FROM WALLS TO CLOUDS: SWOCs OF ONLINE LEARNING FROM VOICES OF PROSPECTIVE TEACHER EDUCATORS IN INDIA IN RESPONSE TO COVID-19

Lakshya Malhotra*
Research Scholar
Department of Educational Studies, Jamia Millia Islamia, New Delhi- 110025
Email: lakshya.malhotra.04@gmail.com
ORCID iD: https://orcid.org/0000-0002-7281-8560
*Corresponding author

Harjeet Kaur Bhatia
Professor
Department of Educational Studies, Jamia Millia Islamia, New Delhi- 110025
Email: hbhatia@jmi.ac.in
ORCID iD: https://orcid.org/0000-0001-7677-9274

ABSTRACT
Recognizing the generic and piecemeal approach of the extant literature towards online learning with scant studies in teacher education, the present study was undertaken to improve online teaching-learning practices in teacher preparation programmes catered by the researchers. The single-cycle action research methodology was adopted by the researchers to capture the voices of prospective teacher educators enrolled at a central university in India. An online intervention was designed for the 'ICT Integration: Methods and Assessment' course which provided an opportunity to the participants to continue their classes during the pandemic via Google Classroom, Google Meet, WhatsApp, and email. Apart from providing all the relevant content in the form of readings, synchronous screen presentations, discussions, and workshops, the researchers often had to scaffold the incumbents to navigate varied resources available online. On completion of the course, data related to strengths, weaknesses, opportunities, and challenges of online learning were gathered on an open-ended questionnaire from an incidental sample of twenty-three prospective teacher educators. The data were analysed qualitatively by codifying the responses that yielded three emergent themes viz., humane, technical, and teaching-learning. Most number of strengths emerged under the 'humane' domain whereas the 'technical' domain contained several weaknesses. 'Teaching-learning' domain unveiled the opportunities and challenges of online learning. Findings indicate that, while most prospective teacher educators consider online learning as a panacea for future learning as it could facilitate access, equity, quality, delivery of uniform content, continued learning to a diverse learner base during the pandemic, a considerable strength of participants emphasize on cost and connectivity constraints. Participants also echoed how technologies are laden with hidden designs that carry the potential to hijack attention, harness choices, and subsequently polarises from the real-world. Findings suggest the need to increase awareness of incumbents towards cyberbullying, upscale digital infrastructure, bridge digital divides in terms of access and skill, evolve distinct pedagogy for online learning, enrich learning experience, redesign programmes, teaching and evaluation practices, promote judicious and responsible use of technology, reduce polarization, and remain value-driven. The study carries implications for policy-makers, educators, curriculum designers, and technology experts to reconsider the orientation towards what learning is possible, what learning matters, and how it should be assessed in the online format to prepare an empowered student and educator base. Owing to the research objective, methodology, context of the study, and sample size constraints, the findings are limited to teacher education programmes, and therefore, further research is recommended.
Keywords: online learning, teacher education, prospective teacher educators, action research, COVID-19

INTRODUCTION AND BACKGROUND

Countries across the globe are grappling with the damaging effects of the COVID-19 pandemic, a novel coronavirus disease, and, in response, have enforced either complete or partial lockdown that has impacted higher education significantly. As of April 04, 2020, as high as 91.3% of the total enrolled learners have been affected globally owing to 194 nationwide closures with India holding a substantial learner base of 300 million out of 1.59 billion global learner base at school level and approximately 34.3 million enrolled in higher/tertiary education (UNESCO, 2020a). Schools and universities are navigating very challenging times as they have to switch to online learning. In India, educational institutions were among the first of many organizations that were shut indefinitely to prevent the outbreak from snowballing further, which thereby caused disruptions not only for students but also for faculties and authorities.

The graduating students are left high and dry as they would graduate at the beginning of a major global recession while others are finding it difficult to adjust to online learning and completing the syllabi since classrooms have transformed into virtual learning spaces with cloud storage. With no timeframe on the resumption of classroom

academics, the pandemic has challenged not only the primordial ways of teaching and learning but jeopardized the existing system of assessment and evaluation.

On the flip side, it is quite interesting to note how technology has swiftly permeated across each realm of our society, especially in the field of education. It has emerged as a key component in collectively tackling the virus and adjusting to the 'new normal'. The conventional classrooms have now transcended beyond the four walls and are driven by cloud computing, artificial intelligence, and the Internet of things (IoT) owing to the fourth Industrial Revolution (IR 4.0) (Malhotra, Bhatia, & Husain, 2020). With learning going online, the pandemic has also presented us with an opportunity to explore and reinvigorate the existing education system with newer affordances of technology. Perhaps, it has also exposed our strengths, weaknesses, and opportunities in online learning and associated challenges.

Like never before, educational institutions are now prompted to employ digital interventions such as Moodle, Google Classroom, Google Jamboard, Google Meet, Zoom, Microsoft Teams, Mentimeter, Padlet, Blackboard, Kahoot, etc., to provide an engaging and holistic learning experience to students. Amidst this, the quality of online learning and its relative effectiveness remains an issue of increasing importance and the subject of growing debate (Driscoll, Jicha, Hunt, Tichavsky, & Thompson, 2012). In a qualitative content analysis conducted by Sun and Chen (2016), it was found that the quality of online learning is largely dependent on multiple factors such as the design of content, easy digital access, affordability, accuracy, pedagogy, efficiency, and effectiveness of web-based resources. Mere transaction of class content via web-based lectures is simply "slapping classroom content online" (O'Neil, 2014) that fails to capture the essence of innovations afforded by educational technology in the present era. And therefore, it is quintessential to design online courses using pedagogically sound practices so that students feel satisfied and find the online learning environment at par with conventional classroom teaching (Driscoll et al., 2012).

