

Date Received : April 2026
Date Revised : May 2026
Date Accepted : May 2026
Date Published : May 2026

DETERMINANTS OF ONLINE MICROTEACHING EFFECTIVENESS IN TEACHER EDUCATION

Muhammad Farizal Amri

Universitas Terbuka, Indonesia (muhammad.farizal@ecampus.ut.ac.id)

Kata Kunci:	ABSTRAK
<i>microteaching daring; pendidikan guru; sistem manajemen pembelajaran; efektivitas pembelajaran</i>	<p>Meskipun penerapan microteaching daring dalam pendidikan guru semakin meningkat, bukti empiris mengenai pengaruh gabungan faktor teknologi dan pedagogis terhadap efektivitas pembelajaran masih terbatas, khususnya dalam lingkungan pendidikan terbuka dan jarak jauh. Penelitian ini bertujuan untuk menganalisis determinan efektivitas microteaching daring dengan mengkaji peran kualitas Learning Management System (LMS), kualitas tutor, dukungan berbasis webinar, dan penilaian teman sebaya (peer assessment) pada program pendidikan guru Pendidikan Agama Islam di Universitas Terbuka, Indonesia. Penelitian ini menggunakan pendekatan kuantitatif dengan desain survei potong lintang (cross-sectional). Data dikumpulkan dari 97 calon guru yang telah mengikuti mata kuliah microteaching daring dan dianalisis menggunakan regresi linear berganda. Hasil penelitian menunjukkan bahwa kualitas LMS, kualitas tutor, dan dukungan berbasis webinar berpengaruh positif dan signifikan terhadap efektivitas microteaching daring, dengan dukungan berbasis webinar menjadi prediktor terkuat ($\beta = 0,365$; $p < 0,01$). Sebaliknya, penilaian teman sebaya tidak menunjukkan pengaruh langsung yang signifikan ($\beta = 0,032$; $p > 0,05$). Model regresi mampu menjelaskan proporsi varians yang tinggi terhadap efektivitas pembelajaran ($R^2 = 0,754$), yang menunjukkan daya jelaskan model yang kuat. Temuan penelitian menunjukkan bahwa interaksi sinkron yang bermakna memiliki pengaruh yang lebih besar dibandingkan infrastruktur teknologi maupun evaluasi berbasis teman sebaya dalam membentuk persepsi mahasiswa terhadap efektivitas microteaching daring. Penelitian ini berkontribusi pada pengembangan literatur dengan mengkaji secara simultan determinan teknologi, instruksional, dan interaksional dalam satu kerangka analisis, sehingga memberikan pemahaman yang lebih komprehensif mengenai praktik microteaching daring yang efektif. Temuan ini juga mendukung relevansi kerangka Community of Inquiry dan Teori Konstruktivisme Sosial dalam menjelaskan pembelajaran berbasis praktik pada konteks pendidikan guru daring. Secara praktis, hasil penelitian menegaskan pentingnya integrasi sesi webinar yang dirancang secara efektif, lingkungan LMS yang berkualitas tinggi, serta dukungan tutor yang optimal untuk meningkatkan kualitas pengalaman microteaching daring. Temuan ini sangat relevan bagi lembaga pendidikan guru yang menerapkan sistem pendidikan terbuka dan jarak jauh dalam upaya meningkatkan kualitas pembelajaran berbasis praktik secara daring.</p>

Keywords:

Online
Microteaching;
Teacher Education;
Learning
Management System;
Learning
Effectiveness

ABSTRACTS

Despite the growing adoption of online microteaching in teacher education, limited empirical evidence exists regarding the combined influence of technological and pedagogical factors on learning effectiveness, particularly within open and distance learning environments. This study investigates the determinants of online microteaching effectiveness by examining the roles of learning management system (LMS) quality, tutor quality, webinar-based support, and peer assessment within an Islamic Education teacher education program at Universitas Terbuka, Indonesia. A quantitative approach employing a cross-sectional survey design was adopted. Data were collected from 97 pre-service teachers who had completed an online microteaching course and were analyzed using multiple linear regression. The findings revealed that LMS quality, tutor quality, and webinar-based support had significant positive effects on online microteaching effectiveness, with webinar-based support emerging as the strongest predictor ($\beta = 0.365$, $p < .01$). In contrast, peer assessment did not demonstrate a significant direct effect ($\beta = 0.032$, $p > .05$). The regression model explained a substantial proportion of variance in learning effectiveness ($R^2 = 0.754$), indicating strong explanatory power. The findings suggest that meaningful synchronous interaction plays a more influential role than technological infrastructure or peer-based evaluation in shaping students' perceptions of online microteaching effectiveness. The study contributes to the literature by simultaneously examining technological, instructional, and interactional determinants within a single analytical framework, thereby providing a more comprehensive understanding of effective online microteaching practices. The findings also support the relevance of the Community of Inquiry framework and Social Constructivism Theory in explaining practice-based learning within online teacher education contexts. Practically, the results highlight the importance of integrating well-designed webinar sessions, high-quality LMS environments, and effective tutor support to enhance online microteaching experiences. These insights are particularly relevant for teacher education institutions operating within open and distance learning systems seeking to improve the quality of online practice-based learning.

