



Transforming Teacher Professional Development for the Digital Era: Embracing Online CPD and Innovative Technological Integration through NEP 2020

Priti Goswami

Alumnus, Department of Education, Raiganj University, Raiganj, West Bengal

Email address: prtigoswami2402@gmail.com

Dr Biswajit Chatterjee

Assistant Professor, Department of Education, Raiganj University, West Bengal

Email address: 225biswajit@gmail.com

DOI : <https://doi.org/10.5281/zenodo.22082337>

ARTICLE DETAILS

Research Paper

Received: 71-06-2026

Accepted: 21-07-2026

Published: 20-08-2026

Keywords:

Continuous Professional Development (CPD); NEP 2020; Online Learning; Techno-Pedagogic Skills; Teacher Education

ABSTRACT

In the context of rapid technological advancement and changing educational demands, Continuous Professional Development (CPD) has become essential for enhancing teachers' competencies and improving the quality of education. The NEP 2020 emphasizes the need for continuous learning among teachers through structured and flexible professional development opportunities. This study aims to explore the concept of CPD, identify various online strategies and sources, examine its current requirements, and analyse the integration of techno-pedagogic skills in teaching practices. The study adopts a descriptive research design using secondary data from policy documents, research articles, and journals. The findings reveal that online CPD platforms, such as MOOCs, national initiatives, and open educational resources, provide accessible and effective opportunities for teachers to upgrade their knowledge. The integration of techno-pedagogic skills enables teachers to create interactive, inclusive, and learner-centred environments. This study also highlights several challenges in implementing CPD, including

Disclaimer: The opinions, interpretations, conclusions, recommendations, analyses, and statements expressed in this research article are solely those of the author(s) and do not reflect the views, policies, or positions of the Publisher, Chief Editor, Editors, Editorial Board, Reviewers, or their affiliated institutions. The author(s) are solely responsible for ensuring the originality, authenticity, and integrity of the manuscript and for ensuring that it is free from plagiarism, AI-generated content, copyright infringement, data falsification, and any other form of academic misconduct.

lack of infrastructure, digital divide, and limited contextual adaptation of training programs. Despite these challenges, CPD plays a crucial role in equipping teachers to meet the demands of 21st-century education. The study concludes that continuous professional development through online learning is vital for empowering teachers, enhancing teaching-learning processes, and achieving the holistic goals of education envisioned in NEP 2020.

1.1 Introduction

Education is widely regarded as a powerful instrument for social transformation and national development. Among the various components of the educational system such as schools, curriculum, infrastructure, and administration—the teacher occupies a central position in facilitating meaningful learning experiences and ensuring the effective utilization of educational resources. In the contemporary era, characterized by rapid technological advancement, globalization, and continuous expansion of knowledge, the role of teachers has become increasingly complex and multidimensional. Mahatma Gandhi emphasized the humanistic dimension of education by stating that “education of the heart can only be imparted through the living touch of a teacher” (Gandhi, 1962). This perspective highlights the enduring significance of teachers in nurturing values, critical thinking, and holistic development among learners. Similarly, the Education Commission (1964–1966) observed that “the destiny of India is now being shaped in her classrooms” (Education Commission, 1966), thereby underscoring the crucial contribution of teachers to nation-building and social progress. NEP 2020 is considered one of the most comprehensive educational reforms in India, aiming to bring structural, curricular, pedagogical, and technological transformation across all levels of education (Ministry of Education, 2020). It advocates the integration of technology in teaching-learning processes and recommends that teachers participate in regular Continuous Professional Development (CPD) programmes to enhance pedagogical competencies, update subject knowledge, and develop technological proficiency. Teacher professional development should not be viewed as a one-time training event but as a continuous and lifelong process of learning and professional enrichment (Borko, 2005). Online Continuous Professional Development (online CPD) provides teachers with flexible, accessible, and self-directed opportunities to enhance their professional competencies without disrupting their regular academic responsibilities. Similarly, electronic CPD (e-CPD) has been found to bridge the gap between theoretical knowledge and classroom practice by incorporating mentoring, coaching, and higher-order learning processes aligned with Bloom’s Taxonomy (Razak et al., 2015).

