



EFFECTS OF BLENDED MICROTEACHING ON TRAINEE MATHEMATICS TEACHERS' CONFIDENCE AND COMPETENCE: A QUASI-EXPERIMENTAL STUDY

Philip K. Mwei¹ⁱ,

Mary Kerich²,

Susan C. Kurgat³

¹Lecturer, Dr.,

Department of Curriculum, Instruction and Educational Media,

Moi University,

Kenya

²Senior Lecturer, Dr.,

Department of Curriculum, Instruction and Educational Media,

Moi University,

Kenya

³Associate Professor, Dr.,

Department of Curriculum, Instruction and Educational Media,

Moi University,

Kenya

Abstract:

This study responds to the constraints arising from large class sizes in higher education, particularly in teacher education programmes, where increased enrolment limits meaningful lecturer–student interaction. Recognizing these challenges, the study designed and implemented a blended microteaching approach to mitigate its effects on the development of instructional competencies. Traditional microteaching principles, such as focused skill practice, small-scale content, and immediate feedback, are difficult to sustain in overcrowded settings, necessitating adaptive strategies. The study reports quasi-experimental research conducted with 28 mathematics teacher trainees. The blended microteaching approach integrated multiple teaching skills, expanded lesson content, and incorporated delayed assessor feedback. A mixed-methods, one-group pretest–posttest quasi-experimental design was used. Data were collected through a structured questionnaire, alongside participants' written comments on Zoom chat. Findings indicate that the approach improved trainees' teaching confidence and enhanced five of seven instructional skills: lesson introduction, learner reinforcement, use of instructional materials, questioning techniques, and lesson closure. However, no significant improvement was observed in classroom management and language command. The study concludes that blended microteaching is a viable, adaptive strategy

ⁱ Correspondence: email mweikip@mu.ac.ke, mweikip@yahoo.com

for addressing large-class constraints in teacher preparation and recommends further validation across diverse contexts.

Keywords: blended microteaching, microteaching, teacher trainees, teaching skills, confidence

1. Introduction

Effective mathematics teaching is crucial for developing students' problem-solving skills, critical thinking abilities, and overall academic success. High-quality mathematics instruction equips students with the necessary tools to understand and navigate the complexities of the modern world. The facilitators of this quality education are teachers whose mathematics training should emphasize the acquisition and sustainability of appropriate teaching skills (Cetin, 2013; Tisher & Klinzing, 1992). However, teacher trainees often face challenges in acquiring and refining essential teaching skills, such as set induction and closure, class management, and effective questioning techniques, as they navigate bridging the gap between theory and practice (Basturk, 2016; Deneme, 2020; Karakas & Yukselir, 2020; Kourieos, 2016). These challenges can stem from a lack of practical experience, limited opportunities for feedback due to time constraints, lack of self-reflection, and inadequate exposure to diverse teaching strategies in teacher preparation (Deneme, 2020).

Microteaching is a central approach in teacher preparation that exposes and stimulates the acquisition of instructional skills. Microteaching is considered a scaled-down, formal practical training that provides teacher trainees with the opportunity to bridge the theory-practice divide by implementing and refining their teaching skills in a controlled classroom-like environment (Ismail, 2011; Kant, 2017; Ledger & Fischetti, 2019). In addition, microteaching allows teacher trainees to focus on specific teaching behaviours, receive constructive feedback from both assessor and peers, and build self-confidence before entering the real classroom environment (Ismail, 2011). Kumar (2016) expounds that a teaching skill comprises teaching acts that occur one after another in coordination to facilitate learning in students. A microteaching skill, on the other hand, is a brief encounter with the skill for between 3 and 5 minutes in a controlled environment. In teacher preparation contexts, teaching skills are often referred to as microteaching skills because of the short duration of practice or demonstration.

2. Statement of the Problem

Successful preparation of mathematics teachers is fundamental to ensuring quality instruction and student success. Many teacher trainees struggle to develop the teaching skills and confidence needed for effective mathematics instruction, particularly in contexts where pedagogical content knowledge is limited, and practicum experiences are insufficient (Koech & Mwei, 2019; Njiku, 2025; Taley *et al.*, 2021). Traditional face-to-face

microteaching, while valuable, is often limited by time constraints, large class sizes, and inadequate opportunities for individualized feedback, scaffolding, and self-reflection (Deneme, 2020; Ledger & Fischetti, 2019; Unlu, 2018).

Blended learning, which integrates online and face-to-face instruction, offers a promising solution by providing flexible, accessible opportunities for guided practice, video analysis, peer critique, and self-reflection (Ismail, 2011). It also aligns with contemporary pedagogical principles emphasizing active learning, personalized instruction, and the strategic integration of technology to support teaching and learning (Carr, Palmer & Hagel, 2015). Despite its potential, research on the impact of blended microteaching on mathematics teacher trainees' confidence and competence is limited, underscoring the need for further empirical investigation.

3. Theoretical Framework

This study is anchored in Experiential Learning Theory (ELT), developed by David Kolb, which conceptualizes learning as a cyclical process whereby knowledge is created through the transformation of experience (Kolb, 1984). The four stages - concrete experience, reflective observation, abstract conceptualization, and active experimentation - provide a useful framework for understanding how teacher trainees develop instructional competence. Microteaching, particularly within blended learning environments, aligns closely with this cycle by enabling practice, reflection, conceptual refinement, and re-application of teaching strategies. Empirical studies have shown that such approaches enhance teaching skills, reflective practice, and professional confidence (Remesh, 2013; Amobi & Irwin, 2009; Basturk, 2016). Additionally, blended learning environments have been found to support active engagement, flexibility, and deeper learning, which are critical for teacher preparation (Graham, 2019; Vo *et al.*, 2017). Through repeated engagement in experiential cycles, teacher trainees are likely to develop both instructional competence and confidence (Bandura, 1997).

4. Literature Review

4.1 Microteaching in Teacher Education

4.1.1 Definition and Historical Development

Microteaching was developed in the early 1960s at Stanford University by Dwight W. Allen and colleagues as a way to provide a controlled environment for practicing and refining teaching skills before exposure to authentic classroom settings (Bilen, 2014; Eltahir *et al.*, 2021; Sa'ad *et al.*, 2015). The initial goal was to identify and practice specific teaching skills, such as questioning techniques and the use of audiovisual materials, in a simplified, controlled setting. Sithole (2023) provides a broader view of microteaching as a programme that equips teacher trainees with both *subject content* and *teaching methodologies*. However, in most teacher education programmes, subject matter is taught through separate and specialized content courses.

Microteaching is a teacher preparation system where pre-service (initial teacher education) or in-service teachers teach a short lesson to a small group of peers, focusing on a specific teaching skill (Bilen, 2014; Fernandez, 2010; Kant, 2017; Kilic, 2010; Kusmawan, 2017). Kilic (2010), for instance, asserts that microteaching *"is a technique that is used in teacher education where a teacher candidate teaches a small portion of a lesson to a small group of his classmates and teaching competencies are carried out under strict supervision"* (p. 82). Likewise, Kusmawan (2017) observes that microteaching cuts class size, time, task, and content to optimize teacher trainees' learning environment. A review of the definitions of *"microteaching"* reveals that it mainly scales down the *duration of the lesson, class size, and scope of content taught* (breadth and depth) in a simulated instructional environment.

The evolution of microteaching over the years reflects a shift from a focus on general teaching methods to a more targeted approach to teaching skill development, emphasizing assessor feedback, peer critique, and self-reflection (Fernandez, 2010; Koross, 2016; Kusmawan, 2017; Peker, 2009). It is this contemporary focus on microteaching that led to this study.

4.1.2 Key Components and Stages of Microteaching

Microteaching develops specific teaching skills in a controlled setting (Bakir, 2014; Basturk, 2016; Bilen, 2014; Koech & Mwei, 2019). Trainees plan a brief lesson targeting a specific skill and teach it to a small group of peers, providing an opportunity to practice and focus on key competencies. Feedback from peers and supervisors identifies strengths and suggests areas for improvement (Ralph, 2014), which the trainee uses to revise and re-teach the lesson. Critical reflection on this process, especially when reviewing recorded lessons, deepens understanding of teaching effectiveness (Kusmawan, 2017; Al-Humaidi & Abu-Rahmah, 2015; Ghafoor *et al.*, 2012). This cycle promotes skill development, reflective practice, and continuous professional growth.

However, contemporary scholarship emphasizes that the efficacy of microteaching is highly dependent on the nature of the target skill. Educational researchers distinguish between discrete pedagogical competencies, such as question distribution or material deployment, and ecological/relational competencies, most notably classroom management (Cetin, 2013).

