Research Article

Prospective teachers' perception and preparedness towards ICT during virtual school internship

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Abstract

ICT played a crucial role in sustaining education during the COVID-19 pandemic. The study explores prospective teachers' preparedness and perceived experience towards using ICT during Virtual SIP to attain inclusive classroom set-up. The researchers tried to examine how ICT was used during the pandemic to enhance students' potential and realise changes in classroom procedures during SIP. The perceptions of prospective teachers were collected from the Department of Education of the Five Central Universities of India. The result was analysed under two themes, i.e., awareness and preparedness of prospective teachers towards ICT and Understanding the role of ICT in accomplishing inclusion in Virtual SIP. The result revealed that while prospective teachers understood the connection between ICT and inclusion well, their use of ICT tools in virtual SIP was limited due to the digital divide, lack of resources, poor internet access, low parental support, and student inattentiveness. Some central universities provided training and resources to enhance ICT awareness among prospective teachers. The study recommends professional training in ICT to create an environment where teachers can seamlessly integrate ICT into education.

Keywords: Inclusive Education, Perception and Preparedness towards ICT, Virtual School Internship Programme (SIP)

Introduction

The 2020 COVID-19 pandemic had challenged the school system, notably teachers' digital competency (Jogezai et al., 2023). Around the world, the education system had experienced a shared shift toward "emergency e-learning," referring to the rapid transition to online education driven by COVID-19, a highly contagious virus (Murphy, 2020).) Before the pandemic, virtual teaching was uncommon in India; however, during COVID-19, it had become the primary method to address the learning gap created by the lockdown (Crawford et al., 2020). Both teachers and students have had to navigate this unique and stressful situation, requiring them to adapt to new modes of teaching and learning. Schools fulfil the socio-psychological needs of society, reflecting its structure and values. John Dewey (1907) described schools as a "miniature of society," a concept that became evident during the COVID-19 lockdown when society rapidly transitioned into a digital space, reshaping education and communication. During this period, many teachers adapted to and preferred online learning modes to respond to the pandemic. Due to its flexible, timely, and continuous learning capacity, online learning is an effective teaching strategy (Brown, 2016). During lockdown, online learning is the single means of survival in schools' teaching-learning process (Reisdorf et al.,2020).

Online education enables greater flexibility in time and space, facilitates the quick and easy sharing of study materials, provides faster feedback, and offers more opportunities to connect with faculty (Khan et al., 2020). It has also reduced transportation and financial costs, enhanced the technological skills of both teachers and students (Kim, 2020), and increased the convenience and comfort of learners (Aithal et al., 2016). Online education was already prevalent in developed countries, but the COVID-19 pandemic forced teachers in underdeveloped nations to adopt digital platforms for teaching and assessing students to sustain their academic engagement (Haleem et al., 2022). This crisis spurred innovation and growth within the education sector to ensure the continuity of student learning. Due to the nationwide lockdown, the unexpected closure of schools in early 2020 presented teachers worldwide with a significant challenge, such as using available information and communication technologies (ICT) to maintain student engagement and facilitate remote learning (OECD, 2020). However, online education is not widely recognised in India, and most prospective teachers lack the skills to conduct virtual classes (Kamal and Illiyan, (2021). ICT made learning possible and provided platforms that were accessible to the teachers as well as learners Barbour et al., 2020; and Selwyn et al., 2010 highlighting the role of ICT in maintaining continuity in education when traditional physical class teaching was not feasible. The integration of ICT in virtual classrooms has been crucial in facilitating inclusive education, ensuring that diverse learners receive equitable learning opportunities. Teachers changed their pedagogical practices and confined the classroom to phones, computers, laptops, and tablets. Schools in developing countries, including India, face significant hurdles in adopting ICT due to infrastructural and socioeconomic constraints (Dwivedi et al., 2021). The abrupt transition of classes to the online platform resulted in issues reported by all stakeholders involved in education at various levels (Kim, 2020; Al-Amin et al., 2021; Ullah et al., 2021). However, several issues, such as network problems, lack of attention, learning skill development activity, hospitality and noise interruptions, were faced by the stakeholders and students involved in professional courses where the internship was a required component of the curriculum (Dani et al., 2020; Asgari et al., 2021; Zaman, 2021; Zhang et al., 2022). Without schools, teacher-education programs would not be possible. These professional courses also include deep-laid and participatory internships. The internship program is a crucial component of teacher preparation. Internships help students develop positive attitudes, values, and confidence. Additionally, it fosters students' independence, social development, and interpersonal abilities (Jawabri, 2017; Gupta et al., 2020; Anjum, 2020). Through the School Internship Program (SIP), prospective teachers acquire practical experience by teaching in real classrooms, allowing them to engage firsthand with the responsibilities they will undertake as future teachers.

