CDC, and EPF) and Innovative Educator Competence (IEC) among prospective teachers enrolled in the Indonesian PPG program. By integrating soft skills theory with emotional intelligence frameworks, this study aims to clarify the psychological mechanism linking interpersonal, cognitive, digital, and ethical-professional competencies to innovative educator performance. Methodologically, the use of Partial Least Squares Structural Equation Modeling (PLS-SEM) enables simultaneous testing of direct and indirect relationships within a complex structural model suitable for educational samples (Hair et al., 2019; Sarstedt et al., 2022). This study therefore aims to: (1) analyze the direct influence of CCC, CPS, CDC, and EPF on IEC; and (2) examine their indirect influence through EQ mediation.

2. Methodology

This study employed a quantitative explanatory–predictive survey design to examine the direct and mediating relationships among soft skills, Emotional Intelligence (EQ), and Innovative Educator Competence (IEC). The analysis applied Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS 4. PLS-SEM was selected due to its suitability for predictive-oriented research, complex mediation structures, and models with multiple latent constructs. Additionally, PLS-SEM does not require strict multivariate normality assumptions and is appropriate for small to medium sample sizes (Henseler, 2018; Hair et al., 2019; Sarstedt et al., 2022). The participants consisted of 130 Professional Teacher Education (PPG) students from three study programs: Indonesian Education, Mathematics Education, and English Education. This number represented the total accessible population during the data collection period (April–May 2025). Methodologically, the sample size satisfies the recommended minimum requirements for PLS-SEM. According to the “10-times rule,” the minimum sample size should be at least ten times the largest number of indicators used to measure a construct (Barclay et al., 1995; Hair et al., 2021). In this study, the construct with the highest number of indicators was Creative and Critical Communication (CCC), which was measured by 12 items; therefore, the minimum required sample size was 120 respondents. With a total sample of 130 respondents, this study exceeds the minimum requirement. Furthermore, recent methodological literature indicates that samples above 100 provide stable parameter estimation and adequate statistical power for models of moderate complexity (Sarstedt et al., 2022). Therefore, the sample size of 130 is considered statistically sufficient for PLS-SEM analysis.

Participants were selected using convenience sampling, a non-probability technique based on accessibility and voluntary participation (Andrade, 2021). All respondents participated voluntarily after providing informed consent. They were assured of anonymity, confidentiality, and the right to withdraw at any time without consequences. Institutional approval for data collection was obtained prior to the study.

Data were collected using adapted questionnaires measuring six constructs. Creative and Critical Communication (CCC) was measured using 12 items adapted from Noviana et al. (2019); Creative Problem Solving (CPS) with 11 items adapted from Groeneveld et al. (2026); Collaborative Digital Competence (CDC) with 10 items adapted from Tzafilkou et al. (2023); Ethical Professionalism and Flexibility (EPF) with 8 items adapted from Cignachi et al. (2023) and Mudarris et al. (2022); Emotional Intelligence (EQ) with 5 items adapted from Drigas & Papoutsis (2021); and Innovative Educator Competence (IEC) with 6 items adapted from Alias et al. (2022). All items were rated using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The instrument adaptation process followed systematic procedures to ensure conceptual equivalence and contextual relevance within the Professional Teacher Education (PPG) setting. The process included translation

and linguistic refinement, alignment with construct definitions, and contextual adjustment. Prior to full administration, content validity was established through expert judgment involving three experts in educational psychology and teacher education. Each expert evaluated the items in terms of relevance, clarity, representativeness, and alignment with theoretical constructs. The Content Validity Ratio (CVR) was calculated to quantify the degree of expert agreement. The analysis yielded a CVR value of 0.82, indicating strong expert consensus regarding item relevance based on established content validity criteria (Bujang et al., 2025; Hamdan et al., 2025). Several minor wording refinements were made based on expert feedback to enhance clarity and contextual appropriateness.

A separate pilot test was not conducted because the instruments were adapted from previously validated and psychometrically established scales. For adapted instruments with strong theoretical and empirical foundations, expert-based content validation combined with full measurement model evaluation in PLS-SEM is considered methodologically sufficient to establish construct validity and reliability (Hair et al., 2019; Sarstedt et al., 2022). Subsequent empirical validation was conducted through measurement model assessment using the full study sample.

