

## Feedback Mechanism in Teacher Training at Higher Education Institution: A Convergent Mixed Methods Design

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### Abstract

This study employs a convergent mixed methods design to thoroughly investigate the multifaceted feedback mechanisms integral to teacher training programs within higher education institutions [4]. There were 109 teachers specializing in education and language studies participated in this 3-day intensive training on the application of learning management system in the classroom. They were required to accomplish a feedback evaluation survey with both quantitative and qualitative measures via essay responses and FGD. Employing a convergent mixed methods design, the quantitative components: were correlated with the dominant themes of the qualitative essay data and FGD. The Chi-Square statistics proved that the teachers' feedback of the teaching training associated significantly with their expectations and benefits of the training. This study allows for a comprehensive understanding by integrating quantitative and qualitative data on various feedback modalities, including those from university supervisors, school mentors, and peers [11]. This integrated perspective is crucial for identifying how feedback influences the development of lifelong learning dispositions in pre-service teachers [4]. Specifically, this research examines whether practice-based curricula foster opportunities for pre-service teachers to cultivate lifelong learning dispositions and how feedback on assessment tasks within campus coursework promotes these dispositions [4]. It further delves into the optimal delivery methods for such feedback to maximize its impact on fostering continuous professional growth among future educators [4]. The overarching goal is to understand how feedback, particularly within a practice-based curriculum, contributes to pre-service teachers' acquisition of critical dispositions such as curiosity, motivation, perseverance, and self-regulation, which are essential for lifelong learning [4]. Furthermore, this investigation explores the nuances of feedback delivery, including its authenticity, source (teacher educators and peers), and content (positive and negative comments with practical advice), to ascertain its efficacy in promoting these vital attributes [4]. The study also explores how feedback linked to authentic tasks and incorporating both positive and negative comments, alongside practical guidance, contributes to these outcomes [4].

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**Keywords:** *Teacher Education, Feedback Mechanisms, Engagement Challenge, Time Management Convergent Mixed-Methods, Chi-Square Correlations*

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## 1. Introduction

This holistic understanding is critical for refining educational programs and instructional strategies, thereby fostering an educational ecosystem conducive to the sustained growth of these dispositions [4]. The integration of digital technologies within campus initiatives can further enhance these feedback mechanisms, transforming higher education institutions into "living labs" that stimulate innovation and practical learning beyond traditional boundaries [9]. However, challenges persist in developing robust technological frameworks that can accommodate continuous adaptations by educators and address ethical concerns regarding data privacy in capturing classroom interactions [9]. Such frameworks must, therefore, prioritize ethical considerations and data security while enabling flexible and adaptive feedback system. The development of such systems is crucial for supporting the iterative nature of feedback, wherein pre-service teachers utilize feedback from practical tasks to guide adjustments and improvements, thereby fostering motivation, perseverance, and self-regulation. This iterative process, characterized by opportunities to review thoughts, act on feedback, and seek alternative solutions, directly cultivates lifelong learning dispositions. This comprehensive approach ensures that pre-service teachers not only acquire foundational teaching practices but also internalize the complex interplay of skills required for continuous professional development [4].

### Theoretical Framework

This study is supported by a framework emphasizing the critical role of teacher feedback in assessing and improving teacher training programs. Teacher feedback provides valuable insights into the clarity of content, curriculum design, and management effectiveness, enabling targeted enhancements in training delivery. Such feedback mechanisms capture teachers' assessments of engagement quality, resource speaker performance, and session sequencing, which are pivotal for addressing challenges like time management and maintaining participant motivation. Moreover, integrating both qualitative and quantitative feedback allows for a comprehensive evaluation of training effectiveness, validating participant perceptions and informing iterative improvements. Therefore, systematic collection and analysis of teacher feedback on training initiatives are essential to ensure these programs meet educators' needs, foster professional growth, and adapt to evolving educational demands. This necessitates a structured approach where feedback, particularly when tied to authentic assessment tasks that simulate in-service duties, becomes a pivotal mechanism for promoting these critical traits [4]. Research indicates that feedback on assessment tasks, especially within a practice-based curriculum, can significantly foster lifelong learning dispositions in pre-service teachers by encouraging self-regulation and deeper engagement with learning objectives [4]. This framework also acknowledges the critical role of metacognitive reflection, where pre-service teachers analyze their learning processes and apply feedback to refine their pedagogical approaches. Specifically, the implementation of personalized learning principles, such as individualized instructional goals and learner control, within microteaching contexts allows pre-service teachers to identify their developmental gaps and adapt their teaching competencies [12]. This tailored approach enables a more effective cultivation of dispositions such as curiosity, motivation, and perseverance, as learners are actively involved in shaping their educational trajectories [4]. Moreover, opportunities for repeated practice and personalized feedback on recorded sessions further solidify these dispositions by promoting skill execution and self-efficacy in teaching graduates (Ledger & Fischetti, 2019). This alignment with self-regulated learning

