

भारतीय ज्ञान परम्परा एवं शिक्षा



संपादक

डॉ. देबकी सिरोला

डॉ. सिद्धार्थ कुमार पोखरियाल

सागर सिंह सिरोला



डॉ. देबकी सिरौला, उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी में स्कूल ऑफ एजुकेशन विभाग में सहायक प्राध्यापक के पद पर कार्यरत हैं। वर्तमान में बी.एड., एम.ए., पी.-एच.डी. की कक्षाओं में शिक्षण एवं शोध निर्देशन के कार्य में संलग्न हैं। आपने कुमाऊँ विश्वविद्यालय, नैनीताल में शिक्षाशास्त्र विषय में एम.ए., एम.एड. एवं पी.-एच.डी. की उपाधि प्राप्त की है। शिक्षाशास्त्र विषय में हो यू.सी.ई.ए.ए.टी. परीक्षा उत्तीर्ण किया है। आपने शिक्षा संकाय, एम.एस.के. कैम्पस अल्मोड़ा, कुमाऊँ विश्वविद्यालय, नैनीताल में सहायक प्राध्यापक के पद पर बी.एड. एवं एम.एड. कक्षाओं में शिक्षण कार्य किया है और बी.एड. स्कूल इंटरशिप का पर्यवेक्षण और एम.एड.-फोल्ड अटैचमेंट कार्य का पर्यवेक्षण किया है। आप उत्तराखण्ड मुक्त विश्वविद्यालय में सहायक परीक्षा नियंत्रक के पद पर कार्य कर चुकी हैं। आपने 04 कार्यशाला एवं 01 राष्ट्रीय संगोष्ठी का आयोजन, आयोजक सचिव के रूप में किया है और 01 अंतर्राष्ट्रीय सेमिनार में सह-संयोजक के रूप में सहभागिता किया तथा शोध पत्र प्रस्तुत किया है। इसके अतिरिक्त राष्ट्रीय एवं अंतर्राष्ट्रीय सेमिनार/वेबिनार/कॉन्फ्रेंसों में 32 से अधिक शोध

पत्रों का प्रस्तुतीकरण एवं सहभागिता किया है। आपके यू.जी.सी. लिस्टेड एवं यू.जी.सी. केंद्र लिस्टेड जर्नल में 12 शोध पत्र एवं 14 सम्पादित पुस्तकों में अध्याय प्रकाशित हैं। आपने 08 संकाय संबद्ध कार्यक्रम में सहभागिता किया है। शिक्षक शिक्षा में 2 ऑरिएंटेशन प्रोग्राम और रिफ्रेशर कोर्स ग्रैंड 'ए' के साथ सफलतापूर्वक पूरा किया है। ऑनलाइन- यूजीसी मासलीय मिरान शिक्षक प्रशिक्षण में भाग लिया और सफलतापूर्वक पूरा किया। आपने स्पेशल बी.एड., ओडी.एल बी.एड. एवं पी.-एच.डी. कक्षाओं में विभिन्न शिक्षण व्याख्यान दिये हैं। इसके अतिरिक्त पाठ्यचर्या एवं विभिन्न शिक्षण विषयों पर रेडियो वार्ता और वीडियो व्याख्यान दिए हैं। बी.ए. एवं एम.ए. (शिक्षाशास्त्र) की विभिन्न पुस्तकों में इकाइयों का लेखन एवं सम्पादन का कार्य किया है। गुरु फाउन्डेशन रोहताक (हरियाणा) द्वारा उल्कृष्ट शिक्षक सम्मान 2024 से सम्मानित किया गया है।