The COVID-19 pandemic further highlighted the importance of digital competence and online professional learning among teachers. Effective professional development programmes that include content focus, active learning, collaboration, reflection, and sustained engagement have been found to significantly improve teaching practices and student learning outcomes (Darling-Hammond et al., 2017). Teachers are now expected not only to deliver subject content but also to facilitate experiential learning, promote critical thinking, manage technologically enriched classrooms, and support students in accessing global knowledge systems. Through online platforms, teachers can engage in collaborative professional communities, access diverse educational resources, and adopt innovative teaching-learning practices suited to the needs of 21st-century learners (Trust, 2017). Such professional learning opportunities contribute significantly to teacher empowerment and educational transformation by enabling educators to integrate technology meaningfully into classroom instruction.

1.2 Objectives of the study

O₁: To understand the concept of Continuous Professional Development (CPD) in the context of NEP 2020.

O₂: To analyse the requirements of CPD in the Contemporary Educational Context.

O₃: To identify the various online strategies that support the CPD of teachers.

O₄: To study the integration of techno-pedagogical skills with CPD for enhancing teaching-learning effectiveness.

1.3 Research questions of the study

RQ₁: What is the concept of Continuous Professional Development (CPD) in the context of NEP 2020?

RQ₂: What are the major requirements of CPD in the Contemporary Educational Context?

RQ₃: What are various online strategies available for CPD of teachers?

RQ₄: How can techno-pedagogical skills be effectively integrated into CPD programmes to enhance teaching-learning practices?

1.4 Methodology of the study

The present study adopts a qualitative, descriptive research design to explore the concept and significance of Continuous Professional Development (CPD) through online modes in the context of the National



Education Policy 2020. The study is primarily based on secondary data from credible sources such as research articles, journals, books, government reports, policy documents, and online databases. A document analysis method has been used to examine relevant literature and policy frameworks related to CPD and NEP 2020. The methodology emphasises synthesising existing knowledge to provide a comprehensive understanding of CPD in the contemporary educational landscape.

1.5 Findings

- Continuous Professional Development (CPD) is viewed as a comprehensive and dynamic process that supports the holistic development of educators and strengthens the education system as envisioned under NEP 2020. It refers to an ongoing process through which teachers systematically enhance their knowledge, pedagogical skills, professional attitudes, and techno-pedagogical competencies throughout their careers.
- Continuous Professional Development (CPD) has become a fundamental requirement for ensuring quality education in the 21st century. It empowers teachers to confidently use digital tools and resources, transforming classrooms into repositories of global knowledge. It enables teachers to respond effectively to changing educational realities and contributes significantly to the holistic development of learners and the advancement of the education system.
- There are various online platforms and national initiatives such as SAKSHAT, MOOCs, SWAYAM, COURSEERA, NROER, Wikipedia, blogs and Discussion forums and NISTHA that have significantly contributed to enhancing teachers' professional learning opportunities. These initiatives support educators in developing digital literacy, technological proficiency, instructional innovation, and professional collaboration without disrupting their regular academic responsibilities.
- Continuous Professional Development (CPD), especially through online modes, plays a vital role in creating a technology-friendly and digitally enriched learning environment. Continuous expansion of knowledge and rapid technological advancement have significantly transformed education systems. UNESCO has long emphasized that teachers and their teaching practices have the potential to transform society, particularly with the integration of Information and Communication Technology (ICT).

1.6 Discussion

1.6.1 Concept of Continuous Professional Development

In the field of education, the term *profession* is understood in a comprehensive sense, signifying a lifelong commitment to the intellectual, social, and moral development of learners and society. Teaching, therefore,



