

Role of Information and Communication Technology in Higher Education Sector

Dr. Mandeep Kaur

Assistant Professor

Email mandip87kaur@gmail.com

University School of Financial Studies, Guru Nanak Dev University, Amritsar

Abstract

The present times are characterized by immense change and complexity in the structure of higher education system due to widespread of knowledge. Higher education fosters critical thinking, effective idea sharing, and comprehension of challenging subjects. ICT can be used as a tool to help with higher education-related problems. ICT applications give educational institutions a competitive edge by improving student and teacher services, increasing productivity, and creating more engaging learning environments. It is advised to create an environment that supports the usage of ICT in higher education sector. Encouraging instructors to include ICT into their professional job may help them acquire the information and skills necessary for successfully integrating ICT into teaching, research, and administrative tasks.

Keywords: Higher education, ICT, teaching, research

1. Higher Education

Higher education is significant because it generates information that enhances humanity's collective scientific and cultural wealth and develops our understanding of the natural and social worlds. In addition to disseminating knowledge, higher education requires students to build and cultivate their cognitive character. Numerous advantages of a higher education include stable finances and a successful profession. In other facets of life in the twenty-first century, a college education is crucial. Getting a higher education can improve prospects and one's quality of life in general. People now recognize the value of a college education and how it can lead to more comfortable living conditions and greater employment opportunities.

In addition to preparing students for their chosen field, higher education fosters critical thinking, effective idea sharing, and comprehension of challenging subjects. Essential qualities like self-control, teamwork, and job observation are also taught to students. They can become more professional and acquire several abilities relevant to the workplace with higher education. It also boosts self-esteem and fosters the development of confidence. Not only do they develop strong coping mechanisms for life's psychological obstacles, but they also have higher satisfaction rates.

In the twenty-first century, improving personal lives and facilitating the smooth operation of communities and societies are two of the most important advantages of higher education. According to the Organization for Economic Cooperation and Development, educated people participate more actively in society activities like volunteering, voting, interpersonal trust, and political interest (OECD). One is more likely to take part in these events and activities when they possess greater information (Vista, 2019).

People with more education are also more aware of their own abilities. This makes it easier for individuals to grow in life and have a positive impact on the world. They tend to feel better and happier about living an educated life when they devote one, two, four, or six years to learning and growing themselves. Those who pursue higher education

have the chance to concentrate on the pressing moral, ethical, legal, physical, and spiritual issues facing humanity. At the apex of the pyramid, postsecondary education is essential for training educators for the classroom.

2. Higher Education and Technology

ICT can be used as a tool to help with a few higher education-related problems. The entire educational process, from investment to technology use in addressing important issues of access, fairness, management, efficiency, pedagogy, quality, research, and innovation, is profoundly affected by the implementation of ICTs in higher education. ICT applications give educational institutions a competitive edge by improving student and teacher services, increasing productivity, and creating more engaging learning environments.

Role of ICT in teaching and Learning

Utilizing ICT in education can enhance accessibility and equity by offering online learning opportunities. Achieving this involves connecting educational institutions, creating virtual laboratories, constructing databases, providing access to expert lectures, and capitalizing on technological advancements in various industries and research organizations. Additionally, replacing traditional teaching methods with innovative approaches like PowerPoint presentations, animations, simulations, and video clips, and utilizing Audio-Visual aids and LCD projectors, can further enhance the teaching and learning process. Integration of ICT also addresses the shortage of qualified educators and provides avenues for delivering high-quality education, fostering inventive learning techniques, and promoting diverse educational experiences.

Research and ICT

ICT plays a crucial role in higher education by improving the quality of research and increasing the participation of individuals across different fields. It enables global connectivity in various subjects and supports social networking. Researchers benefit from time, cost, and effort savings in their studies. The availability of different software makes it easier to collect and analyze large datasets. With the rapid growth in bandwidth and computing power, researchers can efficiently download and process vast amounts of data to ensure accuracy and reliability. (Alam, 2016)

Administration and ICT

ICT has a significant impact on the management of educational institutions. It effectively utilizes current resources to simplify administrative tasks such as student, staff, and general administration. This is achieved by reducing paperwork and implementing digital record-keeping systems to facilitate easy retrieval of information. ICT also streamlines student monitoring and management processes, encompassing admission, enrollment, fee payment, evaluation, performance analysis, and placement.

