INFORMATION & COMMUNICATION TECHNOLOGY IN EDUCATION

(An Edited book for UG & PG Students of Education)

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NOTION PRESS
PUBLISHING PVT. LTD.
TAMILNADU, INDIA

https://notionpress.com

Price: Rs 400.00
ISBN 979-888783766-6
9 798887 837666

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Chapter-4

A Conceptual Analysis of Challenges in Integrating ICT in Education

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Abstract: This chapter is conceptual in nature. It defines and explains the use and importance of Information and Communication Technology in the educational context. It focuses on the possible challenges for the integration of ICT in the educational setting in terms of empirical evidence. Highlighting the challenges of integrating ICT, some suggestions have been given in this chapter.

Keywords: Information and Communication Technology in Education, Challenges of ICT, Integration of ICT in Education

Introduction

In research conducted by various universities across the world, it has been proven that the use of ICT can not only improve students' achievement but also make teaching effective. A report made by the National Institute of Multimedia Education in Japan has proven that an increase in student exposure to educational ICT through curriculum integration has a significant and positive impact on student achievement, especially in terms of "Knowledge Comprehension". "Practical skill" and "Presentation skill"

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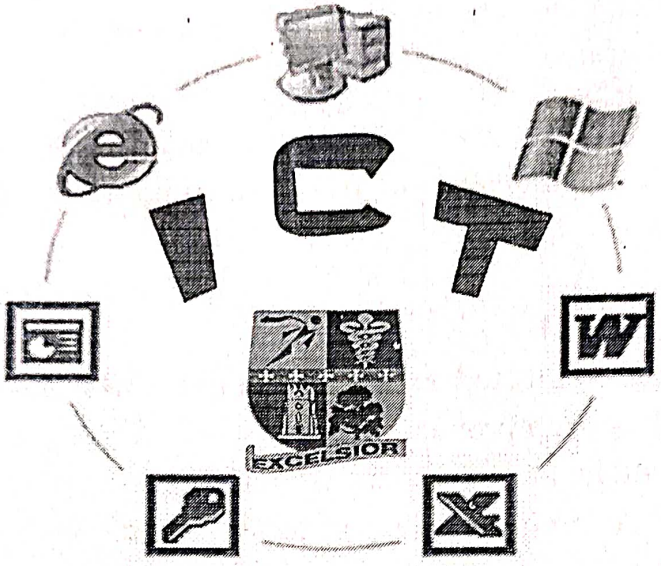
in subject areas such as mathematics, science, and social study.



Common Myths about ICT

1. **Reach v/s Accessibility**. The reach of any ICT media is sometimes mistaken for its accessibility. However, there is a distinction between a medium's reach and its accessibility. A medium doesn't need to be reachable for it to be accessible. For example, in a village, there may be an internet connection, but residents may not have access to computers. Similarly, having 100% cable TV does not guarantee that viewers will have access to televisions. Multiple elements, including social, cultural, and economic factors, have contributed to this scenario. Lack of awareness, poverty, illiteracy, lack of mobility, and differences in priorities all affect the availability of ICT medium in a given location.

2. **Ownership v/s Control.** Another myth about ICT is that people, especially the aged, illiterate, and women cannot handle technology and thus they can never be benefitted from it. However in the real context, if they are exposed to the technology, several social myths and taboos can be overcome. Technology will help solve many deep-rooted problems prevailing in a society. The usage of technology will also boost the confidence level of the less privileged section of society.
3. **Technology v/s People.** It is generally believed that using sophisticated and complicated technology will surely yield beneficial results. The efforts put in by the people are undermined and thus they take a back seat. The general tendency of any organization using an ICT-based project is to allocate a maximum portion of the budget through the technology irrespective of the fact whether the people are capable enough to use it or not. It is to be ensured that more emphasis must be given to issues of the people rather than deploying complicated technology.
4. **Availability of Content.** It is a common belief among people that there is adequate content available for ICT and if not then it can be easily developed. Content is the most important component as its relevance determines the effectiveness of the multimedia package. In reality, there is a lack of adequacy of useful and relevant ICT content which can cater to the diversities prevailing in a country like India. Not much content is available in the regional language and web-based translators are not accurate enough.

5. **Learner's Involvement.** A very common and dangerous myth is that the learners cannot determine the relevance of the content. They are considered mere passive users of technology. This leads to an ineffective teaching-learning process. The learners must be treated as partners in the development of the content by taking into account their requirements and interests, failing which the technology will not address the ground realities.
6. **Appropriateness of Medium.** The most appropriate medium to deliver knowledge is yet to be decided. Appropriateness of medium and content is related to issues of reach and access; technologies of both hardware and software content relevance, cultural acceptability, and usability.