Because traditional and blended microteaching structures scale down both duration and classroom complexity to protect the trainee from cognitive overload (Kusmawan, 2017), they compress the instructional environment. While this reductionist framework accelerates the mastery of concrete execution patterns, it restricts exposure to student non-compliance and unpredictable behavioral trajectories. Thus, the theoretical trajectory of microteaching must be conceptualized as an optimized framework for foundational mechanical training, requiring subsequent authentic field experiences to solidify high-order, adaptive classroom control strategies.

4.2 Blended Microteaching Model

Blended learning integrates traditional face-to-face teaching with online learning experiences for the same students and content (Cleveland-Innes & Wilton, 2018; Watson, 2008). It is described as a “*thoughtful fusion of face-to-face and online learning experiences*” (Garrison & Vaughan, 2008). In this study, a blended learning approach for microteaching combined sequential physical and online sessions (Li *et al.*, 2020). Blended learning offers benefits such as increased flexibility, enhanced interaction, and improved learning outcomes. Video recording, especially, supports teacher education by improving performance during microteaching (Deneme, 2020; Koross, 2016; Kusmawan, 2017; Shaw, 2022).

To model blended microteaching, an online component was added to the traditional microteaching cycle (Figure 1). Microteaching and video-recording occurred offline/physically in the presence of peers (Deneme, 2020; Eltahir *et al.*, 2021; Kilic, 2010; Unlu, 2018). Subsequent online sessions during video analysis, offered feedback through guided discussions (Karakas & Yukselir, 2020) that emphasized peer- and self-assessment (Al-Humaidi & Abu-Rahmah, 2015; Chanaguru *et al.*, 2013; Ghafoor *et al.*, 2012), which enhanced flexibility, engagement, and reflective practice.

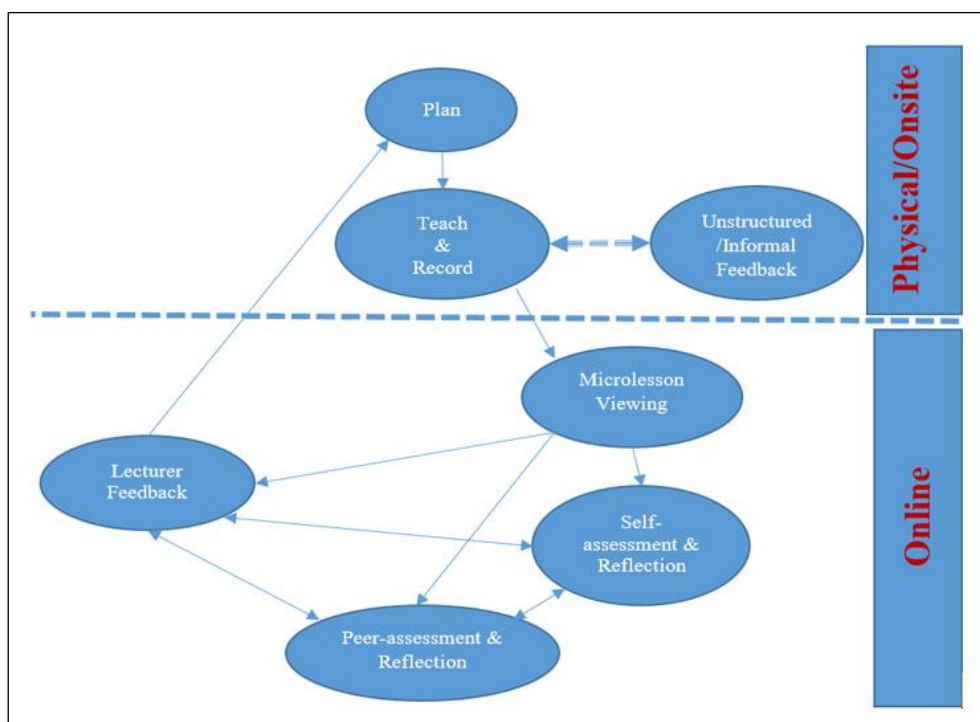


Figure 1: Blended Microteaching Model

Crucially, the horizontal line dividing the physical and online environments in Figure 1 does not function as a strict operational firewall but as a “*permeable boundary within a continuous loop*”. Rather, it delineates the changing medium of a singular, continuous instructional loop. As mapped out by the arrows returning from ‘Lecturer Feedback’ and ‘Peer-assessment & Reflection’ up to the physical ‘Plan’ stage, the model

is inherently cyclical. The insights, critiques, and self-reflections generated during the asynchronous online video analysis directly feed back into the physical world. Trainees use this digital repository of feedback to cognitively restructure their pedagogical approaches, altering their subsequent physical lesson planning and classroom enactments. Online reflection is thus the direct engine for revised physical practice.

4.3 Teacher Self-Confidence

Self-confidence (self-efficacy) refers to a teacher's belief in their ability to plan, organize, and execute instructional tasks that promote effective learning (Tschannen-Moran & Woolfolk Hoy, 2001). It is a key psychological construct derived from Bandura's social cognitive theory, emphasizing that individuals' beliefs in their capabilities influence their motivation, effort, and resilience.

In educational contexts, teacher self-efficacy strongly predicts instructional quality, classroom management and student achievement. Teachers with high self-efficacy tend to adopt learner-centered methods, persist through challenges and exhibit higher commitment to teaching (Klassen & Tze, 2014; Zee & Koomen, 2016). Conversely, low self-efficacy is often associated with teacher stress, burnout, and reduced instructional effectiveness (Skaalvik & Skaalvik, 2010).

Teacher self-efficacy develops primarily through mastery experiences, observation of successful peers, and constructive feedback (Tschannen-Moran & Woolfolk Hoy, 2001). Professional development programs, mentoring, and reflective practice have been shown to enhance teachers' confidence and improve teaching performance (Hoy & Spero, 2005). Consequently, strengthening teacher self-efficacy through microteaching is crucial for improving instructional decision-making and learner outcomes within competency-based and student-centered education systems.

5. Methods and Materials

5.1 Research Objectives

This study set out to achieve the following three objectives:

RO1: To determine teacher trainees' confidence before and after the blended microteaching by gender.

RO2: To determine teacher trainees' confidence before and after the blended microteaching by prior Teaching Experience

RO3: To determine whether there is a significant increase in teacher trainees' competence in teaching skills from pretest to posttest.

5.2 Research Hypothesis

Each of the first two objectives yielded two hypotheses:

HO1a: There is no significant difference in teacher trainees' confidence before or after the blended microteaching by gender.

HO1b: There is no significant increase in teacher trainees' confidence from pretest to posttest by gender.

HO2a: There is no significant difference in teacher trainees' confidence before or after the blended microteaching by prior Teaching Experience.

HO2b: There is no significant increase in teacher trainees' confidence from pretest to posttest by prior Teaching Experience.

HO3: There is no significant increase in teacher trainees' competence in teaching skills from pretest to posttest.

5.3 Research Design and Methodology

This study employed an embedded mixed-methods quasi-experimental single-group pre-test post-test design. The primary focus was quantitative, with primary data collected through a Likert-scale questionnaire administered before and after the intervention to assess teacher trainees' confidence and competence in teaching skills. Qualitative data were collected as secondary evidence from teacher trainees' written comments in Zoom chat during online lesson observations and analysis.

5.3.1 Sampling and Participants

The study targeted third-year, second-semester mathematics teacher trainees. Trainees were organized into microteaching groups with an assigned assessor. A purposive sample of 28 trainees, assigned to the first author for microteaching, was selected.

5.3.2 Blended Microteaching Structure

All trainees attended weekly one-hour lectures on teaching skills, delivered through team-teaching by the lecturers in Curriculum and Instruction. The 28-trainee group was subdivided into three subgroups (of 10, 9, and 9 members). The assessor conducted a two-hour plenary session to introduce the Microteaching Observation Form. Each subgroup selected a member to deliver a "sample" microteaching lesson in a classroom, receiving immediate feedback from peers and the assessor.

Subsequently, subgroups conducted additional onsite microteaching sessions in the absence of the assessor, recording micro-lessons and providing *informal* peer feedback. Over six weeks, trainees engaged in online sessions for video observation, analysis, reflection, and feedback from both the assessor and peers. This blended approach integrated physical practice, collaborative peer review, and online reflection, providing structured opportunities to develop teaching skills, promote self-assessment, and enhance pedagogical competence.