ICT transforms the idea of teacher-centered education into student-centered learning, with teachers serving as coaches, mentors, and knowledge facilitators. The learning environment now revolves around real-time problem-solving techniques. Information technology has altered traditional research methods, prompting researchers to conduct more feasibility studies. As ICT continues to evolve, researchers can now complete their work in a shorter timeframe, inspiring upcoming researchers to tackle more extensive research projects (Alam, 2016).

The implementation of technology in education is a method that will contribute to enhancing the quality of education in India. It is also reshaping the delivery of education in the country. During the COVID-19 pandemic, the integration of technology in education has brought about a significant shift from teacher-focused education to student-centered education. Virtual classrooms and various online resources are facilitating the continuation and improvement of interaction between teachers and students, resembling the traditional classroom experience. Looking ahead, intelligent classrooms are enabling various activities such as parent-teacher meetings and staff/management

gatherings, promoting necessary interactivity. Technology-driven education fosters a more transparent and equitable education system. Digital education can only be successfully implemented with the availability of basic amenities like internet connectivity, availability, and affordability of online systems, PCs, laptops, software, etc. It also requires balanced coordination between course content, educators, technology, and course participants. However, we cannot ignore the reality that, in these dire circumstances, COVID-19 has only speed up the adoption of technology to ensure that everyone has access to high-quality education (Dhanwan, 2020). In this case, the government's Digital India plan is showing to be an essential tool for resolving the COVID-19 crisis. The adoption of digital technology has accelerated due to the lockdown. Now is the perfect moment to try new things and implement innovative methods to give students who are unable to visit campuses. Through online learning and assessment, there's an opportunity to increase productivity and efficiency while gaining new and improved professional skills and knowledge. In this case, the teacher's role is crucial to the efficient implementation and use of ICT in teaching and learning.

3. ICT tools used in Education:

In today's postmodern world, ICT tools for teaching education are crucial to society. Technological advancements in recent years have brought about a paradigm shift that has altered people's thought processes and instructional methods. Hence, educators must modify their approaches to suit the current environment. The resources listed below are available for use in the classroom by teachers.

- **Google Docs:** Students can work together on a project or publish homework assignments to the class from Google Docs, which teachers can use to communicate taught content with their students.
- **Educreations:** Although some argue that the whiteboard as we know it is extinct, Educreations has given it a second lease on life. It provides an opportunity for educators to create interactive whiteboards that include tutorials and lessons that they can share with their students. Making graphs, recommendations, animations, and other instructional materials is easy, and the teacher can even record audio to use in a story. It can be distributed to students by an instructor via social media, email, or in the classroom.
- **Video Chats:** Students can participate in distance learning and share their experiences by using video conferencing tools like Skype to hold online meetings via webcam with professionals located far away or with other classrooms. Additional instances of video conversations are Microsoft Teams, Zoom, and Google Meet.
- **Dropbox:** With its many features, Dropbox enables educators to share particular folders with their pupils, who can then access them from their PCs. Students can also access and edit from their tablets or cellphones using a mobile application.
- **YouTube and TED Talk:** You can use TED Talk's collection of video lectures, which span a variety of subjects, to enhance what your teacher is teaching in the classroom. Teachers can use YouTube's assortment of videos on many subjects to enhance their instruction.
- **Edublogs:** Teachers should take advantage of this useful tool as blogging has become ingrained in Internet culture. The WordPress-powered blogging platform Edublogs was created with educators in mind. Making online documents—like assignments and handouts—that instructors may distribute to their students can be useful, and it even allows for the use of images.
- **Google Classroom:** Available to everyone with a personal Google account, Classroom is a free service for educational institutions, non-profits, and schools. The classroom facilitates smooth communication between teachers and students. It's simple to set up classes, give homework, interact, and maintain organization with Classroom.
- **Socrative:** One of the most difficult parts of teaching is scoring, and Socrates is a great method to make the process easier. It will be simpler for the teacher to provide their pupils quizzes and reports in addition to helping them receive a higher grade.

