Evolving Role of Teacher Educators in the Digital World: Teaching, Learning, and Assessment Practices

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Abstract-- **The rapid digital transformation in education, accelerated by national initiatives such as Digital India and NEP 2020, has significantly influenced the professional roles and practices of teacher educators. This study explores the evolving responsibilities of teacher educators in the domains of teaching, learning, and assessment in technology-enriched environments. Data were collected from 17 teacher educators through a structured Google Form questionnaire and analyzed using descriptive statistics. The findings reveal that most teacher educators demonstrate confidence in using digital tools and regularly integrate platforms such as Google Classroom, LMS systems, multimedia resources, and video conferencing applications. Digital learning environments were perceived to enhance student engagement, support differentiated learning, and promote critical thinking. Digital assessments were widely used, though ensuring fairness and consistency remained a challenge. The study concludes that the teacher educator's role is shifting from knowledge transmission to learning facilitation, digital mentorship, and reflective practice. Continuous professional development and collaborative peer learning are essential to strengthen digital pedagogical competence while maintaining the human element in teaching.**

*Keywords--***Teacher Educator, Digital Pedagogy, Digital Assessment, NEP 2020, Professional Development, Human-Centred Teaching**

I. INTRODUCTION

Over the past two decades, teacher education practice has witnessed a gradual yet significant transformation in the processes of teaching and learning. The integration of digital tools, once considered supplementary, has now become central to contemporary pedagogical approaches. National frameworks such as Digital India and NEP 2020 emphasize not only the adoption of technology, but also the restructuring of pedagogy, learner identity, and assessment culture to align with emerging educational demands.

Teacher educators occupy a unique position—they do not simply teach subjects; they shape the future teachers who will influence the next generation of learners. Therefore, their comfort, confidence, and creativity in digital environments have far-reaching consequences. The digital world demands we rethink our identity not as knowledge deliverers but as mentors, facilitators, and designers of meaningful learning experiences.

This study seeks to understand how teacher educators are adapting to these shifts in reality. It examines how they teach, how they perceive student learning in digital environments, and how they assess learning fairly and constructively using digital tools.

II. REVIEW OF RELATED LITERATURE

Research consistently emphasizes the increasing importance of digital competence among teacher educators. Bayrak Karsli et al. (2023) highlighted that understanding teacher educators' technology use is essential for shaping future educational policies, using the European DigCompEdu framework to assess levels of digital proficiency. Similarly, the SITE organization introduced the Teacher Educator Technology Competencies (TETCs) to guide educators in modeling purposeful and pedagogically aligned technology integration in their teaching practices. These frameworks collectively stress that strong digital literacy among teacher educators is key to ensuring that pre-service teachers adopt effective technology-enhanced pedagogies.

Studies on digitally mediated learning environments identify both opportunities and challenges. Web-based collaborative annotation, for instance, has been shown to engage students behaviourally, cognitively, and affectively, fostering deeper critical thinking (unimma.press). Johnson and Tenenbaum (2007) likewise found that digital annotation improves reading comprehension and analytical reasoning. However, learners do not always experience online environments as equally engaging; Photopoulos et al. (2022) reported that many undergraduate students still perceive greater interaction and clarity in face-to-face classes, suggesting that digital instruction requires deliberate design to sustain cognitive presence and collaboration.

Digital assessment practices have expanded through online quizzes, e-portfolios, and automated feedback systems, offering timely and personalized insights into student learning (col.org; site.aace.org). Yet, these tools must be implemented carefully to ensure fairness, transparency, and alignment with learning outcomes.

Broader literature situates these changes within ongoing shifts in teacher educator identity and responsibility.

The integration of digital technologies in higher education has transformed instructional expectations (Novoa-Echaurren et al., 2025), requiring teacher educators to not only adopt innovative pedagogies but also mentor future teachers in doing so (Avidov-Ungar & Forkosh-Baruch, 2018; Roulston et al., 2019). This positions teacher educators as "second-order practitioners," responsible for preparing others who will teach with similar tools (Rubadeau, 2018). Such evolving roles call for reflective digital literacy and context-sensitive pedagogical decision-making (Clarke & Mitchell, 2007). Although many teacher educators report moderate to high digital competence, research continues to highlight the need for sustained and context-specific professional development (Carpenter et al., 2020; Uerz et al., 2017).