5.3.3 Research Instrument

Two main instruments, using 7-point Likert items, were used to assess teacher trainees' confidence and teaching skills. The Teacher Trainee Confidence Scale measured trainees' self-perceived ability to perform teaching tasks, including classroom management, student motivation, and content delivery. Trainees rated their agreement with statements

reflecting their teaching capabilities. The Teaching Skills Scale, adapted from the Moi University Teaching Practice Observation Guide, contained 30 items evaluating competencies in lesson introduction, learner reinforcement, class management, use of instructional materials, lesson conclusion, language command, and questioning (see Table 1). Additionally, the Zoom Meeting Chat panel was used to collect comments (qualitative data) from trainees during lesson observations.

5.3.4 Instrument Validity

Validity was ensured through expert review. Content validity was established by consulting three experts in teacher education and educational measurement, who evaluated the clarity, relevance, and alignment of each item with the intended constructs (Lynn, 1986). Their feedback guided refinement of both scales, ensuring that the Teacher Trainee Confidence Scale and the Teaching Skills Scale accurately captured the theoretical domains of teacher confidence and instructional competence.

5.3.5 Instrument Reliability

Reliability was evaluated using internal consistency coefficients from the pre-test administrations. Cronbach's alpha (α) was computed for each subscale to determine response consistency. Reliability coefficients of 0.70 or higher were considered acceptable for group-level comparisons (Tavakol & Dennick, 2011; see Table 1).

Table 1: Scale Reliabilities

Variables		No. of Items	Cronbach's α
Teacher Confidence		6	.93
Teaching Skills	1. Lesson Introduction	4	.85
	2. Learner Reinforcement	3	.91
	3. Class Management	4	.86
	4. Use of Materials	3	.86
	5. Language Command	4	.80
	6. Questioning	4	.73
	7. Lesson conclusion	3	.86

5.3.6 Data Analysis

Composite mean scores were computed by summing the raw responses within each respective domain for individual participants at pretest and posttest, without averaging down to the single-item baseline. This linear summation preserved the continuous nature of the data, satisfying the assumptions required to perform the subsequent paired-samples t-tests.

To ensure the trustworthiness and validity of the qualitative data derived from the Zoom text feed, a data-filtering protocol was established prior to thematic coding. Raw text logs from the Zoom Meeting Chat panels were compiled and audited to mitigate social desirability bias and the performative politeness typical of peer-cohort evaluations. Superficial affective expressions, uncritical praise, and generic compliments devoid of

pedagogical context (e.g., “Nice lesson,” or “The introduction is good”) were systematically excluded from the dataset.

Inductive thematic analysis was restricted exclusively to substantive entries that offered explicit, descriptive evidence of pedagogical execution or instructional strategy (e.g., “He recalled the previous related topic that is ‘in form one, you learnt about...’”). The remaining qualitative segments were subjected to independent, parallel coding by two researchers to establish inter-rater reliability, with discrepancies resolved through consensual peer debriefing against the standardized metrics of the Moi University Teaching Practice Observation Guide.

6. Results and Discussions

6.1 Teacher Trainee Confidence in Teaching

Objective 1: To determine teacher trainees’ confidence before and after the blended microteaching by gender.

HO_{1a}: There is no significant difference in teacher trainees’ confidence before or after the blended microteaching by gender.

Because the purposive sample exhibits a distinct gender asymmetry (21 males, 7 females), the data were rigorously screened for violations of parametric assumptions prior to running the Independent Samples *T*-tests. A Levene’s Test for Equality of Variances was performed for both time periods. At pre-test, the variance between groups was highly homogenous ($F = 0.141, p = .711$), and this equality of variance was sustained at post-test ($F = 0.035, p = .853$). Because both *p*-values greatly exceed the ($\alpha = .05$) threshold, the assumption of homoscedasticity is preserved. This confirms that the unequal sample sizes do not artificially inflate or invalidate the reported *t*-test statistics.

Based on the independent-samples *T*-test analysis, both at pretest and posttest (Table 2), the following conclusions were made:

- 1) There was no statistically significant difference in confidence levels between male and female teacher trainees before microteaching ($t(26) = 0.223, p = .825$).
- 2) There was no statistically significant difference in confidence levels between male and female teacher trainees after microteaching ($t(26) = 0.040, p = .968$).

Table 2: Independent Samples *T*-test of Pre- and Post-test Teacher Confidence by Gender

	Gender	<i>n</i>	<i>M</i>	<i>SD</i>	Independent Samples <i>T</i> -Test		
					<i>T</i>	<i>df</i>	<i>p</i>
Pre-test	Male	21	21.4	7.7	0.223	26	.825
	Female	7	22.1	8.1			
Post-test	Male	21	27.7	8.2	0.040	26	.968
	Female	7	27.9	8.1			

These results indicate that teacher trainees’ gender did not contribute any significant difference in teaching confidence prior to and after microteaching. The next objective was

to determine whether the observed increase in the means from pretest to posttest is dependent on gender.

HO1b: There is no significant increase in teacher trainees' confidence from pretest to posttest by gender.

Based on a Paired Samples *T*-Test results (Table 3), there is a significant increase in the confidence of both male and female teacher trainees from pretest to posttest. For female teacher trainees, the mean confidence score increased significantly from $M = 22.1$ ($SD = 8.1$) before microteaching to $M = 27.9$ ($SD = 8.1$) after microteaching ($t(6) = -10.106$, $p = .000$). Similarly, for male teacher trainees, the mean confidence score significantly increased from $M = 21.4$ ($SD = 7.7$) to $M = 27.7$ ($SD = 8.2$) ($t(20) = -9.029$, $p = .000$). The highly significant values ($p < .001$) confirm that the post-intervention confidence gains across both genders are statistically robust rather than accidental, underlining a strong positive association between the blended microteaching framework and elevated trainee self-efficacy.

Table 3: A Paired Samples T-test of Pre- and Post-test Teacher Confidence by Gender

	<i>n</i>	<i>M(SD)</i>		Paired Samples <i>T</i> -Test		
				<i>T</i>	<i>df</i>	<i>p</i>
Gender		Pretest	Posttest			
Male	21	21.4(7.7)	27.7(8.2)	-9.029	20	.000
Female	7	22.1(8.1)	27.9(8.1)	-10.106	6	.000

Further analysis of within-subjects effects using a "*repeated measures ANOVA*" to determine whether the significant *gain* in confidence scores of both male and female teacher trainees between pretest and posttest differs was not significant ($F(1,26) = 0.238$, $p = .630$). That is, the increase in confidence mean score of 6.3 (27.7-21.4) for male teacher trainees is not statistically different from that of their female counterparts of 5.8 (27.9-22.1); thus, the positive changes between the genders are essentially equal.

Objective 2: To determine teacher trainees' confidence before and after the blended microteaching by prior Teaching Experience

HO2a: There is no significant difference in teacher trainees' confidence before or after the blended microteaching by prior Teaching Experience.

An independent-samples *t*-test was conducted to examine whether prior teaching experience influenced teacher trainees' confidence levels before and after the blended microteaching intervention. A Levene's Test for Equality of Variances indicated that at both pre-test and post-test, the variance between groups was homogenous ($F = 0.011$, $p = .916$) and ($F = 2.653$, $p = .115$), respectively.

The results (Table 4) indicate no statistically significant difference in confidence between trainees with and those without prior teaching experience at pretest ($t(26) = -1.711$, $p = .099$) or posttest ($t(26) = -1.308$, $p = .202$). These findings suggest that prior

teaching experience did not significantly impact the development of teaching confidence among trainees participating in the blended microteaching program.

Table 4: Independent Samples T-test of Pre- and Post-test Teacher Confidence by Teaching Experience

	Teaching Experience	<i>n</i>	<i>M</i>	<i>SD</i>	Independent Samples T-Test		
					<i>T</i>	<i>df</i>	<i>p</i>
Pre-test	No	15	19.3	7.5	-1.711	26	.099
	Yes	13	24.2	7.4			
Post-test	No	15	25.9	8.8	-1.308	26	.202
	Yes	13	29.9	6.7			

HO2b: There is no significant increase in teacher trainees' confidence from pretest to posttest by prior Teaching Experience.

According to the results in Table 5, the cohort experienced a statistically meaningful progression in confidence, demonstrating that these self-perceived gains were sustained regardless of background teaching exposure. For teacher trainees without prior experience, the average confidence score increased significantly from a pre-test score of 19.3 (*SD* = 7.5) to a post-test score of 25.9 (*SD* = 8.8) ($t(14) = -8.974, p = .000$). Similarly, for those with prior experience, confidence increased from a pre-test score of 24.2 (*SD* = 7.4) to a post-test score of 29.9 (*SD* = 6.7) ($t(12) = -7.013, p = .000$).

