Academe *Journal of Education & Psychology*
Volume-14, Issue-2, Year-2024 (July-December)
PP: 9- 17 *ISSN No: 2249-040X*

ICT IN HIGHER EDUCATION: ENHANCING EDUCATIONAL ACCESSIBILITY FOR ALL

Moromi Gohain

Research Scholar, Department of Teacher Education, Nagaland University, 797004, Kohima Campus, Meriema,

Gyanendra Nath Tiwari

Professor, Department of Teacher Education, Nagaland University, 797004, Kohima Campus, Meriema

ABSTRACT:

Information and Communication Technology (ICT) is pivotal in preparing learners as necessities in this 21st century. ICT in higher education has proven effective and efficient, enabling its applicability to every kind of student. It has exponentially provided access to vast knowledge, as it has the potential to overcome barriers, empowering learning experiences. NEP 2020 also emphasized using ICT as it enhances access to education for learners from diverse groups. Thus, the researcher in this paper attempts to present a review study and tries to highlight the significance of ICT in higher education and ICT in enhancing educational accessibility for all.

Keywords: Information and Communication Technology (ICT), Education, Accessibility, Learning, Barriers.

INTRODUCTION

Information and Communication Technology, often called ICT, refers to the various integrated tools, devices, and services mainly used for automating and communicating information in business, education, research, etc. ICT tools such as computers, Artificial Intelligence (AI), mobiles, Learning Management Systems (LMS), projectors, interactive whiteboards, online assessment tools, E-mails, and Google platforms have been extensively used in every dimension. It surrounds various dimensions of life such as companies, businesses, industries, the education sector, and viz-a-vis. According to UNESCO, “ICT is a scientific, technological and engineering discipline and management technique used in handling information, its application and association with social, economic and cultural matters."

Education has opened a world of possibilities that can lead to a better scope. The integration of ICT in the field of teaching and learning has improved the delivery of knowledge in every possible way. “We need technology in every classroom and in every student and teacher's hand because it is the pen and paper of our time and the lens through which we experience much of our world” (David Warlick, 2006). In today's world, when our society's activities are dominated by technology, the young minds in the classroom are technologically conscious. For them, electronic devices have become a way of life. Alex (2007) Students retain more information and learn when they use technology to organise and maintain their information. Using exciting videos, bright images, and interactive learning tools enhances the learning experiences and evokes more interest in the topic. Bingimlas (2009) mentioned that using ICT in the classroom proves to be very useful as it provides opportunities for the students to learn, and studying the obstacles to using ICT in education helps educators overcome these barriers. Bindu (2006) the advent of ICT in education helped improve education quality,

where teaching and learning eventually became an engaging, active process related to real life. Active and collaborative learning conditions facilitated by ICT help to develop a knowledge-based student community. Ratheeswari (2018) the use of ICT in classroom learning is vital as it provides opportunities for students to learn and apply in this 21st-century digital era. Also, the integration of ICT in education has dramatically helped the teacher present his teachings effectively and enabled the learner to learn in all educational programme. Shah & Upadhyaya (2017) all the process-based activities can be developed with the aid of ICT. ICT can use pedagogical innovation with new tools and support innovative organisations and technological innovations. Pearman & Chang (2010) ICT has the potential to offer the learner an opportunity to learn at their own pace and within the context of their environment, thus reducing the limitations associated with traditional learning settings. Ron (2002) with the world rapidly advancing towards digital media and informational technologies, the role of ICT in education has become increasingly important, and this importance in education will continue to grow and develop in the 21st century. Mondal & Mete (2012) the present higher education in India is experiencing a significant transformation in access, equity, and quality. Introducing ICTs to the higher education field has profound implications for the whole education process, especially while dealing with crucial issues of access, equity, management, efficiency, pedagogy, and quality.

OBJECTIVES OF THE STUDY

1. To study the significance of ICT in higher education.
2. To find out how the integration of ICT has enhanced educational accessibility for all.