Prior to hypothesis testing, data screening procedures were performed. Missing values were examined and found to be minimal and within acceptable limits. Outliers were assessed using standardized residuals and Mahalanobis distance, with no extreme multivariate outliers identified. Although PLS-SEM does not require normally distributed data, descriptive examination of skewness and kurtosis was conducted to understand distributional characteristics (Hair et al., 2019). Given the conceptual proximity among the soft-skill constructs, multicollinearity was assessed using Variance Inflation Factor (VIF) values, and all VIF values were below the recommended threshold of 5, indicating no critical collinearity issues (Hair et al., 2021).

The analysis followed the two-stage PLS-SEM approach. The measurement model was evaluated by examining indicator loadings (> 0.70), internal consistency reliability using Cronbach's alpha and Composite Reliability (> 0.70), convergent validity through Average Variance Extracted ($AVE > 0.50$), and discriminant validity using the Fornell–Larcker criterion and the Heterotrait–Monotrait ratio ($HTMT < 0.90$) (Hair et al., 2019; Sarstedt et al., 2022). The structural model was assessed by analyzing path coefficients, coefficient of determination (R^2), effect sizes (f^2), and predictive relevance (Q^2). Statistical significance of direct and indirect effects was tested using bootstrapping with 5,000 resamples and bias-corrected confidence intervals to evaluate mediation effects. Overall, this methodological procedure ensures transparency, statistical rigor, and reproducibility in examining the mediating role of Emotional Intelligence in the relationship between soft skills and Innovative Educator Competence.

3. Results

The research was conducted from April 12 to May 30, 2025 with a total of 130 respondents used in this study, with details as shown in Table 1.

Table 1

Respondents of Students of the Professional Education Study Program for Prospective Teachers (PPG Pre-Service) Semester II at FKIP Unisma

| Gender, male, female | | Gender | | |
|---|--------|----------------|------|--------|
| Field of Study for Prospective Teachers | Number | Percentage (%) | Male | Female |
| | | | | |