A. INTRODUCTION

Teacher education is widely recognized as a cornerstone for improving the quality of educational systems, as teachers play a decisive role in shaping students' learning experiences and academic achievement. Within teacher education programs, microteaching has long been regarded as a fundamental pedagogical approach for developing instructional competence, reflective practice, and professional confidence among pre-service teachers. Traditionally implemented through face-to-face sessions, microteaching allows teacher candidates to practice teaching in a controlled environment, receive structured feedback, and reflect on their instructional performance (Jeon, E. Y., 2025) (Asrivi, Q. E. S., 2024). However, the rapid integration of digital technologies into higher education has fundamentally altered the way microteaching is designed and delivered, giving rise to various forms of online microteaching.

Over the past decade, online learning has become increasingly prominent in higher education, supported by advances in learning management systems (LMS), video-based technologies, and synchronous communication tools. This transformation has been particularly evident in teacher education, where online and blended learning models are now commonly adopted to enhance flexibility and accessibility. The shift toward online learning was further accelerated by the COVID-19 pandemic, which compelled universities worldwide to redesign practice-based courses for online delivery. (Ting, A. et al., 2024) As a result, microteaching, once strongly associated with physical classroom interaction, has increasingly been conducted through digital platforms that combine asynchronous and synchronous learning activities (Sugihartini, N et al., 2025) (Kırmızı, Ö., & Kömeç, F. 2022).

Online microteaching typically involves the submission of recorded teaching performances, asynchronous peer and tutor feedback facilitated through LMS platforms, and synchronous interactions conducted via webinar tools. These modalities offer several pedagogical advantages, including flexibility, opportunities for repeated observation, and the ability to document teaching performance over time. At the same time, they introduce new challenges related to interaction quality, feedback immediacy, and learner engagement. (Koc, E. M., 2024) Because microteaching is inherently practice-oriented and interaction-intensive, its effectiveness in online environments cannot be assumed to parallel that of traditional face-to-face approaches. Consequently, understanding what determines the effectiveness of online microteaching has become an increasingly important issue for teacher education institutions.

Learning effectiveness in online environments is shaped by a complex interplay of technological, instructional, and social factors. Prior research has consistently shown that technology alone does not guarantee meaningful learning outcomes; rather, the quality of instructional design, instructor support, and learner interaction plays a critical role (Martin et al., 2020) (Schmid, R. F., et al., 2023). In teacher education contexts, this issue is particularly salient because learning outcomes extend beyond knowledge acquisition to include the development of professional teaching skills and reflective capacities. Identifying the determinants that contribute to effective online microteaching is therefore essential for ensuring the quality of teacher preparation programs.

One important technological determinant of online learning effectiveness is the quality of the learning management system. LMS platforms serve as the primary

infrastructure for organizing learning materials, managing assignments, supporting communication, and facilitating assessment and feedback. Previous studies have demonstrated that LMS quality, reflected in system usability, accessibility, content organization, and reliability, significantly influences students' engagement, satisfaction, and perceived learning outcomes (Al-Fraihat et al., 2020; Baber, 2021) (Almarashdeh, I., 2016). In online microteaching contexts, LMS quality is particularly crucial because teaching performances, peer assessments, and tutor feedback are mediated almost entirely through the platform. Inefficient or poorly designed LMS environments may impede reflective practice and reduce students' focus on pedagogical learning.

In addition to technological infrastructure, instructional support provided by tutors is widely recognized as a key determinant of online learning effectiveness. Tutor quality encompasses pedagogical competence, clarity of instruction, responsiveness, and the ability to provide timely and constructive feedback. Research on online learning has consistently highlighted the importance of instructor presence in fostering student engagement, motivation, and learning outcomes (Richardson et al., 2017; Martin et al., 2020). In online microteaching, tutors play a central role in guiding pre-service teachers through teaching tasks, clarifying assessment criteria, and facilitating reflective dialogue. High-quality tutor support may help mitigate some of the challenges associated with reduced physical interaction in online environments.

Synchronous interaction represents another instructional element that has gained increasing attention in online learning research. Webinar-based learning enables real-time communication, immediate feedback, and dynamic interaction between instructors and learners. Studies have shown that synchronous activities can enhance learners' sense of social presence and engagement, thereby supporting deeper learning experiences (Martin & Parker, 2014; Bond et al., 2020) (Gegenfurtner, A. et al., 2025). In online microteaching, webinars are often used for live demonstrations, discussions of teaching performances, and collective reflection sessions. These synchronous interactions may partially replicate the immediacy and interactivity of face-to-face microteaching, potentially contributing to improved learning effectiveness.

Peer assessment is also commonly integrated into microteaching practices as a means of promoting reflective thinking and active learning. By evaluating peers' teaching performances, pre-service teachers are encouraged to apply pedagogical criteria, engage in critical analysis, and reflect on their own instructional practices. In online microteaching, peer assessment is typically conducted through LMS platforms, allowing students to review recorded teaching videos and provide structured feedback. While previous research suggests that peer assessment can support learning and self-regulation, its effectiveness depends on factors such as assessment literacy, feedback quality, and learners' perceptions of credibility (Panadero et al., 2019) (Double et al., 2020). Empirical evidence regarding the role of peer assessment in online microteaching effectiveness remains limited.