डॉ. सिद्धार्थ कुमार पोखरियाल उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी में स्कूल ऑफ एजुकेशन के विशेष शिक्षा विभाग में सहायक प्राध्यापक के पद पर कार्यरत हैं। आप विगत 10 वर्षों से विशेष शिक्षा के क्षेत्र में अत्यंत कार्य कर रहे हैं। वर्ष 2021 में केन्द्रीय सामाजिक न्याय व अधिकारिता मंत्रालय, भारत सरकार की तरफ से आपके विभाग के कार्य और उपलब्धि को देखते हुए उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी को पुनर्वसि पुरस्कारों के विकास में संलग्न सर्वश्रेष्ठ साठवत्सपरिषद के रूप में मान्यता महासंघ राष्ट्रीय श्रमती शैली मुर्ती जी द्वारा राष्ट्रीय पुरस्कार से सम्मानित किया गया। आप विशेष शिक्षा पाठ्यक्रम के समन्वयक भी हैं। आपने एम.ए. (मानविकी), एम.एस.सी. (जल विज्ञान), एम. एड. (सामान्य एवं विशेष शिक्षा), एम.फिल तथा पी.-एच.डी. (शिक्षा) में किया है। वर्ष 2015 से उत्तराखण्ड मुक्त विश्वविद्यालय में विशेष शिक्षा विभाग की स्थापना के उपरान्त भारतीय पुनर्वसि परिषद से सुविधित, श्रवण बाधित, बौद्धिक अक्षमता, अधिगम अक्षमता में बी.एड. विशेष शिक्षा एवं आधारभूत पाठ्यक्रम जैसे विषयों के संचालन के लिए भारतीय पुनर्वसि परिषद से

एमओयू हस्ताक्षरित करवाने में विशेष भूमिका निभाई और इन पाठ्यक्रमों का सफलतापूर्वक संचालन विशेष शिक्षा विभाग के माध्यम से किया गया। आपके द्वारा विशेष शिक्षा में विभिन्न पुस्तकों को लिखने के साथ-साथ उनके सम्पादन तथा बी.एड. विशेष शिक्षा की पुस्तकों में इकाई लेखन और उनके सम्पादन करने के साथ कई राष्ट्रीय व अंतर्राष्ट्रीय सेमिनारों में विषय विशेषज्ञ के रूप में प्रतिभाग किया गया और सत्रों को अक्षमता को गई। विश्वविद्यालय की ओर से आपके द्वारा उत्तराखण्ड राज्य के सुदूर क्षेत्रों में दिव्यांगजनों के सराविककरण व उनके अभिभावकों के लिए भी समय-समय पर कार्यशालाओं का आयोजन किया जाता रहा है।



सागर सिंह सिरौला, शोधार्थी, (शिक्षाशास्त्र) कुमाऊँ विश्वविद्यालय, नैनीताल।

शैक्षिक योग्यता : एम.एस.सी. (सामान्यशास्त्र), बी.एड. एम.ए. (शिक्षाशास्त्र), एम.एड., एम.एस.एम.ई.-ए.डी.सी.ए.

शोध प्रकाशन : विभिन्न राष्ट्रीय एवं अंतर्राष्ट्रीय शोध पत्रिकाओं में 21 शोध पत्र प्रकाशित। 18 से अधिक राष्ट्रीय एवं अंतर्राष्ट्रीय शोध संगोष्ठियों एवं कार्यशालाओं में सहभागिता एवं शोध पत्र वाचन। विधुवन केन्द्रीय विश्वविद्यालय, कोर्सिपुर नेपाल द्वारा 'भारतीय ज्ञान परम्परा एवं नेपाल ज्ञान परम्परा में अन्तर्सम्बन्ध' शीर्षक पर प्रस्तुत किए गए शोध पत्र पर "उल्कृष्ट अन्वेषक पुरस्कार" द्वारा सम्मानित किया गया है। शिक्षा मंत्रालय, भारत सरकार द्वारा आयोजित किए गए खरीदा से वर्ष-2024 कार्यक्रम में प्रस्तुत किए गए शिक्षा विचारों के आधार पर प्रधानमंत्री श्री नरेंद्र मोदी द्वारा विशिष्ट सम्मान प्रश्न प्राप्त है।