The highly significant changes ($p < .001$) across both groups indicate a clear upward trend in trainees' confidence following the intervention. While growth was universal, trainees entering without previous instructional exposure achieved a slightly larger numerical advancement in their mean scores, which may reflect a more prominent developmental impact for less-experienced individuals

Table 5: A Paired Samples T-test of Pre- and Post-test Teacher Confidence by Teaching Experience

	<i>n</i>	<i>M(SD)</i>		Paired Samples T-Test		
		Pretest	Posttest	<i>T</i>	<i>df</i>	<i>p</i>
Prior Teaching Experience						
No	15	19.3(7.5)	25.9(8.8)	-8.974	14	.000
Yes	13	24.2(7.4)	29.9(6.7)	-7.013	12	.000

Further analysis for the test of within-subjects effects using a "*repeated measures ANOVA*", to determine whether the increase in confidence from pretest to posttest (with prior experience, gain = 5.7 and without prior experience = 6.6) is dependent on prior experience or not was conducted. Confidence mean scores gains were not significantly influenced by the teacher trainee's prior teaching experience ($F(1, 26) = 0.689, p = .414$).

Despite gender and prior teaching experience, this study has shown that blended microteaching improved teacher trainees' confidence in teaching, echoing previous findings (Bacova *et al.*, 2019; Basturk, 2016; Bilen, 2014; Ghafoor *et al.*, 2012; Ismail, 2011;

Kusmawan, 2017; Ledger & Fischetti, 2019). Ghafoor *et al.* (2012) and Sa'ad *et al.* (2015) found that microteaching reduces anxiety, nervousness, and fear in teacher trainees.

Qualitative data gathered from comments made by teacher trainees during the video viewing, analysis, and assessment of the microlessons were analyzed thematically. These comments were made directly on the Zoom Meeting "chat" section. Teacher trainees' confidence was defined by the "*Observable Confidence and Demeanor*," which refers to the overall impression projected to peers. This includes appearance, self-presentation, body language, and the energy brought to the lesson. Confident teacher trainees were perceived as knowledgeable, prepared, and in control of the classroom environment. In contrast, lack of confidence appeared as nervousness, hesitation, or disengagement, undermining credibility and potentially affecting students' learning (Ghafoor *et al.*, 2012). The comments indicate that perceived confidence plays a crucial role in shaping successful teaching experiences and enhancing student learning outcomes.

Inductive thematic analysis of the comments yielded three overlapping attributes that collectively shaped perceptions of confidence in the classroom. These attributes included eye contact, content mastery, movement and body language, and energy levels, all of which contributed to the overall impression of confidence during lesson delivery.

Eye contact emerged as a key indicator of confidence and effective communication. Maintaining eye contact demonstrates engagement, attentiveness, and a connection with learners, enabling the teacher to gauge understanding and build rapport. Teacher trainees who avoided eye contact were perceived as nervous or insufficiently prepared, which could diminish student engagement. Representative comments underscoring this attribute are, "*The teacher is confident and maintains eye contact*" and conversely, "*The teacher is confident though less eye contact with the students.*" Overall, sustained and reasonable eye contact reinforced the perception of confidence and control.

Content mastery was another crucial attribute. Teacher trainees who exhibited a strong understanding of the subject matter were able to speak clearly, respond to questions confidently, and adjust instruction dynamically to students' needs. In contrast, hesitation or uncertainty in content delivery undermined both confidence and credibility. Illustrative comments include, "*She's very confident with the content she's delivering,*" and "*He has a good mastery of content; he is not hesitating.*" High content mastery, therefore, directly supported teacher trainees' perceived confidence and authority in the classroom. *Movement and body language* also influenced perceptions of confidence. Purposeful, deliberate movements, such as interacting with students, using gestures effectively, and navigating the classroom space, signaled control and engagement. Conversely, erratic or limited movement, such as focusing predominantly on the writing board, suggested lower confidence and reduced interaction. Comments reflecting this included, "*Look at how she moves confidently (without hurry!)*," "*She's very confident and moves around,*" and "*Movement is purposeful as she walks to see what the learners are doing.*" Effective use of movement and composure reinforced the teacher's presence and contributed to a positive classroom atmosphere.

In contrast, *lack of confidence* was observed through hesitant delivery, restricted eye contact, or general unease. Teacher trainees displaying these behaviors were perceived as less capable, which could reduce student engagement or question the teacher's competence. Examples include: "Her confidence is a bit low" and "His movements are mainly along the whiteboard." These observations illustrate how insufficient confidence can negatively affect lesson delivery and learner perception.

Overall, teacher trainee confidence in microteaching was shaped by a combination of factors, including demeanor, eye contact, mastery of content, purposeful movement, and expressive body language. Positive performance in these areas fostered an engaging and authoritative teaching presence, while deficiencies hindered lesson effectiveness. The findings underscore the importance of developing both pedagogical competence and observable self-assurance to support effective teaching and learner engagement.

6.2 Teacher Trainees' Competence in Teaching Skills

This section presents the results for the third research objective, RO₃: *To determine whether there is a significant increase in teacher trainees' competence in teaching skills from pretest to posttest*. Seven teaching skills were identified in this study for investigation. These were lesson introduction, learner reinforcement, class management, use of materials, language command, questioning techniques, and lesson conclusion. Therefore, hypothesis HO₃ was tested for each of the seven teaching skills:

H03: There is no significant increase in teacher trainees' competence in [teaching skill] from pretest to posttest.

Table 6 shows the means, standard deviations, *T*, and *p*-values for each teaching skill. The results in Table 6 are discussed in the relevant sections that follow.

Table 6: A Paired Samples T-test of Pre- and Post-test Teacher Trainee Competencies

Teaching Skill	<i>n</i>	Pre-Test <i>M</i> (<i>SD</i>)	Post-Test <i>M</i> (<i>SD</i>)	Paired Samples T-Test		
				<i>T</i>	<i>df</i>	<i>p</i>
Lesson Introduction	28	15.3(5.5)	20.6(3.9)	-6.42***	27	.000
Learner Reinforcement	28	10.5(5.0)	14.2(4.4)	-9.62***	27	.000
Class management	28	17.3(6.1)	17.5(5.9)	-0.32	27	.755
Use of Materials	28	10.6(4.0)	13.6(3.1)	-5.26***	27	.000
Language Command	28	16.0(3.9)	15.4(4.1)	1.18	27	.247
Questioning	28	14.3(3.5)	19.8(5.0)	-7.91***	27	.000
Lesson Conclusion	28	10.3(4.3)	13.5(4.2)	-13.76***	27	.000

6.2.1 Lesson Introduction

Table 6 shows a significant increase in teacher trainees' competence in lesson introduction ($t(27) = -6.42, p = .000$) from pretest ($M = 15.3, SD = 5.5$) to posttest ($M = 20.6, SD = 3.9$). The hypothesis, "there is no significant increase in teacher trainees' competence in lesson introduction from pretest to posttest," is rejected. Consequently, the evidence points to a statistically meaningful upward shift in the cohort's competence in lesson introduction

following their engagement with the blended microteaching framework. This finding supports Fernandez (2010) and Ghafoor *et al.* (2012) that microteaching enhances lesson introduction skills, such as a brief review of learners' prior knowledge and current knowledge.

Inductive thematic analysis of comments related to lesson introductions in teacher trainees yielded several key attributes that influence learners' engagement and understanding. One of the most important attributes was *linking to prior knowledge*, which involves connecting the new lesson to students' existing knowledge and experiences. Effective linking, a form of scaffolding, helps make learning meaningful, facilitates retention, and enables students to see connections between previous and current topics. This attribute was evident in the majority of the introductions where trainees reviewed previous lessons, asked questions to elicit prior knowledge, or explicitly connected past and present content. Representative comments included, *"First, she started with greetings and then recap, then introduced the present lesson,"* and *"He gave the introduction on what he will teach and also recalled the previous related topic that is 'in form one, you learnt about.'"* Conversely, some introductions failed to establish these connections, potentially limiting students' comprehension. Illustrative comments in this regard were, *"The previous and current lessons are not linked,"* and *"He didn't link the lesson with the previous one."*

A third attribute concerned the *overview of lesson objectives*, emphasizing the importance of presenting clear objectives at the start of the lesson. Stating objectives gives learners a roadmap of what they will learn and helps focus attention on key concepts. Positive examples included, *"Well-stated/listed lesson objectives,"* *"Stated clear objectives of the lesson,"* and *"She started by outlining lesson objectives."* In contrast, some introductions lacked clarity or failed to present objectives, potentially hindering students' ability to engage purposefully with the lesson. Comments illustrating this included, *"There were no clear objectives of the lesson,"* and *"Students were not given objectives of the lesson."*

Overall, these findings suggest that effective lesson introductions are characterized by purposeful linking to prior knowledge, clear communication of lesson objectives, and engaging presentation strategies. Where these elements are absent, learners' understanding and engagement may be compromised, underscoring the need for targeted instructional support in designing impactful lesson introductions.