Since independence, teacher education in India has evolved significantly with various policies and committees shaping its direction. These policies aimed at improving teacher training, professional development etc., such as the Radhakrishnan Commission (1948) emphasised the need for well-trained teachers and high academic standards, the Mudaliar Commission (1952) highlighted the importance of training secondary school teachers, and the Kothari Commission (1964-66) stressed the need for comprehensive teacher education. NEP (1986 and 1992) recognised the crucial role

of teachers and teacher education. National Curriculum Framework for Teacher Education (2009) focused on a constructivist approach to teacher training. To promote continuous involvement between students and schools, NCFTE (2009) supports internships as a partnership approach. Schools facilitate the connection between theory and practice. These spaces provide prospective teachers with opportunities to understand school realities, learn about genuine difficulties, and reflect on their pedagogical skills. It is expected that student-teachers complete internships in the school to become part of their ecology. Justice Verma Committee (2012) proposed reforms in teacher education to improve quality. National Education Policy (NEP), 2020 advocated for a four-year integrated B.Ed. degree as the minimum qualification for teachers as well as recognised the value of internships in the preparation of teachers (Para 5.23, pg 23).

School Internship Programs (SIPs) aim to develop professional competencies, student-teacher dispositions, sensibilities, and skills to address the different needs of learners in the classroom. During the school internship program, pupil-teachers function as in-service regular teachers and engage in all school activities, including planning, teaching, evaluation, collaborating with school faculty, and fostering a community of learners. These interactions in educational institutions, classrooms, and communities are significant. It influences the social, psychological, and pedagogical perspectives of the interns and aids them in cultivating their professional competencies to demonstrate ethical duties as educators. Throughout the internship, interns have the opportunity to cultivate and exhibit various skills while assuming diverse roles such as subject teacher, class teacher, mentor, counsellor, and leader, thereby effectively preparing themselves to address crises and critical situations. School internships, although being a vital component of teacher training programs, experience significant neglect. During the lockdown period data of seminal research supported that prospective teachers experienced anxiety, concern, and a widespread sense of unpreparedness during school closures. (Moor house, 2021; OECD, 2020; Pressley, 2021). At the time of lockdown, it became essential for prospective teachers to focus on learning how to integrate ICT tools and foster inclusiveness. Therefore, the 16-week online School Internship Program (SIP) was conducted in various ways, such as simulation teaching, allotting them virtual school exposure, etc., to meet the needs during COVID. Instruction and communication during school closures relied extensively on ICT (Konig et al., 2020). During the lockdown, schools worldwide transitioned to full or partial distance education using various methods, including television and radio programs, live virtual lessons, self-paced structured courses, educational content, and online support services for both parents and students (Darling-Hammond and Hyler, 2020; Schleicher, 2020). The impact of online teaching, the elements that affect pre-service teachers' professional development, the difficulties associated with poor online teaching substructure, the lack of experience of prospective teachers, a lack of information and resources, complex home environments, and a lack of mentoring and support have all been the subject of extensive research in teacher preparation programs (Huber and Helm, 2020; Judd et al., 2020; Zhang et al., 2020). Nevertheless, there has been limited research regarding pre-service teachers' understanding and preparedness to utilise ICT for online instruction, particularly in the context of secondary education, underscoring a notable knowledge gap. The following

research questions guided the study to gain deeper insights into pre-service teachers' experiences with online teaching during the pandemic.

Research Question

- To what extent are prospective teachers cognisant and equipped to employ ICT for successful teaching and learning?
- What is the role of ICT implementation in fostering inclusiveness within virtual School Internship Programs (SIP)?

Research Objective

To explore prospective teachers' preparedness and perceived experience towards using ICT to attain inclusiveness during the Virtual School Internship Programme.

Need and Rationale of the Study

While considerable research has been conducted on the effectiveness of ICT during internship programmes and its integration with various disciplines, there is a notable gap in the literature regarding the use of ICT by pre-service teachers, specifically in the context of virtual SIP Current studies do not adequately address whether prospective teachers are utilising ICT during internship or the type of training they receive, if any, to support this integration. This research aims to fill this gap by investigating the preparedness of prospective teachers and their experiences with the utilisation of information and communication technology. It explores the extent of utilisation of ICT, including digital technological tools and their applications during the virtual school internship programme.

Methodology

Research design

This study used a mixed methods research design to collect the data. This approach allows for a comprehensive understanding. Data were gathered through a closed-ended questionnaire, semi-structured interviews, virtual classroom observations, and focus group discussions.

Sample selection

The study utilised purposive sampling to select 75 prospective teachers enrolled in the B.Ed. programmes of five central universities in India. Concerning the rationale for the selection of five central universities among the higher education institutions researcher used a convenient and purposive sampling procedure. Only 10 prospective teachers for semi-structured interviews and focus group discussions as shown in the table below. The selection was based on the universities' active implementation of ICT in teacher education programs during the pandemic.

Sample Size

Table:1- Number of Prospective Teachers who participated in the study

Observation (No. of classes observed)		Semi-Structured Interview and Focus Group Discussion (No. of prospective teachers)	Open Ended Questionnaire (No. of prospective teachers who responded)
Total-30 class (2 observations were kept from each class)	subjects		
Class VI Class VII Class VII	English Hindi Math Science Social Science	Total 10	Total 75

Tools

- **Open-ended questionnaire:**

  An open-ended questionnaire was developed to assess prospective teachers' awareness, preparedness, and experiences with ICT. The Google form was distributed among the prospective teachers of India's five central universities (Delhi University, Guru Ghasi Das Central University, Banaras Hindu University, Hemvati Nandan Bahuguna University, and Purvanchal University). Data collection was conducted online via Google Forms due to COVID-19 restrictions.