Key challenges in Integrating ICTs in Education

Over the years, the advent of information technology (ITs) in education has been firmly associated with several applications. Computers, the internet, instructional software, laptops, and PDAs are examples of technical emblems commonly used in education to demonstrate how well schools are aligned with modern life.

These technologies, however, are frequently regarded as fads, but they also represent the tip of the iceberg in terms of educational difficulties. Some factors come into play when determining the extent to which ICT is employed. The various sides of the iceberg will be examined in this section to have a better understanding of the issues that ICT faces. It's a difficult effort to figure out what level of integration is most beneficial in the educational system.

Attempts to improve and reform education through ICTs necessitate clear and defined objectives, guidelines, and time-bound targets, as well as the mobilization of resources and the necessary resources, as well as political commitments at all levels. ICT-based interventions must take into account current institutional practices and arrangements. This requires the policymaker an understanding of the potential of different ICTs when applied in different contexts for different purposes, and awareness of priority education needs and financial and human resources capacity and constraints within the country or locality, as well as best practices around the world and how these practices can be adapted for specific country requirements.

The key challenges that surround the integration of ICT in education in India are listed below:

1. **Scarcity of Qualified School Teachers.** The demand for ICT education is enormous, yet the number of instructors who have been educated to teach it is insufficient to provide it. More students want to learn computer skills that there are teachers who can teach them. Teachers don't have the knowledge they need to deal with technical issues when they arise.
2. **A Lack of Computers.** Computers are still quite expensive, and despite the best efforts of government agencies, NGOs, corporations, and people to donate computers to as many schools as possible, a large percentage of schools are still unable to acquire computers for their students to utilize.

3. **Erratic Power Supply.** Another basic requirement is the availability of electricity and telephony. In developing countries like India, large areas are still without a reliable supply of electricity.
4. **Huge Investment.** ICT in education programmes necessitates a significant capital investment, so developing countries must be cautious in deciding which models of ICT are used to implement and keep economies of scale in mind. In the end, the question is whether the value contributed by ICT use overweighs the expense when compared to the cost of alternatives.
5. **Maintenance Issues.** Maintenance and repair of computers available in schools is another problem in India. Hence it is very common to see a school's computer lab full of broken-down computers, some repairable and some not.
6. **Security Concerns.** The fact that computers are still very expensive makes them a target for thieves who usually have ready markets to another party at a much less figure. This has made some schools shy away from purchasing computers for their students.
7. **Fear by the administration.** While it is true that computers do not require highly skilled personnel to operate them, some school administrators are concerned that their students will be exposed to adults and other undesirable sites as a result of their use of the internet. Some people worry about viruses infecting their computers and causing data loss. While this is true to some extent, proper computer education can help alleviate some of these fears.

8. **Fear of the teacher.** The teacher may fear being rendered irrelevant by the introduction of a computer in his/her class. The 'feel' that the teacher remains an authority and a 'know it all in class is something that most teachers cherish, and anything that makes them otherwise is deemed an enemy of the classroom.
9. **Lack of Internet or Slow connectivity.** Most schools are not able to connect to the World Wide Web, due to the high cost of their connectivity.
10. **Lack of Initiatives by the community leaders.** Community leaders tasked with looking out for the best interests of their communities do not consider the purchase and subsequent installation of computers in their schools to be a top priority. They value health care, access to cleaner water, and other amenities above purchasing computers for their school.
11. **Obsolete Computer.** The use of an antiquated system lowers teacher and student morale; it is normal to see some schools employing very old computers running windows 98 or 95.
12. **Increased Morale Degradation.** Pornography on the internet, cyberbullying and other antisocial behaviors are all on the rise.
13. **Language Barrier.** The internet's prevalent language is English. Approximately 80% of web information is written in English. English is used in a substantial percentage of educational software produced around the world. This poses a severe hurdle to leveraging the educational benefits of the World Wide Web in emerging Asia-Pacific countries where English

language ability is low, particularly outside of metropolitan regions.