6.2.2 Learner Reinforcement

Table 6 shows a significant increase in learner reinforcement skills ($t(27) = -9.62, p = .000$) from pretest ($M = 10.5, SD = 5.0$) to posttest ($M = 14.2, SD = 4.4$). The hypothesis that *"there is no significant increase in teacher trainees' competence in learner reinforcement skills from pretest to posttest"* is rejected. Therefore, the results suggest that the implementation of blended microteaching is strongly associated with a significant progression in teacher trainees' competence in reinforcement techniques. This finding aligns with prior studies showing that microteaching enhances teacher trainees' reinforcement skills, such as using praise and encouragement (Ghafoor *et al.*, 2012; Kilic, 2010).

Thematic analysis of teacher trainees' comments identified three attributes of reinforcing student responses: verbal reinforcement, nonverbal reinforcement, and lack of reinforcement. Verbal reinforcement involves spoken acknowledgment of student contributions through praise or feedback emphasizing correctness. Trainees noted, for example, "*She reinforced the learners by saying 'good' after answering questions,*" and "*Teacher uses positive reinforcements such as 'You are right.'*" Effective verbal reinforcement boosts confidence, motivates participation, and reinforces desired behaviors, while generic or absent praise diminishes its impact (Ghafoor *et al.*, 2012; Kilic, 2010).

Nonverbal reinforcement encompasses gestures, facial expressions, and other cues signaling approval. Examples include "*She is using reinforcement by asking learners to clap their hands,*" and "*Use of signs such as thumbs-up.*" Such cues can amplify verbal praise and foster a supportive classroom climate. However, Basturk (2016) emphasizes that microteaching alone may not sufficiently develop these skills, underscoring the need for deliberate practice.

Lack of reinforcement refers to the absence or inconsistent acknowledgment. Trainees reported, "*She sometimes, in fact, most of the time, has forgotten about reinforcement!*" and "*His reinforcement is a bit low. I didn't hear words like good.*" Insufficient reinforcement can reduce motivation and engagement, leaving students feeling unappreciated.

Overall, the findings show that consistent and specific reinforcement, both verbal and nonverbal, is essential for promoting student participation, motivation, and a positive classroom environment. While trainees recognize and implement reinforcement strategies, gaps in their application suggest a need for focused professional development to enhance deliberate and sustained use of these techniques.

6.2.3 Class Management

While the statistical analysis (Table 6) indicates that the blended microteaching intervention did not yield a significant quantitative improvement in teacher trainees' classroom management competencies ($t(27) = -0.32, p = .755$) with pretest scores ($M = 17.3, SD = 6.1$) and posttest scores ($M = 17.5, SD = 5.9$), this outcome reveals a critical structural divergence between discrete instructional actions and dynamic pedagogical skills.

In alignment with Experiential Learning Theory (Kolb, 1984), cognitive development relies heavily on the authenticity of the active experimentation stage. Microteaching, by design, operates within a simulated framework utilizing peer cohorts who naturally exhibit compliant, cooperative classroom behaviors. Consequently, this environment lacks the authentic behavioral variances, spontaneous disruptions, and cognitive diversity characteristic of real-world secondary school classrooms, limitations previously observed by Basturk (2016) and Kourieos (2016).

This finding underscores a functional boundary of the microteaching paradigm: while the model provides a highly effective framework for mastering discrete, repeatable instructional mechanics (such as set induction, structuring questions, and mechanical closure), it serves primarily as a conceptual precursor rather than a functional substitute for relational classroom management. The acquisition of fluid behavior-management

competencies requires prolonged exposure to complex, unscripted ecological environments that cannot be fully replicated within simulated peer-to-peer structures.

Thematic analysis of teacher trainees' comments identified three attributes of class management: teacher movement and presence, classroom control, and student participation and engagement. *Teacher movement and presence* refers to how a teacher's physical positioning and mobility within the classroom affect student engagement and behavior. Trainees observed, for example, "*She needs to move around the class to ensure the learners are concentrating,*" "*She has limited movements,*" and "*Walking around confirming answers [with a thumbs-up emoji].*" Effective movement enables teachers to monitor understanding, provide individual feedback, prevent disruptions, and create a dynamic learning environment. However, Basturk (2016) posits that pre-service teachers often underutilize classroom space.

Classroom control captures the ability to manage behavior and maintain a productive learning environment. Trainees commented, "*A single answer from each student means there are no chorus answers,*" and "*Was not so good at controlling the class.*" These observations prioritize establishing clear expectations, consistent routines, and strategies to address disruptive behavior. Weak classroom control can lead to reduced engagement, increased disruptions, and a less effective learning environment.

Student participation and engagement focus on strategies that promote active learning and equitable opportunities for contribution. Sample comments included, "*The learners are raising their hands before being chosen,*" "*Learner engagement through direct question-answer,*" and "*Checks up whether the students have written the correct equations.*" These indicate that teachers who successfully manage participation encourage inclusive learning, enhance motivation, and foster active student involvement.

Overall, the findings suggest that effective class management relies on deliberate teacher movement, consistent behavioral control, and strategies that maximize student participation, all of which contribute to a positive and engaging classroom environment.

6.2.4 Use of Materials

Table 6 shows a significant increase in teacher trainees' skill in using instructional materials ($t(27) = -5.26, p = .000$) from pretest ($M = 10.6, SD = 4.0$) to posttest ($M = 13.6, SD = 3.1$). The hypothesis, "*there is no significant increase in teacher trainees' competence in the use of materials from pretest to posttest,*" is rejected. These findings indicate a robust, non-random development in trainee capability for integrating instructional materials over the course of the study, supporting the viability of the blended model. This positive trajectory aligns with established literature indicating that microteaching environments actively support the development of pre-service teachers' skills in managing and deploying instructional resources (Jebungei, 2017; Kilic, 2010).

In this study, teacher trainees predominantly used the writing board (chalkboard or whiteboard) and charts, reflecting a limited variety of instructional materials, likely due to a lack of materials to construct alternative resources such as models.

Thematic analysis of the comments identified three attributes of the writing board design and use. First, *handwriting and legibility* emerged as key attributes, emphasizing the clarity and readability of board writing. Trainees observed, for example, that “*his handwriting on the board is good and can be seen clearly,*” “*visible writing on the board,*” and “*clear handwriting.*” Clear and legible writing enables students to accurately interpret content, reducing cognitive “noise” and supporting effective communication. Teachers are encouraged to maintain consistent letter formation and appropriate font sizes (Mwei, 2017) with sufficient contrast, and where possible, use color or underscoring to emphasize key points.

Second, *board organization and layout*, which focuses on the structure and arrangement of information on the writing board. Comments included, “*the whiteboard is well divided. She is also using well-sized, legible handwriting,*” and “*well-organized board, clear handwriting.*” Partitioning the board into sections, using headings, and providing visual cues helps students follow lesson flow, identify key concepts, and understand relationships between ideas, enhancing comprehension and retention.

Finally, the *use of the writing board* underscores strategic and effective application of the board. Trainees noted, “*Good use of the whiteboard,*” “*Whiteboard was used appropriately,*” and “*She was effective in the use of the chalkboard.*” Effective board use involves selecting the appropriate type and integrating the board seamlessly with other teaching strategies, supporting clarity, engagement, and instructional effectiveness.

These findings, generally, indicate that legible handwriting, thoughtful board layout, and strategic board use are essential for effective teaching. These practices enhance communication, student engagement, and learning outcomes.

6.2.4.1 Chart Use

The majority of microlessons incorporated charts, which served as a key instructional material to support lesson delivery. Inductive thematic analysis of teacher trainees’ written comments revealed four attributes: effective chart usage and integration, chart visibility and design, chart organization, and chart timing.

Effective chart usage and integration refers to how teacher trainees actively and purposefully incorporate charts into their lessons, using them not merely as displays but as central tools to explain concepts, guide lesson flow, and reinforce key points. Trainee comments underscored this practice: “*She referred to the outline chart in her explanations and also used the graphic effectively,*” “*He uses the charts well to explain to the students how the process flows,*” and “*Regular use of the teaching aid chart.*” Effective integration demonstrates that the teacher understands the value of visual aids and can leverage them to support learning outcomes.