- **Semi-structured interview schedule:**

  Semi-structured interviews were conducted to obtain qualitative insights into the subjective experiences and insights on using ICT in virtual School Internship Programs (SIP). Additionally, a focus group discussion was also conducted.

- **Classroom observations**

  Virtual SIP classrooms across different subjects (English, Hindi, Mathematics, Science, and Social Science) were observed.

Results

Data analysis and interpretation

The data needed to be subjected to a qualitative analysis to shed some light on the subject of our concern. The responses were analysed under two different themes.

- **Theme 1:** Awareness and preparedness of prospective teachers towards ICT.
- **Theme 2:** Understanding the role of ICT implementation to gain Inclusion in virtual SIP.
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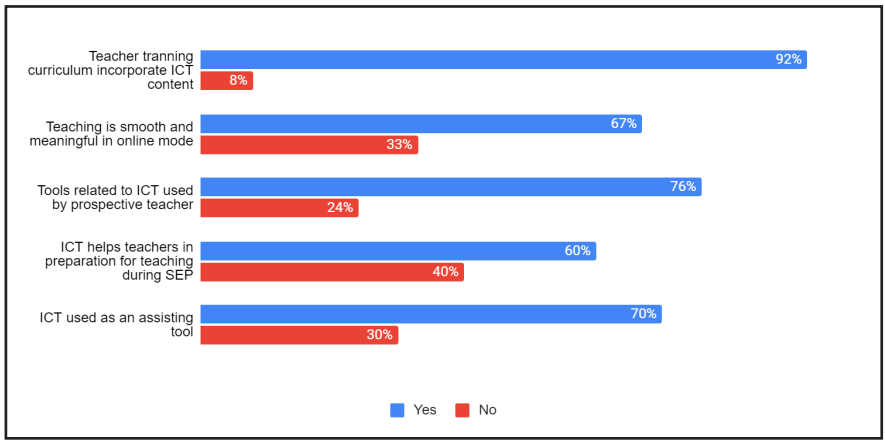
Figure-1: Representation of frequency of Questions' and their responses with percentages for each sub-theme



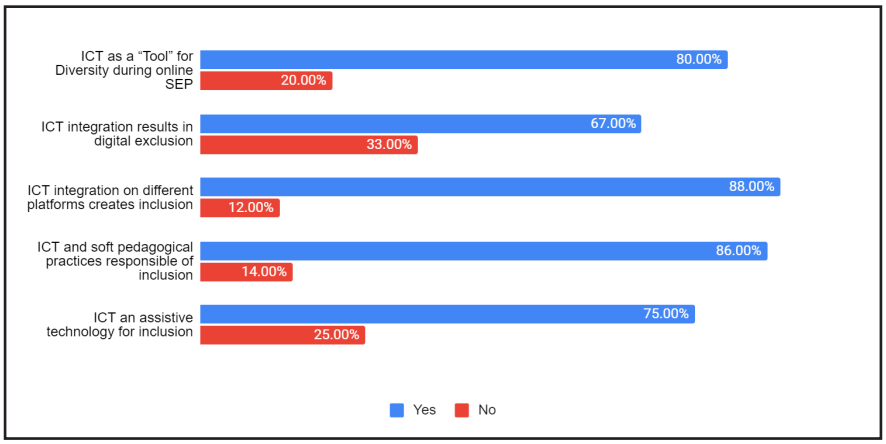
There are 75 responses obtained from Google Forms, and 92 per cent of prospective teachers agree that the teacher training curriculum has offered and incorporated ICT-based content in some of the theoretical course papers, which helps understand ICT and its relevance in contemporary pedagogical practices. The data indicates a high familiarity with ICT among prospective teachers. Sekar (2015) also mentioned that the prospective teachers of B.Ed. have a moderate level of awareness of ICT. Willis et al., (2002) noted that if student teachers are not empowered to use technology skills, then they may not be able to use them in routine classrooms. Mishra et al., (2020) found

that the online mode of instruction is unbound by time or location, allowing for accessibility to instruction at anytime from anywhere, with 67 per cent of responses showing that the online mode facilitates meaningful and smooth teaching. Zayapragassarazan, (2020) emphasised promoting flexible teaching learning through the integration of ICT, with a variety of learning choices to make learning outcomes useful and exciting. Interestingly, 76 per cent per cent of pre-service teachers have actively used ICT tools during virtual SIP. This significant adoption rate implies that many prospective teachers see value in leveraging ICT technology for educational purposes, reflecting a trend towards integrating advanced technologies in teaching practices. Technology such as laptops, LCD projectors, EDUCOM, smart classrooms, and memory sticks are increasingly being used in teacher education (Bhattacharjee and Deb, 2016). Over 60 per cent of the prospective teachers express that ICT helps prospective teachers in planning and preparing at the time of lesson delivery. Whereas 70 per cent of the prospective teachers agreed that they were using ICT as an assessing tool during Virtual SIP. They were aware about ICT-based assisting tools such as Learning management systems (LMS) like Google Classroom and Moodle, assessment tools like Google Forms, collaboration tools such as Google Docs, and Zoom text-to-speech software etc. Effective integration of ICT in education requires that prospective teachers are adequately trained to use these tools confidently and effectively.