III. METHODOLOGY

A **descriptive survey design** was adopted for the study. The population comprised teacher educators working in B.Ed. and M.Ed. colleges. The **sample consisted of 17 teacher educators**, selected through convenient sampling, who voluntarily responded to a Google Form questionnaire titled *"Evolving Role of a Teacher Educator in the Digital World."*

The tool was developed to gather insights across three key dimensions of digital practice: **Teaching**, **Learning**, and **Assessment** in digital environments.

Tool Construction Based on Dimensions

The investigator designed the tool titled *Evolving Role of a Teacher Educator in the Digital World* to understand how teacher educators perceive and apply digital pedagogy in their professional work. The tool was structured around three core dimensions central to contemporary teacher education practice: Teaching, Learning, and Assessment in digitally mediated environments. Its construction drew on current literature, research findings, and recognized digital competence frameworks to ensure conceptual clarity and relevance.

The **Teaching Dimension** focused on the integration of digital tools in classroom practice. It examined educators' confidence in using technology, the frequency with which digital platforms and resources are employed, and the types of tools commonly relied upon, such as learning management systems, video conferencing applications, and multimedia instructional aids.

The **Learning Dimension** explored how digital environments shape the teaching-learning process.

Items were framed to capture perceptions of learner engagement, collaboration, motivation, and critical thinking when learning occurs through digital modes. This dimension aligns with learner-centered and constructivist teaching approaches, highlighting the educator's role as a facilitator of active and meaningful learning experiences.

The **Assessment Dimension** addressed how teacher educators design and implement evaluations in digital spaces. It included items on the use of online quizzes, rubrics, peer and self-assessment tools, e-portfolios, and digital feedback practices, with an emphasis on ensuring fairness, transparency, and reliability in technology-supported assessments.

The tool was reviewed by experts in teacher education and educational technology to ensure content validity. A pilot administration supported refinement of item wording and sequencing. The revised instrument was then administered to the 17 participating teacher educators.

IV. DATA ANALYSIS AND INTERPRETATION

The data collected from 17 teacher educators through the Google Form survey were analyzed using descriptive statistical methods. The responses were organized into frequencies and percentages and grouped under the three major dimensions of the study: **Teaching**, **Learning**, and **Assessment** in digital contexts. The emerging patterns were interpreted in line with existing literature on digital pedagogy and teacher education. Tables and charts supported the interpretation to provide a clear understanding of the trends reflected in the data.

1. Teaching Dimension

The findings indicate that most teacher educators are confident in integrating digital tools into their teaching practice. Around 70% of the respondents reported feeling either *very confident* or *confident* in using digital technologies, showing that digital literacy has become an essential and well-developed skill for many educators. Only a small group (30%) expressed moderate confidence, which suggests that while digital adoption is widespread, there is still room for skill enhancement for some.

In terms of frequency, approximately 65% of participants reported using digital tools either daily or weekly, showing that technology use is not incidental but embedded in regular teaching practice. A smaller proportion used digital tools occasionally (25%), and only 10% reported rare use.
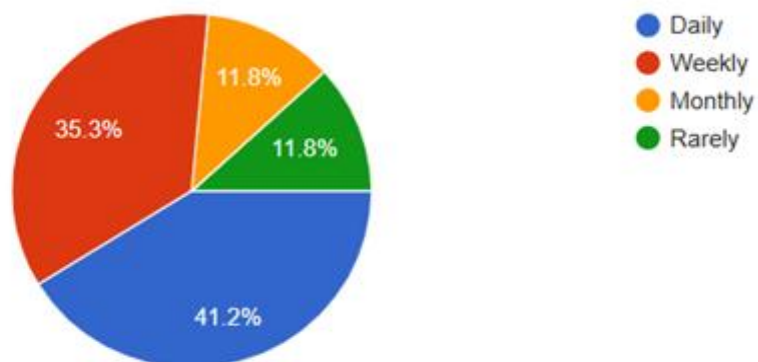
Teaching Perspectives in the Digital Era

1.How confident do you feel in using digital tools to enhance your teaching?