In India, at the macro level, both Union and State Governments have taken several initiatives to fuel a smooth transition to online, remote learning (Department of School Education and Literacy, 2020). Various apex bodies are also encouraging online learning in times of the COVID-19 pandemic. The National Council for Teacher Education (NCTE), a statutory body of the Government of India (GoI), has developed a wide array of open educational resources (OERs) to help learners learn uninterruptedly during the pandemic. The University Grants Commission (UGC), through various advisories, encouraged the adoption of digital initiatives (as listed below) in HEIs to ensure that learning never stops in the fight against the pandemic (F.No 1-14/2020 dated March 25, 2020a, F.No.1-8/2017 dated May 19, 2020c):

- SWAYAM (study webs of active learning for young aspiring minds)
- Swayam Prabha (a group of 32 DTH Channels for reaching students who do not have access to the internet or differently-abled)
- Prasar Bharti Radio channels
- National Digital Library of India (digital content such as scholarly publications, publisher/indexed contents, data repositories, documents, videos, journals, conferences in leading Indian languages) is also housing a special collection titled "Corona Outbreak: Study from Home" to enable students and faculty to continually access content
- e-PG Pathshala (gateway for e-books up to PG level)
- e-Content courseware in UG subjects
- CEC-UGC YouTube channel (hosts curriculum-based lectures)
- Shodhganga (reservoir of Indian theses)
- e-ShodhSindhu (repository of e-journals)
- e-yantra (Engineering for better tomorrow)
- Virtual labs (interactive simulation environment for conducting science-related experiments)
- FOSSEE (free/libre and open-source software for education)
- Spoken Tutorial (self-training in IT fields)
- INFLIBNET (an interconnected network for sharing library resources digitally)
- Plagiarism Detection Software (PDS)

Emphasizing the importance of online learning in times of the COVID-19 pandemic, the union minister of Ministry of Human Resource Development (MHRD), now Ministry of Education (MoE), reinforced that e-Learning would enhance learning by providing greater flexibility to learners across time and space, uniform quality and delivery of content, and promoting paperless learning ("Trying to Make E-Learning Immersive and Constructive: Pokhriyal," 2020). With a strong belief in the potential of online learning, the honourable MoE (then MHRD)

union minister affirmed that efforts are being made to provide more "online resources, platforms, bandwidth, and availability of technological solutions, rather than physical spaces" (as cited in Balachandran, 2020) and firmly placed that "the future lies in blended learning" (as cited in Balachandran, 2020).

Further, it is encouraging to note that the online mode of education is being well received as 50,000 new learners have accessed the SWAYAM repository which, now, has a subscriber base of 25 lakh (UGC Advisory F.No.1-8/2017 dated May 19, 2020c). The HEIs have also been advised to allow students to complete their internship in the online mode (UGC Advisory D.O.No.F.1-1/2020 dated May 4, 2020b) which is comparatively a new development and shall require adequate mechanism, like supervision of student-teachers, to reap the best possible benefits. Guidelines for digital and online education, like PRAGYATA, have been framed that somewhat seek to address the existing digital divide and mobilize resources for providing multi-mode access at the school level, but higher education continues to occupy the backseat. Also, the states have taken several initiatives to ensure continued learning across all levels of education. In Delhi, the capital city, online capacity building programmes via 'Chalklit' app, online lecture series and webinars on the theme 'Learning never stops', development of mobile application – DELHI SCERT INSET with dedicated YouTube channel, etc., have been initiated to ensure students, pre and in-service educators are well-equipped to employ digital interventions (Department of School Education and Literacy, 2020).

In light of the foregoing discussion, it is evident that efforts are being made at the macro as well as the micro-level to ensure continued learning for all but it is imperative to take into cognizance how teacher education, as a discipline, is responding to the online mode of learning. The teacher education institutions are primarily bestowed with the responsibility to prepare future educators and evolve innovative, pedagogically sound teaching methodologies for effective online learning, and reskilling and upskilling professional development of pre-and in-service teachers as per the mainstream educational developments. This, in turn, demands robustness in teacher education curricula to impart pre-and in-service teachers the skills deemed necessary for leveraging technology for instructional purposes. However, much remains to be done on this front as despite several curricular reforms, such as overhauling of teacher education courses to prepare digitally competent teachers and dedicated scheme of National Mission in Education through ICT, the majority of teachers to date resort to talk *'n'* chalk approach with seldom any motivation to integrate online teaching-learning in the mainstream. Thus, it can be inferred that despite knowing the benefits entailed by educational technology for enhancing contemporary teacher education programs, the discipline of teacher education has been leaden-footed towards the adoption of newer technological innovations as its use remains sparse in the Indian landscape.

REVIEW OF RELATED LITERATURE

Considering online learning synonymously with e-Learning is a misnomer as e-Learning is wider in spectrum. The Commonwealth of Learning (COL) elaborates that online learning is subsumed within e-Learning as it requires "mandatory involvement of a digital network which a learner needs in order to access at least part of the learning materials and services" (COL, 2020). Thus, in contrast to online learning that provides an increased scope of interactivity to learners, e-Learning can occur "without any reference to a network or connectivity" (COL, 2020). So far blended learning was the most adopted scheme for integrating various technological tools in the teaching-learning process but the current pandemic, being a stress test for education systems across the globe (The World Bank, 2020), has necessitated complete dependence on remote learning facilitated through online learning and e-Learning. In accordance with the definition of online learning provided by COL and the purpose of the present study, the researchers sought to explore the existing literature related to strengths, weaknesses, opportunities, and challenges of online learning with specific emphasis on research related to online learning during the COVID-19 pandemic.