The importance of these technological and pedagogical factors can be explained through several established theoretical perspectives. The Community of Inquiry (CoI) framework (Garrison et al., 2000) suggests that effective online learning emerges from the interaction of teaching, social, and cognitive presence, where tutor quality contributes through instructional guidance and feedback, while webinar-based support enhances interaction and collaborative reflection. From a technological perspective, the Information Systems Success Model (DeLone & McLean, 2003) emphasizes that system

quality influences user satisfaction and learning outcomes, highlighting the importance of LMS quality as the primary platform for delivering instructional materials, assessments, and feedback. In addition, Social Constructivism theory (Vygotsky, 1978) underscores the role of interaction, collaboration, and feedback in knowledge construction, making it particularly relevant to webinar-based learning and peer assessment. Together, these perspectives suggest that online microteaching effectiveness is shaped by technological, instructional, and interactional factors, providing a theoretical foundation for examining the roles of LMS quality, tutor quality, webinar-based support, and peer assessment within a unified analytical model.

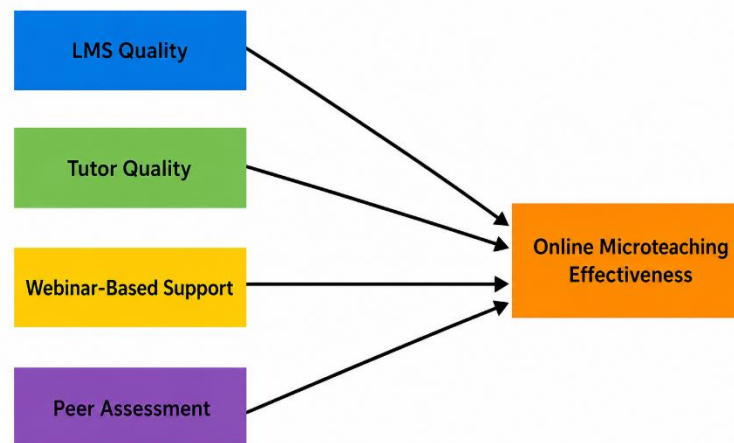


Figure 1. Conceptual Framework of the Determinants of Online Microteaching Effectiveness

Despite the growing body of research on online learning and teacher education, studies that specifically examine online microteaching remain relatively scarce. Previous studies have typically focused on individual determinants of online learning effectiveness. For example, Al-Fraihat et al. (2020) emphasized the importance of LMS quality, whereas Martin et al. (2020) highlighted instructor presence and instructional support. Similarly, Panadero et al. (2019) examined peer assessment as a mechanism for reflective learning. While these studies have contributed valuable insights, they tend to investigate technological and pedagogical factors separately, providing limited understanding of how these determinants jointly influence online microteaching effectiveness. Consequently, empirical evidence regarding the combined influence of LMS quality, tutor quality, webinar-based support, and peer assessment within online microteaching environments remains limited.

To address this gap, the present study adopts an integrated determinant-based approach to examine the effectiveness of online microteaching in teacher education. Specifically, it investigates the roles of LMS quality, tutor quality, webinar-based support, and peer assessment as key predictors of perceived learning effectiveness. Unlike previous studies that examined isolated instructional variables, this study simultaneously investigates technological and pedagogical determinants within a unified regression model. By integrating these factors into a single analytical framework, the study seeks to provide a more comprehensive understanding of what drives effective online microteaching. The findings are expected to contribute to the literature on

teacher education and online learning by offering empirical evidence on the pedagogical and technological conditions that support effective microteaching in digital environments.

B. METHOD

This study employed a quantitative research design to examine the determinants of online microteaching effectiveness in teacher education. A cross-sectional survey approach was adopted to capture pre-service teachers' perceptions of their learning experiences after participating in an online microteaching course. Quantitative methods are widely used in educational research to test relationships among variables and to generalize findings across populations (Creswell & Creswell, 2018; Maier, 2023).

The research was conducted within the undergraduate Islamic Education (Pendidikan Agama Islam/PAI) program at Universitas Terbuka, Indonesia, a public open and distance learning university. Universitas Terbuka implements a fully online learning system in which instruction is primarily delivered through digital platforms. Within this program, microteaching is designed to support the professional preparation of pre-service teachers through the integration of asynchronous and synchronous learning activities. Students were required to complete a series of structured tasks, including developing lesson plans, producing teaching demonstration videos, conducting peer assessments, and presenting instructional designs during webinar sessions. These activities were intended to replicate the essential components of traditional microteaching while utilizing the affordances of online learning technologies.

The participants were pre-service teachers enrolled in the PAI program who had completed all online microteaching activities during the semester. A purposive sampling technique was employed to ensure that respondents possessed sufficient experience to evaluate the effectiveness of online microteaching. Of the 110 eligible students invited to participate, 97 submitted complete responses, yielding a response rate of 88.2%. This sample size was considered adequate for multiple regression analysis and exceeded the minimum recommendations for studies examining direct relationships among a limited number of predictor variables (Hair et al., 2019).

Data were collected using a structured questionnaire adapted from established instruments in the online learning and educational technology literature. The questionnaire measured five constructs: LMS quality, tutor quality, webinar-based support, peer assessment, and online microteaching effectiveness. LMS quality items were adapted from studies examining learning management systems and online learning effectiveness (Al-Fraihat et al., 2020; Baber, 2021), while tutor quality items were adapted from research on instructor presence and online teaching effectiveness (Martin et al., 2020; Richardson et al., 2017). Webinar-based support items were informed by studies on synchronous online learning and learner engagement (Bond et al., 2020; Martin & Parker, 2014), whereas peer assessment items were adapted from research on reflective learning and feedback processes (Panadero et al., 2019; Double et al., 2020). All items were measured using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Prior to data collection, the instrument was reviewed by two experts in teacher education and educational technology to ensure content validity and contextual appropriateness.

