Research Article

Online Training as a Strategy for Continuous Professional Development (CPD) of Teachers

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Abstract

The role of a teacher is regarded as one of the most demanding professions across the globe. Providing appropriate training to the teacher workforce is imperative to their physical, emotional, and mental well-being (UNESCO ICT Framework for Teachers, 2011). The National Education Policy (NEP) 2020 recognizes the need for Continuous Professional Development (CPD) of teachers on innovative pedagogies and digital technologies, due to which there are several efforts taken up at the national and international levels. During the pandemic, a sudden pressure on teachers and educators to use technology for teaching-learning provided ample opportunity and enhanced the scope of online training. There were a large number of online training planned and executed by various organizations and individuals to build the digital competency of teachers and educators. Several researchers have shown online training as an effective strategy for creating awareness. In the context of India, where there is a dearth of digital infrastructure and digital competencies among teachers and educators, it is essential to study the impact of online training as a strategy for capacity building of stakeholders in the use and integration of Educational Technology (ET) and Information Communication Technology (ICT) for teaching and learning. This research article aims to address this need by exploring the efficacy of online training as an alternative strategy for capacity building in the use of ET and ICT in educational settings. Hence a series of online training programs were conducted, and the response to such training was studied. Though the training was attended by most of the learners - teachers, and educators on their interest and motivation, the number of enrolment in these training programs reveals that there is a demand for online training for upscaling their competencies. The results of the study reveal that the representation of trainees of 36 states/ UTs in some training was encouraging. The data also indicates that participants from only 50 per cent of the states/ UTs participated consistently. Also, the data shows that the modality of communication and advocacy was found to play a crucial role in enhancing participation. Results revealed that nearly 60 per cent of the participants were found to achieve the expected performance in the post-training assessment. It may be interpreted that the online training program is an effective strategy for large-scale capacity building and enhances the overall scope for self-learning modalities. To reach out to a large number of beneficiaries in a very short period without much financial or physical constraint, online training of teachers and educators was found as a better strategy for creating awareness of the use and integration of ET and ICT. The findings of this study have the potential to make a significant impact on educational practices by shedding light on the effectiveness of online training in fostering awareness and proficiency in ET and ICT usage.

Keywords: ICT Training, Online Training, Capacity Building, Continuous Professional Development (CPD), Educational Technology

Introduction

Although the digitalization of education has been at its peak for the last decade, its dissemination has seen exponential progress, especially during the pandemic (COVID-19). The pandemic has compelled teachers and educators to adopt and adapt online and hybrid teaching environments, necessitating comprehensive training to equip teachers with modern digital tools and pedagogical approaches. However, providing such training presents a complex task, as it requires teachers to relearn behaviors, skills, and break patterns to enhance their professional development. This transformation is time-consuming, considering the cognitive and socio-cultural patterns ingrained in their teaching practices over the years (Darling-Hammond, 2017). Despite recognizing the importance of teacher training for technology integration in the classroom, the implementation and management of such interventions have been uneven. To address this challenge, it is crucial to prioritize ongoing professional development programs and support teachers with strategies like mentoring, collaboration, and communities of practice (Zhao et al., 2002). By empowering teachers with the necessary skills, they can effectively leverage technology to solve real classroom problems, enhance students' learning experiences, and advance their competencies (Levin & Wadmany, 2006).

Integrating technology in education and cultivating effective pedagogical techniques further enhance teacher effectiveness (Hattie, 2009; Ertmer, 2005). Policymakers and educational institutions shall invest in evidence-based teacher capacity-building programs to empower a skilled and motivated educator workforce, contributing significantly to the nation's educational excellence (Marzano et al., 2001; OECD, 2019). It is imperative to develop the professional skills of the teachers in light of the enormous number of qualified educators necessary to achieve UNESCO's Sustainable Development Goal 4 (UNESCO, 2017) and implement the recommendations of India's National Education Policy (MHRD, 2020). The COVID-19 epidemic forced a shift towards digital teaching and learning. As a result, the need to build digital competencies of teachers and educators has potentially increased. Along with the present changes in the educational landscape, teachers' roles will continue to evolve. To meet the demands of today's teaching and learning, it is crucial to build the capacity of teachers to flourish in change and innovation.

