

SCHOOL TEACHERS' PERCEPTIONS OF THE EFFECTIVENESS OF ICT-BASED PROFESSIONAL DEVELOPMENT PROGRAMS

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1. Introduction

As new technologies and scientific advances have taken place, the present era appears to be completely incommensurable with the past. The rate of change has accelerated dramatically since the advent of information and communication technologies (ICT). All aspects of our lives have been affected by these changes, from science and technology to culture, politics, and education. The paradigm shift sparked by the advent of information and communication technology (ICT) is profound. The present era appears to be a new world in which previous fictions seem to come true. Adoption of these changes is seemingly essential for the survival of all humans living on this planet. Recently, the world witnessed the terrible COVID-19 pandemic attack. The pandemic, as a change, had an impact on all aspects of people's lives. Everyone realised the importance of ICT at a time when they were helpless. ICT, like other fields, aids teachers and students in the teaching-learning process. People recognised ICT's potential in the form of e-learning, mobile learning, online learning, digital learning, and mobile app usability, among other things. In a nutshell, one should keep up with changes and need to adopt them critically. Professionals should stay up-to-date on new knowledge and skills in their field. To put it another way, they need to be a part of a programme that helps them grow as professionals..

Teachers, like all other professionals, require professional programme training to stay updated in their fields. The necessity of a professional development programme for teachers was also stressed by the Education Commission (1964-66) "In all professions, there is a need to provide further training and special courses of study, on a continuing basis, after initial professional preparation. The need is most urgent in the teaching profession because of the rapid advancement in all fields of knowledge and the continuing evolution of pedagogical theory and practise (P-138)". Continuous professional development of teachers is emphasised in the New Education Policy (2020) as well, "Teachers will be given continuous opportunities for self-improvement and to learn the latest innovations and advances in their

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professions. Each teacher will be expected to participate in at least 50 hours of continuous professional development (CPD) opportunities every year for their own professional development, driven by their own interests". One of the primary goals of a teacher is to improve the learning outcomes of her or his students. There is a need to improve teachers' skills and competency in order to align with the adoption of a new national education policy in 2020 and to meet the requirements of a new market demand. A continuous professional development programme or training through ICT for teachers may be effective in developing professional skills.

Review of literature

ICT has been extensively utilised in a variety of fields, including education. Its usage and its value were clearly understood and valued during COVID-19. ICT is essential for schoolteachers to improve professionally. However, in order to effectively use ICT in the classroom, teachers must be aware of and skilled in the field. There are numerous studies that concentrate on the necessity and significance of ICTs in education and professional growth of teachers. Khaliq & Baig (2018) looked at the use of ICT by teachers for professional development. The study concluded that ICT is crucial for the effective professional development of secondary school teachers working in the public sector. Teachers must be knowledgeable and competent in ICT to employ technology in the classroom. The authors recommended providing excellent refresher courses and training to secondary school teachers in order to help them meet the predetermined objectives before incorporating ICTs. According to Mushayikwa (2013), about 60% of Zimbabwean teachers had difficulties in using ICT for professional development. Even though ICT was offered at their schools, almost half of the non-users never used it. To secure access, teachers employed cutting-edge strategies, including using their own resources and pooling resources. The results demonstrated that ICT has great potential to support the self-directed professional development of mathematics and science teachers. Aduwa-Ogiegbaen (2009) found that teachers must be aware about and skilled in ICTs to use technology in the classroom. They conducted a survey with the objectives of obtaining postgraduate in-service teachers from specific universities in Nigeria's south-south geopolitical zone to assess their basic technological competency. The findings showed that the majority of teachers lacked proficiency in fundamental technological domains.

In their 2003 Partnership in Primary Science (PIPS) project, Rodrigues, Marks, and Steel advocated on a lifelong learning approach that encouraged agency and accommodation of relevant knowledge bases. Ten schools (with 16 teachers each), a teacher education institute, and many scientists were a part of PIPS. The project encouraged primary school

teachers to update their knowledge of science topics, teaching and learning techniques, and the use and integration of information and communication technology (ICT) capabilities. Evidence showed that the PIPS model of continuous professional development encouraged the personalization of ICT tools for science education and influenced teaching materials.

Rationale of the Study

The impact of ICT is obvious across the educational system, from designing and developing curricula to evaluation. NEP-2020 highly recommends it for the continuous professional development of teachers through online mode. It states, "Continuous professional development programmes will be offered in multiple modes, including in the form of local, regional, state, national, and international workshops as well as online teacher development modules." The primary goals of CPD programmes are to enrich content, enhance the pedagogical skills of teachers, and provide opportunities for discussion, reflection, and follow-up. Collaboration and cooperation are also crucial components of CPD. NEP-2020 admits that an online platform would facilitate professionals in their professional growth. It advocates that "online platforms will be developed so that teachers may share ideas and best practices."