भारतीय ज्ञान परम्परा एवं शिक्षा



डॉ. देबकी सिरौला
डॉ. सिद्धार्थ कुमार पोखरियाल
सागर सिंह सिरौला



भारतीय ज्ञान परम्परा एवं शिक्षा



संपादक

डॉ. देबकी सिरौला
डॉ. सिद्धार्थ कुमार पोखरियाल
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भारतीय ज्ञान परम्परा एवं शिक्षा

सम्पादक

डॉ. देबकी सिरोला

सहायक प्राध्यापक

शिक्षाशास्त्र विद्याशाखा

उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी (नैनीताल) उत्तराखण्ड |

डॉ. सिद्धार्थ कुमार पोखरियाल

सहायक प्राध्यापक,

शिक्षाशास्त्र विद्याशाखा

उत्तराखण्ड मुक्त विश्वविद्यालय, हल्द्वानी (नैनीताल) उत्तराखण्ड |

सागर सिंह सिरोला

शोधार्थी (शिक्षाशास्त्र)

कुमाऊँ विश्वविद्यालय, नैनीताल उत्तराखण्ड |

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Transforming Indian Education: The Impact of ICT

Tools and Technologies

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Abstract

Information and Communication Technology (ICT) involves computers, software, data storage, and processes that help us to communicate with others. Earlier, the only way of learning was classroom teaching, and for that, learners used to travel to far places, which was time-consuming. However, the whole scenario has now changed. Today, our learning is mainly dependent on ICT and its emerging tools. It has transformed our lifestyle and work efficiency globally because it helps us work faster. A classroom lacking projectors, CCTV cameras, a digital board, and Wi-Fi is often considered under-equipped or outdated. Everyday, we witness new inventions in the field of ICT. Technology plays a crucial role in enhancing our learning experience in today's educational environment. During the COVID-19 pandemic, academicians and learners faced challenges because lockdowns were imposed worldwide, affecting the smooth teaching and learning process flow. As a result, many inventions emerged that greatly assisted in overcoming these challenges. The article focuses on modern ICT tools that help promote and develop the Indian education system.

Abstract: Information Technology, Computer, Communication, Education, Tools.

Introduction:

India has a vast education system which includes a variety of educational institutions. We can divide our educational system into various categories, i.e. primary, upper primary, secondary and higher secondary education, followed by higher education and vocational training. India has about 580 million people in the age bracket of 5-24, so we have a massive opportunity in the education sector. It has over 250 million school-going learners, more than any other country worldwide. These learners are enrolled in primary education, and higher education learners are enrolled in Colleges and Universities. India had 43.3 million learners enrolled in higher education in the 2021-22 session, including 22.6 million male and 20.7 million female learners (Iftikhar, F. 2024). The Ministry of Education governs the Indian education system, which implements the National Education Policy. The Ministry of Education is divided into two departments: the Department of School Education and Literacy, which looks after primary, secondary and higher secondary education (Ministry of Education).

Further, for Adult education and literacy, the Department of Higher Education deals with college and University level education, technical education, scholarships, etc. The whole Indian Education System can be divided into two parts: Private and Government. In India, the private education system is preferred by parents at the school level, but at the higher level, they prefer government institutions. India stands in second position in terms of the maximum number of schools. Similarly, India is on the third position regarding the maximum number of colleges and Universities, and the USA and China are on the first and second positions (NIRF. n.d.). Earlier, the whole education system was manual, but now, the whole system is based on Information and Communication Technology (ICT), which has smoothened the teaching and learning process. ICT includes computers, smartphones, internet and telecommunication networks. It has not only revitalised education but also the business and entertainment industry. ICT has facilitated open and distance learning a lot because now learners sitting far away can join online counselling classes, read digital copies of the study material and submit their online assignments.