Online training provides a flexible and accessible platform for teachers, educators, and other learners to acquire the necessary skills and competencies at their own pace and convenience. Therefore, online training can serve as a catalyst for improved pedagogy and enhanced learning outcomes. By identifying the strengths and limitations of such a self-learning strategy, this research can inform the development of more targeted and effective training programs that align with the needs of teachers, educators, and other learners. Ultimately, the goal is to create an educational ecosystem where ET and ICT are seamlessly integrated, enriching the teaching and learning experiences and preparing learners for the challenges and opportunities of the digital age and future skills.

Need for Online Capacity Building on ET/ ICT

According to Fazekas and Burns (2012), as cited in the OECD Report, capacity building refers to the process of learning and knowledge production among various stakeholders in the education sector. Teachers, the main

conveyors of knowledge, play a vital role in shaping students' intellectual development. Therefore, providing suitable training and professional development opportunities is essential for their physical, emotional, and mental well-being (UNESCO ICT Framework for Teachers, 2011). Research has shown a positive link between teacher professional development and student achievement in various subjects and grade levels (Darling-Hammond et al., 2017).

The COVID-19 epidemic has affected practically every nation. India had difficulties as a result of the unexpected transition to online education, much like many other nations globally (Dadhe & Patil, 2021). The use of ICT in educational settings has the potential to enhance instruction, performance, and learning (Yadav, 2023). Teachers need to be technologically proficient and have a strong understanding of pedagogy to engage students in ways that help them acquire the necessary information, skills, and attitudes (Mishra et al., 2019). Technology-based pedagogy integration is an important step in establishing ICT capability for education to fulfill demands (Byungura et al., 2016). A dedicated teacher attempts to advance Continuous Professional Development (CPD). The need for professional development stems from teachers' passion for their profession and the ingrained belief that they are lifelong learners (Shankar, 2022). ICT must be significantly integrated into educational settings (Pandey et al., 2022).

The government of India has urged educational institutions to undertake online education using ICT amid the pandemic emergency (Subaveerapandiyan & Nandhakumar, 2021). ICT has changed the globe more than any other contemporary technology. ICTs have had a significant impact on the sphere of education, undoubtedly changing the entire educational process. As a result, if teachers want to effectively employ cutting-edge techniques and technology for aspiring teachers, they must possess a positive attitude in addition to a sufficient understanding of and experience with ICT tools and equipment (Beri & Sharma, 2019). Gupta & Singh (2018) have pointed out that a significant number of teachers and students lack the necessary competency to effectively utilize e-learning tools. This deficiency can hinder the full realization of the potential benefits of ICT in education. Gupta's study (2019) further emphasizes that providing teachers with appropriate training in using e-learning tools and incorporating ICT components into their teaching practices can lead to a substantial positive impact on their knowledge and skills development.

Due to the explosion of emerging technologies, the world is changing rapidly. The world is witnessing these changes, along with developing nations like Indonesia, China, and India, among others. The developing nations must adopt these reforms one at a time to improve the value of education and improve the setting for learning and instruction in the classroom (Sudha, 2019). A majority of the investigations found a favorable correlation between teachers' usage of ICT and their attitudes toward the use of ICT resources (Mukherjee & Maity, 2019). Numerous changes are being made to the Indian educational system. The use of ICT in teaching and learning has begun to become unavoidable. Rashtriya Madhyamik Shiksha Abhiyan (RMSA), an initiative of the Indian government, established the ICT program in all schools (Sudha, 2018).

When investigating strategies to develop teacher competencies in ICT integration, Lim (2007) introduced the concept of MicroLESSONS. These MicroLESSONS

were implemented at the National Institute of Education in Singapore, offering a structured 12-lesson module to engage pre-service teachers. By focusing on constructing multimedia packages aligned with constructivist principles, MicroLESSONS aimed to enhance pre-service teachers' clarity and understanding of instructional approaches. Moreover, these micro lessons provided diverse examples of how ICT could be effectively used in classrooms to support student learning.

Self-learning is anticipated to take its rightful position in pedagogical theory and practice. There is a considerable surge in interest in self-learning concerns connected to technology, the fast proliferation of information, and the adoption of a competency-based strategy in specialized instruction and professional development (Kenesbekova et al., 2019). Particularly in light of the Covid-19 epidemic, online learning platforms have taken on an entirely novel position in education (Dilling & Vogler, 2023). Teachers may manage their classes more effectively by taking advantage of online training that will improve their knowledge and abilities (Almutairi, 2022).

