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MOOCs as Catalysts: Exploring Attitude of Prospective Teachers towards MOOCs for Digital Pedagogical Readiness

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Abstract

This study investigates prospective teachers' attitudes toward Massive Open Online Courses and role of (MOOCs) as an agent of change for their digital pedagogical readiness. Data collected from mixed-methods approach (N=100) quantitative findings from structured Likert scale surveys highlights highly favorable attitude towards perceived usefulness ($M = 5.00$, $\alpha = 0.82$) With the use of ease and peer collaboration, they maintain a positive attitude as regards of curriculum alignment and institutional integration dimensions, concerns and aspirations still persist. Qualitative insight through semi-structured interview indicates that individuals well-versed in digital pedagogy readiness and instructional designs were found to have a more positive attitude compared to underprivileged individuals. This study underscores MOOCs could serve as a valuable tool for digital pedagogical readiness of prospective teachers, enabling them to make further progress toward achieving their goals for successful integration of technology into teaching-learning process and devise strategies for areas where challenges persist.

Key Words: MOOCs, prospective teachers, professional development, attitude

Introduction

The emergence of Massive Open Online Courses (MOOCs) has redefined the contours of higher education and teacher preparation, positioning them as transformative catalysts for digital pedagogical readiness**.** MOOCs, with their scalability, openness, and accessibility, embody the democratization of knowledge and the promise of lifelong learning (Gupta, Kaul & Gupta, 2023). MOOCs, by design, promote self-directed learning, digital content creation, and peer interaction—skills that align closely with the demands of 21st-century classrooms. In India, the University Grants Commission (UGC) has endorsed the integration of MOOCs through its SWAYAM initiative, allowing up to 40% of a course's curriculum to be completed via online platforms (UGC SWAYAM Guidelines, 2024). Massive open online courses (MOOCs) have significantly impacted the landscape of online learning, providing access to education on a global scale. These courses, accessible via the web, enable widespread participation through video lectures, interactive forums, and automated assessments. The emergence of MOOCs has broadened the reach of high-quality education and initiated a reevaluation of teaching methodologies in the digital sphere Hoy, M. B. (2014). MOOCS are online courses that are available to a large number of learners to connect with global perspectives: a useful tool to develop teaching skills for learning and using modern technologies. Teachers who participated in MOOCs reported noticeable improvements in their digital competencies and pedagogical practices, suggesting that MOOCs can facilitate important skill development Alraimi et al. (2015). MOOCs are the best opportunities for future teachers because they offer flexibility, cost-effectiveness, and self-directed study, customizable content for professional development, and to understand the latest teaching strategies to collaborate with regional and international teachers. Yulin & Danso (2025) acknowledged the potential of digital tools (including MOOCs), gaps persist in pedagogical integration. However, Pedagogical beliefs were a stronger predictor of technology use than technical skills. School culture and collaboration were critical enablers Howard, S. K., Tondeur, J., Siddiq, F., & Scherer, R. (2021). Sridhar