Chart visibility and design address the physical characteristics of the charts, including font size, clarity, color use, layout, and overall visibility to students. Comments illustrating this attribute included: “*Graphics are brief and self-explanatory,*” “*The chart is visible to the students,*” and “*The chart is well-designed; she has used more than one color.*” Clear,

visually accessible charts help students follow the lesson and comprehend key concepts, whereas poor visibility or unclear design can hinder understanding.

Chart organization focuses on the structural arrangement of information on the chart. Logical layout and clarity enhance student comprehension and engagement. Sample comments included: “*The outline chart is very well-organized,*” “*Use of a simple chart,*” and “*The layout is okay, and the writing is also large enough for learners to see.*”

Chart timing refers to the point at which the chart is introduced during the lesson. Comments such as “*She should have used the chart at the beginning to describe the sides of a triangle from the drawing,*” and “*The chart came in late; I noticed that weakness,*” indicate that appropriate timing is critical. Introducing the chart at the right moment ensures that students grasp key concepts efficiently, while delayed use may reduce its effectiveness.

The findings broadly indicate that thoughtful integration, clear design, organized structure, and timely introduction of charts are essential for effective teaching. These elements enhance student understanding, engagement, and overall learning outcomes.

6.2.5 Language Command

Table 6 indicates that there is no significant change in teacher trainees’ language command from pretest to posttest ($t(27) = 1.18, p = .247$), but a slight drop from pretest ($M = 16.0, SD = 3.9$) to posttest ($M = 15.4, SD = 4.1$). The hypothesis, “*there is no significant increase in teacher trainees’ competence in language command skills from pretest to posttest,*” is not rejected. Therefore, the results suggest that the implementation of blended microteaching was not associated with any significant progression in teacher trainees’ linguistic proficiency or classroom language use. This finding echoes Basturk (2016), who established that the communication skills of primary pre-service teachers were not at the desired level, but acceptable. However, Ghafoor *et al.* (2012) found that microteaching enhanced effective communication.

Thematic analysis of teacher trainees’ comments revealed limited observations regarding language command during the microteaching sessions. The sparse commentary can be attributed to three main factors. First, the lack of authentic communicative contexts within the microteaching sessions may have constrained trainees’ ability to demonstrate or evaluate spontaneous language use. The artificial and controlled nature of microteaching does not fully replicate the dynamic demands of a real classroom, where teachers must adapt in real time to diverse student needs, unexpected questions, and varied comprehension levels.

Second, the homogeneity of the “student” peers limits exposure to linguistic challenges that would arise from teaching learners with different proficiency levels, cultural backgrounds, and learning styles. This uniformity reduces opportunities for teacher trainees to navigate authentic classroom language demands, diminishing the scope for peer feedback on language command.

Finally, the absence of targeted linguistic feedback specifically addressing language proficiency further limited discussion of language command. Peer comments tended to be underdeveloped in this aspect, focusing on general impressions rather than

specific linguistic strengths or areas for improvement. For example, the comments mostly reflected surface-level observations, such as: *"The language proficiency is okay,"* and *"Her language is proficient..."*

Overall, while the microteaching sessions provided opportunities to practice instructional strategies, the findings indicate that language command was not a prominent focus. This suggests a need for more structured activities and feedback mechanisms that explicitly assess and support teacher trainees' language proficiency in pedagogical contexts.

6.2.6 Questioning Skills

Table 6 shows a significant increase in teacher trainees' questioning skills ($t(27) = -7.91, p = .000$) from pretest ($M = 14.3, SD = 3.5$) to posttest ($M = 19.8, SD = 5.0$). The hypothesis, *"there is no significant increase in teacher trainees' competence in questioning skills from pretest to posttest,"* is rejected. Therefore, the results suggest that the implementation of blended microteaching is strongly associated with a significant progression in teacher trainees' competence in questioning skills. This finding is consistent with prior work showing that microteaching encourages learners to answer questions (Ghafoor *et al.*, 2012; Kilic, 2010). Thematic analysis of teacher trainees' comments underscored questioning as a central strategy for student engagement, revealing two key attributes: its role in student engagement and in student interaction and participation.

Questioning as a strategy for engagement involves using questions to actively involve students in the lesson, fostering a more interactive classroom where learners contribute and construct knowledge. Trainees observed, for example, *"She's engaging the students in the class by asking them questions,"* *"Engages the student by asking questions,"* and *"Engages her learners through question and answer."* The repetition of such observations underscores the importance of questioning in promoting attention, participation, and formative assessment, as well-designed questions can gauge understanding, stimulate thinking, and guide the flow of the lesson.

Student interaction and participation emphasize learners' responses to the teacher's questions, reflecting active participation and comprehension. Comments included, *"she asked questions and the learners answered"* and *"interacts with her learners during question and answer."* Active participation allows students to demonstrate understanding and contributes to a dyadic flow of communication in the classroom. The extent and quality of student responses serve as indicators of lesson effectiveness. Consistent, thoughtful answers suggest clear instruction and a supportive learning environment, while limited participation may indicate challenges with question clarity, lesson presentation, or classroom dynamics.

The findings suggest that purposeful questioning, coupled with active student response, is a key feature of effective teaching. This approach enhances engagement, supports formative assessment, and promotes meaningful learning outcomes.

6.2.7 Lesson Conclusion

Table 6 shows a significant increase in teacher trainees' skills in lesson conclusion ($t(27) = -13.76, p = .000$) from pretest ($M = 10.3, SD = 4.3$) to posttest ($M = 13.5, SD = 4.2$). The hypothesis, "*there is no significant increase in teacher trainees' competence in lesson conclusion skills from pretest to posttest,*" is rejected. Consequently, the metrics point to a statistically meaningful upward shift in the cohort's proficiency in managing lesson conclusions following their engagement with the blended microteaching framework. This supports the findings that microteaching encourages the development of lesson conclusion skills (Ghafoor *et al.*, 2012; Kilic, 2010). Specifically, lesson summary is an important skill for lesson conclusion (Kilic, 2010).

Thematic analysis of teacher trainees' written comments revealed four key components of effective lesson conclusion: Summary of lesson content, assignment of tasks, providing hints about the next lesson, and provision of further reading and reference materials.

Summary of Lesson Content focuses on the presence, quality, and clarity of lesson recaps. Effective summaries provide a concise review of key concepts, reinforce learning objectives, and help students consolidate their understanding. Trainees' comments included: "*The conclusion is a good summary of the lesson. Good job!*" "*He did a good summary of main points*" and "*She summarized well.*" Conversely, the absence of a summary was noted in comments such as: "*No conclusion, and no summary given,*" and "*He didn't summarize the class.*" Well-executed summaries allow students to connect new knowledge to prior learning and support deeper understanding, while inadequate recaps may hinder consolidation and retention.

Assignment of Tasks centers on using assignments to reinforce learning and assess understanding. Assignments can include practice problems, projects, or other activities. Comments underscoring effective practice: "*A very very nice lesson conclusion, by giving assignment,*" "*He did a good summary and assignment,*" and "*She summarized well and gave assignments.*" Assignments provide opportunities for students to apply knowledge, receive feedback, and consolidate learning, making them an essential component of effective lesson closure.

Providing Hints or Information about the Next Lesson involves preparing students for future learning. This can include previewing key concepts, suggesting preparatory reading, or posing stimulating questions. Sample comments included: "*The teacher gives a hint on the next lesson,*" "*Hinted at the next lesson,*" and "*She states the next lesson study area.*" Introducing upcoming topics scaffolds learning, builds anticipation, and helps students make connections across lessons.

Providing Further Reading and Reference Materials emphasizes offering additional resources for independent exploration. Comments included: "*...giving ... further reading,*" "*The teacher gives a further reading,*" and "*In conclusion, he gave further reading in the KLB textbook.*" Access to supplementary materials promotes deeper understanding, encourages self-directed learning, and supports differentiation, allowing students to pursue personal interests and strengthen mastery of the subject.

Effective lesson conclusions consolidate learning and reinforce key concepts. They also prepare students for subsequent lessons and encourage independent exploration, making them a critical element of successful teaching.