17 responses
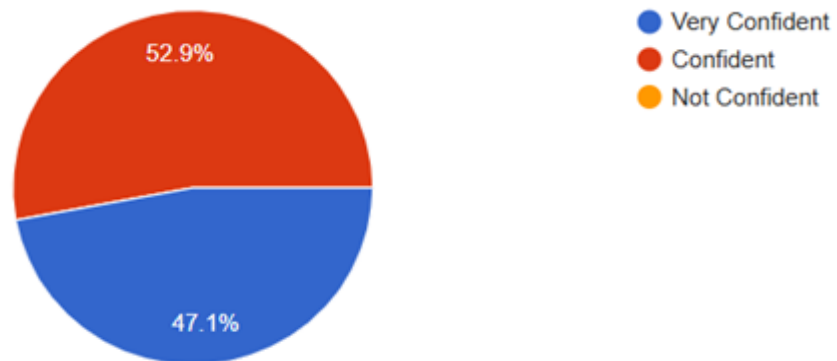
2. How often do you integrate digital technologies (e.g., learning managemen systems, multimedia, apps) in your teaching?
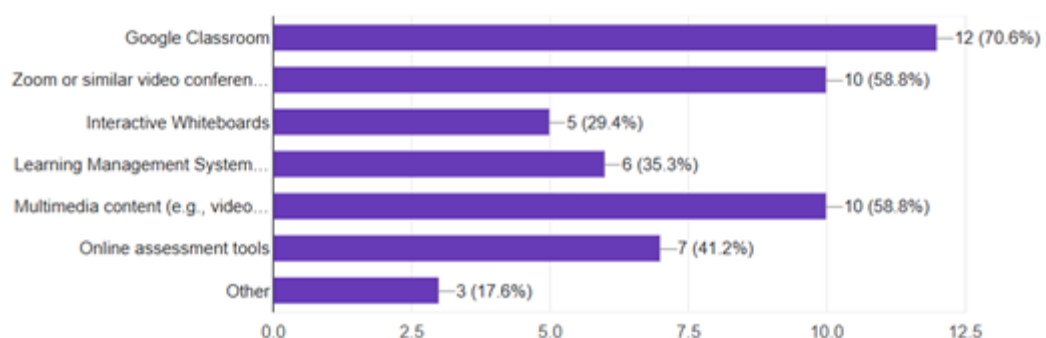
17 responses

3. Which digital tools have you found most useful for your teaching practice? (Select all that apply)
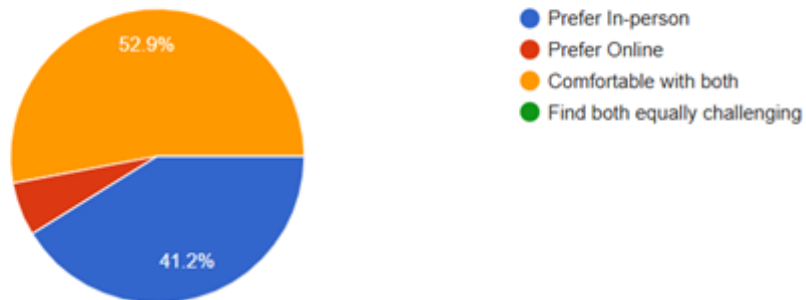
17 responses

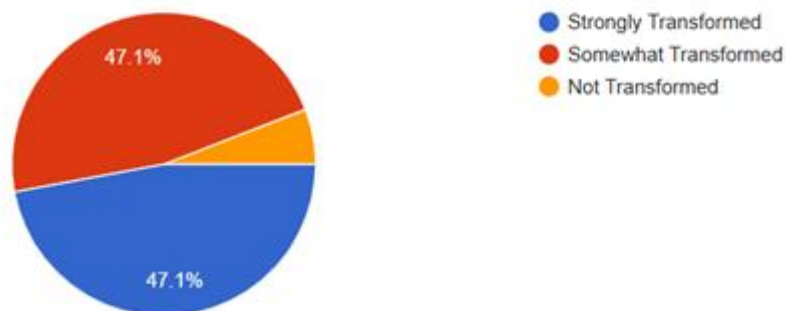4. How do you feel about teaching both in-person and online?

17 responses

5. To what extent do you believe that digital tools have transformed your teaching effectiveness?

17 responses

The most commonly used digital platforms included Google Classroom, Zoom, Learning Management Systems (LMS), and multimedia teaching aids. These tools were used for sharing instructional materials, conducting online sessions, and facilitating communication. The pattern clearly reflects how digital resources have become central to instructional delivery, aligning well with current practices in higher education.

