

INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN SECONDARY SCHOOL LIBRARIES: ACCOMPLISHMENTS, CHALLENGES, AND PROSPECTS

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Abstract

The most crucial element of library resources is information and communication technology (ICT), which allows staff members to gather, store, and provide materials to patrons. Thus, the main goal of the current study was to compile reviews and existing literature on the integration of ICT in Indian secondary school libraries through a methodical examination of existing literature. This will support the successes, difficulties, and opportunities in this field. The SCOPUS database, Google search, and a review of eminent library science journals from Springer, Elsevier, and Taylor & Francis were the main sources used in this study. To gather the materials, a thorough review of the literature was conducted. In terms of search terms, we adjusted the search parameters according to the characteristics of each database and found "ICT," "Information and communication technology," "digital technologies," "library," "secondary schools," and "review." This prevented us from gathering isolated studies that would only partially contribute to a given term. These results imply that ICT integration is a crucial element of secondary school libraries. The integration of ICT in secondary school libraries is influenced by several elements, including digital competencies, ICT literacy among teachers and librarians, leadership and management within the school, and support from the government or management. The study's findings provide insight into how ICTs might help secondary schools undergo digital transformation and the variables that must be considered for these kinds of revolutionary changes to occur.

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INTRODUCTION

Digital technologies have brought phenomenal changes to library resources and the nature and scope of education. Therefore, in recent years, libraries in colleges, secondary, and primary schools have invested in the integration of information and communication technology (ICT) (Fernandez-Gutierrez et al. 2020; Gil-Flores 2018).

Reviewing the literature is an important component of any study. It helps the researcher plan and implement the research study on the chosen topic by providing new ideas and techniques. The review of relevant literature covers the key sources concerned with this topic. This review of the literature is unique and aims to provide an overview of the sources. The purpose of this review is to identify relevant information and outline existing information, to identify gaps in the current field of study, to position the present work, and to evaluate and synthesize the information.

To collect the information, a retrospective search of the literature was conducted using the SCOPUS database, the Web of Science database, and reputed journals in the information and communication technology published by Springer, Elsevier, Taylor & Fancies group. Attempts were made to trace and collect relevant research papers and related documents such as journal articles, conference papers, and books.

A summary of the research articles has been written in the following section. In this study, an attempt has been made to review the published literature under the following subheadings:

- Status of utilization of information and communication technology (ICT) in secondary schools
- World scenario
- Use of ICT in Secondary Schools in India
- ICT Initiatives in School Education in India
- ICT in Schools: Central Board of Secondary Education (CBSE) Initiative
- Definition and Objectives of the ICT at Schools Scheme
- Research outcome of the current status of ICT utilization in secondary schools in India

REVIEW OF THE LITERATURE

Status of utilization of information and communication technology (ICT) in secondary schools

ICT integration in libraries will improve e-resources and help librarians efficiently store and distribute materials to users. Libraries work hard to offer services that satisfy the needs and preferences of their users. ICT resources in school libraries, particularly in elementary and secondary schools, have a positive impact on students' learning and creative endeavors. Worldwide, a great deal of research has been conducted in this field. Two significant and powerful organizations in the field of school libraries, the American Association of School Librarians (AASL) and the International Federation of Library Associations and Institutions (IFLA) have declared that one of the main objectives of libraries is to ensure that everyone has equitable access to information and technology (ICT) and that these opportunities are sustained through meaningful engagement with ICT for learning, irrespective of socioeconomic or racial background (IFLA 2012; AASL 2007). Thus, school libraries are viewed as crucial infrastructures that offer essential learning possibilities by supplying and using ICT (Dadlani and Todd 2014). Similarly, the International Society for Technology in Education (ISTE) has declared that educators should prioritize giving students access to technology that allows them to realize their full potential, rather than just giving them information technology (ISTE 2014). As a result, school libraries should offer students not only access to ICT but also education in the pertinent information literacy and knowledge required to use these tools to achieve their learning objectives.