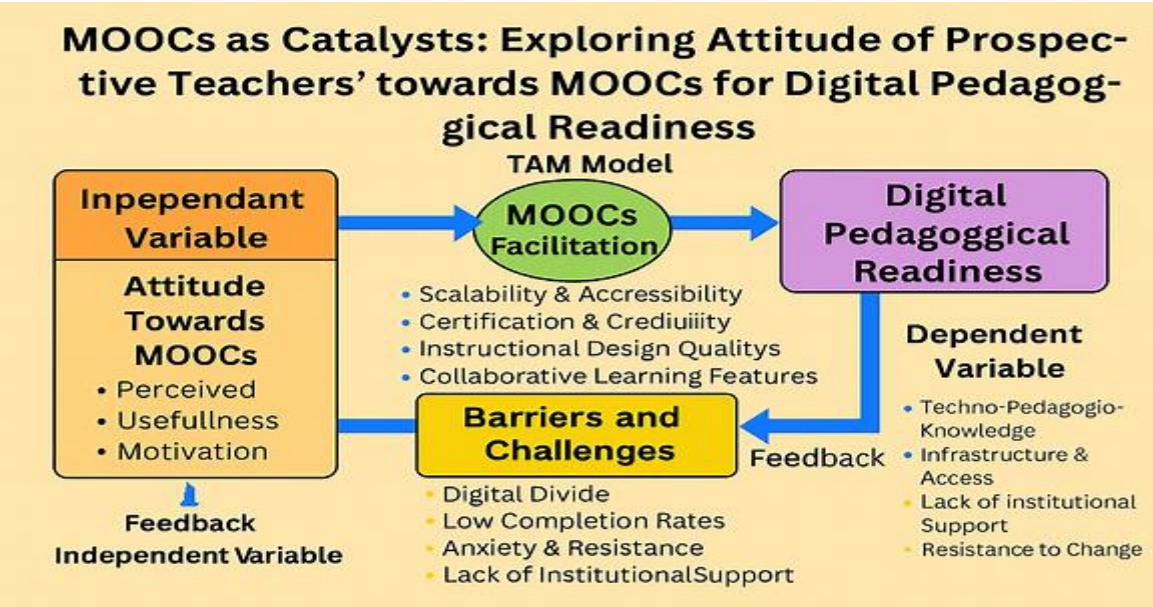
Iyer et al. (2022) proposes a pedagogical design model for MOOCs that emphasizes active learning, reflection, and learner engagement, aligns with the need for pedagogical readiness by promoting student-centered digital practices.

The traditional form of education is transpose to digital and technology-centric. MOOCs considered as a key player in this transformation, include areas with: limited educational opportunities, areas with educational disparities, regions with scarce quality education, or locations facing educational inequality. It is a need of time for prospective teachers to keep their teaching skills in sync with digital pedagogy and modern technologies to become globally competitive. However, prospective teachers' perspectives on MOOCs vary widely. While many teachers find it an excellent medium for learning and development, some face barriers in using it. Understanding such perspectives will have the many benefits like scope for improvement provide suggestions to make the content of MOOCs more accessible and adaptable to local contexts. MOOCs can effective tool to train prospective teachers in better and more effective ways by incorporating MOOCs into teaching training programs.

However, this study explores attitude of prospective teachers towards and significance of MOOCs as catalyst to stimulate digital pedagogical readiness. As education systems worldwide transition toward blended and online modalities, the ability of teachers to design, deliver, and assess instruction using digital tools has become a core professional competency (Laurillard, 2016; Mishra & Koehler, 2006) Positive attitude can enhance perceived usefulness, curriculum alignment and transfer of digital competencies while negative attitude clearly impacts on the adoption of digital pedagogy. Some teacher trainees actively engage with MOOCs and digital tools (Sharma & Kukreja, 2021; Panja et al., 2023), others remain reliant on traditional methods and express uncertainty about digital integration (Saini, 2020; Mitra, 2022). There is a need of the implementation of education policies and programs to make teachers' of this era digital education more widespread and help to make MOOCs more useful and acceptable.

Conceptual Framework

A conceptual framework diagram is illustrating the relationship between attitudes of prospective teachers towards MOOCs and digital pedagogical readiness and barriers of MOOCs.



Source: Data Obtained from Research Field (2025)

Diagram 1, presents a clear picture of the attitude of prospective teachers towards MOOCs and their influence on digital pedagogical readiness. MOOCs could be considered as catalyst because of their scalable accessible and enriched professional development features. This diagram also highlights barriers for adaptation of MOOCs like digital divide, low completion rates, anxiety and resistance. Overall, this diagram supports how attitude of prospective teachers towards perceived usefulness and ease of use of MOOCs can prepare future ready teachers with digital pedagogical readiness.

Need of the Study

MOOCS have the potential to enhance the professional growth of future educators significantly. Engaging with these courses aids in acquiring innovative teaching methods, skills, and techniques that might not be available through conventional education. In today's digital landscape, it is crucial for educators to utilize technology effectively. Exploring the trends associated with MOOCS will provide insights into how these courses promote digital literacy and contribute to the digital transformation of education. MOOCs offer affordable and flexible learning opportunities. Investigating the views of prospective teachers on MOOCs could enhance our understanding of how these courses support equity and inclusion principles. This study will underscore how prospective educators can blend MOOCs with conventional education systems and the impact this has on their personal and professional lives Influence on education policy and decision-making.MOOCs will provide insights for policy development and reforms in education, making future initiatives more effective and focused on user needs and broadening career possibilities. MOOCs can enable aspiring teachers to explore new career paths and avenues for growth will also shed light on how prospective teachers perceive the dissemination and acceptance of MOOCs within society and culture. Thus, this study aims not only to assess the attitude of prospective teachers towards MOOCs but also to gain insights into their significance in the digital pedagogical readiness of teacher.