Online learning has become a norm to mitigate the loss in teaching and learning due to calamities that make knowledge delivery a challenging task. Several initiatives and coalitions have surfaced between various organizations like Organization for Economic Co-operation and Development (OECD), World Bank Group, UNESCO, Global Education Innovation Initiative, and HundrED to support quality education during the COVID-19 pandemic. Amongst other initiatives, the Global Education Coalition launched by UNESCO is striving to help countries mobilize resources in context-appropriate ways to ensure equitable and universal access and reduce drop-out rate when normalcy returns (UNESCO, 2020b).

Existing literature provides that online learning entails multiple benefits for learners and their parents, educators, administrators, policymakers, and other stakeholders. Apart from safeguarding the health of educators and students, some of the strengths of online learning that emerged especially during COVID-19 include learner independence and flexibility across time zones, pace, place (Singh & Thurman, 2019), and recording and archiving of lessons (Agha, 2020). Scarpetta and Quintini (2020) identified some of the benefits of online learning as

continuous learning, coverage of a large number of students in a cost-effective way, development of digital skills and other skills, virtual internships that allow real-time execution of tasks under the supervision of a tutor with concrete pedagogical support, technical support to teachers for using various online platforms and developing online-cum-self-learning resources, and quick feedback from students' for improvising teaching and evaluation methods.

On the flip side, some of the substantial weaknesses of online learning include learner anxiety and disengagement, learner isolation, lack of resources, the inability of parents to navigate the e-resources, inadequate teacher training and support, and collaborative play (Petrie et al., 2020). In its policy brief, UNESCO (2020e) identified some of the inherent weaknesses with the online mode of learning which includes "low levels of digitalization and long-standing structural weaknesses" especially in low-income countries, difficulty in implementing apprenticeship schemes and work-based learning modes, lack of equipment/infrastructure, inability to re-draw academic calendars of programmes to shift to online mode, learners' and educators' poor digital skills, and non-fluency in the language of instruction. Apart from this, it has been observed that online learning exacerbates disparities in learning opportunities which are further deepened owing to gender inequalities coupled with insufficiency of the system to cater to the needs of children with special needs in an inclusive manner (IIEP-UNESCO, 2020; UNESCO, 2020d). Agha (2020) spoke to educators, teachers, and experts on filters that prevent the benefits of online learning to reach the grassroots level during the pandemic. Some of the pertinent issues related to online learning faced by faculty across India during the COVID-19 pandemic includes first-generation learners, unstable internet connection, lack of availability of digital devices especially amongst learners from low-income households, increased data cost, non-inclusiveness, loss of meaning, as well as the context of the shared content, questionable quality of content shared, loss of discursive space and increased measurement error (Agha, 2020).

In respect of weaknesses of online learning, the opportunities for strengthening online learning unveiled by the COVID-19 pandemic cannot be overlooked. Petrie et al., 2020 highlight some of the opportunities provided by online learning which includes enhancing parent-teacher relationship as well as teacher collaboration, developing learner autonomy and agency, and creating innovative solutions. Marinoni et al., (2020) claim flexible learning possibilities, blended or hybrid learning, capacity building of faculty and administration, strategies to integrate online learning as an integral component of study plans, and reviewing assessment practices are some of the opportunities offered by distance and online mode of learning. Additionally, Baran (2011) points online teacher professional development, reconstruction of teachers' roles, guiding student learning and enhancing student engagement, and most importantly creating an online teacher persona are some of the areas which hold massive opportunity when transitioning to online mode. Notably, certain factors such as teaching experience, profile of students, institutional incentives, technology, and pedagogy support should also be taken into account as they determine the motivation of teachers to teach online (Baran, 2011). In the face of the present crisis, online learning unfolded the opportunity for self-directed and blended learning (Longhurst et al., 2020; Martin, 2020), academic e-collaborations (Favale, Soro, Trevisan, Drago, & Mellia, 2020; Longhurst et al., 2020), development and subsequent availability of well-structured, high quality, engaging content (Longhurst et al., 2020; Martin, 2020), designing flexible programmes for all ages and evolving innovative pedagogical approach to strengthen problem-solving and critical thinking skills (Dhawan, 2020), "upskilling in new technologies, development of alternative examination methods, and free access to online resources" (Longhurst et al., 2020), reinvent the system of education and build capacity for change (Petrie et al., 2020)

Besides the strengths, weaknesses, and opportunities identified from the review of literature discussed so far, some of the major challenges of online learning that emerged during COVID-19 includes limited access to digital devices, unstable internet connection, little or no cooperation amongst the countries to learn from each other's learnings, unpreparedness of the system, limited modalities for hands-on learning, increased on-screen time, and difficulty of choice from innumerable online learning tools available (Petrie et al., 2020). A global survey was conducted by the International Association of Universities (IAU), one of the auspices of UNESCO, to study the impact of COVID-19 on higher education and identify the challenges along with opportunities related to distance and online learning. The survey, spanning 109 countries geographically distributed across four regions viz., Africa, the Americas, Asia and Pacific, and Europe, yields that two-thirds of HEIs could move to online teaching (Marinoni, Van't Land, & Jensen, 2020). In Asia and Pacific region, only 60% HEIs could replace conventional classroom teaching-learning by online or distance mode of learning and 3% HEIs had to cancel teaching whereas 46% HEIs had plans to carry out exams in view of the new measures (Marinoni, Van't Land, & Jensen, 2020). Another collaborative research project was undertaken by OECD and HundrED to map the problems, opportunities, and challenges of COVID-19 in education. In its findings, Petrie *et al.*, (2020) claim that pandemic has challenged excellence and equity - the cornerstones of good education systems and suggest the need for collective as well systemic action to complement artificial intelligence systems rather than using them as a stop-

gap solution in light of changes in society which seem to have outpaced the mundane education systems modelled during the industrial age (Petrie et al., 2020).