theory underscores the importance of pre-service teachers setting goals, monitoring their progress, and adapting strategies, thereby reinforcing their capacity for continuous improvement and autonomous learning [13].

### **Literature Review**

Existing scholarship consistently highlights the pivotal role of feedback in fostering lifelong learning dispositions within pre-service teachers, encompassing traits such as curiosity, motivation, perseverance, and self-regulation [4]. A balanced approach to feedback, incorporating both positive reinforcement and constructive criticism, is critical for increasing pre-service teachers' receptiveness to new ideas and enhancing their motivation for continuous improvement [4]. This extends beyond immediate task completion, preparing future educators to effectively collect and interpret classroom data from their own students, thereby cultivating a continuous cycle of pedagogical refinement [4]. This self-regulatory capacity is further enhanced when feedback is tied to authentic tasks and provided by both teacher educators and peers, offering diverse perspectives on performance [4]. However, despite the acknowledged importance of feedback in developing self-regulated learning, research specifically examining pre-service teachers' mindsets and feedback patterns remains limited [10]. This gap underscores the necessity for research that directly investigates how different feedback types influence pre-service teachers' cognitive and affective states, ultimately impacting their engagement with lifelong learning [4]. Moreover, understanding the mechanisms through which feedback cultivates perseverance—particularly through process-oriented feedback on complex tasks and goal-directed actions—is crucial for designing effective teacher training programs [4]. The efficacy of feedback in developing these dispositions is further amplified when it prompts reflection and encourages pre-service teachers to proactively adjust their instructional strategies, thereby fostering self-regulation of learning and intrinsic motivation [4]. This proactive engagement is essential, as the teaching profession increasingly demands the integration of diverse knowledge, skills, and attitudes in dynamic, real-world contexts, necessitating continuous learning and adaptation [4]. Consequently, feedback plays a crucial role in empowering pre-service teachers to develop self-regulated skills and take ownership of their learning journey [8]. This underscores the need for feedback mechanisms to not only pinpoint areas for improvement but also to instill a sense of agency and confidence in pre-service teachers, encouraging them to view challenges as opportunities for growth rather than deficits [4]. Such an approach ensures that feedback is not merely evaluative but transformative, fostering a deep understanding of pedagogical practices and cultivating a proactive mindset towards continuous professional development [4]. This necessitates that feedback strategies within teacher training programs extend beyond immediate performance assessment to actively cultivate metacognitive skills and intrinsic motivation, fostering an adaptive and resilient professional identity [4]. The emphasis on practice-based curricula within these programs has notably advanced the implementation of enactment pedagogy, which involves the deconstruction, representation, and approximation of educational practices, both in fieldwork and campus coursework [4]. Each cycle within this pedagogical framework typically progresses through distinct phases: an introduction to the activity, preparation and rehearsal, enactment with students, and a subsequent analysis of the enactment, which then informs future practice [4]. This cyclical process, particularly the analytical phase, provides rich opportunities for diverse feedback that targets both immediate instructional improvements and the cultivation of enduring professional dispositions [14]. This emphasis on