SOURCES AND METHODOLOGY OF THE STUDY

The present study is a review study. Secondary method of data collection was adopted for the study. Data was collected through various secondary sources such as research articles, review of related literature, dissertations, theses, newspapers, the internet, and other secondary materials.

SIGNIFICANCE OF ICT IN HIGHER EDUCATION

The integration of ICT in education has brought about a massive transformational change, and its significance in higher learning is undeniable. Some of its importance is highlighted below.

1. Provide an opportunity for innovation and creativity: The integration of ICT in higher education has tried its best possible ways to overcome all the challenges and hurdles in disseminating knowledge and information. It has used various educational technology tools and services in the teaching field and the learning process. It has leveraged the power of computing, telecommunication, and multimedia to enhance the transmission and management of information. New emerging technologies have provided new opportunities for education and training as they have the capability to improve and facilitate collaboration, innovation, and creativity to the learners, teachers, and organisations as well. As the digital age continues to progress, the capacities of ICT have developed more to cultivate critical thinking skills among learners, leading to the formation of new innovative ideas, skills, and creativity.
2. Provide personalised learning options: The increasing demand for various adaptive learning technologies for ICTs in higher education has enabled customised learning experiences for learners. The students can now learn and progress at their own convenient time and place. It also allows the learner to improve his learning by

providing feedback and engaging with the contents of the learning materials that cater to their learning styles. Also, enabling the learner to enhance and foster a deeper understanding and acquire knowledge of the subject

3. Give a touch of real-world learning scenarios: The integration of ICT in education has widely contributed to bridging the gap between the real-world setting and theoretical knowledge. Educational technologies such as computer simulations, augmented reality, virtual reality, interactive multimedia tools, etc., have enhanced the students' ability to explore a wide range of knowledge, giving them a touch of real-world practical scenarios. For instance, integrating interactive and multimedia elements, when incorporated into the lessons with the help of ICT tools, captures the student's attention and makes learning take place in a real-life world as it engages the students. It has also increased the student's capability in problem-solving and critical thinking skills to a higher level.
4. Enables smooth transaction of teaching: With the increasing use of technology in the daily lives of humans affecting every activity with no doubt in the field of education, educators have benefited from the ITC tools to an enormous extent. The various availability of ICT tools that streamline administrative tasks like maintaining attendance records, attendance tracking, assessing and evaluating the students, grading the students, creating high-quality content materials, etc., has made teachers more efficient in their teaching profession. It has allowed them to stay focused more on instructional-related activities. It has also let the teacher adapt to the content, from the interactive presentations to the multimedia-rich lessons, to make learning more engaging, catering to the diverse needs of the learner's style.
5. Broad access to information: Along with the transition brought about by the ICT tools, it has enabled people of all ages to access a wide range of information, be it knowledge in the field of science, medicine, history, philosophy, agriculture, astronomy, geography, and research, etc. without no doubt it has enabled us to get access to a vast pool of information much faster and cheaper. Various technological platforms such as websites, social media sites like Facebook, Twitter, WhatsApp, quick response codes, podcasts, YouTube, mobile apps, etc, have enhanced quick access to vast information. Other Sources such as online databases, educational repositories, e-books, and various online educational sources have provided a wealth of knowledge at one's fingertip. Nevertheless, it has also promoted a self-directed learning and curiosity-driven approach towards education.
6. Helps in the preparation of future careers: Exposure to highly advanced technology and its usage in various dimensions has made the scenario more demanding and challenging in this current 21st century. However, integrating ICT into higher education has helped enrich the student's capabilities and capacities to meet the demands of the modern workforce and overcome the challenges in this digitally challenged society. The students' exposure to technology in the classroom has equipped them with digital knowledge, digital literacy skills, and abilities to manage digital tools. By getting familiarised with all these technological tools and expertise, the student has ensured they are ready to meet the challenges of technology-driven careers.
7. It enhances the teacher's professional development skills: ICT has no doubt brought about a transformation in every aspect of human life. In the education sector, it has undoubtedly enhanced the teachers' professional skills to a great extent. The

integration of ICT tools has provided ample opportunities for teachers to store and share their knowledge, information, ideas, thoughts, and high-content learning materials with learners habited across the globe. It has provided continuous and endless support for the professional development of the teachers by giving various opportunities such as making multiple professional courses available, webinars, and various collaborative platforms for the teachers to keep them updated with the current pedagogical trends.