The reliability and validity of the measurement instrument were subsequently assessed before conducting the main analysis. Internal consistency reliability was evaluated using Cronbach's alpha and composite reliability (CR), while convergent validity was examined using Average Variance Extracted (AVE). The results are presented in Table 1.

Table 1. Reliability and Convergent Validity Results

Construct	Cronbach's Alpha	Composite Reliability	AVE
LMS Quality	0.963	0.969	0.79
Tutor Quality	0.981	0.984	0.83
Webinar-Based Support	0.925	0.936	0.74
Peer Assessment	0.964	0.970	0.80

The results indicate that all constructs demonstrated satisfactory levels of reliability and validity. Cronbach's alpha values ranged from 0.925 to 0.981, exceeding the recommended threshold of 0.70. Similarly, composite reliability values were above 0.90 for all constructs, indicating strong internal consistency. The AVE values ranged from 0.74 to 0.83, surpassing the minimum recommended value of 0.50 and confirming adequate convergent validity. These findings suggest that the measurement instrument was reliable and valid for assessing LMS quality, tutor quality, webinar-based support, peer assessment, and online microteaching effectiveness.

Participation in the study was voluntary, and informed consent was obtained from all respondents before questionnaire completion. Participants were informed about the purpose of the study and assured that their responses would be treated confidentially and used solely for research purposes. No personally identifiable information was collected, and all responses were analyzed anonymously in accordance with ethical standards for educational research.

The collected data were analyzed using descriptive statistics and multiple linear regression analysis. Descriptive statistics were used to summarize respondents' perceptions of LMS quality, tutor quality, webinar-based support, peer assessment, and online microteaching effectiveness, whereas multiple regression analysis was employed to examine the relative contribution of each predictor variable to perceived learning effectiveness. Multiple regression was selected because the study aimed to investigate the direct effects of several independent variables on a single dependent variable and provided a parsimonious analytical approach for the study objectives. Prior to conducting the regression analysis, assumptions of normality, multicollinearity, homoscedasticity, and independence of errors were examined. The diagnostic results indicated that all assumptions were satisfactorily met, supporting the suitability of the dataset for multiple regression analysis.

C. RESULT AND DISCUSSION

Descriptive Analysis of Online Microteaching Effectiveness

Table 2 presents the descriptive statistics for online microteaching effectiveness and its associated determinants. Overall, the findings indicate that respondents reported highly positive perceptions of the online microteaching experience. All variables obtained mean scores above 4.00 on a five-point Likert scale, suggesting that

students generally viewed the online learning environment, instructional support, and learning activities favorably.

Table 2. Descriptive Statistics of Research Variables

Construct	Mean	Standard Deviation
LMS Quality	4.32	0.54
Tutor Quality	4.41	0.51
Webinar-Based Support	4.38	0.56
Peer Assessment	4.12	0.60

Among the examined variables, tutor quality recorded the highest mean score ($M = 4.41$, $SD = 0.51$), indicating that respondents perceived tutors as highly effective in providing instructional guidance, feedback, and support throughout the microteaching process. This finding suggests that tutor facilitation remains a critical component of online teacher preparation, particularly in helping pre-service teachers reflect on and improve their instructional practices.

Webinar-based support also received a highly favorable evaluation ($M = 4.38$, $SD = 0.56$), reflecting students' appreciation of synchronous learning activities. The high rating suggests that real-time interaction, immediate feedback, and collaborative discussion provided through webinar sessions contributed positively to students' learning experiences. In practice-oriented courses such as microteaching, opportunities for direct communication may enhance learners' engagement and confidence in applying pedagogical skills.

LMS quality was similarly evaluated positively ($M = 4.32$, $SD = 0.54$), indicating that the learning management system effectively supported learning activities, communication, assessment, and access to instructional resources. The result highlights the importance of technological infrastructure in facilitating online microteaching and ensuring that students can participate effectively in both asynchronous and synchronous learning activities.

In contrast, peer assessment recorded the lowest mean score among the predictor variables ($M = 4.12$, $SD = 0.60$), although it remained within the high category. This finding suggests that students generally valued peer feedback activities, but may have perceived them as less beneficial than tutor support and webinar interactions. Variations in feedback quality, assessment expertise, and confidence in evaluating peers may have influenced students' perceptions of peer assessment effectiveness.

A comparison of the descriptive results reveals that instructional and interactional factors, particularly tutor quality and webinar-based support, received stronger evaluations than peer assessment. This pattern suggests that students may place greater value on expert guidance and real-time interaction when engaging in practice-based learning activities. Given the nature of microteaching as a teaching practice course, immediate feedback and instructional support appear to be especially important in shaping positive learning experiences.

Overall, the descriptive findings suggest that online microteaching in the Islamic Education program at Universitas Terbuka was perceived as effective and supported by favorable technological, pedagogical, and interactional conditions. These results provide an initial indication that multiple factors contribute to online

microteaching effectiveness and warrant further investigation through inferential analysis.

Effects of LMS Quality, Tutor Quality, Webinar-Based Support, and Peer Assessment

Table 3 presents the results of the multiple regression analysis examining the effects of LMS quality, tutor quality, webinar-based support, and peer assessment on online microteaching effectiveness.