World scenario

Teravainen-Goff and Clark (2017) conducted a literature review in the UK and produced thorough, up-to-date assessments of school libraries in the UK. Their research findings demonstrated how important it is to follow in

school libraries. (a) Excellent school librarian: A well-functioning school library ought to employ a full-time, certified librarian who operates within the parameters established by the senior leadership group. (b) Collection quality and resource accessibility: A strong school library should have a good selection of high-caliber printed and digital books, computers, and software facilities. (c) High-quality physical space: To promote reading and learning enjoyment, an efficient school library needs to have enough adaptable space to incorporate different activity zones.

Hossian et al. (2019) conducted a study on ICT facilities and literacy in rural non-government secondary school libraries in Bangladesh. Their findings included three recommendations: (a) improve school libraries' ICT capabilities; (b) enhance school librarians' ICT proficiency; and (c) form partnerships with relevant stakeholders. According to a survey and review of Mongolia's current ICT in education policy and regulatory framework conducted by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 2021, children in Mongolia may be able to continue their education through television lessons, which began soon after school closures. However, according to a survey conducted in conjunction with UNICEF, there is still a need for development in terms of both content and quality, as well as ICT infrastructure in homes and classrooms (UNESCO 2021).

The provision, use, and upkeep of ICT facilities in Ekiti State primary school libraries in Nigeria were evaluated by Osiesi et al. (2022). The study's findings indicated that the ICT facilities offered in schools are insufficient, and they recommended adequate funding from government and non-government agencies. They also recommended that qualified individuals be hired to ensure that the objectives are carried out correctly.

A study on ICT adoption and school leadership in Hong Kong was conducted by Yuen et al. in 2003. ICT is an invention that can support and drive organizational transformation to varying degrees. A "paradigm shift" that resulted from an internal "cultural" motivation was found in the process.

Ekberg and Gao (2017) evaluated teachers' perceptions of the difficulties in using ICT in Swedish secondary schools and discovered that the areas with the greatest difficulties were related to teaching and preparation for teaching.

In their evaluation of the successful integration of ICT in Australian schools, Robertson et al. (2005) concluded that while some ICT-implemented schools in Australia have seen great success, other factors that contributed to the successful integration of ICT in Tasmanian schools included the administrative procedures, structures, and governance framework.

Use of ICT in Secondary Schools in India

ICT Initiatives in School Education in India

In India, ICT has quickly gained popularity and is now considered one of the fundamental pillars of contemporary civilization. Nowadays, many nations consider reading, writing, and numeracy the foundational subjects of education, coupled with ICT comprehension and basic skill mastery. The Government of India's most recent initiative increases ICT use in practically every aspect of life. Focusing on the three vision areas, the Government of India's (2015) Digital India Campaign aims to revolutionize society and the economy by empowering people through digital means. i) Every Citizen's Core Utility: Digital Infrastructure; ii) On-Demand Governance and Services; and iii) Citizen empowerment and digital literacy. By fully utilizing ICT's enormous potential, education policy's three guiding principles—quality, equity, and access—may be effectively serviced. One such application of technology in education is the ability to provide high-quality instruction at any time and from any location. The Indian government has introduced many incentives and rewards to encourage educators to use ICTs extensively. The National ICT Award for School Teachers is just one of these incentives for educators.

According to the National Curriculum Framework (NCF)-2005, "judicious use of technology (multimedia and ICT) can increase the reach of educational programs, facilitate system management, and help teachers, teacher educators, and young learners address specific learning needs." For example, the media can act as an advocate and assist in teacher preparation. It can also help in the classroom. The use of technology, especially ICT, could be advantageous for a variety of learning and teaching options, including self-learning, multiple modes of study, and teaching at different speeds. With more people using the Internet, it is now possible to share knowledge and have conversations on a variety of topics that were previously unattainable on such a large scale. Technological advancements are also required to provide the right tools and resources to help children with birth impairment meet their educational needs. It is important to emphasize that rather than being seen as an add-on or in isolation, technology can be incorporated into educational programs' larger aims and processes. Within this framework, technology use that reduces educators and children to mere users and consumers needs to be examined and condemned. Quality education depends on closeness and interaction, which cannot be compromised as a guiding principle of curricular intervention. The NCF-2005, in a way, highlights a paradigm change regarding the educational process as a whole. The NCF advocates for a change to learner-centric approaches (the primacy of the active learner), allows for a range of learner needs and exposures, and cultivates citizens who can think critically and take an active role in development.