8. Support research growth: ICT has become an integral element in the research process, empowering the researcher to explore vast and in-depth knowledge of complex phenomena. The evolution of the latest ICT tools has helped the researcher to critically analyse information, manage data, and apply appropriate tools and methodologies during the research process. It offered unprecedented opportunities to the researcher for data collection, analysis, and dissemination of knowledge or fact findings. It has also enhanced the researcher's cognitive skills, which eventually has helped to contrast, analyse, and create data rather than simply collecting data. However, ICT has also been applied in higher education institutions, mainly by focusing on research.

ICT IN ENHANCING EDUCATIONAL ACCESSIBILITY FOR ALL

Information and communication technology has enormously significantly enhanced educational accessibility for all. One of the chief contributions is that it supports the inclusion in the education of children with disabilities by enabling them to overcome various barriers that hinder their way of learning. ICT tools can support creative and cooperative learning environments where the disabled students are included in learning activities and have class or group roles or responsibilities (Obradovic et al., 2015). The learner can use computers with specialized software to record, edit, and share ideas, facilitate completing assignments on time, and improve motivation. With appropriate instructions, they can improve their language and writing skills (Quenneville, 2001). Article 24 of the United Nations Convention states that "persons with disabilities receive the supports required, within the general education system to facilitate their effective education. Article 9 of the Convention on the Rights of Persons with Disabilities (CRPD) discusses accessibility. It stated that the parties should take appropriate measures to ensure equal access to information, communications, and other services and emergency services: to promote the system, design, development, production, and distribution of accessible information and communication technologies and system at an early stage so that these technologies and system become accessible at minimum cost.

Education is a tool for bringing development in various economic, political, or socio-cultural dimensions. The right to education is considered one of the most essential rights of international human rights law. Chapter 23 of the New Education Policy 2020 discusses 'Technology Use and Integration.' It also mentions that the relationship between technologies used at all levels of education is bi-directional. The extensive demands and use of technology in teaching and learning have greatly helped remove language barriers and increased access for Divyang students. A wide variety of technological software is made available to many users, including students in remote areas and Divyang students. It has also helped develop educational planning and management. The NEP 2020 has also recognised the importance of optimising and expanding the existing digital platforms and the ongoing ICT-based educational initiatives to meet the current needs and future challenges. Also, it addresses technology usage for online and digital education to address equity concerns. Technology-based education platforms are better equipped and integrated across educational institutions for smooth transactions of teaching and learning practices. New inventive technologies such

as virtual and augmented reality equipment, artificial intelligence, block chains, smart boards, computing devices, and other forms of technology will be integrated into classroom teaching and learning as they will change not only the way students learn but also how they learn.

The evolution of emerging ICT trends in educational technologies has changed the means of teaching and learning, impacting both the lives of educators and learners at all levels and ensuring accessibility. It has affected how knowledge is imparted and provided greater flexibility for teachers and learners to learn. It ensures that the learners can access adequate knowledge without any obstacles. Technology has expanded learning beyond the traditional four-wall classroom, allowing the individual ample opportunities to continue learning. ICT has the potential to alleviate various barriers or constraints. The role of ICT and its emerging trends over time has enhanced and supplemented classroom teaching and learning to a great length. With the help of emerging trends in ICT, such as smartphones, digital platforms, and various software instructional learning tools, the geographical and economic barriers have been reduced to some extent. It has made possible for education to reach the masses by overcoming obstacles and constraints. It can also be seen from the NEP 2020 that it aims to empower and equip schools and teachers digitally. It also calls for a dedicated unit to establish the growth of digital technology, digital content, and capacity building for schools and higher education needs.