2. Learning Dimension

With regard to learning, 60% of the teacher educators felt that digital tools have substantially transformed their teaching and learning processes. Another 30% perceived a moderate level of change, while a small group (10%) reported minimal impact. This suggests that the impact of digital learning is generally positive, although its effectiveness may depend on levels of familiarity, training, and instructional design.

About 50% of respondents felt that students appeared more engaged in online or blended learning environments, while 30% noticed no major difference and 20% believed engagement was lower online. These responses suggest that student engagement in digital contexts is not automatic; it relies heavily on interactive strategies and meaningful learning activities.

To address diverse learning needs, 70% of teacher educators reported using multimedia resources such as videos, animations, and interactive slides. About 60% also indicated that they tailor learning experiences by offering varied resources and tasks, demonstrating efforts to support differentiated instruction. However, around 10% acknowledged that they do not consciously adapt strategies for different learning styles.

Regarding higher-order thinking, 65% believed that digital tools support critical thinking and problem-solving, though many also felt there is still scope to strengthen structured engagement. Notably, only 40% reported frequent use of collaborative digital activities, suggesting an area where digital pedagogy could be further enriched.

Learning Perspectives in the Digital Era

6. Do you believe students are more engaged with online learning compared to traditional classroom learning?

17 responses

- Yes, much more engaged
- No, less engaged
- No difference

29.4%
11.8%
58.8%
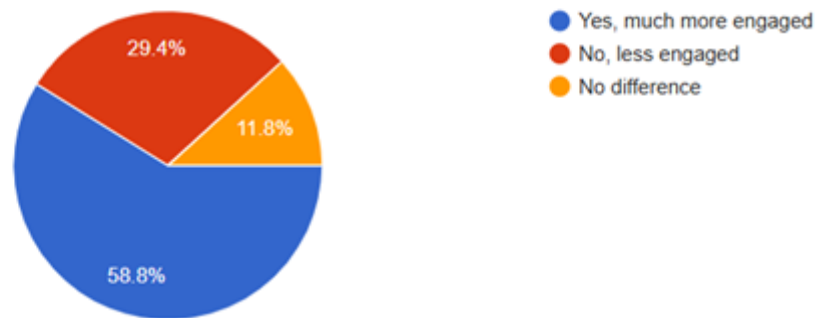
7. How do you ensure that digital learning activities cater to different learning styles (visual, auditory, kinesthetic)?

17 responses

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- By providing varied multimedia resources
- Through interactive platforms and activities
- By offering personalized learning paths
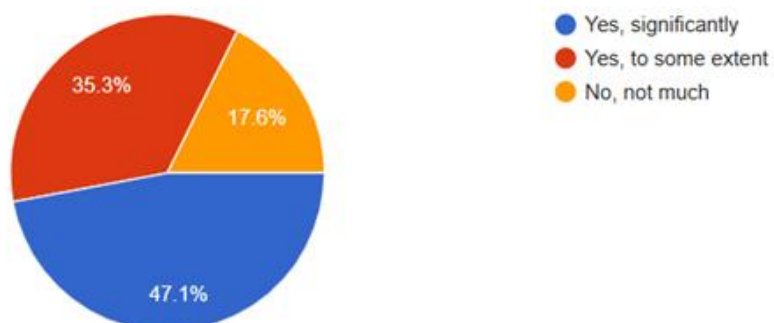- I don't specifically cater to different learning styles

11.8%
29.4%
11.8%
47.1%

8. Do you think digital learning environments promote critical thinking and problem-solving among students?

17 responses

- Yes, significantly
- Yes, to some extent
- No, not much

35.3%
17.6%
47.1%

9. How often do you encourage students to collaborate using digital tools (e.g., group projects, discussion boards)?

17 responses

- Frequently
- Rarely
- Never

41.2%

58.8%
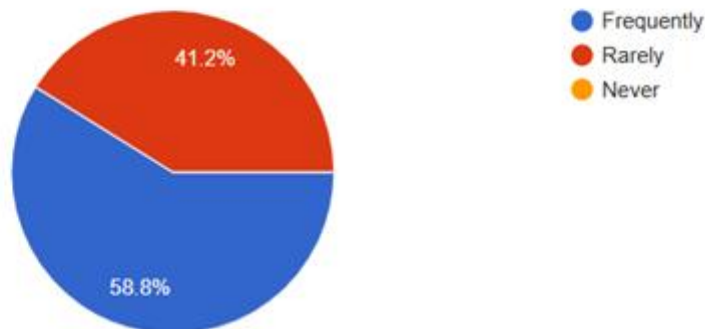
10. Do you think digital platforms offer sufficient opportunities for active student participation (e.g., discussion, group work, real-time feedback)?