Understanding the role of ICT implementation to gain Inclusion in virtual SIP:

Under Theme 2, the observation of class during virtual SIP and the graphical representation of major sub-themes that emerged are shown in the table below.

Figure-2: Representation of frequency of Questions' and their responses with percentages for each sub-theme



The above bar graph represents an understanding of the role of ICT implementation in gaining inclusion during virtual SIP. The idea of inclusion in the field of education refers to the notion that all students should get equal opportunities and provide the same level of education, regardless of their varied abilities UNESCO, (2009). Here inclusion refers to ensuring all prospective teachers and students are equipped to effectively teach diverse learners with different abilities and needs, addressing potential barriers

that might arise due to remote learning or accessibility issues at the time of lockdown. Looking towards the situation, schools shifted to digital platforms with the help of ICT majority of the prospective teachers from various backgrounds, geographical locations, and abilities were able to participate in internship programs effectively. 80 per cent have used ICT in their lesson plans. Respondents believe that ICT is very effective in enhancing the learning experience for students. The significant majority highlights that ICT enables equal access to resources, ensuring diverse learners, including those from different socio-economic, linguistic, and geographical backgrounds, can participate in virtual SIPs. Over 67 per cent have this belief that despite ICT helping to create inclusion in the classroom, its integration results in digital exclusion. This highlights an important barrier to widespread ICT adoption. The (ASER, 2021) report states that younger children are more deprived when it comes to access to smartphones, with most of the students having no internet access despite having devices at home. Favale et al., (2020) also found the same result as 88 per cent of prospective teachers report the integration of ICT across various platforms fosters inclusivity by ensuring equal access to resources, opportunities, and participation for diverse individuals. Whereas 86 per cent of prospective teachers agree that ICT and soft pedagogical practices promote inclusion by creating flexible, student-centred learning environments. ICT enhances accessibility through digital tools, while soft pedagogical practices, such as interactive teaching and personalized learning, address diverse learning needs. Together, they foster engagement, bridge learning gaps, and ensure an equitable educational experience. Over 75 per cent of the prospective teachers believe ICT as an assistive technology is transforming education by ensuring inclusivity, accessibility, and engagement for all learners.

Further analysis is based on classroom observation at the time of virtual SIP and transcriptions of conversations with the prospective teachers at the time of interview and focus group discussion.

Teacher training curriculum incorporates ICT content

NCF 2005 highlighted the importance of ICT in school education, whereas CBSE offers a course related to artificial intelligence to secondary schools. According to Geer and Sweeney, (2012); and Kumar and Biradar, (2010), to prepare effective teachers, there is a need to train them in the application of technology. The prospective teachers who got training had fairly good ideas about inclusion and ICT, one of the prospective teachers of Delhi University said regarding preparedness, "During a 15-day workshop on techno-pedagogical workshop we learned using G-Suite tools, Google Docs, Google Classroom, online meeting tools like Google Meet, Cisco Webex, Google Chrome add-ons, online whiteboard, Jamboard, canvas board, tools related to online assessment like quiz formation, Google Forms, and the use of some assistive technology for learners with disabilities."

Prospective teachers of Guru Ghasi Das University, Banaras Hindu University, Hemvati Nandan Bahuguna University, and Purvanchal University were further selected for telephonic interviews. Some shared popular responses from conversations are cited as,

"I acquired new skills in creating a productive learning environment and better-utilising technology during simulation class of practice teaching. It was a very unique experience for me to teach students in virtual SIP. It was

fascinating to me how some concepts were taught to kids using novel methods and approaches."

"Each component of these online classes was different from their in-person classes, demonstrating to me how I can instruct them in a variety of ways. Although COVID-19 is a challenge, I learned a lot of new things through the simulated teaching-learning practices before virtual SIP."

"I was able to learn more by simulation on online teaching. I was also supervised and guided by our teacher educators regarding how to manage students' online classroom setup and get them involved and engaged."

The above responses reflected that in selected university's prospective teachers were aware to use the ICT in online SIP. When the B.Ed. students of Purvanchal University contacted for the interview during COVID-19 it was found that there was no such exposure given in their respective educational institute. It was elucidated that they were not confident regarding the use of ICT, and their awareness was moderate. Willis and Montes, (2002) study indicates that many mentor teachers still do not have adequate technology skills. They also noted that if student teachers are not empowered to use technology skills, then they may not be able to use them in routine classrooms.