Incorporating ICT in the classroom involves changes in the school and its environment (Majo, 2003). In today's digital world, with the ever-evolving ICTs in higher education, it has undoubtedly played a crucial role in preparing students to face and overcome the challenges in this present technology-driven society. It has provided an opportunity for the students to monitor and manage their learning progress, to think critically, to become creative, ability to solve real-world problems and ideas to work collaboratively, and also help them to develop and adopt a global perspective toward issues and new ideas. Integrating technology in education has brought forth a transformative journey in student practical learning and teaching experiences. It has enabled the development and adoption of new pedagogy and teaching methodologies, fostering a more dynamic environment to create immersive learning experiences that would equip the students with digital skills, teamwork, critical thinking skills, collaborative projects, personalised learning experiences, research knowledge, etc. ICT has revolutionised education by empowering students and educators with innovative tools and resources to create and explore limitless new opportunities for lifelong learning experiences. Through proper planning and adequate integration of ICT resources, students have become active participants in their learning process. It has empowered the learners with all the requirements needed to thrive in this technology-driven world by breaking down all the barriers and fostering greater inclusivity in education.

As we all know, learning is a lifelong process, the integration of ICT has now impacted the concept of an individual's lifelong learning process. The emergences of adaptive ICT tools and facilities have provided vast arrays of multimedia resources to promote various online courses. ICT has dramatically enhanced the learner's educational opportunities by engaging the learner in lifelong learning activities according to one's own choice or interest in learning. Integrating ICT tools in the educational setting has increased access to learning, provided equal educational opportunities, and ensured lifelong learning. The rapid development of ICTs influenced the academic branches of lifelong training, continuing vocational training, and distance training. The arrival of modern web-based technologies and broadband networks also brought the arrival of e-learning and Open and Distance Learning (Athanasios et al., 2015). Technological platforms such as MOOCs(Massive Open Online Courses), personalised learning, collaboration and networking, multimedia learning, gamification,

mobile learning, Open Educational Resources (OERs), etc., have expanded access to vast educational opportunities, allowing the individual to learn and acquire knowledge, from anywhere and at any time as per to one's convenience. ICTs have made it possible to deliver learning content in various formats, allowing the learner to have a more engaging and interactive learning experience and take courses from top universities and institutions worldwide.

The numerous inventions of ICT tools and their integration into education have facilitated collaboration to a vast network, removing innumerable barriers. It has encouraged both the learners and the teacher to explore new ways of teaching and learning. With the help of ICT, it has become very convenient to disseminate knowledge to the students in groups or clusters. ICT has leveraged the opportunities for communication, collaboration, and learning. Multimedia features of ICT and fast access to information open up new possibilities for knowledge sharing and group work (Lehtinen, 2003). (Dillenbourg 1999). Various technological media, platforms, and computer-based technology have enabled learners to access information from anywhere and at any time. Educators and learners can now connect globally and share their innovative thoughts, creative ideas, perspectives, problem-solving ideas, etc. This interconnectedness has enhanced educational accessibility to every learner despite cultural differences, language differences, geographical locations, etc. ICT tools, by supporting collaborative work, have promoted cultural understanding. E-collaboration technologies have allowed people to bring diverse skills to collective ventures that eliminate the barriers of time, distance, and resources (Bessagnet et al., 2005). ICT has enhanced collaborative learning by enabling communication at any time and from any location (Thangasamy, 2023)

ICT has provided diverse tools that offer a vast array of multimedia resources. ICT has become an integral part of today education's teaching and learning process as it improves learning by making the class more fun and engaging. It increases the students' motivation, raises their interest, and makes them more involved in the learning process. Engaging various ICT tools such as interactive whiteboards, smart TVs, e-mails, Google platforms, computers, flipped classrooms, augmented learning, virtual reality learning, projectors, and various other tools has provided a platform for learners with different learning styles. It has provided equal opportunities for learning along with the normal ones. Up-to-date technology offers many methods of enhancing classroom teaching and learning (Ghavifekr et al., 2014). ICT has helped the students to develop new skills and to become creative, increasing their responsibility and sense of autonomy. It enormously caters to the interest of learners belonging to varied categories, leading them to a more curiosity-driven learning approach (Lefebvre et al., 2006). Furthermore, it promotes students' activity and participatory attitude in class. It has led them to express their thoughts, ideas, and understanding, preparing them to overcome the shortcomings of the present technology-driven world.