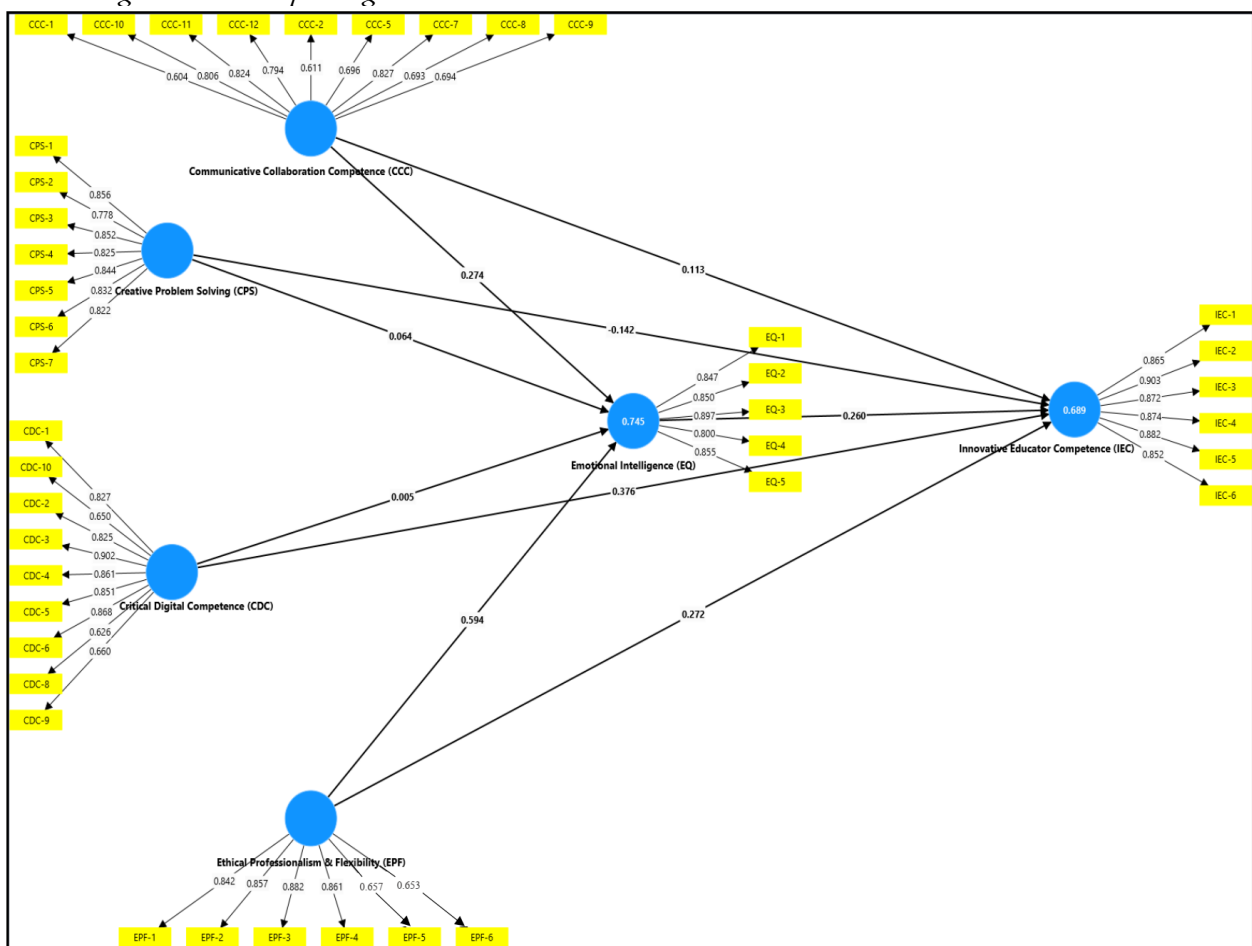
| | | | | |
|-------------|-----|------|----|-----|
| Indonesian | 25 | 19,2 | 3 | 22 |
| English | 37 | 28,5 | 9 | 28 |
| Mathematics | 68 | 52,3 | 11 | 57 |
| Number | 130 | 100 | 23 | 107 |

Data were collected through a questionnaire and analyzed using PLS-SEM with SmartPLS 4. The analysis included evaluation of the measurement model (outer model) and structural model (inner model), including bootstrapping and blindfolding procedures in accordance with current PLS-SEM reporting standards (Hair et al., 2019; Sarstedt et al., 2022).

3.1 Evaluation of Measurement Models (Outer Model)

The evaluation of the measurement model was conducted to ensure that the instrument met validity and reliability standards through convergent validity, indicator reliability, internal consistency reliability, and discriminant validity (Hair et al., 2019; Henseler, 2018; Ghasemy et al., 2021). The results are shown on the outer model diagram of the SmartPLS 4 output (Figure 1).

Figure 1
Model Diagram PLS Output Algorithm Outer Model



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Figure 1 shows that after removing indicators below 0.60, most items had factor loadings above 0.70, with some ranging from 0.60 to 0.70. According to Hair et al. (2019) and Gutu et al (2024), indicators with loadings between 0.60 and 0.70 may be retained provided that the Average Variance Extracted (AVE) and Composite Reliability (CR) meet acceptable thresholds. In this study, all constructs demonstrated AVE values greater than 0.50, confirming convergent validity. AVE serves as the primary criterion for convergent validity because it reflects the proportion of variance explained by the construct relative to measurement error (Sarstedt et al., 2022). Indicator reliability was further evaluated by examining the squared loadings (loading²). All retained indicators showed loading² values above 0.50, indicating that each indicator adequately explains its construct variance. Internal consistency reliability was assessed using Cronbach’s Alpha, Composite Reliability (CR), and rho_A (ρ_A). All constructs demonstrated Cronbach’s Alpha, CR, and ρ_A values above 0.70, indicating satisfactory internal consistency reliability and construct reliability (Hair et al., 2021).