ICT in Schools: Central Board of Secondary Education (CBSE) Initiative

The "ICT at Schools" program provides students in Indian schools with an opportunity to close the digital divide. The program is a comprehensive and well-thought-out initiative to open new vistas of learning and to provide school students, whether in rural areas or metropolitan cities, with equal opportunities. The "ICT at Schools" program is not a stand-alone program; rather, it actively seeks the cooperation of States, Union Territories, and other organizations to connect disparate ICT proliferation throughout the nation's many socioeconomic and geographic segments. The way the initiative is financed, the encouragement of long-term computer education plans, the establishment of Smart Schools in Kenriya Vidya Shaala (KVS) and States as technology demonstrators, and the provision for bolstering state efforts in these areas without attempting to replace state schemes are all examples of this partnership.

ICT at Schools Scheme Launched by the Government of India

Launched in December 2004, the Centrally Sponsored Scheme "Information and Communication Technology [ICT] in Schools" aims to give secondary school pupils the opportunity to enhance their ICT abilities and experience ICT-assisted learning. The Plan is a significant driver in closing the digital divide between students from different socioeconomic backgrounds and places. The Scheme helps States and Union territories set up computer labs in a sustainable manner. Additionally, it seeks to establish SMART CBSE schools and State/Union territories-run schools to serve as "Technology Demonstrators" and to take the lead in promoting ICT proficiency among students in nearby schools.

Definition and Objectives of the ICT at Schools Scheme

1. To create a supportive atmosphere for the use of ICT, particularly in government-aided secondary and higher education institutions and rural libraries. Internet connectivity, widespread availability of access devices, and encouragement of ICT literacy are essential components of such an enabling environment.
2. To guarantee that both in the private sector and online, high-quality materials are accessible via access devices.
3. Using ICT technologies to improve teaching and learning while enhancing the current curriculum and methodology.
4. To enable students to acquire the skills needed for the digital world for higher studies and gainful employment.
5. To use ICT technologies to provide children with special needs a productive learning environment.

6. Encourage the development of analytical and critical thinking abilities through self-learning. As a result, learning will shift from teacher-centric to student-centric in the classroom.

7. To encourage the use of ICT technologies, such as satellite-based equipment and audio-visual media, in distance learning.

The research outcome of the current status of utilization of ICT in secondary schools in India

Research on the structure and administration of Kendriya Vidyalaya (KV) Libraries in Assam was conducted by Sarmah and Lahkar (2020). Their findings indicated a shortage of librarians in the KVs in the Northeast region and recommended a special recruitment campaign for KV schools in that region.

Sharma and Tripathi (2019) mapped significant ICT efforts in Indian schools. They declared and expressed gratitude for the actions taken by the Indian government on initiatives like (a) e-Pathshala, which provides e-textbooks, e-resources, periodicals, and journals along with teaching guidelines and learning outcome assessments to create a virtual environment in secondary schools. The National Informatics Center (NIC), the National Council of Education Research and Training (NCERT), and the Central Institute of Education Technology (CIET) collaborated to design this program. (b) Shaala Siddhi: This is an ICT-based platform called the Program on School Standards and Evaluation (NPSSE), which is overseen by the University of Educational Planning and Administration (NUEPA), where schools are evaluated for improvements. (c) Shall Darpan: This is an ICT project of the Ministry of Human Resources Department (MHRD) that offers the nation's government-run and government-aided schools' access to school information services. (d) School GIS: This Web-based tool allows for easy visualization of school locations across the nation. It is a type of global information system (GIS). Sharma and Tripathi (2019) claim that these initiatives provided teachers, parents, and other education stakeholders, in addition to students, quick and free access to information.