In recent years, particularly during the pandemic period, the continuous professional development of teachers has been facilitated through the use of ICT, whether in synchronous or asynchronous modes. The synchronous mode of a professional development programme refers to the activities that occur in real time. For instance, webinars, online distance education courses, virtual tutoring, virtual coaching, etc. In the asynchronous mode of the programme, participants took part as per their own convenience, i.e., different times for different people. For instance, social networks for teachers, discussion forums, self-paced online courses such as MOOCs (massive open online courses), etc. Numerous ICT-based professional development programmes are available for teachers and administrators of various levels in synchronous, asynchronous, and hybrid mode. For example, on Digital Infrastructure for Knowledge Sharing (DIKSHA), including National Initiative for School Heads' and Teachers' Holistic Advancement (NISTHA), Study Webs of Active-Learning for Young Aspiring Minds (SWAYAM), Massive Open Online Courses (MOOCs), and YouTube, to name a few.

Technology was also incorporated into the programme of continuous professional development. Such integration has changed the mode of content transaction, namely synchronous, asynchronous, and hybrid. During the COVID period, school teachers were trained online. It is critical to investigate teachers' perceptions of the effectiveness of

professional development programmes. Unfortunately, little research has been conducted to determine what constitutes successful procedures for realising this potential in the evaluation of technology integration, such as professional development for technology integration. Keeping this view, the following objectives were formulated.

2. Objectives of the Study

- i. To identify the digital platforms that trainees use for their professional development
- ii. To study the perception of the trainees about the effectiveness of ICT-based professional development programme/training
- iii. To collect suggestions from the trainees in order to improve the effectiveness of ICT-based professional development programme/training

3. Methods

This research is descriptive survey research. The participants were chosen using snowball sampling techniques; one of the participants was familiar with the researchers and volunteered to assist in forwarding the questionnaire to their colleagues who had completed at least one of the professional development programmes or training through an online or digital platform. The sample of the study comprises of 31 school teachers from government and private schools in Uttar Pradesh (India) who worked at various levels: primary, secondary and higher secondary. Table 1 contains information about the sample.

Tools of the study: The responses from the participants were gathered through an online questionnaire developed by the researchers that included both closed-ended and open-ended questions.

Analysis of data: By and large, descriptive statistics and qualitative techniques were used to analyse data.

Table 1: Demography of the Trainees (N=31)

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Gender	
Female	24
Male	07
Age	25 50
Locality	
Urban	16
Rural	15
Types of School	
Government	23
Private	08

4. Results

The results have been presented under following headings.

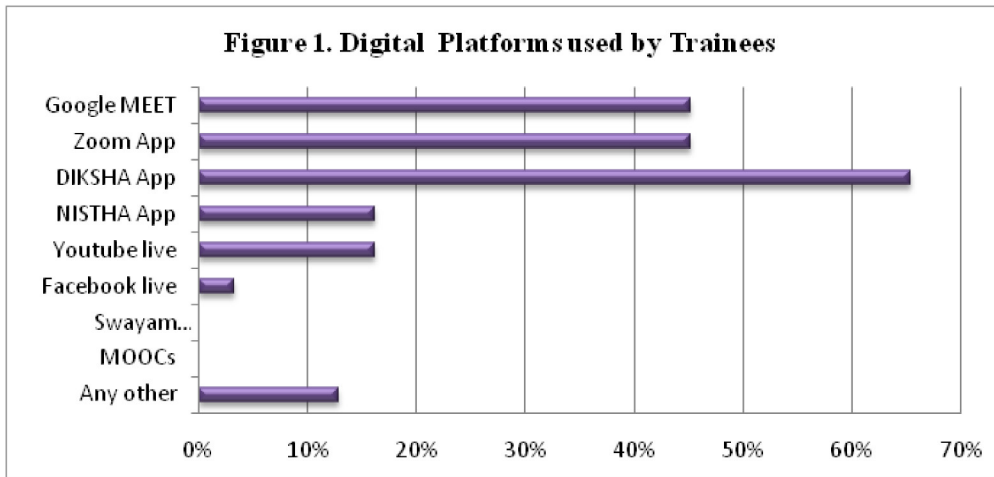
Digital Platform Used by Trainees for their Professional Development

The Faculty Development Programme can use a variety of digital platforms, such as DIKSHA, NISHTHA, Googlemeet, Zoom App, and others, to conduct training sessions. According to the data analysis, teachers have completed two types of ICT-based training,:

J Synchronous(Live)

J Asynchronous (Recorded)

The analysis revealed that 45.2% of teachers used Google Meet to complete synchronous trainings, and 45.2% of teachers used Zoom to complete synchronous training. Only a few about 5% trainees also mentioned that they had completed training on YouTube live, Facebook live, NISTHA app, or any other app. The study found that 64.5 % of teachers had completed their training on the DIKSHA App, with most of the trainings being self-paced and asynchronous in nature.