is not confined to pre-service preparation alone; rather, it is a continuous process of professional learning, reflection, and growth. In this context, Continuous Professional Development (CPD) has emerged as a crucial framework for enhancing teachers' competencies, pedagogical effectiveness, and professional identity. The National Education Policy (NEP) 2020 places significant emphasis on the professional development of teachers, head teachers, and educational leaders. Sections 1.7 and 5.15 of the policy recommend that every teacher should participate in at least 50 hours of CPD annually to ensure continuous improvement in teaching-learning practices (Ministry of Education, 2020). This policy perspective highlights the importance of lifelong learning among educators in addressing the evolving demands of contemporary education. CPD extends beyond traditional in-service training programmes by focusing not only on short-term skill enhancement but also on sustained professional growth, reflective practice, and self-directed learning. The National Curriculum Framework for Teacher Education (NCFTE) 2009 introduced the term CPD as a broader and more holistic alternative to conventional in-service education programmes (Singh & Gupta, 2021). Historically, several educational commissions and committees in India have emphasized the need for improving teacher quality through in-service education and professional training initiatives. Over time, the concept evolved into a more comprehensive understanding of professional learning that integrates subject knowledge, pedagogical innovation, and professional ethics. CPD, therefore, encompasses a wide range of activities such as workshops, seminars, online courses, collaborative learning, reflective practices, and participation in academic forums. NEP 2020 further broadens the scope of professional development by extending it to school principals and educational leaders. The policy encourages educators to adopt innovative pedagogical approaches, strengthen foundational literacy and numeracy, integrate experiential learning, and effectively utilize technology in teaching-learning processes. Teachers are also encouraged to incorporate art, sports, storytelling, and multidisciplinary approaches into classroom practices while actively participating in professional learning communities and training programmes. Scholars have argued that CPD contributes significantly to enhancing teachers' intellectual capacity, professional competence, and analytical abilities, thereby improving the overall quality of education (Laltlansangi et al., 2023). Participation in CPD programmes also enables teachers to develop scientific thinking, quantitative reasoning, communication skills, and reflective practices essential for addressing contemporary educational challenges.

1.6.2 Requirements of Continuous Professional Development (CPD) in the Contemporary Educational Context

In the contemporary educational landscape, Continuous Professional Development (CPD) has become indispensable due to rapid advancements in knowledge, technology, pedagogy, and learner expectations.



The emergence of digital education, competency-based curricula, inclusive education, and global learning frameworks has significantly transformed the role of teachers. Consequently, educators are required to continuously update their professional competencies to remain effective in dynamic teaching-learning environments. The COVID-19 pandemic further exposed the urgent need for teacher preparedness in digital and online education. According to UNESCO, a large number of teachers in India faced considerable challenges during school closures and the sudden transition to online teaching due to limited technological competencies and inadequate digital infrastructure (Dutta, 2021). This unprecedented situation highlighted the necessity of continuous professional learning and digital upskilling among educators. In India, where teachers often serve for several decades, rapid changes in educational practices and technological innovations demand ongoing renewal of professional knowledge and skills. CPD therefore serves as a critical mechanism for ensuring that teachers remain professionally competent, adaptable, and capable of addressing contemporary educational challenges. The major requirements of CPD in the present educational context are discussed below:

- The implementation of NEP 2020 has introduced significant reforms in curriculum design, pedagogy, assessment, multilingual education, and experiential learning. CPD enables teachers to understand these reforms and effectively implement innovative teaching practices aligned with policy objectives.
- CPD supports the development of pedagogical knowledge, subject expertise, classroom management skills, and reflective practices. It contributes to improving instructional quality and promotes learner-centred teaching approaches that enhance student achievement.
- Digital transformation in education requires teachers to develop technological proficiency and techno-pedagogical competencies. CPD equips educators with the skills necessary for online teaching, blended learning, digital assessment, and the effective use of educational technologies.
- The contemporary knowledge society demands critical thinking, creativity, collaboration, communication, and problem-solving skills among learners. CPD enables teachers to adopt innovative pedagogical strategies that support the development of these competencies.
- The role of teachers has expanded beyond classroom instruction to include mentoring, counselling, curriculum planning, assessment design, and content creation. CPD prepares teachers to effectively perform these multidimensional responsibilities.
- Classrooms today are increasingly diverse in terms of language, culture, socio-economic background, and learning needs. CPD equips teachers with inclusive pedagogical strategies to address learner diversity and ensure equitable educational opportunities for all students.



- NEP 2020 emphasizes multilingualism and mother-tongue-based education. CPD helps teachers develop competencies required for implementing multilingual pedagogical approaches and reducing linguistic barriers in learning.
- In addition to academic achievement, contemporary education emphasizes moral values, cultural awareness, emotional well-being, and holistic development. CPD supports teachers in integrating these dimensions into classroom practices.

