EMPOWERING EDUCATION IN THE DIGITAL AGE: MANAGING THE TEACHING AND LEARNING PROCESS

Abstract

The dynamic environment of education in the digital age is examined in this paper, which focuses on methods for empowering both students and teachers. The present research explores how teaching and learning might help students enhance their creativity, critical thinking, and problem-solving abilities by moving away from rote memorization and toward holistic learning. By investigating the fusion of technology, pedagogy, and learning processes, this study aims to navigate the evolving educational paradigm while ensuring meaningful and effective teaching and learning experiences. And connecting with navigating the teaching and learning process, presenting a comprehensive overview of key strategies that educators can employ to create meaningful and engaging learning experiences. By exploring the realms of learning theories, clear learning objectives, engaging content, classroom management, active learning, assessment and feedback, technology integration, culturally responsive teaching, lifelong learning skills, and reflection, this paper aims to provide educators with a holistic framework to enhance their teaching practices. NEP 2020, an ingenious policy framework to intensify the education sector and as a catalyst for amalgamation of technology in learning and teaching process. In conclusion the study provides perceptivity into the evolving landscape of education with the importance of harmonious blend of pedagogy with technology to foster the teaching learning process. In this paper author discuss various teaching-learning platform which is use in Indian and global perspectives.

Keywords: Technology, Digital, Teaching, Online-Learning, Books, Communication.

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I. INTRODUCTION

In an era defined by technological advancements, reimagining education is imperative. The digital age offers new opportunities and challenges, demanding innovative approaches to navigate the teaching and learning landscape. The earliest technological revolutions can be traced back to the Stone, Bronze, and Iron Ages, when material transformation sparked Schumpeterian creative destruction. Learning is referred to as the "education" process. Men transmit their cultural norms and value systems to the younger generations through an allegoric syphon. Naturally, it is also how a person positions themselves in regard to both their personal needs and societal expectations (Hilbert, 2022). As a result, human knowledge has reached new heights (Burnett, 2016).

We are currently experiencing an era of fast advancement in technological knowledge and tools. Different fields have been impacted by information and communication technology, with a focus on public health and education (Hilbert, 2022).

Globally speaking, elevating the stature of the educational system is in the best interests of any nation. The quickening pace of globalisation and technical advancement has made this effort easier. This development enhances a person's ability to connect and exchange educational resources (Heleem, 2022).

In reaction to societal developments, the educational system is always being modified and adjusted. We are successfully advancing education at all levels through the deliberate use of novel technology and experiments. The efficiency of educational institutions has grown as a result of efforts to uphold greater standards and accountability as well as better curricula. In recent years, computers have been used in education in novel ways. Computers were initially employed for menial jobs such as database maintenance, but computers are today used in training, exam administration, teaching, and research at all levels of education (Kober & Rentner, 2020).

New policies are currently being implemented and old ones are being reevaluated, and the process of doing so is being closely examined (Haleem et al., 2022). As a result, our current educational system needs to undergo a significant transformation in order to adapt to a world that is always changing. In a nutshell, this would imply that the primary goals of the new educational system will be to pique learners' intellectual curiosity and to foster the values of critical thinking and enduring abilities that are necessary for functioning meaningfully in life (Bhongade & Sarode 2018).

To make the entire nation a digital society and information economy, education is essential. A mutually reinforcing association between education technology and the existing educational system occurs as a result of the importance of the educational system to the improvement of the learning process and outcome (Rana & Manohar, 2014). In order to advance and develop educational technologies, the Indian government is actively promoting disruptive technology. With the use of technology, teachers may more effectively impart their knowledge to pupils, making learning more engaging and relevant for them. As a result, the government develops post-independence strategies to improve the use of new technologies in the educational curriculum. Smart classrooms, integrated science labs, play based learning will be among the major focus areas of Sarva Shiksha Abhiyaan`s five-year

plan (Mukherjee & Sen, 2007). The objective of technological interventions is to enhance teaching-learning and evaluation processes, support teacher preparation and professional development, and enhance the educational approach. This will streamline educational planning, management, and administration, which includes, among other things, admissions, attendance, and assessments. Due to the aforementioned factors, a high-end form of educational technology will be created and made accessible to teachers and students at the most fundamental levels.

Since the 1990s, there has been a notable infiltration of technology into our daily lives. This event has far-reaching global implications. In his research, (Hennessy, 2000) concluded that using computer technology and graphing instruments in a meteorological project holistically improves not just student engagement, but also enjoyment and interest, as well as offering a greater knowledge of graphing procedures. In today's scientific and technological age, we see that traditional teaching methods are insufficient to arouse students' interest and thus unable to meet their overall intellectual, emotional, and intellectual needs in this new millennium; thus, teaching methods must be changed. This has not gone unnoticed by educators, who have begun to incorporate technology into the classroom (Vijayalakshmi, 2019). To contribute in the nation's development, kids must be capable of investigation, inquiry, creativity, invention, and morality during their formative years.