Further, Parkes, Stein, and Reading (2015) highlight some of the challenges related to online learning as development of an e-learning environment based on socio-constructivist principles, inadequate preparation of students, in terms of competency, for a transition to an e-learning environment, lack of ability to strike a work/study-cum-family life balance, and engage collaboratively with others. Further, Marinoni *et al.*, (2020) iterate technical infrastructure and accessibility, competencies and pedagogies for online and distance learning, and discipline-specific requirements are some of the challenges which impede the shift from face-to-face mode to online or distance learning. The findings suggest that irrespective of enabling technical infrastructure, the practical aspects of any field of study, like use of orchestra in music classes, is severely challenged in online mode as social distancing robs the context of study which, thus, limits teaching primarily to a discussion of the theoretical content of the curriculum (Longhurst et al., 2020; Marinoni, Van't Land, & Jensen, 2020). Apart from corroborating these challenges, the OECD while reinforcing the need to embrace digital education and online collaboration points that it is a challenge to keep a pulse on students' emotional health amidst this time of uncertainty as learners tend to become disoriented in virtual environments (OECD, 2020). In light of the lockdown implemented across India, Barua and Reimers (2020) discuss how they overhauled the English learning programme and the challenges faced thereto while transitioning to online mode. The implementation challenges included condensing the lessons to balance on-screen and off-screen time, technological challenges, overlooking of boundaries by students such as texting teachers anytime they felt like, and lack of motivation amongst the students and faculty (Barua & Reimers, 2020). Other challenges identified from the literature include diverse learner expectations and content development (Kebritchi, Lipschuetz, & Santiague, 2017), lack of planning, quality control standards and improper delivery mechanisms of online courses (Affouneh, Salha, & Khlaif, 2020; Cojocariu, Lazar, Nedeff, & Lazar, 2014), and increased time investment, diminished teacher-student relationship, reduced student engagement as well as assessment issues (Longhurst et al., 2020).

Unequivocally, the existing literature attests that online learning is a double-edged sword; therefore, the onus falls on the end-users to ensure technologies are used in the right direction. Apart from unveiling the strengths of online learning, the review of related literature suggests the need to closely plug in the gaps, especially in developing nations, such as lack of availability of high-quality online courses, engaging course content, absence of distinct pedagogical methodologies crafted for online learning, prohibitive access cost including ownership of digital devices, and lack of student as well as faculty readiness for adopting technological affordances for teaching-learning process. Such weaknesses, if not plugged appropriately, turn into systemic level challenges that affect the quality of educators entering the mainstream education industry. Further, to the best ability of researchers, studies related to online learning specifically in teacher preparation could not be traced whereas there is no dearth of similar studies undertaken in other disciplines. Hence, drawing insights from the literature, the researchers conceptualised the problem and made an earnest attempt to capture the strengths, weaknesses, opportunities, and challenges of online learning in teacher preparation in India from the voices of prospective teacher educators who are not only students but also teachers.

STATEMENT OF PROBLEM

Online learning is not a recent phenomenon but gained widespread momentum for teaching across the curriculum in response to the prevailing pandemic. The sudden transition from the face-to-face mode of instruction to online exerted drastic changes in teaching-learning techniques and assessment methods. The faculty and students had to respond instantly with no guide map to reckon with. Not only this acted as a test to their readiness and creativity for use of technology but also exposed the SWOCs of online learning inherent at the systemic as well as individual level. In this scenario, the researchers felt it was imperative to capture the voices of prospective teacher educators on SWOCs of online learning during COVID-19 as it would help in building an enabling culture which may facilitate learning, unlearning and re-learning throughout learners' life and make them reflective practitioners as enunciated in National Curriculum Framework for Teacher Education (2009).

RESEARCH QUESTION

What are the strengths, weaknesses, opportunities, and challenges of online learning for teacher preparation as perceived by prospective teacher educators?

METHODOLOGY

Viewing the existing scenario as a massive opportunity in the form of a social experiment to break out of the old teaching-learning methods and sensitize the prospective teacher educators for developing new relevant modes that take advantage of technology, the researchers sought to explore the SWOCs of online learning. The present study in the form of a single cycle action research invoked the voices of prospective teacher educators to gain insights

from their experience of an intensive mode of online learning during the pandemic. Since it was a new experience, the researchers developed an open-ended questionnaire to capture the SWOCs of the online classes from the voices of learners. The researchers adopted a process-oriented, intuitive-proactive action research approach to gain insight into the responses, as well as context, of prospective teacher educators to improve their online practices and effectively reach learners.

The intervention

The pandemic necessitated the researchers to employ Google Classroom and Google Meet subscribed by the university as a part of the G-Suite package, coupled with WhatsApp and email, to complete the syllabus of 'ICT Integration: Methods and Assessment' course. The researchers conducted classes from the middle of the semester in online mode by providing all the relevant content in form of readings, synchronous screen presentations, discussions, and workshops. Often, the researchers were handholding the incumbents to help them navigate varied resources available online. Small tasks with practical experiences, such as creation of Google Classroom, were assigned to prospective teacher educators wherein their peers acted as students and evaluation was done by each prospective teacher educator. This provided them an authentic hands-on experience of the online teaching-learning process. Further, to gauge the understanding levels of prospective teacher educators, the researchers carried assessments at regular intervals and assigned topics for preparing, recording, and presenting assignments using Google Meet, individually and in groups, to showcase the work done by each incumbent. Each learner was provided feedback synchronously which, perhaps, could enhance the sense of purposiveness. The entire activity spanned for two months during which the researchers made simple, unstructured observations of the online classes, including deviations from the plan.