Literature Review

MOOCs as a Catalyst:A screening of prominent literature accentuates the catalytic nature of MOOCs with latent ability for addressing gaps in digital pedagogical readiness for promoting lifelong learning. MOOCs offer a wide range of free, online courses tailored to educators' needs, covering various aspects such as pedagogy, content knowledge, and technology (Shewale, 2021). The platform offers independent, credit-based certification system to enhance students' professional credentials. The platform's validity is further reinforced by partnerships with prestigious academic institutions and universities, which ensure alignment with educational standards; (Sikarwar et al., 2022).Kumar and Kala (2021) has conducted a systematic review of 102 peer-reviewed articles published in the period 2013–2020, employing content analysis to extract prime themes including MOOC adoption, accessibility, and completion issues. Stracke and Trisolini (2021) followed PRISMA protocols to examine 103 studies and classified MOOC quality into pedagogical, organizational, technology, and social aspects, and highlighted the importance of comprehensive instructional design. Deng & Benckendorff (2016), Khanna (2021) and Gannaway et al. (2017) used mixed methods and meta-analyses with sample sizes varying from small qualitative to large-scale platform data. Jordan (2014) highlights the scalability and accessibility of MOOCs, making them ideal for providing affordable professional development opportunities for educators. Moreover, a systematic review by Greller and Drachsler (2012) indicated that MOOCs can serve as platforms for collaborative learning, enabling educators to share experiences and resources that enhance their teaching strategies. However, challenges remain, including low completion rates and the need for structured support systems to maintain engagement(Adamopoulos,2013).These previous studies refer developmental and transformative capacity of MOOCs such as; enhance professional development, bridging educational disparity, accelerate institutional support, self-pace learning and most important to promote inclusive education. Along with it highlight challenges like low completion rate and unequal digital access.

Digital Pedagogical Readiness reveals diverse perspectives and insights from various researchers. In the era of technological advancement our teaching and learning also moving towards digital settings, technological integration along with pedagogical understanding, required for this generation and keep themselves digital

pedagogical ready. Bhuwania, P., & Rastogi, S. (2023), and Sharma & Singh (2020) noted a significant digital divide between different type of institute, adequate infrastructure, and reliable internet access. Researches of Goswami, M., & Dutta, S. (2022) underscore moderate pedagogical knowledge but low techno-pedagogical knowledge because strong preference to traditional lecture methods obstructing, the adoption of student-centric digital pedagogy. Research of Adnan, M., & Boz, Y. (2023) has indicated high confidence in basic technical skills, but low readiness in pedagogical design for digital environments. Kumar et al. (2021) and Iyer & Kulkarni (2022) suggests that training significantly improve technical proficiency, a significant gap has found in the exhibiting these skills into effective pedagogical design, challenges noted in higher education by Goswami & Dutta (2022). Nair, P. K., & Fahimirad, M. (2019) have indicated lacking of pedagogical integration competency among faculty members because technology just for the purpose of content delivery instead of collaborative learning. Trust, T., & Whalen, J. (2021) in a thematic analysis highlighted effectiveness of high digital pedagogical readiness for interactive student-centered activities rather than low one those relied on replication of physical worksheets while Spante, M., Hashemi, S. S., Lundin, M., & Algers, A. (2018) investigated that long-term required for the development of digital pedagogical readiness. Mehta, R., & Goyal, M. (2021) has found anxiety, a loss of authority among senior university professors. Hattie, J., & Donoghue, G. (2021) highlighted effectiveness of digital tools is highly dependent on pedagogical implementation. Teacher professional development had a higher effect size than the technology itself.