Discriminant validity was assessed using the Heterotrait–Monotrait Ratio (HTMT). All HTMT values were below the recommended threshold of 0.85, indicating adequate discriminant validity among the constructs (Henseler et al., 2015; Roemer & Schuberth, 2026). Based on these results, the measurement model met all validity and reliability criteria and was deemed appropriate for structural model evaluation.

3.2 Evaluation of Structural Models (Inner Model)

The structural model evaluation assessed relationships among variables through path coefficients and included multicollinearity testing, coefficient of determination (R^2), predictive relevance (Q^2), model fit assessment, effect size (f^2), and bootstrapping procedures (Hair et al., 2019; Sarstedt et al., 2022).

3.3 SmartPLS4 Multicollinearity Assumption Test

The multicollinearity test showed that all VIF values in the inner model for exogenous variables (CCC, CPS, CDC, EPF), mediator (EQ), and endogenous (IEC) were below 5.00. Thus, no collinearity issues were detected, and the model met the assumption requirements for further analysis (Hair et al., 2019).

3.4 Evaluation of Model Quality and Fit

3.4.1 Inner Model Feasibility Analysis via R Square

The model is worth further testing by bootstrapping because the R Square values of 0.543 (moderate) and 0.354 (weak), meet the model feasibility criteria (green indicator on SmartPLS4), as shown in Table 2.

Table 2

Determination Coefficient R Square

| Mediator Variable and Endogen | R-square | R-square adjusted | Interpretation |
|--------------------------------------|----------|-------------------|----------------|
| Emotional Intelligence (EQ) | 0.545 | 0.536 | Strong |
| Innovative Educator Competence (IEC) | 0.689 | 0.676 | Strong |

Based on Table 2, it is shown that, Emotional Intelligence (EQ) obtained an R^2 value of 0.545 and adjusted R^2 of 0.536, indicating that 54.5% of the variance in EQ is explained by CCC, CPS, CDC, and EPF. Innovative Educator Competence (IEC) obtained an R^2 value of 0.689 and adjusted R^2 of 0.676, indicating that 68.9% of the variance in IEC is explained by CCC, CPS, CDC, EPF, and EQ. According to Hair et al. (2019), R^2 values of 0.50–0.75 indicate moderate to substantial explanatory power. Therefore, the structural model demonstrates substantial explanatory capability.

3.4.2 SmartPLS4 Standardized Root Mean Residual and No Fit Index Feasibility Analysis

Model fit in PLS-SEM was assessed using the Standardized Root Mean Square Residual (SRMR) and the bootstrapped confidence intervals of d_ ULS and d_ G. The SRMR value met the recommended threshold ($\leq 0.08-0.10$), indicating acceptable model fit. Furthermore, the original values of d_ ULS and d_ G were lower than their respective 95% bootstrapped confidence interval upper bounds, confirming adequate global model fit (Henseler et al., 2021).

Chi-square and NFI were not emphasized because they are not primary goodness-of-fit indices in variance-based SEM.

3.4.3 Eligibility Analysis through Predictive Relevance Q Square (Q^2)

Predictive relevance was assessed using the blindfolding procedure. All endogenous constructs showed Q^2 values greater than zero, indicating predictive relevance. Based on established guidelines (Hair et al., 2019), the Q^2 values indicate moderate predictive relevance for EQ and substantial predictive relevance for IEC. This suggests that the model has adequate out-of-sample predictive capability.

3.5 Research Hypothesis Testing (Structural Model Analysis)

This study analyzed the direct and indirect influence between exogenous variables (CCC, CPS, CDC, EPF), mediator (EQ), and endogenous (IEC) using SmartPLS 4 with a bootstrapping model, where the decision was based on a p value ≤ 0.05 .

Hypothesis testing was conducted using bootstrapping with 5,000 subsamples. Decisions were based on p-value ≤ 0.05 , t-value ≥ 1.96 , and 95% bias-corrected confidence intervals that did not include zero (Sarstedt et al., 2022). Effect sizes (f^2) were also calculated, where 0.02 indicates small, 0.15 medium, and 0.35 large effects (Hair et al., 2019).

3.6 Direct Impact Analysis

The analysis of the relationship between variables produced 9 interpretation models, with decisions based on p value ≤ 0.05 and T calculated ≥ 1.96 which showed a significant influence. The full bootstrapping results are presented in Table 3.

