Development of a Blended Learning Training Program for Professional Development of Teacher Educators in Aurangabad District

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***Abstract*—The expansion of the information society has substantially increased the importance of Information and Communication Technologies (ICT) in education, particularly in teacher education and postgraduate programs. Although fully online learning offers flexibility, it often lacks adequate face-to-face interaction, which may limit learner engagement and pedagogical effectiveness. In this context, blended learning an instructional approach that integrates online and face-to-face modes has emerged as an effective alternative for professional development.**

The present study aimed to design, implement, and evaluate a blended learning training program for the professional development of teacher educators in Aurangabad District, Maharashtra, India. A quasi-experimental pre-test–post-test design was adopted using purposive sampling. A total of 150 teacher educators participated in the pre-test, of whom 75 were assigned to the experimental group and received a four-week blended learning training intervention, while the remaining 75 constituted the control group. Data were collected using a validated questionnaire, observation schedules, and standardized pre- and post-tests.

The results indicated statistically significant improvements in ICT competence, instructional design competence, and confidence in blended learning implementation among the experimental group ($p < 0.01$), whereas no significant change was observed in the control group. The study proposes a plagiarism-safe and replicable model for in-service teacher training aligned with the objectives of the National Education Policy (NEP) 2020 and provides practical implications for policymakers, teacher education institutions, and researchers.

***Index Terms*—Blended learning training program; teacher professional development; ICT competence; instructional design competence; NEP 2020**

I. INTRODUCTION

Rapid advancements in Information and Communication Technologies (ICT) have significantly transformed educational practices worldwide. In the field of teacher education, digital technologies have expanded access to learning resources, enabled flexible instructional delivery, and encouraged innovative pedagogical approaches. However, exclusive reliance on fully online learning environments has revealed several limitations, including reduced interpersonal interaction, limited opportunities for collaborative learning, and challenges in developing practical teaching competencies.

Blended learning, also referred to as hybrid or mixed-mode learning, integrates online instructional resources with traditional face-to-face classroom interaction. Garrison and Vaughan (2008) describe blended learning as an approach that combines the strengths of online and conventional teaching by providing flexibility in time, place, and pace while maintaining meaningful human interaction. Graham (2012) further emphasizes that blended learning exhibits considerable variation across institutional contexts due to differences in pedagogical design and technological integration.

In the Indian context, the National Education Policy (NEP) 2020 strongly advocates the integration of technology into teaching and learning processes to promote quality, inclusivity, and learner-cantered education. The policy emphasizes continuous professional development of teachers, digital capacity building, and the creation of high-quality e-learning resources. The COVID-19 pandemic accelerated the

adoption of online education; however, it also exposed gaps in teachers' preparedness to integrate technology effectively with pedagogy.

In Aurangabad District, many teacher educators adopted basic online teaching practices during the pandemic without adequate training in blended learning design, instructional planning, or assessment strategies. This highlighted the need for structured professional development programs that develop ICT competence, instructional design competence, and confidence in blended learning implementation. The present study addresses this need by developing and empirically evaluating a blended learning training program tailored to the local context and aligned with national policy priorities.

II. REVIEW OF RELATED LITERATURE

Research studies indicate that the effectiveness of blended learning depends on several interrelated factors:

Institutional Support: Park and Choi (2009) reported that organizational encouragement, workload flexibility, and supervisory support positively influence participation and success in blended learning programs.

Learner Characteristics: Kintu and Zhu (2016) identified self-regulation, computer competence, and positive attitudes as significant predictors of achievement and satisfaction in blended learning environments.

ICT Competence: Shraim and Khlaif (2010) found that inadequate ICT competence among teachers remains a major barrier to the effective implementation of e-learning initiatives.

Technology Acceptance: Naaj et al. (2012) reported high levels of satisfaction with digital tools such as video conferencing platforms and learning management systems within blended learning contexts.

Self-Regulation and Time Management: Selim (2007) emphasized that self-regulatory skills and effective time management are critical for success in blended learning environments.

Despite the growing body of international research, empirical studies focusing on structured blended learning training programs for teacher educators in Indian semi-urban contexts are limited. The present study attempts to bridge this research gap.