Research Questions

This research investigates the role of online training as a strategy for capacity building of teachers and teacher educators in the use of ET and ICT. The primary research questions guiding this study are as follows:

1. Can online training be a strategy for the Continuous Professional Development (CPD) of teachers on the use of ICT?
2. What are the perceived benefits and challenges of using online training as a strategy for CPD?
3. What are the enablers of online training as a strategy for CPD?

Methodology of the study

To study the efficacy of online training as a strategy for capacity building of teachers, a series of online training was conducted, and the feedback of the learners and their performance in the post-training assessment was studied.

For this study, a quasi-experimental design was adopted. Seven online training packages were developed with slide presentations. Each training was conducted for 5 hours spread across five days in online mode through a YouTube channel as a live program and also simulcast through PMeVidya DTH TV channels across the country for wider reach. After the five days (one hour each per day) of training, the recorded videos and slide presentations were uploaded and provided to the learners as self-learning resources. At the end of each training, the post-training assessment was conducted to study the impact of training programs organized in seven cycles for the acquisition of knowledge in the concerned area. The reaction of the learners towards each training was also measured and analyzed through a feedback mechanism.

The purposive sampling technique was adopted for the selection of the sample, as the learners participated on a voluntary basis. The sample selected for the study is given in Table-1 below:

Table-1: Training-wise Selection of Participants

S.No	Titles of the Trainings	No. of States/ UTs participated	No. of Participants
1	Open Educational Resources (OER) and Licenses	18	4,564
2	Digital Tools for Teaching, Learning and Assessment of Specific Subjects	12	68,219
3	Game-Based Learning	32	8,230
4	Digital Pedagogy	36	23,889
5	Multimedia Resources for Teaching, Learning, and Assessment	12	51,135
6	Virtual Labs for Teaching, Learning, and Assessment	36	34978
7	Let's be a Cyber Warrior	9	6005
Total no of participants included in the study			**1,97,020**

Insights on Participation in the Online Training

Seven trainings of five days each were identified randomly for this study. The data were analyzed to understand the participation trend. The information regarding this training was shared officially with the states/ UTs and autonomous organizations and through the social media handles of CIET-NCERT, but participation in the training was voluntary.

Table-2: Training-wise Participation

S.No	Titles of the Trainings	No. of States/ UTs participated	State with max. participation	State with min. participation
1	Open Educational Resources (OER) and Licenses	18	Arunachal Pradesh	Bihar
2	Digital Tools for Teaching, Learning and Assessment of Specific Subjects	12	Karnataka	Nagaland
3	Game-Based Learning	32	Jharkhand	Ladakh
4	Digital Pedagogy	36	Odisha	Dadra and Nagar Haveli, Daman & Diu

5	Multimedia Resources for Teaching, Learning, and Assessment	12	Karnataka	Mizoram
6	Virtual Labs for Teaching, Learning, and Assessment	36	Uttar Pradesh	Ladakh
7	Let's be a Cyber Warrior	9	Bihar	Andaman & Nicobar Islands, Manipur, Sikkim

Insights from the data related to participation reveal the following:

The data entered in Table-2 shows the overall registration of participants in seven trainings. The data reveals that the representation of participants from 36 states/ UTs was witnessed only in one training, i.e., Virtual Labs for Teaching, Learning, and Assessment. However, the data further shows that in training on cyber safety, participants from 9 states/ UTs only participated.

From the data given in Table-1, it is evident that the maximum number of participants were found to be in training on "Digital Tools for Teaching, Learning, and Assessment of Specific Subjects," i.e., 68219. At the same time, the overall minimum participation was found to be in the training "Open Educational Resources (OER) and Licenses," which could attract about 4564 participants.

The data entered in Table-2 reveals that across all the seven pieces of training, the state from which the maximum participation was reported was Karnataka which was 37,924 in training "Digital Tools for Teaching, Learning, and Assessment of Specific Subjects." On the other hand, it may be seen from the data that the minimum participation across the seven training sessions was from the states like Andaman & Nicobar Islands, Manipur, and Sikkim in training "Let's be a Cyber Warrior."