17 responses

- Yes
- Somewhat
- No

29.4%

70.6%
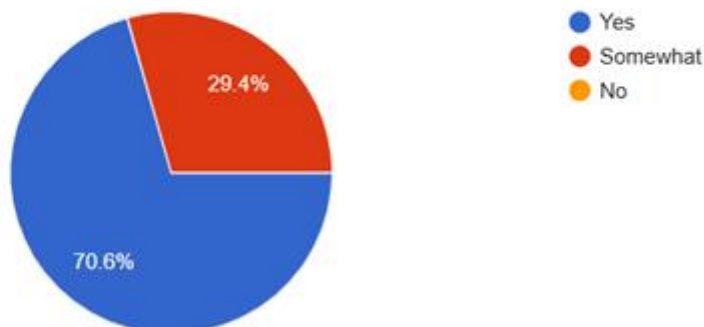
3. Assessment Dimension

The analysis of assessment practices showed that teacher educators are using a blend of digital tools to evaluate student learning. Online quizzes (76%), digital assignments (82%), and e-portfolios (53%) were the most common modes of assessment. About 47% used peer and self-assessments, while 18% adopted simulation-based or gamified assessment formats.

Feedback practices also varied. Written feedback through LMS or email was the most common (65%), followed by real-time feedback during live sessions (55%) and audio or video feedback formats (35%). This indicates that digital environments allow for more flexibility and personalization in feedback delivery.

To maintain fairness in evaluation, 70% of teacher educators used rubrics and clearly defined criteria. Automation tools were used by 30%, and peer moderation by 25%. However, around 10% expressed difficulty in maintaining consistency in online grading, suggesting the need for more structured rubrics or assessment training.

Confidence in conducting formative assessments digitally was high among respondents, with 65% rating themselves as confident or very confident. Importantly, 75% agreed that digital assessment tools help identify students' strengths and weaknesses more effectively, highlighting the diagnostic value of technology-enabled evaluation.

Assessment Perspectives in the Digital Era   Copy

11. Which digital assessment methods do you find most effective for evaluating student learning? (Select all that apply)
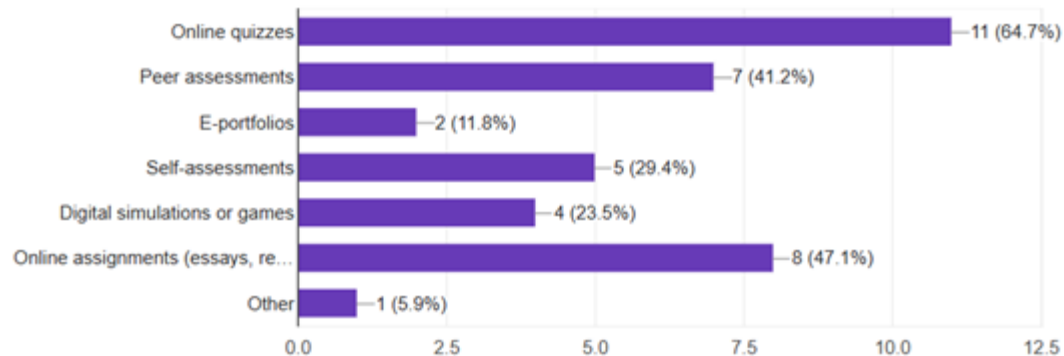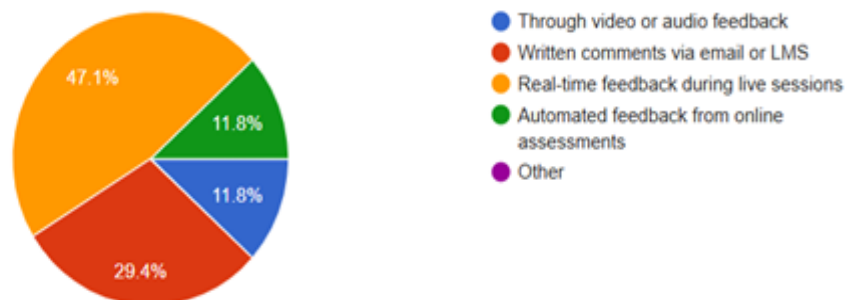
17 responses