The upcoming technology savvy class will assist teachers in this endeavour. In comparison to the previously employed alternative, the employment of digital technology in education would coordinate the usage of neurological systems with auditory and visual components, making it helpful not only to students but also to teachers (Kwauk & Winthrop, 2021).

Naturally, it is known that the education process’s foundation is class-room interaction. Digital learning forges new ways of enhancing these interactions. They are emerging to be a significant tool in the teaching process, helping student’s foster creative and critical thinking along with enhancing their problem-solving skills (Gorai, 2023). Effective teaching involves a nuanced understanding of various factors that influence the learning process. Educators must consider diverse learning styles, technological advancements, and cultural backgrounds to create an environment conducive to meaningful learning experiences.

As the competition grows at an alarming pace, the children of this age require not just theoretical knowledge, concentration and long-term retention i.e., the traditional skills but also understanding the abstract ideas behind the concepts that are being taught. Digital learning enhances visual medium, aids the student in doing so. Thus, it paves a way for exciting new possibilities in modern education.

This novel and revolutionizing are set to change the very concept of learning itself, massively radicalizing the way teachers teach and students learn. This new and flamboyant way of teaching is likely to help the students that are underperforming with the relatively drab traditional teaching framework. The curriculum can be converted into animated visuals, which would be visually more appealing and help the students retain the knowledge significantly better. This, in turn, can be predicted to improve educational performance. This

kind of education would ensure longer periods of focus from the students by immersing them completely in the learning experience.

Covid-19 pandemic has changed all walks of life. The education sector is no exception. In the teaching and learning process, India saw a tectonic shift from blackboard to digital board within a span of time (Lockee, 2021). Digital solutions are the biggest intermediary between the teacher and the learner in the present era. Edu tech (education technology) companies are reinventing themselves to schools and universities to mode of education. Some of the effective digital teaching learning methods are: 'Byte-sized' video lessons, live streaming with precise contextual delivery, flipped classroom, simulations, problem-based learning techniques to foster higher order thinking in students.

To curate such digital content, digital pedagogy has become essential for teachers. Along with content and apt delivery models, the teachers must integrate learning psychology, learning analytics, behavior analytics, assessments into their digital classroom all the while hand holding the slow learners of the digital ecosystem. Complex learning (mixture of online and offline learning) should be the way forward for postcovid-19.

Information and communication technology (ICT) has significantly altered many aspects of how we live. The impact of ICT over the past few decades has been enormous, if one could possibly manage to think about such sectors as medicine, the travel industry, travel, business, law, banking, building, and design. Over the past fifty years, advanced educational frameworks have grown enormously to meet the demands of value instruction for everyone. Rapid advancements in (ICT) information and communication technology have also contributed to the strength of this viewpoint. The demand for skilled and capable labour is always growing in today's globalised world.

ICT developments have been taken into account in advanced education frameworks worldwide over the past twenty years. The Indian government is ready to use mechanical resources to further its goal of making higher education accessible to all candidates on the basis of merit. As a result, it launched its National Mission on Education through Information and Communication Technology (NMEICT) in 2009 to give all educators and experts in the country the chance to combine their knowledge to help every Indian student and, in doing so, close the achievement gap. The Polish higher education system has established a legal basis for the adoption of contemporary teaching methods in keeping with current trends.

The contemporary instructional approach also seeks to gain a competitive edge in the global educational market by responding to the offers made by the best institutions in the world. To overcome the problem and develop a flexible Indian education system in the long run, a multifaceted strategy is required (Schleicher, 2020). Through the process of previous discussion learner can develop various concept which is discuss bellow. When we discuss navigate the teaching and learning process must concentrate on like

1. **Learning Theories and Pedagogical Foundations:** To navigate the teaching and learning process, educators must ground their practices in sound learning theories. Ertmer & Newby (1993) highlight behaviourism, cognitivism, constructivism, and connectivism as critical frameworks for designing instructional strategies. These theories inform the creation of dynamic learning environments that align with how individuals learn best.

2. **Defining Clear Learning Objectives:** Mager (1997) emphasizes the importance of setting clear learning objectives to guide both educators and learners. These objectives provide a roadmap for the educational journey, ensuring that instructional efforts are targeted and aligned with desired outcomes.

3. **Crafting Engaging Content:** Engaging content plays a pivotal role in capturing learners' attention and fostering deep understanding. Mayer (2009) discusses the principles of multimedia learning, advocating for the integration of visuals, narratives, and interactive elements to enhance content delivery.