Research Questions

1. What are the prevailing attitudes of prospective teachers' attitude towards MOOCs in relation to their digital pedagogical readiness?

2. How efficiently MOOCs facilitate to prospective teachers in enhancing digital pedagogical readiness?

3. Which prevailing factors act as barriers and challenges to deter and motivate prospective teachers for adoption of MOOCs?

4. What is the relationship between MOOCs and digital pedagogical readiness of prospective teachers?

Objectives

1. To explore attitude of prospective teachers towards MOOCs as a tool for digital pedagogical readiness.

2. To assess the effectiveness of MOOCs to facilitate prospective teachers in enhancing digital pedagogical readiness.

3. To identify barriers and challenges those deter and motivate prospective teachers for adoption of MOOCs?

4. To examine the relationship between MOOCs and digital pedagogical readiness of prospective teachers.

Hypotheses

(H_0): There is no significant relationship between prospective teachers' attitudes towards MOOCs and their digital pedagogical readiness.

(H_1): There is a significant relationship between prospective teachers' attitudes towards MOOCs and their digital pedagogical readiness.

Research Design

This study employed mixed-methods sequential explanatory design to explore prospective teacher's attitude towards MOOCs and how these attitudes relate to their professional development. The quantitative phase

involved administering structured questionnaires, followed by semi-structured interviews in the qualitative phase to expand upon key themes and patterns.

Population and Sampling

Population: B.Ed., D.El.Ed. and M.Ed. students enrolled in teacher training institutions affiliated with state universities in Uttar Pradesh, India.

Sample Size:

Quantitative phase: 100 prospective teachers selected using stratified random sampling based on institution type (government/aided/private).

Qualitative phase: 10 participants purposefully selected from high and low attitude scorers (based on questionnaire results) for semi-structured interviews.

Data Collection Methods

1 Survey Questionnaire

A structured questionnaire with two scales was administered:

- **Attitude Toward MOOCs Scale (developed by the researcher)**

-5 dimensions: Perceived Usefulness, Ease of Use, Curriculum Alignment, Peer Collaboration, and Perceived Challenges.

20 items per dimension, 5-point Likert scale

Reliability: Cronbach's $\alpha = 0.82$ overall

2 Semi-Structured Interview

- **Digital Pedagogical Readiness (Semi-structured Interview conducted by researcher)**

- 7 dimensions: Instructional Design, Classroom Engagement, Assessment Strategies, Content Creation, Collaboration & Sharing, Tech Adaptability, Resource Curation

Interviews were conducted with 10 participants to explore in depth:

- How MOOCs influence teaching strategies, reflection, digital practices, and teacher identity

- Interview protocol was based on literature (e.g., Mishra & Koehler, 2006; Rajput & Dixit, 2020) and validated by experts in educational research.

Ethical Compliance

Ethical guidelines were adhere rigidly throughout the research process to make sure the rights and confidentiality of participants. Ethical consideration were followed:

Informed Consent: All participants were completely aware with the purpose, procedures, their involvement, rights and confidentiality. Their consent was taken before data collection.

Confidentiality: The privacy of all participants was maintained. Their personal information was securely stored and never disclosed with anyone except research team.

Voluntary Participation: All the participants was participate voluntary and they had the choice to withdraw any time from this process.

Findings and Discussion

Table 1: Demographic Characteristics of Participants

Variable	Frequency	Percentage
Age	21-25	60%
	26-30	35%
	31-35	05%
Gender	Female	60%
	Male	40%
Subject Stream	Arts	25%
	Science	45%
	Commerce	30%
Type of Institution Enrolled In	Government	35%
	Private	65%
Medium of Instruction	English	78%
	Hindi	22%

This data table reveals that the majority of participants (60%) are aged 21–25; followed by 35% aged 26–30, and only 5% aged 31–35, indicating a younger demographic focus. Female participants dominate with 60% representation, highlighting potential gender engagement trends. Subject stream analysis shows Science has a slightly higher representation (45%) compared to Arts (25%) and Commerce (30%) suggesting varied academic interests. Participants of private institutes with 65% and in comparison of government institute (35%).The highest mean score was observed to the participants of English medium 78% in comparison of Hindi medium participation with 22%.