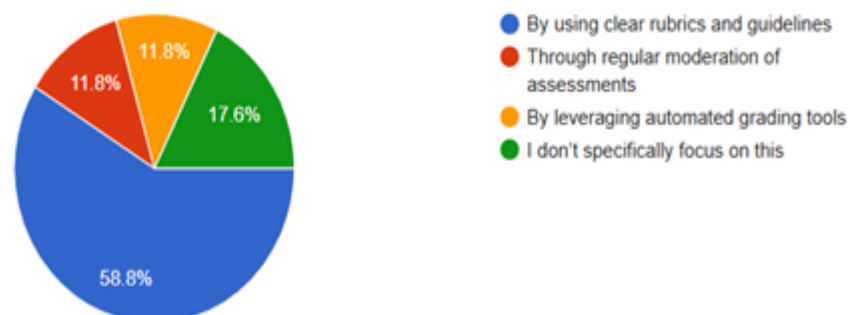12. How do you provide feedback to students in a digital environment?   Copy ch

17 responses

- Through video or audio feedback
- Written comments via email or LMS
- Real-time feedback during live sessions
- Automated feedback from online assessments
- Other

13. How do you ensure fair and unbiased grading in a digital environment?   Copy c

17 responses

- By using clear rubrics and guidelines
- Through regular moderation of assessments
- By leveraging automated grading tools
- I don't specifically focus on this
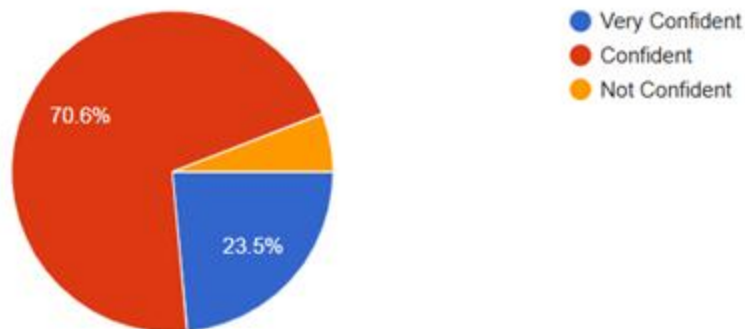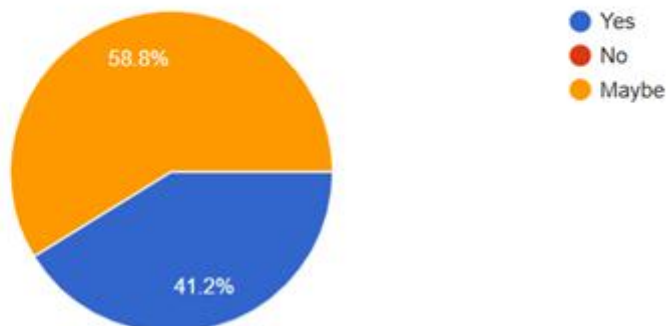
14. How confident are you in using digital tools for formative assessments (ongoing assessments to monitor student progress)?

17 responses

15.Do you believe that digital assessment tools help in identifying individual student strengths and weaknesses more effectively?

17 responses

Overall Interpretation

The analysis of responses from 17 teacher educators points to a positive and forward-moving shift in the integration of digital technologies across teaching, learning, and assessment. The majority of teacher educators reported being confident and comfortable with digital tools, acknowledging that technology has enhanced their instructional delivery, supported student participation, and enabled flexible assessment practices with timely feedback. These insights suggest that digital preparedness is gradually becoming a core component of teacher educator professionalism.

At the same time, the findings highlight areas that require further strengthening. Ensuring fairness and consistency in digital grading and promoting meaningful online collaborative learning remain challenging for some educators.

The responses indicate that while digital tools are widely used, professional development must continue to focus on deeper pedagogical integration rather than just functional tool usage. This points to a need for ongoing training in **digital pedagogy**, **assessment literacy**, and **designing collaborative online learning experiences**.