4. **Classroom Management for Optimal Learning:** For the purpose of fostering a positive learning environment, effective classroom management is crucial. Emmer and Sabornie (2015) underscore the significance of establishing a positive and inclusive classroom culture, which minimizes disruptions and supports the learning process.

5. **Active Learning Strategies:** Engaging learners through active participation enhances retention and comprehension. Prince (2004) emphasizes the efficacy of active learning strategies such as discussions, group activities, and problem-solving tasks in promoting deeper engagement and understanding.

6. **Assessment & Feedback:** Assessment is an important part of the teaching and learning process. Black and Wiliam (1998) emphasise the need of a variety of assessment methods as well as timely feedback in assessing student knowledge and fostering development.

7. **Integrating Technology:** In a digital age, incorporating technology into teaching is critical. Mishra and Koehler (2006) propose the "concept of technological pedagogical content knowledge "CTPCK", which advocates for educators' ability to use technology to improve instructional results.

8. **Culturally Responsive Teaching:** Culturally responsive teaching acknowledges the diverse backgrounds of learners. Gay (2018) emphasizes the significance of creating an inclusive environment that respects and values students' cultural identities, fostering a sense of belonging and enhancing learning outcomes.

9. **Fostering Lifelong Learning Skills:** One of the main goals of education is to prepare pupils for lifelong learning. To prepare students for ongoing personal and professional development, the Association of American Colleges and Universities (2007) emphasises the value of developing abilities including critical thinking, problem-solving, and information literacy (Tomei, 2003).

10. **Reflection and Continuous Improvement:** Brookfield (2017) underscores the value of reflective practice for educators. Regular self-assessment and gathering student feedback enable instructors to refine their teaching methods, promoting continuous improvement.

One, immediate steps are required to maintain university learning continuity. Teachers should use open-source digital learning systems and Learning Management Software to perform online instruction. As a developing country, more than half of India's population lives in rural areas. There are numerous network concerns. To begin, we must eliminate this issue. Second, because we have numerous online teaching learning platforms, such as Swayam Prabha and E- Pathshala, we must eliminate this issue. we should have to polish them more and improve their quality. Third, the government should expense internet data that students of every class avail of.

Fourth, attending several workshops on creating e-content is mandatory of teachers. It is also essential to assess current delivery and pedagogical approaches in schools and higher education in order to create a unified learning system. This is possible by smoothly integrating conventional classroom instruction with online learning techniques. Nevertheless, there are benefits and drawbacks to e-learning (Schleicher, 2020). As a result, educators are now leveraging technology to spread knowledge across borders, industries, and social strata. Since online learning technologies will be essential, it is our shared responsibility to utilise them to their full potential.

II. EDUCATIONAL TOOLS AND APPLICATIONS

1. **Digital Tools**: With the aid of numerous digital and online efforts and tools, we were able to lower the barrier of social isolation and lockdown. Technology is practically ubiquitous in the world we live in, and youngsters are better than anybody else at adjusting to it. Students, unlike teachers, grew up in the digital age. Using technology in many aspects of life comes naturally to students of all ages. As a result, the use of digital tools in the classroom is becoming increasingly important. Traditional teaching methods are already being modified to better meet the demands of students in the twenty-first century and to strengthen teachers' professional practises. The digital technology age has already begun.

When technology is employed in the classroom, it piques students' attention, increases their involvement, and improves their learning and comprehension. These characteristics are highly prized by excellent teachers, and they are now easily attained in the classroom due to the usage of digital tools.

It is simple to complete them. Both teachers and students can utilise the digital tools, which are intended for schools that promote accountability, interpersonal interactions, and respect. With the aid of online classes held using Skype, Zoom, Google Hangouts, Google Classroom, etc., students can stay in regular contact with their professors. They can take full advantage of this lockdown period by signing up for a variety of online courses offered by sites like Swayam, Coursera, edX, and many others. Through numerous online platforms, including ugc, students can access the in-depth notes, information, and free books.

2. **E-learning Applications:** Not that long ago, smart phones were considered a distraction for children. Every attempt was made by parents, teachers, and others to keep smartphone use from obstructing students' education. All of their efforts came to nothing. But, as they say, there is always a silver lining. Mobile apps have transformed smart phones into virtual classrooms where students can complete assignments with ease and focus. Help is available from companies that make online learning software, like Adda24x7, BYJU's, NCERT CBSE guide, Doubtnut, Coursera, Vedantu, Duolingo, Witkali, Unacademy, Khan Academy, and many more.