According to Ahmad's (2011) survey, senior secondary school libraries in Jammu and Kashmir do not have nearly as good library resources as they may have. Deshpande and Sarasvathy's (2015) study, which examined ICT use and awareness among students in CBSE schools in Mysore, Karnataka, demonstrated the value of ICT availability in secondary education for learning and general growth. According to Seenivasan and Ashok Kumar's (2014) assessment of the state of higher secondary school libraries in Tamil Nadu's Tiruvallur district, government schools lack competent librarians and sufficient library resources. All of these studies point to the necessity for additional research on the state of secondary school libraries across India, as well as the ICT resources and staff employed by these institutions.

MAJOR FINDINGS

Every school has a library that is worth the term; this is not an idealistic vision; rather, it is a current necessity. School library operations have been greatly impacted by innovations in school organizations, which have also had a significant impact on instruction. Information and communication technologies (ICT) are potent instruments that can improve learning outcomes and change education. Students may access information, work together with teachers and peers, hone their critical thinking and problem-solving skills, and express their creativity and ingenuity through technology. Furthermore, it can help educators plan and execute more efficient and customized lessons, evaluate and track the development of their students, and participate in ongoing professional growth. The primary issues affecting school libraries and librarians include a lack of funds, a staffing shortage, ineffective management, and insufficient coordination between public and private agencies, according to a literature survey from various countries. Research on ICT resources and ICT-enabled instruction in India's government-aided and private secondary schools is lacking. Figure 1 summarizes the factors affecting the integration of ICT in secondary schools and their impact on stakeholders based on the findings from the literature review.

Conclusion

The findings revealed that the integration of ICT in education affects a variety of factors such as government support and connectivity infrastructure, school leadership and management, teachers'/librarians' ICT literacy and professional development, digital competencies, administration, and data management, and students' socioeconomic background and family support. We hope that our study will inform policy, practice, and research, and result in a paradigm shift toward more holistic approaches in assessment studies.

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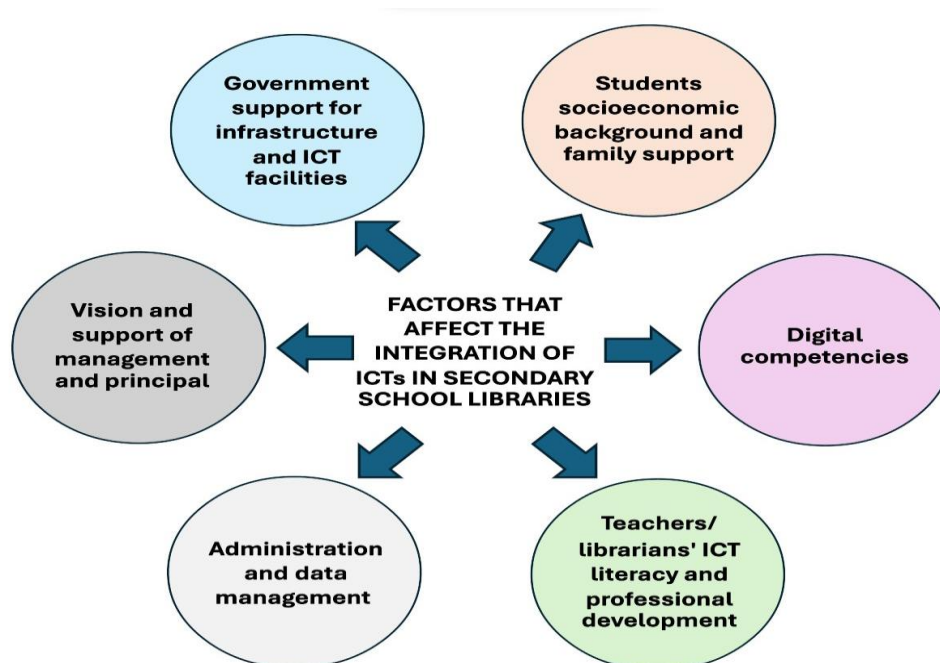


Figure 1 Factors that affect the integration of ICTs in secondary school libraries