Table 3. Hypothesis Testing Results on Microteaching Effectiveness

Hypothesis	Path	β	t-value	p-value	Result
H1	LMS Quality	0.203	2.36	0.020	Supported
H2	Tutor Quality	0.196	2.03	0.045	Supported
H3	Webinar-Based Support	0.365	3.53	0.001	Supported
H4	Peer Assessment	0.032	0.35	0.728	Not Supported

The regression analysis revealed that LMS quality, tutor quality, and webinar-based support significantly predicted online microteaching effectiveness. Together, these findings indicate that both technological and instructional factors contribute to students' perceptions of learning effectiveness in online microteaching environments.

LMS quality demonstrated a positive and statistically significant effect on online microteaching effectiveness ($\beta = 0.203$, $p < 0.05$). This finding suggests that students who perceived the learning management system as reliable, accessible, and easy to use were more likely to report positive learning experiences. The result highlights the importance of technological infrastructure in supporting online teaching practice, facilitating communication, and enabling access to instructional resources.

Tutor quality also exhibited a significant positive effect on online microteaching effectiveness ($\beta = 0.196$, $p < 0.05$). Students who perceived tutors as responsive, supportive, and effective in providing feedback tended to report higher levels of learning effectiveness. This result underscores the importance of instructional guidance in helping pre-service teachers develop pedagogical competencies and engage in reflective learning processes.

Among all predictor variables, webinar-based support emerged as the strongest determinant of online microteaching effectiveness ($\beta = 0.365$, $p < 0.01$). The relatively large standardized coefficient indicates that synchronous interaction plays a particularly important role in supporting learning effectiveness. Students who experienced meaningful real-time communication, discussion, and feedback during webinar sessions tended to perceive online microteaching more positively. This finding suggests that synchronous learning activities may compensate for the limited face-to-face interaction typically associated with distance education.

In contrast, peer assessment did not demonstrate a statistically significant effect on online microteaching effectiveness ($\beta = 0.032$, $p > 0.05$). Although the relationship was positive, its magnitude was relatively small and did not reach statistical significance. This result indicates that peer assessment, while potentially beneficial for reflection and collaborative learning, may not be a primary determinant of perceived learning effectiveness in the context of online microteaching.

To facilitate comparison among the predictor variables, Figure 2 presents the standardized regression coefficients obtained from the regression model. The figure provides a visual representation of the relative strength of LMS quality, tutor quality, webinar-based support, and peer assessment in predicting online microteaching effectiveness.



Figure 2. Relative Strength of Predictors of Online Microteaching Effectiveness

A comparison of the standardized regression coefficients reveals a clear hierarchy of determinants. Webinar-based support emerged as the most influential predictor, followed by LMS quality and tutor quality, whereas peer assessment contributed minimally to the prediction of learning effectiveness. The stronger influence of webinar-based support suggests that interactional factors may play a more prominent role than technological and peer-based factors in practice-oriented learning environments. At the same time, the significant contributions of LMS quality and tutor quality indicate that effective online microteaching requires a combination of reliable technological infrastructure and strong instructional support.

Overall, the regression results indicate that three of the four proposed hypotheses were supported. LMS quality, tutor quality, and webinar-based support significantly contributed to online microteaching effectiveness, whereas peer assessment did not exhibit a significant direct effect. These findings provide evidence that successful online microteaching depends on the integration of technological, pedagogical, and interactional elements, with synchronous learning support emerging as the most influential factor.

Overall Findings

The findings of this study provide a comprehensive understanding of the factors that contribute to online microteaching effectiveness in teacher education. The descriptive analysis revealed that students generally reported positive perceptions of the online microteaching experience, as reflected in the high mean scores obtained across all study variables. These results suggest that the online microteaching model implemented within the Islamic Education program at Universitas Terbuka was perceived as effective in supporting teaching practice, professional development, and learning engagement.

The regression analysis further demonstrated that online microteaching effectiveness is influenced by a combination of technological, instructional, and interactional factors. Among the examined determinants, webinar-based support emerged as the strongest predictor of learning effectiveness, indicating the importance of synchronous interaction, immediate feedback, and real-time communication in practice-oriented learning environments. LMS quality and tutor quality also exhibited significant positive effects, highlighting the complementary roles of technological infrastructure and instructional guidance in facilitating effective online learning experiences.

In contrast, peer assessment did not demonstrate a statistically significant direct effect on online microteaching effectiveness. Although students generally perceived peer assessment positively, its contribution to learning effectiveness appeared less substantial than that of tutor support and webinar-based interaction. This finding suggests that learners may place greater value on expert feedback and synchronous engagement when developing teaching competencies in online environments.

Taken together, the findings indicate that effective online microteaching is not determined by a single factor but rather by the interaction of multiple technological and pedagogical supports. The prominence of webinar-based support, combined with the significant contributions of LMS quality and tutor quality, suggests that successful online teacher preparation requires not only reliable technological systems but also meaningful instructional interaction and guidance. These findings provide the basis for the subsequent discussion of how technological, pedagogical, and interactional factors shape learning effectiveness in online microteaching contexts.

DISCUSSION

This study investigated the determinants of online microteaching effectiveness in teacher education by examining the roles of LMS quality, tutor quality, webinar-based support, and peer assessment. The findings provide important insights into how technological, instructional, and interactional factors jointly shape learning effectiveness in online microteaching environments, particularly within the context of open and distance learning (ODL).