practice-based learning highlights the importance of feedback that extends beyond simple evaluation, promoting a dialogic approach where learners and stakeholders collaboratively construct meaning [15]. This approach often integrates opportunities for self, peer, and lecturer feedback around active homework tasks, fostering a comprehensive understanding of teaching practices [16];[4]. Such multi-faceted feedback, especially when enhanced by technology, can significantly motivate student teachers, personalize their learning experiences, and ultimately improve teaching performance [17]. Furthermore, integrating diverse feedback modalities, such as video-based reflection and guided self-assessment, allows pre-service teachers to critically analyze their performance, leading to enhanced self-efficacy and deeper pedagogical understanding [18]. These feedback mechanisms, particularly when delivered iteratively and accompanied by opportunities for practical application and peer discussion, are instrumental in deepening pre-service teachers' assessment literacy and their ability to integrate research-based practices into their future classrooms [19] [6]. This holistic approach to feedback not only refines immediate teaching competencies but also instills a professional identity characterized by continuous learning and adaptability [20]. The complexities inherent in feedback for pre-service teachers, particularly during the teaching practicum, have been recognized as a "wicked problem," further exacerbated by challenges such as those presented during the COVID-19 pandemic [17]. This recognition necessitates a re-evaluation of existing feedback frameworks, exploring innovative strategies that can adapt to unforeseen disruptions and still effectively support pre-service teacher development. Therefore, there is a compelling need to investigate the efficacy of convergent mixed-methods designs in comprehensively analyzing feedback mechanisms within teacher training, particularly concerning their capacity to foster resilience and adaptability in future educators. This approach allows for a deeper understanding of the interplay between quantitative feedback metrics and qualitative experiential data, offering insights into the multifaceted impact of feedback on pedagogical growth. By integrating both numerical and narrative data, such designs can illuminate not only what aspects of feedback are effective, but also why they resonate with pre-service teachers, thereby informing more robust and responsive teacher education policies and practices. Specifically, such designs can rigorously evaluate how various feedback interventions contribute to improvements in teaching efficacy and pedagogical content knowledge, utilizing objective measures alongside subjective perceptions of growth [5].

### **Statement of the Problem**

1. What is the assessment of HEI teachers on a training program about learning management system?
2. How do teachers present their feedback pertaining to the overall assessment of the training program, management team, content and the performance of the resource persons?

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## **2. Methodology**

This study employed a convergent mixed-methods design, which integrates quantitative and qualitative data collection and analysis to provide a comprehensive understanding of feedback mechanisms in teacher training [4];[21]. This methodology allowed for a robust triangulation of

findings, enhancing the validity and reliability of the conclusions drawn regarding the impact of feedback on pre-service teacher development. This approach ensures that both the breadth and depth of the feedback experience are captured, offering a nuanced perspective on its role in shaping future educators. Specifically, the convergent design facilitated the simultaneous collection and analysis of diverse data types, enabling direct comparison and integration of insights from quantitative performance metrics and qualitative lived experiences of feedback [4]. The concurrent integration of these distinct data streams allowed for cross-validation and the identification of emergent themes that might not have been apparent through a monomethod approach. This design is particularly advantageous for exploring complex educational phenomena where a singular focus on either numerical data or narrative accounts would present an incomplete picture. By synthesizing these different data sources, researchers can develop a more holistic understanding of how various feedback strategies contribute to pre-service teachers' pedagogical growth and professional identity formation. This integrated perspective is crucial for developing evidence-based practices in teacher education that can effectively leverage feedback to cultivate adaptable and reflective practitioners. This robust methodology ensures that the findings are not only statistically significant but also contextually rich, providing actionable insights for improving teacher training programs. This approach is especially beneficial for addressing potential response-shift bias, as it allows for a more accurate assessment of changes in trainees' perceptions and confidence over time [6]. Such mixed-methods designs, which simultaneously collect quantitative and qualitative data, offer a more profound interpretation of complex research questions by providing both breadth and depth [22]. This comprehensive understanding is particularly vital in educational research, where the nuances of human learning and development often defy simplistic categorization. Therefore, the integration of both objective and subjective data streams through a convergent mixed-methods design provides a robust framework for investigating the efficacy of feedback mechanisms in fostering pre-service teachers' professional growth and adaptability. This design allows for the exploration of how structured feedback, combined with mentor support, influences pre-service teachers' metacognitive development and addresses their anxieties [23].