Variety of ICT Tools Used by Educational Institutions:

ICT greatly helps the modern education system; we cannot imagine teaching and learning without various technical tools. Learners and academicians use these tools in different

education systems according to their interests, motives or availability. The following are the primary ICT tools used these days:

- **Learning Management Systems (LMS):**

Learning management systems are essential tools that help transform conventional face-to-face learning into online learning. LMS provides a common platform where teaching and learning can be done smoothly. It is a centralised platform where learners can get course materials, do quizzes, and complete assignments. Both instructors and learners can communicate with each other; some examples of LMS are Moodle, Blackboard, and Canvas (**Georgiana, E., & Paraschiv, S. 2023**).

- **Digital Content:-**These study materials are available free and sometimes also paid. The majority of the learners either study in institutions or prepare for competitive examinations with the help of available e-books and online videos.

- **Social Media Platforms:-**Institutions and academicians can create groups to share information about the members' common interests. Some important social media platforms are Facebook, Instagram, Twitter and YouTube.

- **Virtual Reality (VR) and Augmented Reality (AR):**

These help to understand concepts in a better way. Using such tools helps you see places and events as you meet people. These help you to see 360 views of the places. In Virtual Reality (VR), a person uses headsets that isolate you from the real world and allow you to interact with objects and environments.

- **Online Classes:-**Nowadays, These are prevalent forms of classes. Where teachers and learners connect with an online tool, for example, Zoom Meeting or Google Meeting platform. Such tools became popular during the period of COVID-19 pandemic.

- **Online Learning Apps:-**Many online learning apps are popular among learners, offering online classes and reading material. In India, some of the most popular learning Apps are Byju's, Unacademy, Toppr, Vedantu, Physics Wallah etc.

- **Artificial Intelligence (AI):-**These tools are popular among academicians and learners. Here you can search anything, and as a result, you find unique content. It is ok if these tools are used as a helping tool. Otherwise, learners may face AI plagiarism-related issues.

- **Open Educational Resources (OERs):-** OERs are freely available, openly licensed and easily accessible. Learners can find study materials, video content, test series, etc.
- **Digital Assessment Tools:-** Many online assessment tools allow learners to participate in quizzes and puzzles. Here, learners can take exams and get immediate feedback. Teachers can also use these tools to assess their learners' progress.

Impact of ICT on Education:

ICT has revolutionised the whole education system, transforming traditional teaching and learning methods into modern methods. Because of ICT tools, education is accessible to everyone, including learners residing in hilly, desert areas, forests or villages. Without ICT knowledge, a teacher cannot teach interactively; similarly, learners cannot learn additional knowledge and complete their projects on time. ICT has a significant impact on the world's education system. Here are some key areas where ICT has made a significant impact.

- **Response to COVID-19 Pandemic:** During the period of COVID-19, all academic institutions were closed, which created an issue with the smooth functioning of the teaching-learning process, but due to ICT and its innovations, the majority of the learners joined their classes in online mode. An uncountable number of webinars were organised on different topics. Therefore, it can be said that COVID-19 has dramatically affected the education system, but not very much.
- **Innovative Teaching Methods:** Earlier, the face-to-face teaching method was the only option for learning, but due to ICT innovations, now teachers can use interactive teaching methods, for example, whiteboards, projects, virtual and augmented reality, online meeting tools, video lectures, radio talks, Now, students learn more interactively, and if they miss any information, they have an opportunity to watch the recorded lectures.
- **Inequality:** ICT and its innovations are open to everyone, but due to the high cost of the gadgets, software and WIFI, every learner cannot use available information equally. Rich people can purchase costly devices, software and superfast and Wi-Fi networks and can get updated information, but on the other hand, a poor person will not be able to avail of such, so he will never be able to give competition.