ICT integration in education has expanded to a great extent from the lower level to the higher level of learning. With the integration of ICT, it has provided a vast array of digital learning platforms and resources. In distance education, an open learning education system, ICT has played an essential role in disseminating education to the masses. It has made the delivery of course content materials easier with a click. The integration and support of ICT have helped to reach education to thousands of people across the globe. A wide range of various technologies has been designed and integrated to provide an effective mode of delivering courses as per the needs of the individual. It has enabled the learners to choose the medium that best suits their learning styles. The rapid development of information technologies leads to significant changes in every part of life involving the education process. They provide

opportunities to accomplish various instructional goals by responding to different learning styles (Bagapova et al., 2020). With an increasing trend of acquiring distance education through online learning, blended learning permits time, place, and space flexibility. Therefore, this type of education has been recently adopted by many educational institutions, and it has been expanding remarkably with ICT support (Hubackova & Ruzickova, 2011).

CONCLUSION

Technology has become an integral part of human activity in the present scenario. It has not only brought transformation in medicine, agriculture, e-commerce, industries, and businesses but has also strategically brought massive transformational changes in the field of education. The significance of the use of technology can also be seen highlighted in the NEP2020. It states that the extensive use of technological tools in teaching and learning helps remove barriers, increase Divyang students' access, and help properly plan and manage educational activities. The integration of ICT in education in this fast-paced and challenging technology-driven society has given individuals the potential to learn and share without any hindrances.

It has significantly improved accessibility to various educational resources by overcoming multiple barriers that stand as a hindrance in the way of learning. Students belonging to all learning categories and residing in every geographical location can now quickly access various learning materials. All these have been made possible with the invention of the latest ICT tools and their integration into the field of education.

However, ICT has revolutionised the ways how teachers disseminate knowledge and the means through which a student acquires knowledge. It has offered new teaching, learning, management, planning, and administration possibilities. The growing demands of technology have reshaped the education system in the 21st century and have proven to be an effective, efficient, and productive tool to be applied to every kind of individual and in every field of education. Nevertheless, it has enhanced educational accessibility, providing ample opportunities and being more inclusive and equitable to all groups of learners and educators by overcoming numerous challenges and barriers. Also, it is imperative to state that as we harness the potential of emerging trends of ICTs, it has further enhanced educational accessibility and bridged the gap brought about by the digital divide.

REFERENCES

1. Alam, A. (2021). National Education Policy-2020 and Integration of Information and Communications Technology with Education. Digital Education: Post Covid Era, 112–119. https://doi.org/10.13140/RG.2.2.29294.95042
2. Balaji, Dr. K., & Sahija, D. (2022). Effectiveness of ICT in enhancing learning procedure in Higher Education. Technoarete Transactions on Application of Information and Communication Technology(ICT) in Education, 1(2). https://doi.org/10.36647/ttaicte/01.02.a004
3. Bingimlas, K. (2009a). Barriers to the Successful Integration of ICT in Teaching and Learning Environments: A Review of the Literature. Eurasia Journal of Mathematics, Science and Technology Education, 5(3), 235–245. https://doi.org/10.12973/ejmste/75275
4. Chang, C., Pearman, C. J., & Farha, N. W. (2010). Assessing a Peer Evaluation Strategy. Journal of Educational Technology, 3(1), 69-84.
5. Diyal, S. B., & Pandey, R. (2002). Integration of ICT at Secondary Level School. Innovative Research Journal , 1(1), 28–41.