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### **3. Results**

The correlation between feedback themes derived from qualitative data and quantitative evaluation parameter ratings was analyzed using Chi-Square statistics, confirming significant associations across key dimensions of the teacher training program. This integrative analysis highlights how qualitative insights from participant feedback align with and explicate the frequency distributions observed in the rating scales—Poor, Fair, Good, Better, and Best—providing a comprehensive assessment of training efficacy and areas for improvement.

## Correlation of Themes with Evaluation Parameter Ratings:

### 1. Overall/General Assessment of Training:

- Quantitative ratings predominantly fell within the "Better" and "Best" categories, reflecting high overall satisfaction.
- Qualitative themes reinforced this positive appraisal, with 95% of participants expressing that the training was very satisfactory.
- The Chi-Square test indicated a statistically significant relationship ( $p < 0.05$ ) between favorable qualitative themes and high quantitative ratings, aligning with the consensus that the program met participant needs effectively.

### 2. Content Clarity, Comprehensiveness, and Relevance:

- Content-related parameters received 95% ratings in the top categories ("Better" and "Best").
- Participants highlighted the clarity and applicability of topics, indicating strong curriculum design as a core strength.
- Statistical correlation showed that positive content feedback themes significantly aligned with frequency counts of higher ratings ( $p < 0.05$ ), confirming content's pivotal role in satisfaction.

### 3. Management Team Performance:

- High frequencies of "Better" and "Best" responses (98%) were recorded for Secretariat support, venue, and management effectiveness.
- Qualitative data emphasized the efficiency and preparedness of the management team ( $f=95$ ), corroborating the smooth logistical execution of training.
- Chi-Square analyses reflected a significant association between management-related positive themes and quantitative ratings ( $p < 0.01$ ), underscoring its critical influence on training success.

### 4. Resource Speakers' Competency and Delivery:

- Ratings for speaker mastery and engagement hovered around 90% in "Better" and "Best" categories but were comparatively lower than other parameters.
- Qualitative themes suggested that while speakers were knowledgeable, improvements are needed in engagement strategies, clarity, and systematic sequencing of topics to enhance participant involvement and learning efficacy.
- Chi-Square tests confirmed a significant correlation ( $p < 0.05$ ) between participant concerns about timing and sequencing and the distribution of moderate rather than top-tier ratings, signaling the need to address these specific areas.

### 5. Timeliness and Topic Sequencing:

- This parameter received mixed ratings skewed toward fairness and goodness but with notable suggestions for stricter time management and sequencing to avoid overruns and improve flow .
- Qualitative data highlighted the importance of adherence to schedules and systematic ordering of topics to optimize engagement and content assimilation (90% consensus in FGD themes) .

- The Chi-Square results showed a significant relationship between these themes and frequency ratings, validating the need for targeted interventions to improve these aspects.

The study employed a convergent mixed-methods design, integrating quantitative frequency data of evaluation parameters with qualitative essay feedback themes to provide a holistic understanding of teacher training feedback and its implications relative to the research problem.

### **Correlation of Quantitative Frequency Data with Qualitative Essay Feedback Themes**

#### **1. Overall/General Assessment of Training:**

- **Frequency Data:** Majority of the teachers rated the program in the "Better" and "Best" categories, reflecting high satisfaction—with specific frequencies showing about 80 participants in "Fair" and "Better" categories, and very few in "Poor" .
- **Essay Feedback Themes:** Teachers expressed positive reflections on training effectiveness, with recognition of strong content and management support (95% positive consensus on content clarity and management logistics) , .
- **Convergence:** The quantitative ratings strongly align with qualitative expressions of satisfaction, confirming that the training largely met participant expectations, a central focus of the study's problem statement regarding teacher evaluation of training programs.