It may be logically reasoned that in the state of Karnataka, a large number of teachers have undergone training on ICT-Basics as part of the implementation of the ICT Curriculum by CIET-NCERT. Also, Subject Teacher Forums (STF) have been created for the use and integration of technology, and the teachers of Karnataka are very active in social media groups. So the information disseminated through multiple modes might have contributed to a higher number of participants from the Karnataka state. In the case of Andaman Nicobar Islands, Manipur, and Sikkim, lack of advocacy, less internet penetration, etc., might have contributed to low enrolment. Though registration in this training was not a mandatory requirement, learners have registered themselves keeping in view their needs and interest. This shows the motivation of the learners to join such online courses. However, the reasons for variation in the training need to be further studied. Such research may support in effective implementation of this training.,

Also, data collected through the feedback mechanism shows that around 97 per cent of the learners have reported that they are interested in joining online courses because of the following reasons:

- Training is free

- No travel involved
- Topics included in the training are the latest areas of knowledge and coming under their interest areas.

From the data, it was evident that around 63 per cent of the participants who missed the live sessions used the recorded videos provided on ciet.nic.in website for self-learning. Also, the participants were of the opinion that the access to the recording of all seven trainings and presentations that were provided as self-learning materials encouraged them to learn at their own pace and appear in the post-training assessment for obtaining a successful participation certificate.

Analysis and Interpretation of Performance in the Post-Training Assessment

The data entered in Table-3 shows the no of registration in each training and the number of participants in the post-training assessment.

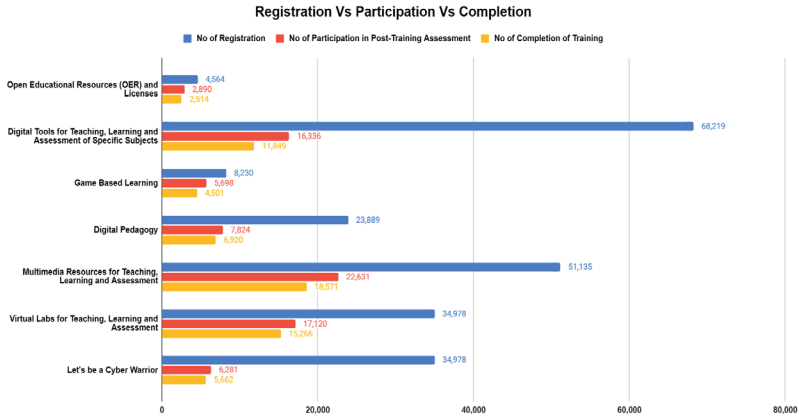
Table-3: Participation in Post-Training Assessment

S.No.	Name of the training programme	No of Registration	No of Participation in Post-Training Assessment
1	Open Educational Resources (OER) and Licenses	4,564	2,890
2	Digital Tools for Teaching, Learning and Assessment of Specific Subjects	68,219	16,336
3	Game Based Learning	8,230	5,698
4	Digital Pedagogy	23,889	7,824
5	Multimedia Resources for Teaching, Learning and Assessment	51,135	22,631
6	Virtual Labs for Teaching, Learning and Assessment	34,978	17,120
7	Let's be a Cyber Warrior	6005	6,281
Total		1,97,020	78,780

The data presented in Table-3 shows that the total number of registrations across all seven trainings was 1,97,020; however, the number of people who have participated in the post-training is only 78,780, i.e., only 39.99 per cent of the registered participants. The maximum registration was received from "Digital Tools for Teaching, Learning, and Assessment of Specific Subjects," i.e., 68,219; however, the number of people who eventually participated in the post-training assessment was only 16,336. On the contrary, "Let's be a Cyber Warrior" training received only 6,005 registrations. Still, the number of people who participated in the quiz was more than the people who registered in the post-training assessment, i.e., 6,281. One of the reasons which were commonly expressed by teachers regarding non-participation in the post-training assessment was a lack of awareness about the method of certification in online training. Many teachers and educators registered and participated in the training, but they missed to understand or follow the assessment strategy. Hence, the following initiatives were planned to be taken for further training:

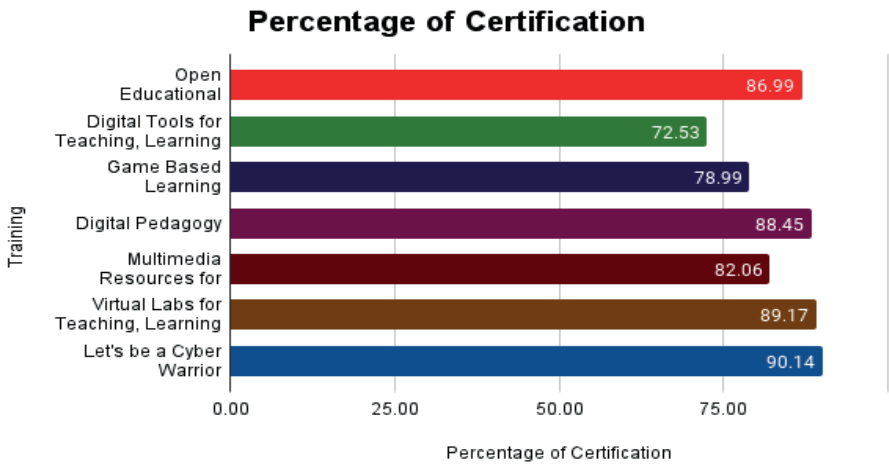
- Banners on missed sessions and assessments are to be circulated among the registered participants.
- Details of the post-training assessment were announced during every session.
- Details of the post-training assessment were elaborated on the event page
- N=1,97,020

Figure-1: Participation in Post-Training Assessment and Completion and Performance



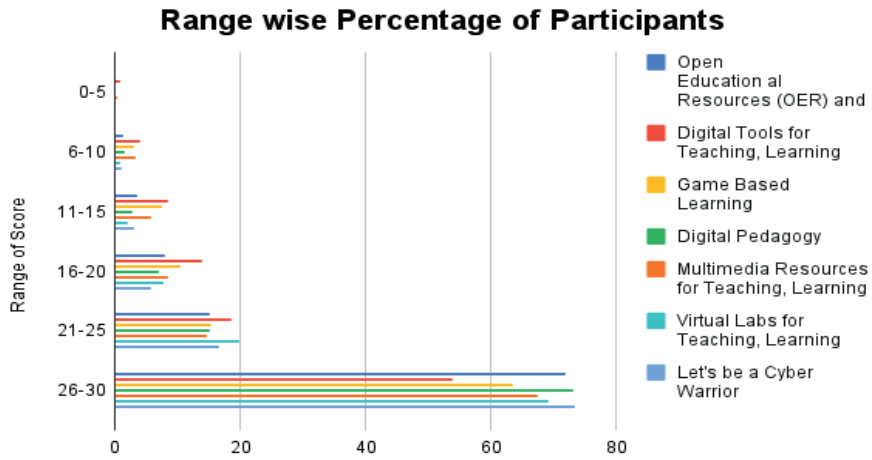
Looking at the scores obtained by the participants, it can be seen from the data that out of 78780 participants who took the post-training assessment, 82.86 per cent of the participants (i.e., 65,283) scored 70 per cent and above in the post-training assessment. This indicates that the information delivered during the training to the participants was well comprehended and imbibed by the majority of them.

Figure-2: Percentage of Completion of the Training



Based on the chart above, the maximum number of participants who scored 70 per cent and above in the quiz were from the "Let's be a Cyber Warrior" training, i.e., 90.14 per cent. In almost all training, the percentage of learners who scored more than 70 per cent is above 70 per cent. This indicates that online training was effective in knowledge acquisition.

Figure-3: Scores in Post-Training Assessment



Based on the chart given in Figure 3, it can be concluded from the results that the majority of the participants obtained scores between the range of 26-30 and 21-25, i.e., nearly 60 per cent, which shows that the online training is effective in developing the knowledge of the learners in the use of ET & ICT.

Conclusion

In conclusion, the integration of ICT in education is a transformative and indispensable aspect of modern teaching and learning practices. To unlock the full potential of ICT, it is essential to invest in the capacity building of teachers, providing them with the necessary training, resources, and support. Moreover, school administrations play a key role in fostering a conducive environment for ICT integration. As educational technology continues to evolve, continuous research and development are needed to equip teachers with the knowledge and skills required to navigate the digital landscape effectively and enhance the overall quality of education. Based on this research, it is observed that online training has created an environment for teachers and other stakeholders in education to learn, use and integrate technology in their self-interest. The data further reveals that in almost all states/ UTs, most participants have also showcased their understanding in post-training assessment. Therefore, well-structured online training can educate the audience about the new-age educational resources and tools to accomplish the teaching-learning objectives in school education. However, there is more scope to make the training intensive and improve to scale up and cover every single school teacher in the country as envisioned in NEP-2020.

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