4.2 Perception of Trainees about the Effectiveness of ICT-Based Professional Development Programme/Training

Trainees' perspectives on the effectiveness of professional development programmes through digital platforms were elicited through open-ended questions. Their responses were as follows:

Table 2: Trainees' perspectives on the effectiveness of CPD Programme/training

Statement	To great extent (%)	To moderate extent (%)	To some extent (%)
In your opinion, to what extent does ICT-based professional development programme/training impart pedagogical knowledge to you?	51.6	19.4	29.0
In your opinion, how collaborative is an ICT-based professional development programme/training?	51.6	29.0	19.4
Do you think ICT-based professional development programme/training can help teachers to learn anytime, anywhere?	51.6	45.2	3.2
Do you think ICT-based professional development programme/training saves teachers' travel expenses?	65.5	25.8	9.7
Do you think ICT-based professional development programme/training is a useful platform for self-paced learning for teachers?	58.1	35.5	6.5
Is internet data usage a problem with ICT-based professional development programme/training?	25.8	41.9	32.3
In your opinion, is internet connectivity a problem with ICT-based professional development programme/training?	35.5	54.8	9.7
Is electrical connectivity a problem with ICT-based professional development programme/training?	22.6	54.8	22.6

Table 2 shows that 51.6% of trainees believe that ICT-based training programmes impart pedagogical knowledge and foster collaboration to a great extent. In terms of feasibility, 51.6% of trainees perceive that ICT-based training provides an opportunity to learn anytime and from any location to a great extent. A sizable proportion of trainees (65.5%) reported that ICT-based continuous professional development programmes significantly reduce travel costs. To a great extent, 58.1% of trainees indicated that ICT-based CPDs serve as significant self-learning platforms for them. Among the trainees, 41.9% believe that internet data usage, 54.8% believe that internet connectivity, and 54.8% believe that electrical connectivity are moderately problematic in ICT-based professional development programmes.

Open-ended questions elicited views of trainees on the effectiveness of the continuous professional development program. They viewed that the CPD program/training were interesting and used many of the e-content formats including audio, video, visual, graphics, presentations, documents etc. Trainees found ICT-based training to be interesting, and they expressed interest in the course while it was being delivered online. The ICT-based training was easy to understand, making learning easier. In addition, such programmes/

trainings provide an opportunity to be trained even when renowned trainers are thousands of miles away. Trainees stated that ICT-based training saves time and money by reducing travel expenses and saving time. These trainings were inexpensive, easily accessible, and gave teachers practical experience dealing with issues they were familiar with. There is a belief among trainees that such training programmes are effective. Trainees expressed satisfaction with the platform as a self-learning tool. In their opinion, it is a good platform for connectivity because anyone can connect from anywhere. The following theme emerged from trainee feedback on the strength of the CPD program/training.

ICT-based CPD programmes/trainings were:

- J Interesting
- J Engaging
- J Interactive
- J Easy to understand
- J Self paced
- J Accessible
- J Economical (cost reducing: travel expense)
- J Time saving
- J Opportunity to listen to eminent trainers

4.3 Trainee Suggestions to Improve Efficacy of ICT-Based Professional Development Programme/Training

The suggestions made by trainees were categorized under the following themes.

Content: Trainees expressed their opinion that the content of the CPD should be divided into smaller sections.

Mode of presentation: Most of the training experiences the participants had asynchronous, and the absence of contact was seen as a major source of uncertainty. Therefore, they argued, presentations should be hybridised.

Collaboration: In view of trainees, more collaborative environments, similar to face-to-face interactions, were required. Qualities appear to be deteriorating in an environment where teachers engage in self-directed online learning activities. Their response indicated that sharing resources found online with colleagues and discussing the quality of the resources found would be more effective online learning. They believed that greater interaction with colleagues would help them get more out of webinars or courses.

Bandwidth and electricity issues: Although some teachers encountered bandwidth and power issues, ICT-based training was effective for some. To overcome these constraints, they proposed that such programmes and training be run on low bandwidth.

Audio quality: Trainees said that both the audio quality and the trainers' ability to communicate needed to be improved.

Time: It was suggested by the trainees that the duration of the ICT training session should be kept to a minimum. But they have not mentioned any time constraints.

5. Conclusion

Continuous professional development in any profession is of utmost importance to meet the current demand. Teachers' jobs are also changing because of how much information is out there and how easy it is to get. Guskey (2003) says that teachers should be updated so they can meet the needs of students in the 21st century. "The ultimate goal of teachers' professional development is to improve student learning outcomes," he says. Additionally, Killion (1999) stated that "the most effective way to increase teacher effectiveness in the classroom is through consistent, high-quality professional development." In this study, trainees received both synchronous and asynchronous training. Google Meet, Zoom Apps, and the DIKSHA platform were more commonly used for ICT-based training programmes or courses. ICT-based training was found to be interesting, engaging, interactive, self-paced, accessible, economical, and time-saving. There is also a need to evaluate the effectiveness of such a programme from a collaborative perspective. This type of evaluation would be broad and include all stakeholders. For instance, an ICT-based professional development programme is a process that takes place in the field, and each participant's situation may be different when it comes to integrating technology. As a result, assessing the effectiveness of an ICT-based programme can reveal important contextual realities for its improvement. Despite the fact that the findings are important, the study had a number of limitations. The trainees' suggestions will also help design and build professional development programmes that use e-content or ICT modules.

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