The context

The study was undertaken in Jamia Millia Islamia (JMI), a central university located in Delhi, India. The institution houses a diverse learner base enrolled across nine faculties. The present study is limited to the Faculty of Education, a pioneer in teacher preparation. The faculty offers varied undergraduate and post-graduate programmes from which the incumbents of the Master of Education programme (M.Ed) were selected for the proposed study as they are not only teachers but also prospective teacher educators. During the pandemic, the university persistently encouraged its faculty members to employ various digital tools for the teaching-learning process and organized several extension programmes to upskill the professional development of faculty members so that learning occurs continually (Press Release: JMI- Online Faculty Development Programme for Sharing the Best Practices and Capacity Building of Faculty Members for Online Teaching-Learning 2020a, JMI Office Order File No:Gen4/RO/(E)/JMI/2020 dated April 02, 2020b).

Participants

For the present study, the sample, being incidental in nature, comprised an intact class of twenty-three (23) prospective teacher educators who continued their learning in online mode and therefore, were considered to be appropriately placed to identify the SWOCs of online learning from dual perspective viz., as 'teachers' and as 'students'.

Data collection and analysis

After two months of conducting online teaching-learning, an open-ended questionnaire was sent to the participants to elicit their views on the strengths, weaknesses, opportunities, and challenges of online learning from their experience so that educators may improve their practices and evolve ways that could benefit prospective teachers educators at large.

The collected data from the questionnaire were analysed qualitatively by employing an interpretive approach to gain insight into the responses and context of prospective teacher educators. The responses were arranged in the flat coding frame which was followed by inductive coding of the responses (verbatim) and identification of emergent themes with the help of Weft QDA software.

Though the findings cannot be generalised due to sample size constraints coupled with the context as well as purpose of the study, nonetheless diffusing the findings may prove beneficial in the greater interest of academia. It would enable the researchers, policy-makers, and stakeholders to meet the peculiar needs of teacher education programmes which is a fine blend of theory and practicum, and quintessentially requires hands-on experience. Perhaps, this could also usher a new wave of technology integration in the teaching-learning process which can cater to diverse needs of teacher preparation adeptly. The findings may help researchers to unveil the ingredients which could make online learning a great success across the discipline of teacher education and contribute to the field of research as well as teaching for evolving suitably crafted online learning methodologies in view of 'new

normal'. The findings appearing in the next section have been analysed and discussed thematically, and few excerpts from the respondents have been inserted to augment the findings.

FINDINGS AND DISCUSSION

The beauty of findings emanating from the present research lies in the superfluous nature of responses which are versatile and can be included under more than one thematic area. In the present study, three themes viz., humane, technical, and teaching-learning emerged upon codification of responses.

Theme 1: Humane

The COVID-19 pandemic has shuttered the way of life and brought educational institutions across the globe to a standstill. Not only has the pandemic upended the social fabric of our society, but also made us overly dependent on the multifarious technological affordances which pose an existential challenge to human beings. The researchers, upon codification of responses, categorically included all the responses under the present theme that related to the humane use of technology that had implications for human life such as wellbeing, inclusion, security, privacy, accountability, and trust (Ashok, 2018). Table 1 presents the responses of the prospective teacher-educators under the 'humane' theme.

Table 1. SWOCs of online learning under the 'humane' theme

Strengths	Weaknesses
• Caters learner diversity • Learning at individual pace • Sense of purposiveness • Online counselling amidst the pandemic promoted mental wellbeing • Transparency in assessments • Increased accountability in teaching-learning • Authentic engagement • Privacy of assignments • Discourages unhealthy competition • No bias/ impartiality	• Learner unpreparedness at the psychological level • Increased on-screen time poses several health risks • Absence of teacher in-person
Opportunities	**Challenges**
• Promotes access, equity, and quality to online learning • Saves time and promotes physical safety especially during trying times	• Cyberbullying/online bullying • Polarization/social isolation • High cost related to access and maintenance

The respondents expressed varied perspectives from their personal experience concerning the humane aspect of technology and how it is shaping their beliefs and practices as teacher educators in the present scenario. Collectively, the respondents indicated that one of the biggest strengths of technology is the opportunity to learn at an individual pace that not only caters to learner diversity, but also discourages unhealthy competition, stress, and performance anxiety amongst the learners. Though technology offers multi-sensory authentic engagement, a considerable number of respondents expressed concerns related to increased on-screen time as it poses several health risks in the long run. As a strength of online learning under the humane domain, one of the respondents iterated how technology helped him/her find a sense of purposiveness during this pandemic. The narrative of prospective teacher educators is presented hereafter in verbatim. One of the respondents claimed:

> *"As coronavirus is rapidly spreading across the world, it is inducing a considerable degree of fear, worry, and concern among people of all ages. Many clinical psychologists are providing online counselling. Similarly, our teachers have become all the more versatile, technology savvy and act as a guide-cum-counsellor to motivate the students online. This has provided a sense of purposiveness to me and my peers amidst the crisis that is good for students' holistic development (social, psychological, physical, and emotional wellbeing). The crisis has also provided each one of us the opportunity to develop skills necessary for using ICT tools."*

According to another respondent, one of the major weaknesses of online learning is reflected in how it has changed our interaction patterns. The respondent provided:

> *"The sudden transition to online learning has left all of us somewhat unprepared because we were not anticipating this change in teaching-learning pattern. The technology has become intricately woven in our lives to such a great extent that it may prove to be a threat to social interactions in near future."*

Another respondent, while critically evaluating the SWOCs of online learning, exposed one of the major challenges of using technology unabatedly for online learning. The respondent iterated:

> *"I feel all these technologies are laden with hidden designs which have the potential to hijack our attention, harness our choices, and polarize us from real-world. Often, I experience my Google search results for different items popping-up in the Facebook feed. It feels as if we are being spied upon. I feel there should be some awareness about cyberbullying and appropriate mechanisms to combat instances of cyberbullying. Also, we miss our one-on-one interactions with teachers – our guiding light. Not only this, with false information travelling at exponential speed, the technology does spread feelings of hatred which manipulates us to react in divisive style."*

From the perspective of prospective teacher-educators, one may gauge that though the wave of technological advancements has made each one of us believe that everything is just a click away, provided us with the *'me'* space, increased transparency and efficiency in assessment patterns, boosted our self-confidence for using technological tools, and developed self-discipline but left each one of us vulnerable and enveloped in their cocoon. Further, Krishna Kumar (as cited in Agha, 2020) noted, "Schools and colleges are a discursive space where youngsters learn to live in a universe of ideas and discourses. The e-peddlers seldom think about this; even among adults, one rarely finds people willing to concede that virtual relationships or conversations are illusory in a fundamental sense". Majority of the respondents expressed that with effective use of technology, constants such as access, equity, and quality in online learning can be ensured to a wider student base but extreme caution needs to be exercised to ensure a safe, secure environment free from cyberbullying. The respondents echoed how technological tools coupled with artificial intelligence systems carry the potential to manipulate thinking and decisions. Not only are these findings mind-numbing but also intimidating from an ethical perspective as it infringes the privacy of users by tracking their online activities. The participants also provided that increased instances of cyberbullying, though not experienced by any one of them as such during the designed intervention, is one of the major challenges to online learning and, therefore, requires appropriate training of teachers as well as students coupled with sufficient institutional mechanism for its prevention.

Theme 2: Technical

With the availability of varied tools afforded by Information and Communication Technology (ICT), the opportunities for online learning galore. Table 2 presents the SWOC analysis of online learning for the technical theme from the perspective of prospective teacher-educators. Responses related to infrastructure, technical support, upskilling of teachers and administrators, privacy issues, time efficiency, etc., are included under this theme.

Table 1: SWOCs of online learning under the 'technical' theme

Strengths	Weaknesses
• Anytime, anywhere learning • Promotes collaboration and peer learning • Ease of access to information • Strengthens technical skills • Platform for synchronous and asynchronous learning • Strengthens use of digital tools, online library, news, information about other countries mass sensitization • Eco-friendly and cost-efficient • Time efficiency	• Network connectivity issues • Cost constraints • Technically unskilled learners • Lack of technical equipment • Lack of knowledge about new technology • Lack of technical support • Lack of trained teachers • Disastrous effects of mismanagement of technology • Privacy issues like ZOOM app • Unfriendly user interface of some apps • Compatibility issues in devices, operating systems, and apps • Lack of discipline
Opportunities	Challenges
• Digital infrastructure development • Evolve ways and techniques to make everyone adept at using technology	• Cyberattacks • Improper hardware disposal • Unforeseen outages

Majority of respondents indicated that online learning affords them the convenience to learn anytime, anywhere that is unparalleled. The prospective teacher-educators also provide that technologies have been firmly supporting them to collaborate with their peers during difficult times. In turn, this has facilitated every respondent to learn something from their peers, exploit digital resources such as online libraries, educational discussion forums, etc., to ensure continued learning. The narrative of prospective teacher educators is presented hereafter in verbatim. One of the respondents iterated that online learning is a cost-efficient, as well as an eco-friendly mode as it is paperless. Another respondent echoed:

> *"Time efficiency afforded by online learning is one of the major strengths as my travel time is saved. I no longer need to stand in long queues or take the overcrowded public transport. I am just a click away from my class. I am thoroughly enjoying the present mode of learning."*

However, another respondent felt quite uncertain about the efficiency of technology and shared one of the challenges to online learning which s/he faced. The respondent expressed:

> *"Power outages have made it difficult for me to complete the work within the stipulated timeline. Due to bad weather, there are days at a stretch when there is a power outage. How do I complete my assignments as it gets quite difficult to work on a small screen of mobile phone for prolonged hours."*

While highlighting the strengths of online learning, one respondent claimed:

> *"I can learn anytime, anywhere. I don't fret about having a missed class as I can always look up the videos, discussion thread after each class and keep pace with my peers."*

On the flip side, as a weakness of online learning, below is an excerpt from a respondent who had a harrowing experience related to connectivity. The respondent iterated:

> *"Internet connectivity, especially for people like me living in remote areas, is a major issue as it becomes difficult to access good quality internet connectivity. I live in a remote area of Bihar, and often, I have to rush to the terrace, irrespective of climate, to attend my online classes but, on rainy days, I have no choice and end-up missing my class. Poor video/audio quality, noise, etc., interrupts my learning often. Also, during the lockdown, the consumption of data has increased which resulted in increased cost that has further added to our woes. Moreover, I am not technology savvy, and require some technical help to support my digital skills. Also, sometimes, I feel our teachers need to be better equipped with ICT skills as a considerable amount of time is consumed in managing the class properly."*

An excerpt from one of the respondents highlights the disastrous effects resulting from the mismanagement of technologies. The respondent provided:

> *"Though it is the dawn of a renewed digital era, we have to be careful to avoid any disastrous effects emanating from mismanagement of artificial intelligence systems. Not only this, we need to evolve a mechanism for proper disposal of hardware components so that it doesn't make its route to aquatic bodies."*

Another respondent indicated a pertinent concern that, indeed, is a challenge to online learning. The respondent claimed:

> *"Our confidential and informative data has to pass through several technical interfaces which always carries a risk of unauthorized use of sensitive information. What if someone hacks my account and steals my information. I feel quite insecure and vulnerable."*

In light of the weaknesses and challenges of online learning, one cannot afford to overlook the strengths and opportunities that online learning entails. Upon analysing the responses, many respondents echoed the need for adequate teacher preparation to exploit the potential of technological affordances to the fullest. Digital libraries, open educational resources, MOOCs, learning management systems, etc., have provided multiple avenues for continued synchronous and asynchronous learning, but, a considerable section of prospective teacher-educators face cost constraints that impede online learning. Further, the participants highlight the disruptions in audio and video due to connectivity issue that causes disengagement amongst the learners and often jeopardize the class discipline. The findings indicate the need to adequately address the privacy issues which, if ignored, can turn into

a challenge. Nonetheless, the pandemic has provided us with the opportunity to upscale our digital infrastructure and provide sound technical training to students, teachers, and administrators to make them adept at using technology.