Table 2: Representative Statement-Wise Analysis with Descriptive Statistics and Literature Support

Item No.	Dimension	Statement	Polarity	Mean	SD	α	Supporting Literature
PU1	**Perceived Usefulness**	MOOCs enhance pedagogical understanding.	Positive	5.00	0.66	0.82	***Sharma & Kukreja (2021):*** *Reported improved instructional insight through SWAYAM.*
PU4		Concepts rarely apply to classroom-level teaching. *(reverse)*	Negative	1.50	0.74	0.82	***Joshi (2020):*** *Real classroom relevance was missing for many learners.*

Item No.	Dimension	Statement	Polarity	Mean	SD	α	Supporting Literature
EU1	**Ease of Use**	Platform interface is user-friendly and accessible.	Positive	3.60	0.77	0.74	***Punia & Chouhan (2020):*** *Found user interfaces intuitive for digital-native trainees.*
EU4		Too much technical knowledge is required to use MOOCs. *(reverse)*	Negative	3.10	0.85	0.74	***Nanda & Ghosh (2020):*** *Reported digital skill barriers in rural teacher education.*
PC1	**Perceived Challenges**	MOOCs offer flexibility despite academic workload.	Positive	3.90	0.79	0.69	***Mitra(2022):*** *Trainees appreciated flexible pacing during practicum workloads.*
PC4		Technical barriers delay course completion. *(reverse)*	Negative	3.80	0.86	0.69	***Joseph &Thomas (2020)):*** *Crashes and platform errors disrupted sessions.*
CA1	**Curriculum Alignment**	MOOC content aligns with NEP 2020 priorities.	Positive	2.60	0.71	0.81	***Kumar & Tiwari (2019):*** *Content supports NEP goals, but lacks contextual customization.*
CA4		MOOCs are disconnected from B.Ed. curriculum. *(reverse)*	Negative	2.30	0.68	0.81	***Joshi (2020): Observed*** *misalignment with regional teacher education syllabi.*
PL1	**Peer Learning & Collaboration**	Discussion forums in MOOCs support collaborative learning.	Positive	3.80	0.74	0.79	***Mitra(2022):*** *Highlighted that peer forums promoted deeper engagement.*
PL4		MOOCs create an isolated learning experience. *(reverse)*	Negative	3.40	0.76	0.79	***Joseph & Thomas (2020):*** *Lack of moderated interaction led to disengagement.*

Source: Data Obtained from Research Field (2025)

Statement-Level Analysis

Participants expressed strong agreement on MOOCs enhancing pedagogical insight (Mean = 5.00, SD = 0.66). Challenges such as digital skill gaps and curriculum misalignment were also noted.

Table 3: Attitudes towards MOOCs Dimension-Wise Likert Scale Analysis Table

Dimension	No. of Items	Type of Items	Mean	SD	Cronbach's α	Interpretation
Perceived Usefulness	4	2 Positive, 2 Negative	5.00	0.70	0.82	Highly favorable
Ease of Use	4	2 Positive, 2 Negative	3.52	0.78	0.74	Favorable
Perceived Challenges	4	2 Positive, 2 Negative	2.61	0.82	0.69	Neutral to slightly favorable
Curriculum Alignment	4	2 Positive, 2 Negative	2.41	0.71	0.81	Favorable
Peer Learning & Collaboration	4	2 Positive, 2 Negative	3.50	0.70	0.79	Favorable

Source: Data Obtained from Research Field (2025)

Findings from Data Tables

The dimension-wise analysis of attitudes towards MOOCs reveals varied perspectives among respondents:

- Perceived Usefulness

With the highest mean score (M = 5.00, SD = 0.70) and strong internal consistency (Cronbach's α = 0.82), this dimension reflects a highly favorable attitude. Participants largely recognize the value and benefits of MOOCs in enhancing their professional and academic development.

- Ease of Use

A moderately favorable attitude is observed (M = 3.52, SD = 0.78; α = 0.74). While not overwhelmingly positive, the data suggests that respondents find MOOCs reasonably easy to access and navigate, although some usability barriers may persist.