3. **Connectivity**: Reliable connectivity is just one of the many requirements for online learning, but it is by far the most important. Various telecom operators and streaming services such as Netflix and YouTube have successfully cooperated during COVID-19 to reduce transmission bit rates from high definition to standard definition to maintain network capacity. This increases the bandwidth that a large number of users can access. Additionally, they should allow children to come into direct contact with tools and chemicals. All this is possible only with optimal network capacity utilization. To ensure that learning and teaching never stops, teachers create courses using online learning resources and parents learn new learning strategies at home. Which has taken the education system forward a lot at present.

III. GOVERNMENT INITIATIVE

1. **Govt Working on New Web Portal for Game-Based Education of Little Kid**s: The government is trying its best to come up with a game-based curriculum for little kids from 3 to 6 years old to fully engage their curious minds.

2. **Online Classes can be done via Various Mediums for those without Internet Access:** Even though digital access has improved in India, thousands still of not have internet access. The HRD minister said that for such students, online classes were available on 32 DTH channels on TV along with Tata Sky and Dish TV.

3. Students can start their New Academic Year with the Free Resources Online

- **School Education**

  - **DIKSHA (Digital Infrastructure for Knowledge Sharing)**: A novel step of digitization can be said for all students where, for classes I to XII, Diksha offers more than 80,000 e-books written by CBSE, NCERT and State/UT in various languages. Additionally, information can be accessible by scanning the textbook's QR code. You can download the app from iOS and Google Play (https://diksha.qov.in or https://seshaqun.qov.in/shaqun) respectively.

  - **E-PATHSHALA:** E-PATHSHALA is a novel initiative taken up by NCERT. Where free books are provided digitally for students, teachers, educators, parents, supplementary books are also provided. For classes I to XII, NCERT has made available 1886 audios, 2000 videos, 696 e-books (e-pubs) and 504 flip books in

different languages through this web platform. http://epathshala.nic.in or http://epathshala.qov.in offers mobile app.

- **(NROER) National Repository of Open Educational Resources:** The NROER site (http://nroer.qov.in/welcome) has a total of 14527 files, comprising 401 collections, 2779 papers, 1345 interactive, 1664 audios, 2586 photos, and 6153 videos in various languages.

- **Higher Education**

- **SWAYAM (Study Webs of Active–Learning for Young Aspiring Minds):** Swayam is an effort launched by the Government of India to achieve three key goals of education policy: access, equity and excellence. The main objective of this project is to ensure that the underprivileged students get the best teaching and learning tools. SWAYAM's mission is to digitally facilitate students who have been left behind by the digital revolution and are unable to participate in the knowledge economy. From this platform anyone is able to access all the courses taught in classrooms from class 9 to post-graduation as per their own time, anywhere. Each course is beautifully interactive created by top instructors in the country and offered to all students free of charge. "SWAYAM reports that there are 203 partner institutes, 2,748 courses that have been finished, 12,541,992 students enrolled, 915,538 exam registrations, and 654,664 certificates that have been successfully completed" (PM e-Vidya - SWAYAM Portal (education.gov.in).

- **SWAYAM** is divided into four sections which are:
  - Video lecture,
  - Specially designed reading material that can be downloaded or printed,
  - Tests and quizzes for self-assessment and an online discussion board for questions and answers.
  - Steps have been taken to enhance the educational experience by using state-of-the-art pedagogy/technology, audio-video and multimedia.

SWAYAM PRABHA

Swayam Pravar is one of the channels of an online education system. 32 DTH TV channels are operated under Swayam Pravar which are capable of broadcasting educational content 24 hours a day, seven days a week. These channels are accessible across the country using a free dish set top box and antenna. Channel schedule and other information will be available on the portal. The channels provide a clear understanding of subjects in Arts, Science, Commerce, Performing Arts, Social Sciences in School Education (Classes IX to XII) as well as Higher Education (Graduate, Post Graduate, Engineering, Out of School Children, Vocational Courses and Teacher Training) also, Agriculture, Law, Humanities, Technology, and Engineering Medicine (swavamprabha.qov.in).

IV. CONCLUSION

The pandemic has replaced the century-old chalk-talk teaching approach with a paradigm that is centred around technology. Policymakers are being forced by this disruption in educational delivery to figure out how to increase engagement at a large scale while also offering e-learning options and closing the digital gap. A logical and efficient educational approach is necessary for the growth of young brains in these trying times (Harasini 2001). In addition to assuring India's progress, it will help people build skills that will support their employment, productivity, health, and well-being for decades to come.

Technology has the power to reshape and reshape education. Empowerment makes education more sustainable by building relationships between educators and the adaptability of students. By integrating established theory, contemporary techniques and reflective practice, education can be truly empowering in the digital age.

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