1.6.3 Different Online Strategies for Continuous Professional Development (CPD)

Teachers play a vital role not only as transmitters of knowledge but also as facilitators, mentors, counsellors, and reflective practitioners who contribute to the holistic development of learners. Recognizing this multifaceted role, the National Education Policy 2020 emphasizes Continuous Professional Development (CPD) through participation in workshops, seminars, collaborative learning, and reflective practices. In the digital era, online platforms and technology-enabled learning environments have emerged as significant avenues for teacher professional development. Various initiatives undertaken by the Ministry of Education, Government of India, and other educational organizations provide accessible and flexible opportunities for teachers to enhance their pedagogical and techno-pedagogical competencies. The major strategies for CPD are discussed below.

- **SAKSHAT Portal:** The SAKSHAT portal, launched by the Ministry of Education in 2006, functions as a comprehensive digital platform for teachers and learners. It provides free access to quality educational resources, e-content, teaching modules, and subject-specific learning materials. The “Teacher Corner” of the portal particularly supports teachers’ professional development through pedagogical guidance and academic resources.
- **Massive Open Online Courses (MOOCs):** Massive Open Online Courses (MOOCs) offer flexible, self-paced, and lifelong learning opportunities for teachers through Information and Communication Technology (ICT)-enabled platforms.
- **SWAYAM:** Study Webs of Active Learning for Young Aspiring Minds (SWAYAM) is a flagship initiative of the Government of India designed to provide accessible and affordable online education. It offers numerous teacher training and professional development courses that enable educators to improve their pedagogical, technological, and subject-specific competencies.
- **Coursera:** Coursera is an internationally recognized MOOC platform offering courses related to classroom management, literacy education, educational technology, social-emotional learning, and



teacher training. Such platforms support teachers in engaging with global educational practices and contemporary pedagogical innovations.

- **NROER:** The National Repository of Open Educational Resources (NROER) provides free access to multilingual digital educational resources. It supports teachers in accessing, adapting, and creating educational content while promoting collaborative learning and resource sharing.
- **Wikipedia:** Wikipedia functions as a collaborative knowledge platform where educators can access, contribute to, and share educational content, thereby fostering collaborative and self-directed learning practices.
- **Blogs and Discussion Forums:** Digital discussion platforms such as Quora, Webex, and professional teacher communities facilitate knowledge exchange, peer interaction, and reflective dialogue among educators. These platforms support collaborative professional learning and encourage the sharing of innovative teaching practices.
- **NISHTHA:** NISHTHA (National Initiative for School Heads' and Teachers' Holistic Advancement), implemented under Samagra Shiksha, is a comprehensive teacher development programme introduced by the Ministry of Education. It aims to improve classroom processes and learner outcomes through holistic professional development aligned with NEP 2020 and the recommendation of 50 hours of CPD annually (NCERT, 2022).

1.6.4 Integration of Techno-Pedagogic Skills with Continuous Professional Development (CPD)

The concept of techno-pedagogic skills refers to the effective integration of technology and pedagogy within the teaching-learning process. In contemporary education, technology encompasses digital tools, software applications, online platforms, multimedia resources, and innovative technological practices that facilitate learning. Pedagogy, on the other hand, refers to the methods, strategies, and approaches employed by teachers to promote meaningful learning experiences. The integration of these two dimensions enables educators to create interactive, learner-centred, and technologically enriched classroom environments. Techno-pedagogic competence involves the ability of teachers to appropriately integrate technological resources with pedagogical methods to enhance instructional effectiveness and improve learning outcomes. In the digital age, such competencies have become essential for teachers to address the diverse needs of learners and adapt to rapidly changing educational contexts. The National Education Policy 2020 strongly advocates the incorporation of technology into educational practices and emphasizes the need for teacher training programmes that develop techno-pedagogical competencies. Consequently, Continuous



Professional Development (CPD) serves as an important mechanism for equipping teachers with the knowledge and skills necessary for integrating technology into classroom instruction.