Theme 3: Teaching-Learning

Amidst the crisis, academic continuity has emerged as a universal need across the globe. With no other option at hand, the HEIs had to adapt to the new normal and encourage faculty members to keep teaching remotely to ensure a swift transition to online course delivery. From the responses of prospective teacher educators, the teaching-learning domain emerged as one of the thematic areas that specifically focused on the process of teaching-learning, engagement, assessment, and inclusiveness afforded by online mode. The findings are summarised at Table 3.

Table 2. SWOCs of online learning under the 'teaching-learning' theme

Strengths	Weaknesses
• Varied learning techniques for a diverse group of learners • Engaging environment • Easy to work and communicate • Ease of tracking • Strengthen content enrichment in the teaching-learning process. • Promotes independent learning • Storehouse of self-learning opportunities • Facilitates more inclusive classrooms	• Compatibility issues in technological design and psychological components of the learning process • Increased burden • Lack of instant feedback and evaluation • Lack of discipline • Unavailability of required learning material • Learners span of attention compromised • Inadequate teacher preparation • Overhauling the traditional curriculum to meet the demands of online learning
Opportunities	Challenges
• Evolve and integrate creative ways in the teaching-learning process • Better use of ICT devices and resources • Possibilities to learn what one desires • Increased scope for online courses and online exams • Distant students can get access to qualified educators	• Missing out on the *cons* of technology • High dropout rate of students • Insufficient legislative base and roadmap for integrating online learning in HEIs • Recognition of online degrees at par with traditional courses

Table 3 provides that online learning needs to be delicately leveraged for attaining educational goals. With an equal number of strengths vis-à-vis weaknesses, the findings on the domain of teaching-learning highlight the need for creating an engaging online learning environment in accordance with socio-constructivist principles. The findings indicate that diverse learning styles could be catered during the planned intervention which, in a way, could promote independent and self-directed learning, though some respondents expressed a lack of discipline and seriousness on the part of learners as one of the major weaknesses of online learning. The narrative of prospective teacher educators is presented hereafter in verbatim. As one of the strengths of online learning, a respondent stated:

> *"I can track my current work status, progress report, pending tasks, meet deadlines, engage in multiple activities and classrooms at the same time, and know upcoming tasks just with a click. I can communicate and collaborate with groups, educators, or members present in the groups synchronously as well as synchronously."*

Another respondent asserted how online learning enabled him/her to develop the skills necessary for utilizing online platforms efficiently and effectively. According to the respondent:

> *"It has helped me tremendously in improving my technical skills. I can now fully understand how learning management systems work and I feel more empowered to employ the same in my classroom in the future. I have been able to learn and explore so many new things on my own which I did not think of doing earlier."*

This is, further, echoed by another respondent who argues that online learning has strengthened the skill-set of many learners. The respondent claimed:

> *"Online learning allows us to inquire and learn independently, even my peers who are differently-abled can make use of varied resources to meet their learning needs. One can always pick and choose what he/she needs to learn and for how long."*

However, one of the respondents expressed some of the pertinent weaknesses of online learning related to psychological components of the teaching-learning that are often left unattended in the online mode. The respondent stated:

> *"The technological systems and applications are not always designed in view with the psychological components of the teaching-learning process as machine learning is significantly different and lacks human touch. It merely works linearly by following a set of commands whereas our classroom experiences not only enhance our learning but only make us think differently and develop the quality of respecting and accommodating tangential views of our peers in a patient and accepting manner. It helps broaden our horizon."*

Further, while claiming the weaknesses of the online learning system concerning evaluation practices, another respondent provided:

> *"The only thing I dread is completing assignments in a short span as there is a sudden outpour of assignments in all subjects amidst the pandemic. Moreover, there is uncertainty about terminal evaluation, how will we write our exams. Would online presentations, assignments, MCQ-type tests suffice to ascertain the learning levels of students? Can't they cheat?"*

Expressing the lack of discipline as well as creative and engaging content, a respondent asserted:

> *"The manner in which classroom interaction provides us instant feedback is amiss in online learning. Also, proper discipline is a matter of concern as one always has the scope to become disengaged and it may go unnoticed from teachers' end. I also wonder how will practice teaching take place online. "*

Findings emerging from the domain of teaching-learning suggest that lack of discipline, not owing to technical glitches as discussed in the previous section but self-discipline that emerged as one of the issues which dampen the process of online learning. Many respondents openly shared how their peers lack sincerity and take for granted online classes. Perhaps, this not only drains the earnest efforts made by the educators but also influences the efficacy of online learning. Furthermore, on the positive side, the respondents unequivocally highlighted how the online format provides more freedom to differently-abled students (and teachers) to participate in class. Additionally, the participants expressed the need for overhauling the traditional curriculum and its associated transaction practices as per the nuances of online learning for improving future practices. The respondents also stated the need to maintain a delicate balance between face-to-face instruction and online mode as going overboard with the 'positives' may prove detrimental in absence of sufficient normative and legislative base that accords equal recognition to courses completed online. Moreover, many respondents indicated ease in tracking learners' progress and instantaneous communication as one of the strengths of online learning. However, the inability of online mode to carry evaluations at par with the traditional way of writing examinations remains an area of concern since the existing systems are not robust enough to conduct evaluations in a fair manner. In essence, the findings on this domain suggest that the traditional curriculum and existing methodologies for classroom teaching as well as evaluation cannot be merely applied in the online mode of learning. The courses designed for online delivery require distinct pedagogy coupled with newer evaluation practices as the instructional paradigm is fundamentally different for classroom teaching-learning and online teaching-learning.