- Perceived Challenges

This dimension (M = 2.61, SD = 0.82; α = 0.69) indicates a neutral to slightly favorable stance. Participants acknowledge certain obstacles—possibly related to technological infrastructure, time constraints, or language barriers—yet these are not viewed as overwhelming deterrents.

- Curriculum Alignment

Although favorably interpreted (M = 2.41, SD = 0.71; α = 0.81), this relatively low mean score suggests ambivalence. Respondents may question the extent to which MOOCs align with their formal educational goals or national curriculum standards.

- Peer Learning and Collaboration

Scoring a mean of 3.50 (SD = 0.70; α = 0.79), this reflects a favorable perception. Participants acknowledge the opportunities MOOCs provide for interaction and knowledge sharing, though these may be somewhat limited compared to traditional classroom settings.

Table: 4 Interview Insights

Comparative Insights from Semi-Structured Interviews on Attitude towards MOOCs

Dimension	High Attitude Group – Common Views	Low Attitude Group – Common Views	Key References
Instructional Planning	MOOCs helped improve lesson plans and gave new ideas for classroom strategies	Found it hard to use MOOC content in real lesson planning	Sharma & Kukreja (2021); Kale & Srivastava (2021)
Reflective Practice	Became more thoughtful about teaching style and learning needs of students	Did not reflect much; treated tasks like checkboxes	Rajput & Dixit (2020); Thomas & Verma (2020)
Digital Pedagogy	Learned to use digital tools like SWAYAM, Google Forms, and online quizzes	Felt confused or scared to use tech; preferred pen-and-paper methods	Mishra & Koehler (2006); Sharma et al. (2022)
Professional Confidence	Felt more confident as future teachers; ready to try new methods	Felt unsure about using MOOC learning's in real classrooms	Saini (2020); Mitra (2022)

Source: Data Obtained from Research Field (2025)

The semi-structured interviews revealed that prospective teachers with high attitudes toward MOOCs experienced meaningful growth in areas like lesson planning, digital teaching, and confidence. They applied structured teaching methods from MOOCs, used digital tools effectively, and reflected more deeply on their teaching beliefs. In contrast, those with lower attitudes found MOOCs harder to connect to their classroom practice, often feeling overwhelmed or disengaged. These differences suggest that a positive mindset toward MOOCs can play a key role in how much a teacher learns and grows professionally—echoing studies by Sharma & Kukreja (2021), Rajput & Dixit (2020), and Mishra & Koehler (2006).

Table5: Digital Pedagogical Readiness of Prospective Teachers

Comparative Insights from Semi-Structured Interviews on Digital Pedagogical Readiness of Prospective Teachers

Dimension	High Readiness Group – Common Views	Low Readiness Group – Common Views	Key References
Instructional Design	Integration of digital tools multimedia and interactive content to plan lessons	Relied on textbook-based planning; unsure how to adapt digital resources	Mishra & Koehler (2006); Sharma et al. (2022)
Digital Tool Usage	Familiar with platforms like SWAYAM, Google Forms, Canva, and Padlet	Hesitant or unaware of digital platforms; preferred pen-and-paper methods	Saini (2020); Mitra (2022)
Assessment Strategies	Designed online quizzes and formative assessments using digital tools	Reluctant to use digital assessments; lacked confidence in evaluating online	Rajput & Dixit (2020); Kale & Srivastava (2021)
Content Creation	Created digital presentations, videos, and infographics to	Limited to handwritten notes and verbal lectures	Sharma & Kukreja (2021); Thomas &

	support learning		Verma (2020)
Collaboration & Sharing	Shared resources via cloud platforms; participated in online peer forums	Preferred face-to-face collaboration; rarely used digital sharing tools	Panja et al. (2023); Laurillard (2016)
Reflective Practice	Used digital journals and feedback tools to reflect on teaching methods	Minimal reflection; treated digital tasks as routine	Thomas & Verma (2020); Sharma et al. (2022)
Tech Adaptability	Adapted quickly to new tools and platforms; explored emerging technologies	Struggled with updates and new interfaces; avoided unfamiliar digital tools	Mishra & Koehler (2006); Mitra (2022)
Resource Curation	Curated content from MOOCs, YouTube, and academic repositories for lesson enrichment	Depended on textbooks; unaware of digital repositories	Panja et al. (2023); Saini (2020)