After a focus group discussion with prospective teachers, it was noted that the majority of the teacher educators of their universities provided assignments such as preparing multimedia presentations through the use of a recent technology tool for the application of technical knowledge. Some of the prospective teachers shared during the interview that these courses offered in B.Ed. are elective ones so it was not chosen by each prospective teacher. Looking at the COVID-19 situation and online teaching challenges during virtual SIP it was found that universities proposed a workshop on techno-pedagogical interventions for the preparedness of prospective teachers for the successful execution of the Virtual SIP Programme. Many of the research findings also support the idea of nurturing teachers with 21st-century skills in which digital literacy and skill are important skills. Teacher educators guide in terms of pedagogy and "real world" classroom experience (Kay, 2006). Doering, Hughes, and Huffman, (2003) identified the Prospective teacher's placement with a mentor teacher as a "crucial cog" in the preparation of student teachers to use ICT in teaching.

The above responses reflect the concerns of the prospective teachers. The teachers' narratives quoted above reflect that the virtual field experiences were beneficial for the pre-service teachers, yet at the same time, they all acknowledged that they suffered to gain offline experience of SIP due to the pandemic. They agreed that their curriculum and various virtual platforms, lectures of YouTube support them in the use of ICT during virtual SIP.

Teaching is smooth and meaningful in online mode

During observation of virtual SIP classes, it was observed that the majority of the prospective teachers of Delhi University used ICT more competently by using Gem board and Google Classroom.

Prospective teachers mentioned positively, "Using technology in education makes students more interested and helps them remember what they learn." When ICT is used in the classroom, kids are more interested in what they are doing. This is because technology makes it possible to teach the same things in different ways that are more fun and interesting."

For prospective teachers who may be unfamiliar with new labs, new tools, or different software versions, providing technical and instructional support is a key factor for the successful integration of technology (Bullock, 2004; Dexter and Riedel, 2003; Doering et al., 2003; Grove et al., 2004). Joshua Stern also found the online classroom environment as a convenient way to fit education into their busy lives. Other researchers such as Ammanni and Aparanjani, (2016), also found the use of ICT increases the scope of teaching, it also provides quality learning materials, and creates autonomy in learning. Seminal studies (Fu, 2013) stated that ICT in education intends to promote educational productivity and efficiency to improve the teaching and learning process.

Tools related to ICT used by prospective teachers

On the third subtheme, i.e., tools related to ICT used by the prospective teachers, one of the teachers highlighted their practical experience, stating, "There are many ICT tools that I have implemented successfully during Virtual SIP. There are tools such as multi-link headphones, digital cameras, webcams, and audio recording software that encourage the development of speaking and listening skills while teaching languages. Interactive whiteboards and smart boards promote writing skills on a large scale"

"Better and faster communication is now possible thanks to ICT tools, as is the presenting of ideas in a more efficient and relevant manner. Students are today better informed than ever before thanks to the widespread availability of this powerful resource for gathering information."

After observation of virtual SIP, it was found that due to the acquired knowledge of ICT, SIP programs become more effective. Prospective teachers with a single computer in the classroom noted development of personal productivity skills such as keeping grade books, lesson planning, and delivering presentations but few opportunities to develop, and learn how to facilitate lessons that involved student use of technology with content-area topics (Dexter and Reidel 2003; Grove et al., 2004), while those with access to computers during class noted higher frequencies of their students' use of technology (Grove et al., 2004). Technology integration nowadays has gone through innovations and transformed our societies that have changed the way of thinking of people, work, and life, (Grabe, 2007). The use of technology in education contributes a lot to the pedagogical aspects in which the application of ICT will lead to effective learning with the help and support from ICT elements and components (Jamieson et al., 2013).

ICT helps teachers in preparation for teaching during SIP

On the other sub-theme, one of the teachers stated, "Planning is important in teaching as it ensures learning progression in subject learning and also in the general capabilities of the curriculum. Through the use of effective ICT tools, we can better manage student boredom while teaching online".

The prospective teacher also stated, "If I'm teaching about weather, for example, I want to not only talk about the subject but also show my students relevant pictures so they can better understand the topic. Fortunately, the Internet and ICT tools provide more opportunities than ever to find relevant images so we can give students a concrete context for the subject. Pre-selected images can also be projected or shown on individual computers to reinforce the lesson while we talk."

The responses cited above show the notion of prospective teachers towards ICT that it makes them capable of obtaining dynamic and proactive teaching-learning environments. The schools and other stakeholders that are supposed to prepare students to live in "a knowledge society" need to consider ICT integration in their curriculum and teaching (Ghavifekr et al., 2012).

ICT used as an assessment tool

"On the fifth subtheme of the bar graph, ICT is used as an assisting tool. This aligns with the perspective shared by a prospective teacher from Delhi University, "She used ICT in assessment practices during the formation of quizzes, in MCQ-based test series, paragraph comprehension, etc. and also collected feedback with the help of Google classrooms during Virtual SIP. Some of the prospective teachers shared that at the beginning of SIP, they were more used to social apps such as WhatsApp, email telephonic conversations, etc., to impart knowledge and assess the students. As we moved further in the lockdown, pre-service teachers and students got more well-versed with app-based software like Go- Assessment App, Zoom, Google Meet, and Webex, to name a few." Many teachers also stated "When we have conducted online examinations, we were left with no choice but to conduct the exams online along with online lectures. Also, at home, we had to single-handedly manage everything, right from uploading the paper to collecting them to checking to mark tabulation which contributed to an increase in the overall efforts. This is very hectic for us."