6. Drigas, A. S., & Tsolaki, V. (2015). Lifelong Learning and ICTs . International Journal of Recent Contributions from Engineering, Science & IT, 3(2), 15–20.
7. Dubey, V., & Kanvaria, V. K. (2020). ICT in higher education: Overcoming the challenges. Role of ICT in Higher Education, 411–422. https://doi.org/10.1201/9781003130864-31
8. Fallows, S., & Bhanot, R. (n.d.). Quality in ICT-based Higher Education. Quality Issues in ICT-Based Higher Education, 1–6. https://doi.org/10.4324/9780203416198_chapter_1
9. Fu, J. S. (2013). ICT in Education: A Critical Literature Review and its Implications. International Journal of Education and Development Using Information and Communication Technology , 9(1), 112–125.
10. Ghavifekr, S., Kunjappan, T., Ramasamy, L., & Anthony, A. (n.d.). Teaching and Learning with ICT Tools: Issues and Challenges from Teachers' Perceptions. Malaysian Online Journal of Educational Technology, 4(2), 38–56.
11. Ghavifekr, S., & Rosdy, W. A.W. (2015). Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools. International Journal of Research in Education and Science (IJRES), 1(2), 175–191.
12. Griffiths, M. (n.d.). Building quality into ICT-based Distance Education. Quality Issues in ICT-Based Higher Education, 48–60. https://doi.org/10.4324/9780203416198_chapter_5
13. Higher Secondary Education and ICT. (2020). Encyclopedia of Education and Information Technologies, 857–857. https://doi.org/10.1007/978-3-030-10576-1_300294
14. https://www.cegr.in/Role-of-ICT-in-Improving-Quality-of-Higher-Education.php. (.21.3.2024.).
15. https://www.lisedunetwork.com/ict-concepts-and-meaning-definition/#:~:text=According%20to%20UNESCO%20%E2%80%9CICT%20is,%2C%20economical%20and%20cultural%20matters%E2%80%9D.
16. ICT and innovation in teaching learning methods in higher education. (2022). Innovations in Higher Education Teaching and Learning. https://doi.org/10.1108/s2055-3641202245
17. N, B. C. (2016). Impact of ICT on Teaching and Learning: A literature Review. International Journal of Management and Commerce Innovations, 4(1), 24–31.
18. Negi, S. (2020). Role of ICT in research and development in Higher Education. Role of ICT in Higher Education, 107–111. https://doi.org/10.1201/9781003130864-9
19. Pal, P., & Kumar, R. (2020). The role of ICT in higher education: Emerging issues and challenges. Role of ICT in Higher Education, 199–211. https://doi.org/10.1201/9781003130864-17
20. Rana, K., & Rana, K. (2020). ICT integration in Teaching and Learning Activities in Higher Educaton: A case study of Nepal's Teacher Education. Malaysian Online Journal of Educational Technology. https://doi.org/10.17220/mojet.2020.02.003

21. Ratheeswari, k. (2018). Information Communication Technology in Education. Journal of Applied and Advance Research, 3(1), S45–S47. https://doi.org/10.21839/jaar.2018.v3iS1.169

22. Sengupta, E., & Blessinger, P. (2022). Introduction to ICT and innovation in teaching–learning methods in higher education. Innovations in Higher Education Teaching and Learning, 3–9. https://doi.org/10.1108/s2055-364120220000045001

23. Shah, M. B., & Upadhyaya, A. (2017). ICT for Creativity and Innovation in Education. International Journal of Advance Research and Innovative Ideas in Education, 2(1), 132–134.

24. Subasi, G., Tas, S., & Solmaz, F. (2022). Using ICT Tools in Distant EFL Classes: The Voice of Teachers and Students. The Turkish Online Journal of Educational Technology, 21(4), 1–17.

25. Veena, S., & Senthil Kumar, R. (2023). Revolution of ICT in higher education. International Journal of Science and Research (IJSR), 12(9), 1605–1608. https://doi.org/10.21275/sr23919110739