Source: Data Obtained from Research Field (2025)

The findings present in Table 6 of comprehensive analysis of semi-structured interview marked a remarkable difference in digital pedagogical readiness with high and low groups of prospective teachers. The high readiness group exhibits integration of digital tools and platforms like SWAYAM, Canva and Padlet in lesson planning for content curation and students' assessment, taking advantage by MOOCs for lesson enrichment. On the other hand the low readiness group deeply relied on traditional text-book based method and demonstrated minimal awareness or confidence in using digital platforms. Preference gives to face-to-face collaboration and paper-pen approaches and face struggle with new interfaces and minimal engagement with digital reformations. These insights have ground of references such as Mishra & Kohler(2006), Sharma et al.(2022) and Panja et al.(2023)

Implications of the study

The findings of this study carry important implications for teacher education policy, instructional design, and institutional support systems.

At the policy level, the favorable attitudes towards MOOCs—especially regarding usefulness and collaboration—suggest that teacher training bodies like NCTE and SCERTs can confidently integrate MOOCs into formal pre-service and in-service frameworks, provided alignment with the curriculum and NEP 2020 is ensured. The moderate scores in ease of use and perceived challenges imply that digital equity remains a pressing concern, indicating a need for better digital infrastructure and pedagogical support across teacher education institutions.

For MOOC designers and developers, the results emphasize the importance of contextual relevance, accessibility, and reflective engagement. Incorporating local case studies, regional languages, and teacher-centered scenarios can improve relatability. Moreover, embedding built-in reflection points, scaffolded assessments, and interactive peer components can deepen both learning and teaching readiness.

Institutionally, the findings imply that blended learning models—where MOOCs are complemented with mentoring, peer discussion, or field-based application—could bridge the gap between online theory and classroom practice. Supporting trainees with digital onboarding and reflective coaching may enhance their confidence and long-term professional growth.

In essence, positive attitudes toward MOOCs are a strong foundation—but realizing their full potential in teacher development requires curriculum alignment, context-aware pedagogy, and continuous institutional support.

Limitations of the Study

The present study is subject to several limitations that should be acknowledged. First, the sample was drawn from teacher trainees in select institutions within a single Indian state, which may restrict the generalizability of findings to broader or more diverse educational contexts. Additionally, the use of self-reported questionnaires and interviews introduces potential bias, as responses may reflect participants' perceptions or a desire to present themselves favorably, especially concerning digital competence. Another limitation is the study's treatment of MOOCs as a single category without distinguishing between specific platforms like SWAYAM, NPTEL, or international providers, which can vary significantly in quality, content structure, and accessibility. Lastly, the cross-sectional nature of the research offers only a snapshot of professional development, whereas such growth is typically a dynamic, long-term process that may evolve over time.

Conclusion

The study concludes that prospective teachers generally hold favorable attitudes toward MOOCs, particularly in recognizing their usefulness, digital accessibility, and potential for collaboration. Quantitative results showed the highest mean scores for perceived usefulness, indicating strong appreciation for the knowledge and flexibility MOOCs offer. Meanwhile, the qualitative phase revealed that learners with higher attitude scores demonstrated more significant growth in instructional planning, reflective teaching, digital pedagogy, and confidence. Conversely, low-attitude participants reported limited integration of MOOC learning into practical contexts. These findings affirm that both attitude and engagement are critical in determining how effectively MOOCs support teacher development, echoing prior work by Sharma & Kukreja (2021) and Rajput & Dixit (2020).

Recommendations

To strengthen the role of MOOCs in teacher education, the study recommends several strategic interventions. First, integrating MOOCs with national curriculum standards and teacher education programs can improve relevance and encourage broader adoption. Second, institutions should offer digital readiness sessions or mentorships to ensure equitable access and reduce barriers for low-tech learners. Third, MOOC designers should embed reflective prompts, contextual classroom examples, and peer interaction spaces to make the learning experience more experiential and engaging. Lastly, hybrid models combining MOOCs with in-person guidance or internships may help bridge theory and practice, making professional development through MOOCs more transformative and sustainable.

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