The most notable finding of this study is that webinar-based support emerged as the strongest predictor of online microteaching effectiveness. This result suggests that synchronous interaction plays a particularly important role in practice-oriented learning environments. Unlike content-based courses that can be effectively delivered through asynchronous activities, microteaching requires demonstration, observation, discussion, and immediate pedagogical feedback. Webinar sessions provide opportunities for real-time communication, collaborative reflection, and interactive feedback, thereby simulating some of the instructional dynamics typically found in face-to-face teaching practice. This finding is consistent with previous studies emphasizing the importance of social presence and instructor–student interaction in online learning environments (Martin et al., 2020; Bond et al., 2020). It also aligns with the Community of Inquiry framework (Garrison et al., 2000), which highlights social presence as a critical element in fostering meaningful online learning experiences. From a social constructivist perspective, synchronous interaction facilitates knowledge construction through dialogue and collaborative engagement, making webinar-based learning particularly valuable in teacher education contexts.

The prominence of webinar-based support may also be explained by the institutional context of Universitas Terbuka as an open and distance learning university. Students are geographically dispersed across different regions and rely heavily on technology-mediated interaction for academic engagement. In such environments, webinar sessions may reduce feelings of isolation and provide opportunities for direct communication with tutors and peers. This interpretation is consistent with Moore's (1993) Theory of Transactional Distance, which suggests that meaningful interaction can reduce psychological and pedagogical distance in online learning environments. Consequently, webinar-based support appears to function not only as an instructional tool but also as a mechanism for strengthening engagement and connectedness among learners.

The findings also indicate that LMS quality significantly influences online microteaching effectiveness. This result highlights the importance of technological infrastructure in supporting complex learning activities within online teacher education. In the context of online microteaching, the LMS serves as the central platform through which students access learning materials, submit teaching demonstrations, receive feedback, and engage in assessment activities. Therefore, the effectiveness of the learning experience is closely linked to the quality of the system itself. This finding corroborates previous studies demonstrating that system quality, usability, and accessibility are important determinants of learning satisfaction and educational outcomes (Al-Fraihat et al., 2020; Baber, 2021). Furthermore, the result supports the Information Systems Success Model (DeLone & McLean, 2003), which posits that system quality contributes to positive user experiences and performance outcomes. For students in distance learning settings, a reliable LMS is particularly important because it mediates nearly all instructional interactions throughout the course.

Tutor quality was likewise found to be a significant predictor of online microteaching effectiveness. Although digital technologies provide numerous learning opportunities, the findings suggest that technological systems alone are insufficient for developing professional teaching competencies. Pre-service teachers continue to require expert pedagogical guidance, constructive feedback, and reflective support throughout the learning process. In online microteaching, tutors play a crucial role in helping students interpret teaching experiences, refine instructional strategies, and engage in reflective practice. This finding is consistent with previous research highlighting instructor presence as a critical determinant of online learning success (Martin et al., 2020; Richardson et al., 2017). The result further supports the teaching presence component of the Community of Inquiry framework, which emphasizes the importance of instructional design, facilitation, and feedback in promoting effective online learning. Thus, while technological systems create opportunities for learning, the human dimension of teaching remains essential in supporting professional development.

In contrast, peer assessment did not demonstrate a statistically significant direct effect on online microteaching effectiveness. This finding requires careful interpretation. One possible explanation is that students may not yet possess sufficient assessment literacy to provide feedback that is perceived as valuable for improving teaching performance. Evaluating instructional practice requires pedagogical knowledge, critical judgment, and familiarity with assessment criteria, competencies

that may still be developing among pre-service teachers. As a result, peer-generated feedback may be viewed as less authoritative or less useful than feedback provided by tutors.

Another possible explanation relates to perceptions of credibility and expertise. In teacher education contexts, students often place greater trust in feedback provided by experienced tutors than in evaluations generated by peers. Consequently, tutor feedback may exert a stronger influence on perceptions of learning effectiveness. This interpretation is supported by previous research indicating that peer assessment tends to be most effective when accompanied by explicit assessment training, clear evaluation criteria, and instructor moderation (Nicol et al., 2014; Panadero et al., 2019). Therefore, peer assessment may function more effectively as a complementary learning strategy that promotes reflection and engagement rather than as a primary determinant of perceived learning effectiveness. It is also possible that peer assessment exerts indirect effects through variables such as self-reflection, motivation, or engagement, relationships that were not examined in the present study.

Collectively, the findings demonstrate that online microteaching effectiveness is shaped by a combination of technological, pedagogical, and interactional factors. However, the comparative analysis reveals that interactional factors, particularly webinar-based support, exert a stronger influence than technological or peer-based factors. This finding extends the existing literature on online teacher education by suggesting that successful practice-based learning depends not only on access to technology but also on opportunities for meaningful interaction and immediate feedback. In other words, the effectiveness of online microteaching appears to be driven more by the quality of learning interactions than by technological infrastructure alone.

From a practical perspective, these findings have important implications for higher education institutions, particularly those operating within open and distance learning systems. Institutions offering online microteaching courses should prioritize the integration of regular and well-designed synchronous learning sessions that facilitate interaction, discussion, and feedback. Investment in LMS quality remains important, but technological improvements should be accompanied by strategies that strengthen instructional presence and learner engagement. Similarly, professional development initiatives for tutors should emphasize effective online facilitation, feedback provision, and reflective learning support. While peer assessment should continue to be incorporated into microteaching activities, additional scaffolding, assessment training, and tutor moderation may be necessary to maximize its educational value.