- **Social media:** Teachers can share information and notes with students via social media networks. Sharing ideas is the most generally regarded usage of this kind of network. Instantaneous opportunities to follow and learn from authors, educators, educational leaders, and professional heroes are provided by spaces like Twitter (<https://twitter.com/>), LinkedIn (<https://in.linkedin.com/>), Facebook (<https://www.facebook.com/>), and Google+ (<https://plus.google.com/>). These individuals not only share information and resources but also frequently initiate and invite direct engagement.
- **Presentation Software:** Occasionally, visual aids can be useful to enhance instruction, spark discussion, or permit teaching outside of the classroom. It is possible to use tools like PowerPoint that are intended for this purpose improperly. Prezi, Haiku Deck, Google Presentation, and Zoho Presentation are online applications for creating presentations.
- **Google Hangouts:** Google offers a range of tools tailored specifically for educators. Students can communicate via video from a distance using Google Hangouts. It's a fantastic method for holding online talks and debates.

4. ICT Resources for Scholarly Work

For every research phase, the following ICT resources are available:

Search for Data

It is important for researchers to make sure they have access to research databases related to their field of study. Through free online resources that offer connections to scholarly publications, journals, published studies, and other academic papers, they can do literature searches. Here are a few of them: Jurn; Academia.edu; Google Scholar; Springer; Research Gate; iurn.org; RefSeek; ERIC; Virtual Libraries

Save and Organize Data:

- Mendeley: To use Mendeley, a researcher must first download and upload the manuscript as a PDF. After that, the program annotates the titles, authors, and other details. It also syncs the documents to other devices and the cloud, ensuring that the user won't lose their data in the event that their machine malfunctions. As they work on their literature study, it also enables them to incorporate the citations in the proper format. Similar functions are provided by Google Drive, Zotero, and EndNote, which all facilitate collaboration and sharing among team members.

Data collection:

Direct email, online questionnaires, and other electronic tools can all be used to gather data online. The researcher can create a questionnaire or upload one and gather data using a variety of online portals. • Google forms; Surveymonkey.com; Psychsurveys.com

Data Analysis:

After the data have been coded, analysis can begin. They can be coded online using the website used for data collection, or they can be coded in MS Excel or Access if the data is gathered manually. Following coding, the researcher needs to choose which programs to employ for data analysis and which inferential statistics to apply. <http://www.statcrunch.com>; <http://lowry.into.html>; faculty.vassar.edu The website <https://home.clara.net/sisa/index.htm>

Grammar and Spelling Checker:

Correct grammar is essential to a well-written literary analysis, therefore it's helpful to have some tools on hand to verify or double-check definitions, spelling, and term usage. You might find the following resources helpful: Dictionary.com, Grammarly, Thesaurus-online

Take Notes and Synthesis

A straightforward piece of software called Evernote makes it easier to store and retrieve ideas at a later time. Evernote offers a free basic plan and ensures that all data is synchronized and accessible on a daily basis. Scoop.it, Biblio, Diigo, and Educlipper are further programs.

Microsoft's equivalent of Evernote, OneNote, is comparable to Evernote. It makes it possible to keep all study materials in one location. OneNote's user interface may look familiar to those who are comfortable using other applications that are part of Microsoft Office Suite 18. Notability and Google Keep are also doing the same thing.

Checking Plagiarism

Since the Unplag plagiarism checker detects text similarities in student work, it is ideal for identifying academic dishonesty. Teachers have the ability to add papers to their profile library and do searches on submitted works using the Internet or other library files. Following assessments, educators have the option to submit reports on plagiarism or examine the library's check history. Students might also be contacted and sent a plagiarism report.