14. **Intellectual Property Rights.** Concerns about the preservation of intellectual property rights have arisen as a result of the ease with which web-based educational content can be saved, transmitted, replicated, and updated. Are intellectual property rights infringed upon, for example, when lectures aired on television or the internet integrate pre-existing materials or when students film educational broadcasts for subsequent viewing? While schools and universities may already have agreements in place that expressly allow the use of certain materials in the classroom, these agreements may not be broad enough to allow for telecommunications transmission, videotape recording, or the distribution of course-related materials outside of the classroom.
15. **Technical Support Specialists.** Technical Support specialists, whether offered by in-house personnel or external service providers, or both, are critical to the continued validity of ICT use in a specific school. While an institution's technical support needs are ultimately determined by what and how technology is deployed and used, neral abilities in the installation, operation, and maintenance of technical equipment (including software), network administration, and network security are all necessary. Technical breakdowns can cost a lot of time and money if you don't have on-site technical help.
16. **Content Developers.** The generation of content is a crucial area that is all too frequently disregarded. The

majority of existing ICT-based instructional material is likely to be in English or irrelevant to developing-country schooling (especially at the primary or secondary levels). Original educational content (e.g. radio programmes, interactive multimedia learning materials on CD-ROM or DVD, Web-based courses, etc) is needed, as in the adaptation of existing content and the conversion of print-based information to the digital medium. Content development specialists such as instructional designers, scriptwriters, audio and video production specialists, programmers, multimedia course authors, and web developers are required to do these responsibilities.

17. **Other Factors.**
    - ICT Equipment is scarce, and the expense of acquiring, using, and maintaining ICT resources is prohibitively expensive.
    - Due to the organizational considerations such as the placement of computers in ICT studies rather than in a classroom, there is a lack of access to ICT equipment.
    - Lack of institutional support through leadership, planning, and teacher & manager participation in change implementation change.
    - Training that focuses on incorporating technology into the classroom rather than merely teaching basic skills is lacking.

Suggestions

- Provide technical knowledge and training: Ascertain those teachers are aware of how technology can

benefit them and their students. If the teachers have proper knowledge about technology, then they should deliver proper knowledge about ICT to students.

- Proper Allocation of Computers: Computers are the backbone of our society, and it is required for government agencies, NGOs, corporations, and people to donate computers to as many schools as possible. If the proper allocation of computers was done, then the information and technology also circulated.
- Maintenance Cost: For greater durability and lower repair and maintenance costs, ICT resources should be of high quality. If the maintenance cost is minimum, then productivity is maximum.
- Appointment of Qualified teachers: To relieve teachers of their heavy responsibilities, the government or school administration should hire more qualified teachers. This will give them more time to plan their ICT integrated lesson efficiently.
- Proper training: Regardless of the areas they specialize in, teachers should be schooled in ICT skills beginning in college. The training provided in institutes such as SMASSE and through ICT champions at the school level should be expanded and followed up on to ensure that the skills learned are transmitted to the classroom.
- Proper supply of electricity: The ICT rooms should be built so that full classes may be accommodated without becoming crowded. For ICT integrated lessons, power sockets and white walls as displays

should also be available in classrooms. This reduces competition for computer laboratories and ICT rooms.

- **Other Factors:**
  - ✓ Take a comprehensive approach to the integration of ICT into educational planning and strategies. ICT support is provided at both the national and individual school levels. This can involve things like incorporating education stakeholders in discussions about how to integrate ICT skills into the curriculum or enlisting teachers' aid in developing policy initiatives.
  - ✓ Educate teachers, administrators, and other education leaders on how to use and integrate ICT in their classrooms. Professional Development options for education leaders should be made available so that they may engage teachers and demonstrate a shared commitment to ICT in Education.
  - ✓ To promote innovation and expand the use of ICT in education, mobilize resources for research and assessment. Working with tertiary universities to operate as research hubs is one example. Governments can incentivize R&D on novel uses of ICT in education, such as making software and hardware more accessible and relevant to students. ICT effectiveness evaluation studies can provide evidence-based reasons for altering the education sector to embrace ICT.

Conclusion

In this chapter, our main focus was on issues and challenges faced in ICT. In individualized instruction, instructional activity is controlled more by the students than the teacher. In other words, the student depends more on himself for learning than on the teacher. In this digital age, using ICT in the classroom is critical for students to learn and apply the necessary 21st-century skills. As a result, researching the concerns and challenges surrounding the use of ICT in teaching and learning can help teachers overcome these barriers and become successful technology users. Therefore, the primary goal of this study is to examine teachers' perspectives of the problems they confront when employing ICT tools in the classroom. Overall, the following obstacles and challenges were identified as major in teachers' use of ICT tools; limited accessibility, Lack of computers, poor network connection, limited technical support, lack of appropriate training, limited time, and lack of teacher competency.

Unit and Exercises

1. With the help of suitable examples, explain the common myths about ICT.
2. What are the key challenges in integrating ICT in education?
3. Discuss the various barriers to ICT in the classroom.

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