Also, some of the prospective teachers had shared that "To make assessment transparent moderate efforts made by them before the exams since there was a difficulty in setting paper online and the problems in inter-faculty coordination for paper setting added to the difficulties. It has been observed that a school culture that emphasises competition and an assessment system with high stakes can discourage instructors from integrating technology into their classrooms." ICT can provide students with grades or feedback in addition to building or delivering materials. Geoffrey, (2011) stated that the assessment that is based on ICT can be taken up with many technological devices in his Teacher's Handbook that was on e-Assessment. It reveals that some of the stakeholders found it difficult to assist students through ICT tools as they were uncomfortable managing their work single-handedly. ICT won't be useful in the classroom if teachers don't know how to use it to meet teaching goals (Koc, 2005).

Understanding the role of ICT implementation to gain Inclusion in virtual SIP

ICT tools helped to address Lingual diversity

The idea of the Information Society, which refers to "the central role information technology has for production, economy, and society at large, is closely related to the concept of e-inclusion UNESCO, (2009). The term e-inclusion refers to the objective of ensuring access to information-society-based products and services for all individuals, including those with special needs or at risk of exclusion such as the elderly, people with disabilities, those with little formal education, the unemployed, ethnic minorities, and people living in isolated rural area Northway, (1997). The idea of inclusion has also been applied to the field of education, where it refers to the notion that all students are guaranteed equal opportunities; as a result, one of the target objectives to be met by today's school systems is that of providing the

same level of education to all students, regardless of their varied abilities UNESCO, (2009). After interaction with some of the prospective teachers, it was found that prospective teachers were using many different tools for inclusion, narratives acknowledged as,

"For students to be engaged, learning has to be relevant and meaningful on a personal level. ICT can offer a variety of options for information intake and processing, idea interpretation, and learning expression for students with different learning styles. ICT assists these students in experiencing the information rather than just reading and hearing it, students learn best through visual and tactile modalities. But it is difficult when we are not able to use ICT tools properly due to lack of resources." Most of the respondents mentioned the same popular response on the above aspect.

One of the prospective teachers also stated, "Students whose mother tongue is different from the official language of instruction are less likely to understand than students from the majority. There is material available to them online in their language, so here information can be gathered and shown by using ICT".

So, from the above discussion, it is analysed that ICT tools help prospective teachers correct their language errors and support them in making their language academic. Some of the participants shared that they frequently use Grammarly, Quiltbot, and other software for the same. ICT tools can help improve the skills of minority language students, especially in learning the official language of instruction through features such as automatic speech recognition, the availability of authentic audio-visual materials, chat functions, etc.

ICT integration and digital exclusion

The researcher observed some of the classes and noticed the challenges faced by prospective teachers and enrolled students are related to the digital divide problems such as access to devices and internet facilities. It was also observed that in some of the government schools in the initial phase of COVID-19 online classes are organised and monitored through WhatsApp groups. The group consists of 40 to 50 students, but only 50 per cent of students participate in online mode due to insufficient data and access to resources. The (ASER, 2021) report states that younger children are more deprived when it comes to access to smartphones, with most of the students having no internet access despite having devices at home. The prospective teachers' narratives acknowledged that "Access to online platforms was sometimes poor, and there were connection problems from our side as well, especially when the number of students connected was high." Most of the respondents mentioned the same in this aspect. Some experts use the term to describe the disparity in access to the internet between those who have it and those who don't. Various factors which contribute to digital exclusion are poverty, geography, illiteracy, disability, etc. (Mehra, 2002). Other researchers, such as Single, (2008), argue that simply allowing children to sit with their peers in regular classes will not result in "inclusion" unless an effort is made to combat the exclusionary forces. All possible support structures in terms of physical infrastructure, equipment, teaching-learning material, curriculum, and trained human resource personnel must be provided for the successful implementation of inclusive education (Bansal and Kaur, 2021).

ICT integration on different platforms creates inclusion

The other subtheme as ICT integration on different platforms creates inclusion. About this, the researcher observed the classroom and saw that most of the students were able to communicate and interact in English during an interactive Lesson in PPT.

Class	Subject (chapter)	ICT tools - Audio visual aid used by prospective teacher	Classroom Observation
VIIth	English (Preposition Jumbled Sentence)	Videos, PPT, and Pictures Images, self-made worksheet	Students were involved and engaged, they made guesses about the pictures and responded.
VIth	Hindi (कठपुतली)	Story and Multimedia pictures	The lively atmosphere and real-life environment created by stories encourage the students to talk and discuss with each other. Tools used by the prospective teacher helped the learners to improve their understanding, pronunciation, intonation, words, sentence stress, etc.
VIth	Math (3-D Shapes)	GeoGebra app, YouTube	The math subject in school has taken many innovations from the traditional method and their love for mathematics. It Primarily helped students to apply the problem-solving process when using a computer to solve a problem of shapes, and then ICT is involved in developing the solution for all kinds of learners.
VIIIth	Science (Cell-Structure and Functions)	Self-made animated video with audio and pictures	A self-made animated video energized the audience to listen more and more with total attention. The students look attentive and relaxed while answering the questions on the topic in their classes.
VIIIth	Social Science (India After Independence)	Flow chart, Pictures, Map, and Short films.	Short films were shown to the learners and it is an important listening activity, which with the right support, helps children in building listening skills and learning through simulating the actual situations.