Publication:

Academic institutions may choose to publish the results of their study online. They are able to publish their work and submit their manuscript to open access publications.

Elsevier's Journal Finder is a program that assists educators in identifying journals that would be the most appropriate for publishing their scholarly articles.

- **Journal Guide:** Select the most appropriate journal for their study. (Blog entry)
- **Journal Reviewer:** Compiles user-submitted data regarding their encounters with the review procedures of scholarly journals.
- **Journalists:** An academic author-run site that provides reviews of academic authors' experiences with academic publications.
- **RoMEO** - Learn about self-archiving and publisher copyright rules.
- **SciRev:** To help educators choose where to submit their articles, share your experience as a teacher going through the scientific review process and learn from others. (Blog Entry).

5. Conclusion

ICT has a significant impact on daily living. ICTs' ability to reach students wherever they are at any time or location has the potential to bring about radical shifts in the way that education is currently practiced. Through the provision of numerous programs and plans pertaining to the integration of ICT in higher education, the Indian government and UGC are also promoting ICT. ICT has the power to enable the world's finest teachers' output to be used in classrooms everywhere. With self-study, ICT can expedite the road to a degree and expand learning opportunities. ICTs can develop into helpful resources to assist educators. ICT facilitates the creation or improvement of lesson plans, idea sharing, information gathering, and the discovery of free simulations and animations to enhance lectures (Sagar, 2007).

These days, a range of information and communication technologies (ICTs) can help with both the actual process of learning and the delivery of instruction. Additionally, ICT can support global networking and collaboration in professional development and education. More and more data points to the possibility that ICT can offer modern teachers more adaptable and efficient means of pursuing lifetime professional development (Sagar, 2007).

It is advised to create an environment that supports the usage of ICT. Teachers ought to be encouraged to increase their ICT knowledge and proficiency. Technology infrastructure ought to be offered to address the current difficulties

in education. There should be an attempt to minimize and repress the elements working to prevent ICT use in the establishment. It is important for faculty members to use and integrate ICT. Encouraging instructors to include ICT into their professional job may help them acquire the information and skills necessary for successfully integrating ICT into teaching, research, and administrative tasks.

References

- Alam, D. M. M. (2016). Use of ICT in higher education. *The International Journal of Indian Psychology*, 3 (4), 163-171. <https://doi.org/DOI:10.25215/0304.208>
- Chawinga, W. D. (2017). Taking social media to a university classroom: Teaching and learning using Twitter and blogs. *International Journal of Educational Technology in Higher Education*, 14(1), 3. <https://doi.org/10.1186/s41239-017-0041-6>
- Devi, S., Rizwaan, M., & Chander, S. (2012). ICT for quality of education in India. Retrieved July, 22, 2017, <http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.415.5661>
- Dhanwan, B. (2020, May 5). COVID-19: How smart classrooms are transforming India's education system. *The Financial Express*. <https://www.financialexpress.com/education-2/covid-19-how-smart-classrooms-are-transforming-indias-education-system/1948670/>
- Gazi, A., & Arikan, A. (2015). The use of the internet and Web 2.0 tools among EFL instructors. *Mediterranean Journal of Humanities*, 1, 313-325. Retrieved from <https://doi.org/10.13114/MJH.2015111386>.
- Maheshwari, U. P. (2013). A study on the practice of ICT among the students and teachers of Technical universities and its impact on their communication behavior. Retrieved from <http://hdl.handle.net/10603/27796>.
- Sagar, K. (2007). *ICTs and Teacher Training*. Authors Press. Delhi.
- Sugar, W., Crawley, F., & Fine, B. (2004). Examining teachers' decisions to adopt new technology. *Educational Technology and Society*, 7(4), 201-213. Retrieved from <https://eric.ed.gov/?id=EJ853756>
- Vista. (2019, November 26). The importance of higher education in the 21st century. Vista College. <https://www.vistacollege.edu/blog/resources/higher-education-in-the-21st-century/>