CONCLUSION AND IMPLICATIONS

The findings emanating from the present research shed light on the status-quo of online learning in teacher education programmes conducted in India. The findings of present study indicate the emergent need for reconsidering how technology is employed and its subsequent effects on the humane, technical, and teaching-learning domain. The takeaways from the present study lack generalization due to the limited sample size and context of the study but can enrichen academia. With the majority of strengths emerging under the humane domain, and weaknesses majorly appearing under the technical domain, the study unveiled abundant opportunities as well as challenges under the teaching-learning domain, which, if carefully considered, can provide a fillip to online learning. In light of the findings, the implications for policy-makers, curriculum designers, technology experts, and educators are discussed hereafter.

The findings under the humane aspect highlight the need to consider students as 'whole people' existing in diverse contexts so that practices that foster student collaboration and community connections may be evolved and embraced to cover the void created by social distancing. Also, evolving appropriate modalities for maintaining a fine balance between on-screen and off-screen time should be considered. Additionally, as echoed by UNESCO (2020c) in 'Safe to Learn' recommendations, there is an impending need to raise awareness amongst the learners towards cyberbullying so that online safety practices could be adhered to so that learners do not fall prey to online predators. Though the maximum number of strengths were identified under this domain, the need of the hour calls for a judicious, careful, and responsible use of technology for online learning that promotes social solidarity, reduces polarization, remains value-driven, and empathetic to maintain the social fabric of the society.

The takeaways under the technical domain include the need to upscale existing digital infrastructure, digital skills of teachers, and quality of technical support. Also, to promote online learning and equip teachers, administrators, prospective teacher-educators, and educators to cater to the needs of an ever-evolving digital culture, a considerable investment is required in the education sector. Further, the findings indicate the imperative need to maintain the technical infrastructure that plays a significant role in determining the success of any online learning project. Also, in absence of adequate technical support, educational technologies cannot be appropriately harnessed even though one may have access to cutting-edge technologies. Moreover, there is an urgent need to reconsider how to leverage technology to tailor existing programs, bridge digital divides in terms of access and skill, strengthen educators' and students' inner capacities without taking over their lives, provide an enriched learning experience, and prepare an empowered educator as well student base. With most weaknesses emerging under this theme, the researchers realized that some aspects, such availability of technical infrastructure, internet speed, etc., are beyond individual control, and therefore, require interventions at the macro level to ensure equity in access.

In the domain of teaching-learning, the findings affirm that the time is ripe to reconsider our orientation towards what learning is possible, what learning matters, and how to assess it given the online format. The researchers observed that learner and faculty preparedness are the areas that require immediate attention as the sudden transition to the online mode not only changed the dynamics of classroom teaching but carried a significant number of constraints, such as increased cost, financial burden, mobility issues, etc., for both set of users. Often, the incumbents required handholding during online learning irrespective of the fact that the lessons were stored digitally to enable anytime, anywhere access. Additionally, during the initial phase, the researchers struggled to condense the lessons without compromising the quality that resulted in classes stretching beyond the stipulated hours and learners reaching out for help beyond working hours. The findings affirm that even though the researchers were connected with prospective teacher educators via phone calls, WhatsApp, email, Google Classroom, Google Meet, etc., there existed the need for developing modules for asynchronous learning as per contemporary curricular requirements. The researchers also found that the existing curriculum and present-day classroom teaching practices required overhauling as online learning demanded a distinct pedagogy and newer evaluation practices considering the principles for the humane use of technology vis-à-vis psychological, sociological, and pedagogical dimensions of the teaching-learning process.

While much of higher education has been thrown into disarray by the pandemic, the silver lining amidst this storm is the set of opportunities to redesign programmes and teaching methodologies in mindful, empathetic, creative, and student-centred ways. The researchers suggest that constructive interventions, such as providing a sufficient normative and legislative base that may accord equal recognition to online courses, can convert several weaknesses and challenges of online learning into an area of strength and opportunity. This, in turn, would offer an enhanced online learning experience to every learner. This would ensure that our digital natives and digital immigrants such as teachers, educators, administrators are future-ready. Further, there is a need to draw study plans to integrate online learning as an integral component so that academic continuity, including apprenticeship/practice teaching, remains unhindered. The faculty and prospective teacher educators need to upskill the professional development to provide an engaging online learning environment wherein condensed packets of knowledge can be delivered that, in turn, would offer more discursive space. Also, an appropriate combination of online-offline work needs to be included to keep the screen-time under check. Besides, the pandemic entailed an opportunity for the participants to become conversant with the online learning and communication skills such as navigating Google meetings, searching and accessing online learning resources, developing a range of assignments using multimedia tools, and working in a collaborative-connected fashion. Lastly, the entire online teaching-learning activity left researchers and prospective teacher educators with an imprint of the very skills and abilities that a post-pandemic world would rely upon when it eventually re-emerges. Thus, in light of the findings of the present study, one can conclude that the COVID-19 pandemic has provided an impetus to online learning that, if channelized appropriately, can reap stellar results for future teaching-learning.

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