From the above table, it is inferred that the majority of the prospective teachers, besides the disciplinary subject nature difference, use ICT tools in the form of animated videos, presentations, e-stories, pictures, and other assistive

technology for disabled students etc. They also used Gem Board, White Board, and other tools, such as the GeoGebra app, YouTube, etc. for teaching purposes. One of the target objectives of NEP, 2020 is to develop competency in learners regardless of their varied abilities or possibilities. The concept of inclusion has been expanded to include the idea that all students are guaranteed equal opportunities. By offering many means of presenting data, expressing knowledge, and engaging in learning activities, including assessment, ICT can encourage inclusiveness, this encompasses both conventional educational technology and assistive technology created especially for people with disabilities. During classroom observation, it was noted that a visually impaired student of Class VIIIth displayed a strong interest in learning the science topic of cell structure and function. Throughout the session, the student actively participated, engaged in discussions, and responded to questions. Additionally, the student utilised a recording device to aid in learning during the lesson. Whereas the teacher incorporated assistive technology in a Social Science Class VIIIth while teaching the topic 'India after Independence'. Short films were shown to the students as an essential listening activity designed to enhance their listening skills and facilitate learning by simulating real-life situations. Notably, a hearing-impaired student participated in the session with appropriate support, demonstrating engagement and comprehension through visual cues and interactive discussions.

Prospective teachers' narratives acknowledged ICT tools can be utilised to facilitate collaborative and imaginative learning environments where students with disabilities are included in educational activities and have roles or responsibilities in groups or classes. During observation, when a prospective teacher begins to introduce Science lessons, the lively atmosphere and real-life environment created by self-made animated videos encourage the students to talk and discuss with each other. Some related quotes of pre-service teachers "ICT tools support many perceptual and mental modalities. Computers and specialised software can be used to capture, modify, and exchange thoughts, as well as to speed up the completion of assignments and boost motivation. Students can watch YouTube videos related to their content anytime and anywhere ICT helps to learn beyond the classroom environment." Inclusive education is a long-term process that must be relentlessly pursued. To do this, it is examined from the above response that it is a requirement for future teachers to become proactive and ready to deliberate ICT in a pedagogical approach so that significant adjustments be made in their instructional contents, methodologies, structures, and tactics, etc. Ott and Pozzi, (2009).

The effective integration of ICT alongside the curriculum is associated with a new pedagogy that changes the role of the teachers and increases students' control of their learning, self-regulation, and collaboration. This presupposes a shift from traditional lesson formats, based on transmitting information philosophies, towards student-centred approaches that promote active engagement, help them control their learning, and support collaborative learning and meaningful understanding. Sabada and Bringue, (2010) identify the primary characteristics of children and teenagers regarding the use of ICT, and teachers must refer to ICT both in the planning as well as in the development of their classes, to adjust, make flexible, and lead their pedagogical practices to good use. Along with pedagogical practices, a few teachers also explained the importance of short films, songs,

and movie clips used during online SIP to bring inclusion.

ICT and soft pedagogical practices responsible for inclusion

The researcher observed the Hindi classroom to examine the role of short films in teaching listening skills and found that short video stories and movie clips support listening skills. One of the prospective teachers stated, "The affective domain, reflective attitudes, and experience-based learning are all effectively addressed by using movies in the classroom. Using emotional movie triggers to learn allows for the emergence of dilemmas, questions, and expectations for both learners and teachers. Movies offer a narrative model that is rooted in the familiar world of the learners and is framed in feelings and images." The student teacher acknowledged that they value soft pedagogy because they are easier to manage in a classroom and during class time than a feature film, and because they frequently have something unique to offer a quirky plot, an unusual location, or a unique visual aesthetic.

ICT and assistive technology for inclusion

The term inclusion here means making sure that every student, no matter who they are, feels welcome, valued, and able to take part in all activities. ICT includes tools such as computers, smartphones, the internet, educational apps, online learning platforms, etc. These technologies help all people, including those with disabilities, to learn, communicate, and participate fully in school, work, and society. Prospective teachers incorporating ICT stated that "assistive technology (AT) is opening up new opportunities for everyone, but they are particularly important for people with disabilities (PWDs), who use assistive technology more frequently than the average person for daily tasks. Disabled end-users are more able than ever to engage in all facets of social life on an equal basis when using assistive technology that is tailored to the abilities of everyone. To participate in an open and barrier-free information society, students must gain access to the rapid development of ICT on an equal basis."

A few responses by prospective teachers: "A lot of effort is required to address the special requirements of Students with Disabilities, using new pedagogical technologies and appropriate methods of educational, administrative, and legislative measures to ensure their full integration and inclusion." "The new information and communication technologies are crucial tools for promoting social inclusion because they enable PWDs to interact, access, and use information, which opens up opportunities for them to pursue education. Through the use of information and communication technologies (ICT) and assistive technology (AT), students with disabilities are now able to interact with one another and learn."