1.6.4.1 Key Elements of Techno-Pedagogic Skills

- Technologically capable teachers must possess the ability to effectively use digital tools, educational software, and online platforms for instructional purposes.
- Effective techno-pedagogic practice requires teachers to combine appropriate teaching strategies with technological tools to enhance student engagement, collaboration, and conceptual understanding.
- Teachers need competencies in accessing and utilizing digital learning resources, e-content, MOOCs, and Open Educational Resources (OERs) to enrich classroom instruction and support independent learning.
- Technology-based assessment tools enable teachers to evaluate student performance, provide immediate feedback, and monitor learning progress effectively.

Continuous Professional Development (CPD) plays a significant role in strengthening these competencies by providing teachers with opportunities for training, experimentation, reflection, and collaborative learning. CPD programmes enable educators to confidently adopt innovative teaching practices and effectively balance educational objectives with emerging technological advancements (Rísquez et al., 2019).

1.7 Conclusion

In the rapidly transforming educational landscape of the 21st century, Continuous Professional Development (CPD) has emerged as a vital component for ensuring quality education and effective teaching-learning practices. Online CPD has become increasingly significant as it provides flexible, accessible, and technology-enabled opportunities for teachers to upgrade their professional competencies. The study highlights that CPD is not limited to traditional in-service training programmes but represents a holistic and lifelong process of professional learning that includes pedagogical innovation, reflective practice, technological adaptation, and collaborative engagement. The integration of techno-pedagogic skills within CPD enables teachers to effectively combine technological tools with pedagogical approaches, thereby creating learner-centred, inclusive, and interactive educational environments. Such competencies are essential for addressing the diverse learning needs of students and meeting the demands of digital and knowledge-based societies. Overall, the study concludes that online Continuous Professional Development, integrated with techno-pedagogical competencies, is essential for empowering teachers and improving the quality of education in alignment with the vision of NEP 2020. It not only enhances teachers' professional



effectiveness but also contributes to the holistic development of learners and the advancement of society as a whole.

REFERENCES

- Borko, H. (2004). Professional development and teacher learning: Mapping the terrain. *Educational Researcher*, <http://dx.doi.org/10.3102/0013189X033008003>, 33(8), 3–15.
https://www.researchgate.net/publication/237143784_Professional_Development_and_Teacher_Learning_Mapping_the_Terrain
- Darling-Hammond, L., Hyler, M. E., & Gardner, M. (2017). *Effective teacher professional development*. Learning Policy Institute. <https://doi.org/10.54300/122.311>
- Dutta, A. (2021). Evolving from teacher training to continuous professional development for teachers. Retrieved from <https://www.highereducationdigest.com/evolving-from-teacher-training-to-continuous-professional-development-for-teachers/>
- Education Commission. (1966). *Education and national development: Report of the Education Commission (1964–1966)*. Government of India.
- Gandhi, M. K. (1962). *The heart of education*. Navajivan Publishing House.
- Laltlansangi, C., Nanchanga, L., & Fanai, L. (2023). Reflection of National Education Policy 2020 on professional development of teachers. *JETIR*, ISSN-2349-5162, vol-10.
- Ministry of Education. (2020). National Education Policy 2020. Government of India.
- NCERT. (2022). Guidelines for 50 hours of continuous professional development for teachers, head teachers and teacher educators. <https://ncert.nic.in/pdf/Guidelines50HoursCpd.pdf>
- Razak, N. A., et al. (2015). Electronic continuous professional development (E-CPD) for teachers: Bridging the gap between knowledge and application. *Turkish Online Journal of Educational Technology*, 14(4):14-27, https://www.researchgate.net/journal/Turkish-Online-Journal-of-Educational-Technology-2146-7242?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19



- Rísquez, A., et al. (2019). Online continuing professional development: An integrative approach. <http://dx.doi.org/10.4995/HEAd19.2019.942>
- Singh, S., & Gupta, P. (2021). Continuous professional development for teachers in India: Prospects and challenges in reference to National Education Policy 2020. *ISSN Journal*, 8(22).
- Trust, T. (2017). Motivation, empowerment, and innovation in online professional learning networks. *Journal of Research on Technology in Education*, 49(1–2), 16–30