Overall, this study contributes to the growing body of research on online teacher education by providing empirical evidence regarding the determinants of online microteaching effectiveness within an open and distance learning context. By simultaneously examining LMS quality, tutor quality, webinar-based support, and peer assessment within a single analytical framework, the study offers a more comprehensive understanding of how technological and pedagogical factors interact to support effective teacher preparation in digital learning environments. The findings also suggest several directions for future research, including the examination of mediating and moderating relationships and the exploration of indirect pathways through which peer assessment may influence learning outcomes.

CONCLUSION

This study examined the determinants of online microteaching effectiveness in teacher education by analyzing the roles of LMS quality, tutor quality, webinar-based support, and peer assessment within an open and distance learning context. The findings indicate that online microteaching effectiveness is shaped by a combination of technological, pedagogical, and interactional factors. Among the variables examined, webinar-based support emerged as the strongest predictor of learning effectiveness, followed by LMS quality and tutor quality. In contrast, peer assessment did not demonstrate a significant direct effect on perceived learning effectiveness. These findings highlight the critical importance of meaningful interaction and instructional support in facilitating practice-based learning in online environments.

From a theoretical perspective, this study contributes to the literature on online teacher education by demonstrating that interactional factors may exert stronger influences than technological factors in practice-oriented learning contexts. The findings support the relevance of the Community of Inquiry framework, particularly the role of social and teaching presence, in explaining effective online microteaching practices. The results also reinforce Social Constructivism Theory, which emphasizes the importance of interaction, collaboration, and feedback in knowledge construction, while extending the Information Systems Success Model by confirming the role of LMS quality in supporting learning effectiveness. By integrating technological, instructional, and interactional determinants within a single analytical framework, this study provides a more comprehensive understanding of effective online microteaching in teacher education.

The findings also offer important practical implications for teacher education institutions, particularly those operating within open and distance learning systems. Given the dominant influence of webinar-based support, institutions should prioritize the integration of well-designed synchronous learning activities that facilitate real-time interaction, discussion, and feedback. Investments in LMS quality should be accompanied by efforts to strengthen tutor capacity in online facilitation, feedback provision, and reflective learning support. Furthermore, peer assessment activities should be supported through clearer assessment criteria, structured guidance, and tutor moderation to enhance their educational value. These strategies may help reduce transactional distance and improve the quality of online teaching practice experiences.

Despite its contributions, this study has several limitations. The data were collected from a single Islamic Education teacher education program at Universitas Terbuka, which may limit the generalizability of the findings to other disciplines and institutional contexts. Future research is therefore encouraged to examine online microteaching across different educational settings, involve larger and more diverse samples, and investigate potential mediating or moderating variables that may further explain the relationships identified in this study. Additional research may also explore the indirect effects of peer assessment on reflective practice, engagement, and professional competence development.

Overall, this study demonstrates that successful online microteaching depends not only on technological infrastructure but also on meaningful instructional interaction and pedagogical support. The findings provide valuable evidence for designing more effective online teacher education programs and contribute to ongoing

efforts to enhance practice-based learning within digital and distance education environments.

REFERENCES

- Al-Fraihat, D., Joy, M., Masa'deh, R., & Sinclair, J. (2020). Evaluating e-learning systems success: An empirical study. *Computers in Human Behavior*, 102, 67–86. <https://doi.org/10.1016/j.chb.2019.08.004>
- Almarashdeh, I. (2016). Sharing instructors experience of learning management system: A technology perspective of user satisfaction in distance learning. *Computers in Human Behavior*, 63, 249–255. <https://doi.org/10.1016/j.chb.2016.05.013>
- Alshammari, S. H., & Alrehaili, T. A. (2025). The effect of teaching, social, and cognitive presence on student engagement in online courses: A structural equation modelling approach. *Acta Psychologica*, 246, 105183. <https://doi.org/10.1016/j.actpsy.2025.105183>
- Asrivi, Q. E. S. (2024). Urgensi microteaching terhadap keterampilan profesional guru. *Al-Madrasah: Jurnal Pendidikan Madrasah Ibtidaiyah*. <http://dx.doi.org/10.35931/am.v8i3.3621>
- Baber, H. (2021). Social interaction and effectiveness of online learning: A moderating role of maintaining social distance during the COVID-19 pandemic. *Asian Education and Development Studies*, 11(1), 159–171. <https://doi.org/10.1108/AEDS-09-2020-0209>
- Bond, M., Buntins, K., Bedenlier, S., Zawacki-Richter, O., & Kerres, M. (2020). Mapping research in student engagement and educational technology in higher education: A systematic evidence map. *International Journal of Educational Technology in Higher Education*, 17(1), 1–30. <https://doi.org/10.1186/s41239-019-0176-8>
- Borup, J., West, R. E., & Graham, C. R. (2015). Improving online social presence through asynchronous video. *The Internet and Higher Education*, 15(3), 195–203. <https://doi.org/10.1016/j.iheduc.2011.11.001>
- Cidral, W. A., Oliveira, T., Di Felice, M., & Aparicio, M. (2018). E-learning success determinants: Brazilian empirical study. *Computers & Education*, 122, 273–290. <https://doi.org/10.1016/j.compedu.2017.12.001>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.)
- DeLone, W. H., & McLean, E. R. (2003). The DeLone and McLean model of information systems success: A ten-year update. *Journal of Management Information Systems*, 19(4), 9–30. <https://doi.org/10.1080/07421222.2003.11045748>
- Double, K. S., McGrane, J. A., & Hopfenbeck, T. N. (2020). The impact of peer assessment on academic performance: A meta-analysis. *Educational Psychology Review*, 32(2), 481–509. <https://doi.org/10.1007/s10648-019-09510-3>