So, the purpose of this study was to capture all of these real-world encounters from the perspective of prospective teachers. The objective was fulfilled through the triangulation method and most of the institutions managed SIP through providing online workshops. A majority of stakeholders were able to use ICT tools to bring Inclusiveness to the online classroom. The researcher's analysis of the various themes and subthemes revealed that the majority of the prospective teachers employed a variety of strategies, including the use of ICT, creating a democratic classroom environment, focusing on learner-centred pedagogy, and offering them a variety of inclusion opportunities during the SIP. This indicated that the prospective teachers had a strong knowledge of the ICT

course which was essential for the online School Education Programme. Most of the teacher training institutions have conducted virtual workshops to train the student teachers for conducting online SIP. Ultimately, each decision made by stakeholders has a great impact on the opportunities available to students and impacts their SIP.

Findings and Conclusion

Implementation of ICT leads to learning which is more interesting and less burdening to bring inclusion. How effectively a teacher can use these tools is of prime importance, to promote learning through ICT to bring Inclusion in the classroom (Kaur, 2016). Our prospective educators would benefit greatly from internships because they provide hands-on experience with ICT technologies in a professional setting. It's a chance to put what you've learned into practice, design and deliver effective classes, and refine your approach based on the observations of your superiors. The bulk of B.Ed. internships have been completed online because of the COVID-19 epidemic (Alam, 2021; Dvivedi et al., 2022). In this situation, it is a great time when there is a need to modify the curriculum of teacher-training courses and include the training and skills related to online classes and ICT in regular internship programs for inclusion. This will lead the prospective teachers to acquire techno-pedagogical expertise. Much effort was made by the teacher training institutes to provide meaningful training and workshops by removing the shortcomings and some of the best results have also come out, like the use of ICT, handling the online learning and online platforms, self-learning, saving time and energy, which could not have happened in traditional training style, (Dvivedi, et.al: 2022). The prospective teachers' narratives reflect the ideas and initiatives that they apply in their classrooms. The responses and narratives in the two themes as well as observations shared above substantiate each other to establish certain findings. It can be said that the student teachers implicitly have made their teaching smooth and meaningful in online mode during SIP. The instances or anecdotes specified by them in their narratives show that they have a comprehensive idea of using appropriate ICT tools. On the other hand, some problems and difficulties are being faced by the student teachers to pursue their SIP, especially those students who reside in rural areas and villages. They are facing challenges in arranging internship classes for their SIP and most of the students complain about not having enough space and a supportive environment at their home. This is a common problem for most of the student teachers who belong to the middle or lower classes or reside in villages or rural areas.

The responses in the second theme proved that the teachers employ a diverse range of strategies that they think would contribute towards inclusiveness during online SIP. The integration of ICT with education provides better opportunities for all learners, teachers, and administrators to work better in the current scenario of the education system (Raushan, 2020). Considering this, the National Education Policy (NEP, 2020) notes the extensive use of technology in teaching and learning, removing language barriers, increasing access to all as well as education planning and management. COVID-19 and its outbreak across the world geared up and gave a boost to the field of technology. Training and support in ICT for prospective teachers are relatively important to provide inclusiveness in online classrooms so training was provided through virtual workshops. New technologies such as ICT as a tool to promote diversity, soft pedagogical practices, assistive technology for disabled students, and its

integration resulted in digital inclusion while conducting online SIP.

The process of achieving inclusive education is ongoing and long-term; to that end, all available and appropriate methods should be used, including technological tools that are widely acknowledged as having great potential. School e-inclusion requires time, effort, competence, and strong conviction by all the stakeholders. (Ott and Pozzi, 2009)

Implications of the study

Internship programs are an essential component of professional education (Anjum 2020). Teaching, managing a classroom, assessing students' progress, running a morning assembly, mentoring students, coordinating extracurricular activities, leading a school, etc., gives prospective teachers hands-on experience to be effective and efficient teachers (OECD, 2009). The majority of the SIP program of B.Ed. was held in online mode due to the COVID-19 pandemic, (Noel, 2021). Most of the prospective teachers of urban areas had gained expertise in techno pedagogy as a result of this, they were able to handle Virtual SIP smoothly. But, at the same time, the teacher training institute, which is located in rural areas, needs much improvement in workshops for the awareness of ICT tools. At the time of the 21st century, looking at the situation there is a need to compulsorily implement the ICT course in the B.Ed. curriculum. Because of this, it is crucial to update the standard internship program to include preparation for teaching online classes. There is an urgent need for developing communities of technology-using teachers in urban and rural schools (Radinsky, Lawless and Smolin, 2005), teams of university faculty and pre-service teachers are needed to investigate and develop effective uses of ICT in the classrooms (Bannon and Nonis, 2002); and additional virtual field experiences using video conferencing are also required (Karchmer-Klein, 2007). Clarifying our current international status regarding ICT in initial teacher preparation is a welcome step toward improvement.

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