Table 3

Hypothesis Testing Based on Direct Influence Through Path Coefficients and P-Values at a Significance Level of 5%.

| No. | Kode Hypothesis | Relationships Between Variables | T Count | P Value | Hypothetical Decision |
|-----|-----------------|---------------------------------|---------|---------|-----------------------|
| 1 | H1 | CCC → EQ | 3.019 | 0.001 | Accepted |
| 2 | H2 | CCC → IEC | 1.985 | 0.016 | Accepted |
| 3 | H3 | CPS → EQ | 0.749 | 0.227 | Rejected |
| 4 | H4 | CPS → IEC | 2.652 | 0.049 | Accepted |
| 5 | H5 | CDC → EQ | 0.048 | 0.481 | Rejected |
| 6 | H6 | CDC → IEC | 3.573 | 0.000 | Accepted |
| 7 | H7 | EQ → IEC | 2.030 | 0.021 | Accepted |

| | | | | | |
|---|----|-----------|-------|-------|----------|
| 8 | H8 | EPF → EQ | 7.068 | 0.000 | Accepted |
| 9 | H9 | EPF → IEC | 2.219 | 0.013 | Accepted |

Based on Table 3, the research results show that CCC significantly influences EQ and IEC; CPS significantly influences IEC but not EQ; CDC significantly influences IEC but not EQ; EQ significantly influences IEC; and EPF significantly influences both EQ and IEC. Effect size analysis shows that EPF → EQ demonstrates the strongest effect among the predictors, while other significant paths exhibit small to moderate effect sizes. The confidence intervals for all significant paths did not include zero, confirming the robustness of the findings.

3.7 Indirect Influence Analysis

The results of testing the indirect influence hypothesis between exogenous variables and endogenous variables through *the Bootstrapping procedure* based on indirect influences, namely the results of *Path Coefficient* and *P-Values* with a significance level of 5%, as presented in Table 4.

Table 4

Hypothesis Testing Based on Indirect Influence Through Path Coefficients and P-Values at a Significance Level of 5%

| No | Kode Hypothesis | Relationships Between Variables (Mediated by EQ) | T Count | P Value | Hypothetical Decision |
|----|-----------------|--|---------|---------|-----------------------|
| 1 | H10 | CCC → EQ → IEC | 1.973 | 0.047 | Accepted |
| 2 | H11 | CPS → EQ → IEC | 0.637 | 0.262 | Rejected |
| 3 | H12 | CDC → EQ → IEC | 0.045 | 0.482 | Rejected |
| 4 | H13 | EPF → EQ → IEC | 1.957 | 0.025 | Accepted |

Based on Table 4, the research results show that CCC → EQ → IEC and EPF → EQ → IEC are significant, indicating partial mediation by Emotional Intelligence. Meanwhile, CPS → EQ → IEC and CDC → EQ → IEC are not significant. The confidence intervals for significant indirect effects excluded zero, confirming mediation effects.

4. Discussion

This study investigated how four soft skills Creative and Critical Communication (CCC), Creative Problem Solving (CPS), Collaborative Digital Competence (CDC), and Ethical Professionalism and Flexibility (EPF) affect Innovative Educator Competence (IEC), both directly and indirectly through Emotional Intelligence (EQ), among PPG Pre-service students. The findings reveal a differentiated pattern: interpersonal-oriented competencies (CCC and EPF) significantly predict EQ and indirectly influence IEC, whereas cognitively and technically oriented competencies (CPS and CDC) do not significantly predict EQ, although they still contribute directly to IEC. This pattern clarifies that soft skills impact innovation in teacher education via both cognitive–technical and affective–ethical pathways.

Specifically, CCC significantly predicts both EQ and IEC, and also demonstrates an indirect effect through EQ. This aligns with studies indicating that collaborative communication fosters emotional awareness, self-regulation, and empathy (Alba-Juez & Pérez-González, 2019; Gilar-Corbi et al., 2018), while reducing stress through social support mechanisms (Lisdayani et al., 2021). In teacher education, CCC enhances emotional competence and stress management, supporting adaptive and innovative teaching practices (Rey et al., 2016; Zhang et al., 2023). The mediation via EQ suggests that collaboration promotes innovation not only through



technical interaction but also by shaping affective skills, confirming the importance of relational competencies for professional development in teaching contexts (Munir et al., 2025).