7. Limitations of the Study

A notable limitation of this study is that a single-group pretest-posttest quasi-experimental design that has zero internal control. Without a control group, the observed confidence gains ($p < 0.001$) cannot be cleanly isolated from maturation effects, history effects, or simply the participant's natural progression through their third-year curriculum

Similarly, the structural environment of the online feedback channel is a limitation. Because the qualitative data were sourced from live, un-anonymized Zoom chat logs populated by a single peer cohort, the feedback matrix was susceptible to peer bias and social desirability constraints. This manifested in a high frequency of surface-level or performative affirmations regarding language proficiency and classroom execution. While systemic data-filtering protocols successfully isolated substantive pedagogical critiques from generic compliance statements for analysis, the live digital medium inherently constrains deep, unfiltered critical reflection. Future iterations of this blended model should incorporate anonymized digital response repositories or asynchronous, post-lesson semi-structured interviews to elicit more candid and granular peer evaluations.

8. Conclusions

The findings of this study demonstrate that the blended microteaching is an effective pedagogical approach for developing teacher trainees' confidence and instructional competence. By combining online and in-person components, the model created a supportive environment where trainees could practice, reflect, and refine their teaching skills. Trainees reported increased confidence in their ability to engage students, manage classrooms, and deliver lessons effectively, suggesting that repeated practice in a low-risk, scaffolded environment enhances self-efficacy.

The blended approach also contributed to the development of specific teaching competencies. Trainees showed improved performance in lesson introduction, reinforcement of student responses, the use of instructional materials, questioning techniques, and lesson conclusion. These areas correspond closely with key dimensions of effective teaching and classroom management, indicating that the blended microteaching model retains many of the benefits of traditional microteaching while offering additional flexibility and reflective opportunities. Importantly, consistent use of verbal and nonverbal reinforcement, active student engagement strategies, and deliberate integration of materials were observed, demonstrating that the model supports both pedagogical skill development and reflective practice.

Moreover, the study found that gender and prior teaching experience did not significantly influence trainees' confidence, emphasizing the inclusivity and adaptability of the blended model. This suggests that the approach is broadly applicable, capable of supporting diverse trainee backgrounds without bias, and emphasizes that confidence and competence are primarily shaped by structured practice and targeted feedback rather than demographic factors.

Overall, the evidence indicates that blended microteaching is a valuable pedagogical model for teacher preparation. It not only enhances confidence and instructional competence but also promotes reflective practice, strategic classroom management, and effective use of teaching resources. By providing opportunities for iterative improvement, constructive feedback, and active student engagement, the model prepares teacher trainees to transition successfully into real classroom settings, equipping them with the skills, confidence, and pedagogical insight required for effective teaching.

9. Recommendations

The study findings inform several practical recommendations. These aim to enhance the effectiveness of blended microteaching in teacher education.

First, it is important to strengthen support systems for digital pedagogy. Teacher trainees, regardless of gender or prior teaching experience, should have equitable access to digital learning tools and structured opportunities to practice using them. Providing guided practice and technical support can enhance trainees' confidence, ensuring that all participants benefit fully from blended instructional approaches.

Second, there is a need to expand and diversify the implementation of blended microteaching. Education stakeholders, including curriculum developers and practicum coordinators, should explore extending this approach beyond the current study setting. Conducting pilot studies and implementation trials across different subjects, year groups, and teacher education institutions can provide insight into its scalability, adaptability, and potential for broader impact on teacher preparation programs.

These recommendations aim to support the development of teacher trainees' confidence, pedagogical competence, and reflective practice, while promoting inclusive, flexible, and effective training environments.

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Conflict of Interest Statement

The authors declare no conflicts of interest.

About the Author(s)

Dr. Philip K. Mwei has a PhD in Educational Communication and Technology, and he is a lecturer of Mathematics Education and Educational Technology at Moi University, Department of Curriculum, Instruction and Educational Media. He has taught and examined mathematics education courses at undergraduate and master's levels. He has published in peer-reviewed journals with research interests on: Mathematical problem solving, ICT integration in education (esp. in curriculum and instruction), Language of Mathematics/Mathematical language, Teaching models and skills for effective.

Dr. Mary Kerich is a Senior Lecturer in Educational Communication and Technology with extensive expertise and professional experience in pedagogy, curriculum development, learning design, educational technology, quality assurance, and competency-based education and training. Her work reflects a strong commitment to strengthening the quality, relevance, accessibility, and effectiveness of education through innovative pedagogical approaches, well-designed curricula, and technology-enhanced learning. She has extensive experience in teacher education, faculty development, curriculum design, online learning, and pedagogical leadership. Her professional practice combines academic scholarship with practical experience in supporting educators and institutions to respond effectively to emerging trends in education, particularly the increasing integration of technology and competency-based approaches into teaching and learning. A significant aspect of her professional development has been her involvement in Pedagogical Leadership in Africa, where she was trained and subsequently became a trainer in pedagogical leadership. Through this role, she has contributed to strengthening the pedagogical knowledge and leadership capacities of educators, supporting them to improve teaching practices, learner engagement, instructional planning, and the overall quality of learning experiences. Her experience as both a participant and trainer has provided her with a strong understanding of the importance of pedagogical leadership in promoting effective and transformative education systems.

Prof. Susan Kurgat is an Associate Professor in the Department of Curriculum, Instruction and Educational Media, where her career has been anchored in the practice and scholarship of pedagogy. She holds a PhD in Educational Technology and brings to her work a rare depth of classroom experience, having taught Business Studies Methods for seventeen years and Open and Distance Education for a further three. Her research is rooted in pedagogy, with a strong and prolific publication record in economics and business studies education, examining how teachers are trained, supported, and equipped to deliver effective instruction. She has supervised numerous graduate

students through to completion and regularly serves as an external examiner of theses, contributing to the quality assurance of postgraduate research in her field. Prof. Kurgat is an active member of ANIE and a frequent presenter at academic conferences. Beyond teaching and research, she has taken on significant administrative and leadership responsibility as Project Coordinator of the CERM-ESA Centre, and has a strong track record of successfully securing scholarships and research grants to support institutional and student development.

References

- Al-Humaidi, S.H., & Abu-Rahmah, M.I. (2015). Enhancing microteaching at Sultan Qaboos University. *Studies in English Language Teaching*, 3(1), 28-40. <https://doi.org/10.22158/selt.v3n1p28>
- Bacova, D., Telfer, S., & Griffiths, D. (2019). Video for (micro) teaching, an opportunity or a challenge? (A mixed-methods case study). *Educationfutures*, 10(2), 66-85. Retrieved from https://www.researchgate.net/publication/402240872_Video_for_micro_teaching_an_opportunity_or_a_challenge_A_mixed_methods_case_study
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York, NY: W.H. Freeman. Retrieved from https://books.google.ro/books/about/Self_efficacy.html?id=8O9swEACAAJ&redir_esc=y
- Basturk, S. (2016). Investigating the effectiveness of microteaching of primary pre-service teachers. *Journal of Education and Training Studies*, 4(5), 239-249. <https://doi.org/10.11114/jets.v4i5.1509>
- Bilen, K. (2014). Effect of micro teaching technique on teacher candidates' beliefs regarding mathematics teaching. *Procedia - Social and Behavioral Science*, 174, 609-619. <https://doi.org/10.1016/j.sbspro.2015.01.590>
- Cetin, S. (2013). The effect of micro-teaching applications that are used in teaching practice course on class management self-efficacy convictions of students. *International Journal of Academic Research*, 5(4), 375-379. <https://doi.org/10.7813/2075-4124.2013/5-4/B.55>
- Chanaguru, S., Nair, P., & Yong, C. (2013). Teacher trainers' beliefs in microteaching and lesson planning in a teacher training institution. *The English Teacher*, XLII (2), 104-116. Retrieved from <https://meltajournals.com/index.php/TET/article/view/140/137>
- Cleveland-Innes, M., & Wilton, D. (2018). *Guide to blended learning*. Burnaby, BC: Commonwealth of Learning. <https://doi.org/10.56059/11599/3095>
- Deneme, S. (2020). Teacher trainees' opinions regarding video-recorded microteaching sessions. *TOJET: The Turkish Online Journal of Educational Technology*, 19(2), 24-33. Retrieved from <https://eric.ed.gov/?id=EJ1251127>