V. DISCUSSION AND FINDINGS

This study, involving 17 teacher educators, provides focused insights into how they perceive and engage with digital tools in their professional practice. Even though the sample size is modest, the responses reveal clear and consistent patterns in how teacher educators are responding to the digital transition.

A large proportion of participants demonstrated strong familiarity and active use of digital platforms and resources.

Approximately 70% of the respondents reported a high level of confidence in integrating digital tools into their teaching practices. Many noted that such integration has improved classroom engagement and instructional efficiency. For example, around 59% of the participants observed a noticeable increase in student engagement when technology-supported strategies were employed. Similarly, about 53% reported that digital resources allowed them to deliver lessons more effectively, supporting clarity, pacing, and variety in instruction.

These findings highlight that teacher educators are not only adapting to digital transformation but are also leveraging it to enhance the quality of teaching and learning. Digital tools appear to be helping them diversify instructional methods, support different learning styles, and offer more flexible learning pathways.

However, the responses also identified key challenges. Limited technological infrastructure and inconsistent access to digital resources were reported by about 41% of participants. Time constraints in preparing technology-supported lessons were acknowledged by 29%, while nearly one-fourth (24%) pointed out the need for structured training to use digital tools more effectively. As one participant reflected, *"With limited training, it is difficult to explore the full potential of digital tools, even though I can clearly see the advantages they offer."*

This feedback emphasizes that effective digital integration is not merely about tool availability, but also about sustained professional learning, institutional support, and opportunities for collaborative peer learning.

Overall, the study suggests that teacher educators are willing and motivated to embrace digital methods, but they benefit most when training is **context-specific**, **hands-on**, and **aligned with real classroom challenges**.

Findings Summary Table

Aspect	Response / Observation	Number of Respondents (n = 17)	Percentage (%)
Familiarity with Digital Tools / Practices	High familiarity	12	70.6
Perceived Benefits	Enhanced learner engagement	10	58.8
	Improved instructional efficiency	9	52.9
	Better assessment practices	8	47.1
Challenges	Limited infrastructure and resources	7	41.2
	Time constraints in planning / implementation	5	29.4
	Need for more formal training or capacity building	4	23.5
Professional Growth Trend	Higher confidence among educators with >5 years of experience	-	Observed pattern

Interpretation of the Findings

The summary table highlights clear trends in the experiences and professional practices of the teacher educators who participated in the study. A majority demonstrated **high familiarity** with digital tools and approaches, indicating that educators are increasingly open to innovation and are actively engaging with digital teaching practices.

The most commonly recognized benefits included **greater student engagement** and **more efficient teaching processes**, showing that teacher educators see value in integrating technology meaningfully into their classroom practice. Enhanced assessment practices were also mentioned, suggesting that digital platforms are supporting more streamlined and flexible feedback systems.

However, the findings also reveal persistent challenges. **Limited access to digital infrastructure**, **time constraints**, and a **need for more structured professional training** were identified as barriers to deeper digital integration. These challenges point to the need for **institution-level support**, including well-planned professional development opportunities, mentoring, and reliable technological resources.

An interesting pattern that emerged was that **teacher educators with more teaching experience tended to express greater confidence** in adapting to digital instructional methods. This suggests that professional maturity, reflective practice, and continuous learning play a key role in adapting to change.

Overall, the findings emphasize that **sustained support, training, and infrastructure** can significantly improve the effective use of digital practices in teacher education.

VI. CONCLUSION

This study, conducted with 17 teacher educators, provides meaningful insights into how teacher educators are engaging with digital practices in their teaching, learning facilitation, and assessment activities. The findings show that most participants are confident and familiar with using digital tools and recognize the positive impact these tools can have on learning engagement and instructional efficiency.

At the same time, the study highlights important areas where additional support is needed, particularly in terms of improving infrastructure, making time for thoughtful lesson planning, and providing structured professional development opportunities. The trend showing higher confidence among more experienced educators reinforces the value of continuous professional learning, peer collaboration, and reflective practice.

Overall, the study suggests that **when teacher educators are supported with the right resources and ongoing capacity-building, they are well-positioned to integrate digital innovations effectively.**

These insights hold practical significance for enhancing teacher education programs, improving teaching quality, and ultimately strengthening the learning experiences of future educators.

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