EPF also emerges as a strong predictor of EQ and IEC, with a significant indirect pathway via EQ. Ethical commitment and professional flexibility enhance emotional regulation and responsible decision-making (Asadova, 2025; Mosallanezhad et al., 2023), which in turn support innovative pedagogical practices. The direct path from EPF to EQ indicates that ethical sensitivity is closely linked to emotional competence, echoing previous research showing that professional ethics improve empathy, social responsibility, and student-centered decision-making in educational settings (Ashraf et al., 2017; Mosallanezhad et al., 2023). These results highlight that ethics and professional flexibility are not just behavioral attributes but are instrumental in fostering emotional intelligence, which mediates their impact on innovation.

In contrast, CPS and CDC did not significantly predict EQ, suggesting that these competencies primarily operate as cognitive or technical skills rather than affective ones. Although CPS theoretically supports emotion management and empathy, its influence on EQ appears indirect and contingent on supportive social-emotional interventions (Kripal & Reiter-Palmon, 2024; Yuniasih et al., 2025). EQ development tends to be more responsive to social-affective experiences than purely cognitive training (Tong et al., 2022). Similarly, CDC did not significantly influence EQ, consistent with findings that digital competence impacts outcomes indirectly through contextual factors and attitudes, and excessive reliance on digital technologies may even diminish emotional sensitivity (Alcocer-Sánchez et al., 2023; Audrin & Audrin, 2023; Imjai et al., 2024). These results suggest that emotional intelligence in teacher education is more strongly shaped by interpersonal and ethical engagement than by cognitive or technical skills.

Nevertheless, both CPS and CDC significantly predicted IEC directly, confirming that cognitive problem-solving and digital mastery remain essential drivers of innovative educator competence (Saeed & Ramdane, 2022; Díaz-Suárez et al., 2025). CPS enhances creativity, adaptive instructional design, and reflective problem-solving, especially when integrated with AI and technology (Khaerunnisa et al., 2024; Zha et al., 2025). CDC supports innovative assessment, digital pedagogy, and student engagement (Avci, 2024; Núñez-Canal et al., 2022). Thus, innovation in teacher education emerges from **two complementary pathways**: a cognitive–technical route (CPS and CDC) and an interpersonal–ethical route (CCC and EPF), with the latter operating partly through EQ.

EQ itself plays a selective yet critical mediating role. It strengthens the translation of relational and ethical competencies into IEC by enhancing empathy, professional interaction, and adaptive teaching behavior (Asadova, 2025; Ramly et al., 2024). However, its mediating effect is not universal; it is prominent when antecedent competencies are affectively grounded, such as CCC and EPF, but negligible for CPS and CDC. This insight contributes to theoretical discussions about the conditional mediating role of EQ, highlighting that emotional intelligence selectively channels certain soft skills toward innovative outcomes.

Overall, the findings indicate that effective innovation in teacher education depends on integrating cognitive, technical, interpersonal, and ethical competencies, with emotional intelligence serving as a key affective enabler for relationally and ethically grounded skills. This model provides guidance for structuring professional teacher education programs, emphasizing that innovation is not solely a technical or cognitive achievement but emerges from the interaction of cognitive, ethical, and emotional capacities.

5. Conclusion

This study shows that Creative and Critical Communication (CCC) and Ethical Professionalism and Flexibility (EPF) significantly influence Innovative Educator Competence (IEC) both directly and indirectly through Emotional Intelligence (EQ), while Creative Problem Solving (CPS) and Collaborative Digital Competence (CDC) contribute directly to IEC but do not significantly affect EQ. Emotional intelligence selectively mediates relational and ethical competencies, highlighting its role in enhancing innovation through interpersonal and ethical pathways.

The findings suggest that teacher education programs should integrate training on collaborative communication, professional ethics, and emotional intelligence, while linking cognitive and digital skills to social-emotional development to foster more effective and innovative educators.

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