#### **2. Content Delivery (Clarity, Comprehensiveness, Applicability):**

- **Frequency Data:** Content parameters received predominantly high scores, with 95% in "Better" and "Best," emphasizing clarity and relevance
- **Essay Themes:** Recurrent mention of clear and applicable content, indicating curriculum effectiveness and alignment with participant needs (f=95 in themes).
- **Convergence:** Quantitative ratings and qualitative narratives mutually reinforce the conclusion that content quality is a major strength, addressing one of the research concerns—how teachers evaluate content performance during training.

#### **3. Management Team and Logistics:**

- **Frequency Data:** The management components (secretariat support, venue, management effectiveness) garnered very high positive ratings (98%).
- **Essay Themes:** Feedback highlighted the seamless organization and effective management contributing to participant satisfaction (90% agreement).
- **Convergence:** This strong alignment indicates that logistical support is critical to training success and positively influences overall training perceptions, directly related to the research problem's focus on assessing the management team's role.

#### **4. Resource Speakers' Performance and Engagement:**

- **Frequency Data:** Ratings for resource speakers were slightly lower (~90% "Better" and "Best"), with some participants indicating issues with clarity, delivery, and engagement.

- **Essay Themes:** Teachers suggested improvements in session sequencing, time management to avoid overruns, and enhanced engagement strategies by speakers (90% consensus on stricter sequencing).
  - **Convergence:** The convergence highlights a nuanced problem area where quantitative satisfaction scores are positive but flag areas needing refinement in delivery and engagement strategies, addressing part of the research question on performance evaluation of resource persons.
5. **Timeliness and Topic Sequencing:**
- **Frequency Data:** This parameter showed more balanced ratings with a substantial number of "Fair" and "Good" responses and fewer in "Best," indicating perceived shortcomings in scheduling and progression of topics.
  - **Essay Themes:** Emphasis on strict implementation of timing, systematic ordering of topics, and avoiding overtime were recurrent themes (90% agreement on the need for better time management and sequencing).
  - **Convergence:** Both data types highlight time management and sequencing as key areas for improvement—directly aligning with the study’s problem about optimizing training delivery and maximizing benefits.

#### **Detailed Discussion Related to the Research Problem**

The problem focuses on assessing how Higher Education Institution (HEI) teachers evaluate the learning management system (LMS) training and perceive aspects of the training program, management, content, and resource persons’ performance . The convergent findings reveal:

- **Positive Overall Program Evaluation:** The generally high ratings and supportive essay feedback suggest that the training program effectively meets teachers’ expectations and needs, supporting the thesis that current training frameworks are broadly successful.
- **Strong Curriculum and Management Support:** The high frequencies in positive ratings for content clarity and management team effectiveness, supported by qualitative elaborations, indicate that these are core strengths of the program. This corroborates existing literature emphasizing structured curriculum design and logistical organization as determinants of quality teacher training ([15]; [4]).
- **Engagement and Delivery Challenges:** Despite overall positive perceptions, the moderate ratings and recurring essay themes call attention to engagement and time management challenges with resource speakers. This reflects complex "wicked problems" in educational feedback delivery [25], [3] . The participants’ call for better sequencing and stricter time control echoes concerns about delivering timely, clear, and engaging feedback and instruction in teacher education.

**Implications for Feedback Mechanisms:** The integration of quantitative and qualitative data suggests that practice-based, interactive feedback aligned with timely and well-sequenced sessions can increase effectiveness, a finding consistent with the literature advocating for innovative feedback models incorporating technology and iterative reflection [5]

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## 4. Discussion

The existing literature highlights several critical issues within current feedback mechanisms in teacher training, including the teachers' dissatisfaction with feedback timeliness and comprehensibility, alongside teacher educators' concerns regarding the time-intensive nature of detailed feedback provision [17]. Moreover, the practical application of feedback in enhancing instructional and pedagogical skills often faces limitations due to inadequate opportunities for pre-service teachers to engage in simulated teaching experiences and receive consistent feedback throughout their programs [7]. This gap is particularly pronounced in addressing the "wicked problems" that characterize modern educational systems, where conventional feedback models often fall short in preparing teachers for complex, evolving classroom realities [3]. This necessitates a move towards innovative, non-traditional approaches to feedback delivery, including leveraging technology and virtual environments, to adequately prepare future educators for the multifaceted challenges of contemporary schooling [3]. The integration of artificial intelligence in feedback processes, for instance, offers a promising avenue for providing scalable and personalized critiques within simulated environments, thus bridging the gap between theoretical knowledge and practical application [24].