III. RESEARCH GAP

Most existing studies on blended learning focus on conceptual discussions, learner perceptions, or general applications in higher education. There is a lack of empirical research examining structured, competency-based professional development programs specifically designed for teacher educators. This study addresses this gap by designing and evaluating a blended learning training program that focuses on developing ICT competence, instructional design competence, and confidence in blended learning implementation among teacher educators in Aurangabad District.

IV. OBJECTIVES OF THE STUDY

1. To develop a blended learning training program for enhancing the professional competencies of teacher educators
2. To examine the effectiveness of the training program in improving ICT competence, instructional design competence, and confidence in blended learning implementation.

V. METHODOLOGY

Research Design: A quasi-experimental pre-test–post-test design with experimental and control groups.

Population: Teacher educators working in colleges of education in Aurangabad District, Maharashtra.

Sample: A total of 150 teacher educators participated in the study. The experimental group consisted of 75 teacher educators who received the training intervention, while the remaining 75 formed the control group.

Sampling Technique: Purposive sampling.

Intervention: A four-week blended learning training program integrating online and face-to-face components was designed based on professional competency domains:

Week 1: Conceptual foundations of blended learning and alignment with NEP 2020.

Week 2: Development of ICT competence through hands-on training in digital tools, learning management systems, and multimedia content creation.

Week 3: Instructional design competence focusing on lesson planning, learner engagement strategies, and online facilitation techniques.

Week 4: Assessment literacy and learner support in blended learning environments, including formative and summative assessment and feedback mechanisms.
Tools for Data Collection:
A structured and validated questionnaire (Cronbach's alpha = 0.86).
Observation schedules to record instructional practices and learner engagement.
Pre-test and post-test instruments measuring ICT competence, instructional design competence, and confidence in blended learning implementation.
Data Analysis: Paired-sample t-tests and independent-sample t-tests were employed using SPSS (Version 26).

VI. RESULTS

Table 1: Pre-test and Post-test Scores of the Experimental Group (n=75)

Measure	Pre-test Mean (SD)	Post-test Mean (SD)	t-value	p-value
ICT Competence	22.4 (5.4)	38.6 (4.5)	27.12	<0.001
Instructional Design Skills	19.8 (4.9)	36.1 (4.8)	26.49	<0.001
Confidence in Blended Learning Implementation	16.2 (4.3)	31.5 (4.9)	25.05	<0.001

Major Findings:
The experimental group demonstrated statistically significant improvement across all measured competency domains ($p < 0.01$).
No significant differences were observed in the pre-test and post-test scores of the control group.
Observational evidence indicated increased use of interactive digital resources, improved instructional planning, and higher learner engagement among trained teacher educators.

VII. DISCUSSION

The findings of the study clearly demonstrate that the blended learning training program was effective in enhancing teacher educators' ICT competence, instructional design competence, and confidence in blended learning implementation. The significant gains observed across all competency domains indicate that a structured and competency-based training approach can successfully prepare teacher educators for technology-integrated teaching.
The improvement in ICT competence supports earlier findings by Shraim and Khlaif (2010), who emphasized the importance of digital skills in effective e-learning implementation.
The use of Blended approach The teacher uses e-learning& multimedia to modify the contents of the material .It will help the teacher to represent in a more meaningful way, using different media elements by Pagare Prashant (2018) Similarly, the enhancement of instructional design competence aligns with the work of Kintu and Zhu (2016), who highlighted the role of pedagogical planning and learner-cantered design in blended learning success. Increased confidence in blended learning implementation reflects the development of self-efficacy, which Selim (2007) identified as critical for sustained engagement in blended learning environments.
The explicit alignment of the training program with NEP 2020 priorities further strengthens the relevance of the intervention and underscores its potential for large-scale implementation within teacher education systems.

VIII. CONCLUSION

The study concludes that a systematically designed blended learning training program can significantly enhance teacher educators' ICT competence, instructional design competence, and confidence in blended learning implementation. These competencies are essential for effective integration of technology into teaching and learning processes. Scaling such training programs across districts may contribute to strengthening teacher professional development initiatives and supporting the successful implementation of national educational reforms.

IX. IMPLICATIONS OF THE STUDY

For Policymakers: The study offers an evidence-based framework for designing NEP 2020-aligned in-service teacher training programs.
For Teacher Education Institutions: The findings support the integration of blended learning pedagogy

into pre-service and in-service teacher education curricula.

For Researchers: The study provides a foundation for future longitudinal research examining the sustained impact of blended learning training on teaching practices and learner outcomes.

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