- Gao, X., et al. (2023). A systematic review of the key components of online peer feedback in higher education. *Studies in Educational Evaluation*. <https://doi.org/10.1016/j.edurev.2023.100588>
- Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education*, 2(2–3), 87–105. [https://doi.org/10.1016/S1096-7516\(00\)00016-6](https://doi.org/10.1016/S1096-7516(00)00016-6)
- Gegenfurtner, A., Alijagic, A., Gabel, S., & Keskin, Ö. (2025). Synchronous online learning supports cognitive and affective outcomes more than traditional face-to-face and asynchronous online education: A meta-analysis of webinars. *Learning and Individual Differences*, 109, 102862. <https://doi.org/10.1016/j.lindif.2025.102862>
- Gherghel, C., Yasuda, S., & Kita, Y. (2023). Interaction during online classes fosters engagement with learning and self-directed study both in the first and second years of the COVID-19 pandemic. *Computers & Education*, 198, 104795. <https://doi.org/10.1016/j.compedu.2023.104795>
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2019). *A primer on partial least squares structural equation modeling (PLS-SEM)* (2nd ed.). Sage.
- Jeon, E. Y. (2025). The impact of microteaching on preservice EFL teachers' professional development. *Teaching and Teacher Education*, 145, 105153. <https://doi.org/10.1016/j.tate.2025.105153>
- Kırmızı, Ö., & Kömeç, F. (2022). Student teachers and online microteaching: Overcoming challenges in the age of the pandemic. *European Journal of Educational Research*, 11(2), 935–946. <https://doi.org/10.12973/eu-jer.11.3.1897>
- Koc, E. M. (2024). LMS-supported HyFlex clinical supervision model in teacher education. *Heliyon*, 10. <https://doi.org/10.1016/j.heliyon.2024.e29503>
- Lin, J. (2024). Unpacking the mediating role of classroom interaction between student satisfaction and perceived online learning. *Acta Psychologica*. <https://doi.org/10.1016/j.actpsy.2024.104233>
- Maier, C. (2023). Cross-sectional research: A critical perspective, use cases, and recommendations. *International Journal of Information Management*. <https://doi.org/10.1016/j.ijinfomgt.2023.102625>
- Martin, F., & Parker, M. A. (2014). Use of synchronous virtual classrooms: Why, who, and how? *MERLOT Journal of Online Learning and Teaching*, 10(2), 192–210.
- Martin, F., Wang, C., & Sadaf, A. (2020). Student perception of helpfulness of facilitation strategies in online courses. *The Internet and Higher Education*, 45, 100732. <https://doi.org/10.1016/j.iheduc.2018.01.003>

- Nicol, D. J., Thomson, A., & Breslin, C. (2014). Rethinking feedback practices in higher education: A peer review perspective. *Assessment & Evaluation in Higher Education*, 39(1), 102–122. <https://doi.org/10.1080/02602938.2013.795518>
- Panadero, E., Jonsson, A., & Botella, J. (2019). Effects of self-assessment on self-regulated learning and self-efficacy: Four meta-analyses. *Educational Research Review*, 22, 74–98. <https://doi.org/10.1016/j.edurev.2017.08.004>
- Richardson, J. C., Maeda, Y., Lv, J., & Caskurlu, S. (2017). Social presence in relation to students' satisfaction and learning in the online environment: A meta-analysis. *Computers in Human Behavior*, 71, 402–417. <https://doi.org/10.1016/j.chb.2017.02.001>
- Schmid, R. F., et al. (2023). A meta-analysis of online learning, blended learning, and the use of technology in education. *Computers and Education Open*, 4, 100124. <https://doi.org/10.1016/j.caeo.2023.100142>
- Sugihartini, N., Elmunsyah, H., Nurhadi, D., & Rahmawati, Y. (2025). Innovative web-based microteaching model: To improve the teaching skills of prospective informatics teachers. *Social Sciences & Humanities Open*, 11, 101344. <https://doi.org/10.1016/j.ssaho.2025.101344>
- Sun, Y., Beriswill, J., & Allen, M. E. (2022). Adopting web conferencing in online teaching. *International Journal of Distance Education Technologies*. <https://doi.org/10.4018/IJDET.296701>
- Ting, A., Manaig, K. A., & Yazon, A. D. (2024). Online teaching during COVID-19: Experiences and challenges. *International Journal of Web-Based Learning and Teaching Technologies*. <https://doi.org/10.4018/IJWLTT.336545>
- Tong, Y., et al. (2023). Why increasing the number of raters only helps sometimes: Reliability and validity of peer assessment across tasks: The role of task complexity. *Studies in Educational Evaluation*. <https://doi.org/10.1016/j.stueduc.2022.101233>
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.
- Winslade, M. (2026). A framework for effective mentor teacher written feedback to support pre-service teacher development. *Teaching and Teacher Education*. <https://doi.org/10.1016/j.ijedro.2025.100565>