- **Personalised Learning:** Using ICT tools in education allows a learner to learn whatever he wants. He can watch the same videos again and again. It means learning depends upon his choice of learning, but in classroom teaching, a teacher teaches whatever he wants to teach, and if a learner misses any particular class, then he cannot hear the same lecture again and again; therefore, ICT tools are more user-friendly than classroom teaching.
- **Teaching Issue:** While using different ICT tools in education, learners may face technical issues which can disturb their learning. Suppose a teacher teaches an online class, and suddenly, the network goes down. Then, he will not be able to deliver his lecture properly, but in an offline class, a teacher can do it smoothly.
- **Data Privacy and Security:** In online education, overuse of ICT tools can increase the risk of data loss or affect the user's privacy. In today's scenario, this is a significant challenge and keeping ourselves safe from such things is the toughest task.

Benefits of using ICT in Education:

ICT has a significant role in education because we can not imagine the current teaching-learning process without it. Some benefits of ICT are listed below:

- **Enhance Learning Experiences:** Earlier, classroom teaching was the only option for learning and if a learner does not understand anything, he can not attend the same class again and again, but in an online class or content, he can learn again and again. Further, by using ICT tools, a learner can understand topics quickly and better.
- **Access to Information:** ICT tools make information easily accessible to learners. A student sitting in a remote village or desert can see the videos of good teachers and learn. Availability of mobile phones and a good internet network are only required to get such information.
- **Personalised Learning:** By utilising the ICT tools, the learners can access and study information according to their interests. For instance, a medical student can search for any content they wish to explore, but in classroom teaching, they will only learn what their teacher covers in the classroom.
- **Efficient Administration:** Using the ICT tools, we can quickly look at the learners' progress. Such tools also help with grading, attendance tracking and resource management. These tools also store our data permanently until we remove them.

- **Collaboration and Communication:** ICT in education enhances learning by enabling students and teachers to share ideas, solve problems, and provide feedback. Effective interaction fosters a dynamic learning environment and improves educational outcomes.

Challenges and Limitations of ICT in Education:

- **Digital Divide:** Sometimes learners face difficulty getting information because they do not have an Android phone, laptop or a good network of internet, but on the other hand, a learner equipped with fast Wi-Fi and the latest generation of laptops will always get more information quickly.
- **High Cost and Funding:** Some ICT tools are available free of cost, but most are very expensive, so it can be said that ICT is very expensive for most institutions and learners.
- **Lack of Training and Skill Development:** Proper training and skill development are required before using the ICT tools; otherwise, a learner may get the wrong information or indulge in unethical practices. For example, if a learner does not know about AI tools and their advantages, he may indulge in unethical practices.
- **Frequent Technical Issues:** Sometimes, we may face software-related or hardware failure issues and lose our precious data permanently. Suppose a vital meeting happens, and organisers suddenly face software or hardware-related issues. It may negatively affect their reputation. Similarly, while using different ICT tools in education, learners may face technical issues which can disturb their learning. If a teacher is teaching in an online class, then suddenly the network fails, he will not be able to deliver his lecture smoothly, but in an offline class, a teacher can teach smoothly without any hurdle.
- **Over-Dependency on Technology:** If a person continuously uses ICT and its tools, it may reduce his capacity to write and think or face memory loss-related issues. Therefore, over-dependency on ICT may create many problems, so it should be avoided.
- **Data Privacy and Security:** While using ICT tools, learners may face data privacy and security-related issues because hackers may hack our systems and steal our precious data.
- **Content Quality:** In classroom teaching, we can discuss our queries and problems with our teachers, but in online teaching, sometimes we find poor-quality of content.

Conclusion:

Based on the above-detailed discussion, it can be said that ICT has changed the face of the educational sector. It has reshaped the instructor and student interactions in profound ways. Additionally, using ICT tools has brought more convenience to education through the personalisation of teaching, efficiency in learning, and general experience. While learning was primarily done physically in the past, the challenges that could arise from this have changed with the advent of ICT. Every student or teacher stands to benefit from using such tools. However, it is essential to deal with issues such as the digital gap, cost and adequate information supply concerning the appropriate use of such technology.

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