The integration of Chi-Square statistical results with thematic feedback aligns well with established literature on teacher training feedback mechanisms. Prior studies emphasize that effective feedback is multidimensional—encompassing content clarity, delivery quality, and active engagement to foster deeper pedagogical understanding [15]; [6]. The findings support these assertions by revealing high ratings for content and management, underscoring the positive impact of well-structured curriculum design and logistical support on training outcomes. However, the comparatively lower ratings and thematic concerns regarding speaker engagement and topic sequencing resonate with documented challenges in feedback timeliness and comprehensibility identified in recent literature [25];[3]. These "wicked problems" in educational feedback highlight the complexity of delivering feedback that is both timely and pedagogically effective within dynamic classroom realities—issues that the current data affirm need addressing through stricter sequencing and innovative feedback modalities. Moreover, the use of convergent mixed-methods and the significant Chi-Square correlations between qualitative themes and quantitative ratings reinforce the literature's call for integrated, practice-based feedback systems [4]; [5]. These design features allow for triangulation of subjective experiences with objective assessment metrics, enhancing the reliability and applicability of feedback improvements. Finally, the discussion aligns with cutting-edge literature advocating for leveraging technology—including artificial intelligence and virtual environments—to deliver personalized, scalable, and iterative feedback crucial for preparing adaptive, resilient educators [24]; [3]. The study's findings concerning the need for improved engagement and time management echo calls for such innovative, flexible feedback environments that can accommodate the evolving demands of contemporary teacher education. This convergence of frequency-based quantitative evaluations and rich essay feedback thematically addresses the research problem by validating strengths and pinpointing improvement needs in the LMS teacher training program. The data reflect broad approval of content and management, while also identifying engagement and time management as pivotal challenges to be addressed for maximizing training impact. These findings not only respond directly to the study's questions but

also provide data-driven direction for enhancing feedback mechanisms and training delivery in line with contemporary educational demands and research insights

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## 5. Conclusion

The study demonstrates that the convergent mixed-methods approach combining quantitative ratings and qualitative feedback provides a robust and nuanced understanding of teacher training program effectiveness, particularly in LMS training for Higher Education Institution teachers. Overall, the training program received strong positive evaluations regarding content clarity, curriculum design, and management effectiveness, corroborating existing literature that highlights these factors as critical enablers of quality teacher education. Nevertheless, the data and thematic analyses consistently identify engagement challenges and time management issues, especially relating to resource speakers' performance and session sequencing. These challenges reflect well-documented "wicked problems" in educational feedback, where delivering timely, clear, and engaging feedback remains complex within dynamic learning environments. The significant correlations via Chi-Square tests between qualitative feedback themes and quantitative evaluation strengthen the evidence base, validating participant perceptions and pinpointing areas for targeted improvement. Importantly, the findings emphasize the need for flexible, innovative feedback environments that integrate technology and iterative practice-based reflection. Such feedback mechanisms are essential to accommodate evolving demands in contemporary teacher education and to foster pre-service teachers' adaptability, professional growth, and lifelong learning dispositions. By aligning feedback delivery with best practices from recent research, including leveraging artificial intelligence and virtual environments, teacher training programs can enhance engagement, optimize time management, and ultimately maximize training impact. In conclusion, this comprehensive assessment confirms that well-structured curriculum and strong logistical support underpin training success, while advocating for strategic enhancements in feedback modalities and session management. These improvements are crucial for preparing resilient, reflective educators capable of navigating the complexities of modern classrooms and sustaining continuous professional growth. The study thus provides data-driven directions for evolving feedback mechanisms in teacher education, contributing valuable insights to both scholarship and practice.

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