- Eltahir, M.E., Alsalihi, N.R., Al-Qatawaneh, S., & Al-Masri, G. (2021). The effect of video recording in micro-teaching activities on preparing female students in teacher education programs in the GCC countries. *Review of International Geographical Education*, 11(4), 1282-1299. Retrieved from https://www.researchgate.net/publication/353996699_The_Effect_of_Video_Recording_in_Micro-Teaching_Activities_on_Preparing_Female_Students_in_Teacher_Education_Programs_in_the_GCC_Countries
- Fernandez, M.L. (2010). Investigating how and what prospective teachers learn through microteaching lesson study. *Teaching and Teacher Education*, 26, 351-362. <https://doi.org/10.1016/j.tate.2009.09.012>
- Ghafoor, A., Kiani, A., Kayani, S., & Kayani, S. (2012). An exploratory study of microteaching as an effective technology. *International Journal of Business and Social Science*, 3(4), 224-238. Retrieved from https://ijbss.thebrpi.org/journals/Vol_3_No_4_Special_Issue_February_2012/27.pdf
- Graham, C.R. (2019). Current research in blended learning. In M. G. Moore & W. C. Diehl (Eds.), *Handbook of distance education* (4th ed., pp. 173–188). New York, NY: Routledge. Retrieved from https://www.researchgate.net/publication/332767207_2019_HandbookDE_Current_Research_in_BL
- Hoy, A.W., & Spero, R.B. (2005). Changes in teacher efficacy during the early years of teaching. *Teaching and Teacher Education*, 21(4), 343–356. <https://psycnet.apa.org/doi/10.1016/j.tate.2005.01.007>
- Ismail, S.A.A. (2011). Student teachers' microteaching experiences in a preservice English Teacher Education Program. *Journal of Language Teaching and Research*, 2(5), 1043-1051. <https://doi.org/10.4304/jltr.2.5.1043-1051>
- Jebungei, N.K. (2017). Role of microteaching in acquisition of educational media development and use skills: perceptions of Christian Religious Education pre-service teachers and trainers in Kenya's public universities. *Journal of Education and Practice*, 8(33), 131-140. Retrieved from <https://www.iiste.org/Journals/index.php/JEP/article/view/39753>
- Kant, R. (2017). Microteaching: Attitude and perception of students and teacher educators. *International Journal of Current Research*, 9(09), 58385-58388. Retrieved from <https://www.journalcra.com/article/microteaching-attitude-and-perception-students-and-teacher-educators>
- Karakas, A., & Yukselir, C. (2020). Engaging pre-service EFL teachers in reflection through video-mediated team micro-teaching and guided discussions. *Reflective Practice*, <https://doi.org/10.1080/14623943.2020.1860927>
- Kilic, A. (2010). Learner-centered microteaching in teacher education. *International Journal of Instruction*, 3(1), 77-100. Retrieved from

- https://www.researchgate.net/publication/353236783_Learner-Centered_Micro_Teaching_in_Teacher_Education
- Klassen, R.M., & Tze, V.M.C. (2014). Teachers' self-efficacy, personality, and teaching effectiveness: A meta-analysis. *Educational Research Review*, 12, 59-76. <https://doi.org/10.1016/j.edurev.2014.06.001>
- Koech, H.C., & Mwei, P.K. (2019). How secondary school mathematics teachers perceive the effectiveness of microteaching and teaching practice in their pre-service education. *Humanities and Social Science Letters*, 7(1), 46-55. <https://doi.org/10.18488/journal.73.2019.71.46.55>
- Kolb, D.A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall. Retrieved from https://www.researchgate.net/publication/235701029_Experiential_Learning_Experience_As_The_Source_Of_Learning_And_Development
- Koross, R. (2016). Micro teaching an efficient technique for learning effective teaching skills: Pre-service teachers' perspective. *International Journal of Education and Multidisciplinary Studies*, 4(2), 289-299. <https://doi.org/10.21013/irajems.v4.n2.p7>
- Kourieos, S. (2016). Video-mediated microteaching—A stimulus for reflection and teacher growth. *Australian Journal of Teacher Education*, 41(1), 65–80. <https://doi.org/10.14221/ajte.2016v41n1.4>
- Kumar, D. (2016). Developing and using blends: Evaluating a hybrid micro-skill for new teaching paradigm. *Rupkatha Journal on Interdisciplinary Studies in Humanities*, 8(2). http://rupkatha.com/V8/n2/01_Using_Blends.pdf
- Kusmawan, U. (2017). Online microteaching: A multifaceted approach to teacher professional development. *Journal of Interactive Online Learning*, 15(1), 42-56. Retrieved from https://www.researchgate.net/publication/317974897_Online_microteaching_A_multifaceted_approach_to_teacher_professional_development
- Ledger, S., & Fischetti, J. (2019). Micro-teaching 2.0: Technology as the classroom. *Australasian Journal of Educational Technology*, 36(1), 37-54. <https://doi.org/10.14742/ajet.4561>
- Li, X., Yang, Y., Chu, S.K.W., Zainuddin, Z., & Zhang, Y. (2020). Applying blended synchronous teaching and learning for flexible learning in higher education: an action research study at a university in Hong Kong, *Asia Pacific Journal of Education*, 42(2). <https://doi.org/10.1080/02188791.2020.1766417>
- Lynn, M.R. (1986). Determination and quantification of content validity. *Nursing Research*, 35(6), 382–385. <https://doi.org/10.1097/00006199-198611000-00017>
- Mwei, P.K. (2017). Empowerment in communication: Effects of training in lettering on student-teachers' handwriting. *International Journal of Education and Research*, 2(2), 307-316. Retrieved from https://www.researchgate.net/publication/315187019_Empowerment_in_Communication_Effects_of_Training_in_Lettering_on_Student-Teachers'_Handwriting

- Njiku, J. (2025). Pre-service teachers manifested mathematics pedagogical content knowledge: The role of the teaching practicum. *Pedagogical Research*, 10(1). <https://doi.org/10.29333/pr/15647>
- Peker, M. (2009). The use of expanded microteaching for reducing pre-service teachers' teaching anxiety about mathematics. *Scientific Research and Essay*, 4(9), 872-880. <https://doi.org/10.5897/SRE.9000950>
- Ralph, E.C. (2014). The effectiveness of microteaching: Five years' findings. *International Journal of Humanities Social Sciences and Education*, 1(7), 17-28. Retrieved from <https://arcjournals.org/pdfs/ijhsse/v1-i7/3.pdf>
- Ryan, T.G., & Ryan, D.T. (2025). A case of micro-teaching within the tertiary training of Ontario teachers. *International Journal of Instruction*, 18(2), 185-202. <https://doi.org/10.29333/iji.2025.18211a>
- Sa'ad, T.U., Sabo, S., & Abdullahi, A.D. (2015). The impact of micro-teaching on the teaching practice performance of undergraduate Agricultural Education students in College of Education, Azare. *Journal of Education and Practice*, 6(26), 109-115. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1077458.pdf>
- Shaw, D. (2022). Building teaching competencies through video-recorded discourse. *International Journal for the Scholarship of Teaching and Learning*, 16(2), Art 2. <https://doi.org/10.20429/ijstol.2022.160211>
- Sithole, N.V. (2023). The efficacy of microteaching in teacher education programme during the lockdown at a university in South Africa. *International Journal of Learning, Teaching and Educational Research*, 22(2), 76-91. <https://doi.org/10.26803/ijlter.22.2.5>
- Skaalvik, E.M., & Skaalvik, S. (2010). Teacher self-efficacy and teacher burnout. *Teaching and Teacher Education*, 26(4), 1059-1069. <https://psycnet.apa.org/doi/10.1016/j.tate.2009.11.001>
- Taley, I.B., Adusei, O., & Koranteng, D.N. (2021). Mathematics teaching anxiety among College of Education pre-service teachers in Ghana: The influence of mathematics achievement and field experiences. *International Journal of Innovative Research and Development*, 10(4), 70-79. <https://doi.org/10.24940/ijird/2021/v10/i4/159356-391055-1-SM>
- Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education*, 2, 53-55. <https://doi.org/10.5116/ijme.4dfb.8dfd>
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783-805. [https://doi.org/10.1016/S0742-051X\(01\)00036-1](https://doi.org/10.1016/S0742-051X(01)00036-1)
- Unlu, M. (2018). Effect of micro-teaching practice with concrete models on pre-service mathematics teachers' self-efficacy beliefs about using concrete models. *Universal Journal of Educational Research*, 6(1), 68-82. <https://doi.org/10.13189/ujer.2018.060106>
- Vo, H.M., Zhu, C., & Diep, N.A. (2017). The effect of blended learning on student performance: A meta-analysis. *Educational Technology Research and Development*, 65(5), 1165-1195. <https://doi.org/10.1007/s11423-017-9521-6>

Zee, M., & Koomen, H.M.Y. (2016). Teacher self-efficacy and its effects on classroom processes, student academic adjustment, and teacher well-being: A synthesis of 40 years of research. *Review of Educational Research*, 86(4), 981-1015.
<https://doi.org/10.3102/0034654315626801>