



## **"Unveiling Challenges: Exploring Obstacles Faced by Secondary Level Teachers in the Application and Use of ICT Tools in Teaching"**

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### **Abstract:**

The integration of Information and Communication Technology (ICT) tools in secondary-level education is a transformative endeavor, yet it is not without its challenges. This study seeks to uncover and understand the multifaceted problems faced by secondary-level teachers in the application and use of ICT tools in their teaching practices. The research delves into the intricacies of technological integration within the secondary education landscape, aiming to identify obstacles that impede the seamless adoption of ICT tools. The investigation addresses issues such as limited access to technology, where disparities in resource availability among schools hinder uniform implementation. Furthermore, the study explores the pedagogical challenges that arise as teachers navigate the alignment of ICT tools with established curriculum objectives. Additionally, the research sheds light on the intricate balance required between traditional teaching methods and innovative technological approaches. By comprehensively examining the obstacles faced by secondary-level teachers, this research aims to contribute valuable insights for educational policymakers, administrators, and educators. The study has been conducted in Sivasagar district of Assam taking 30 secondary schools as sample schools for this study. The findings are anticipated to inform targeted strategies and interventions that can enhance teacher preparedness, facilitate access to technology, and ultimately foster a more effective integration of ICT tools in secondary-level teaching practices.

**Key words:** ICT, Secondary Education, Challenges, Teachers



## **Introduction**

The incorporation of Information and Communication Technology (ICT) in secondary education is pivotal, ushering in a paradigm shift in the way knowledge is imparted and acquired. This integration is crucial as it aligns with the developmental stage of secondary students, providing a multifaceted approach that caters to their evolving cognitive abilities, diverse learning styles, and the demands of a rapidly advancing technological landscape.

At the heart of the importance of ICT in secondary education lies the enrichment of learning experiences. Secondary students, in their adolescent years, are naturally curious and tech-savvy. ICT tools such as interactive whiteboards, digital textbooks, and multimedia presentations captivate their attention and make the learning process more engaging. This not only reinforces their understanding of complex concepts but also instills a sense of enthusiasm for acquiring knowledge. Digital learning resources, including e-learning platforms, educational apps, and online databases, offer secondary students a wealth of information beyond the confines of traditional textbooks. This access not only broadens their understanding of subjects but also encourages independent research, critical thinking, and the development of analytical skills—crucial components for academic success and future endeavors.

Furthermore, the integration of ICT in secondary education fosters collaborative learning environments. Online platforms and communication tools enable students to collaborate on projects, participate in discussions, and engage with peers globally. This collaborative approach not only enhances their social skills but also exposes them to diverse perspectives, preparing them for a connected and globalized world. In the realm of teacher-student dynamics, ICT plays a dual role. Teachers, armed with digital resources and platforms, can customize lessons to address the varied learning needs of their students. This adaptability ensures that each student can learn at their own pace and explore areas of interest, promoting a more personalized and student-centric learning experience.

Simultaneously, ICT facilitates the professional development of educators. Online courses, webinars, and collaborative networks empower teachers to stay abreast of the latest pedagogical approaches, technological advancements, and subject-specific developments. This continuous learning not only enhances their teaching skills but also enables them to effectively navigate the ever-evolving educational landscape.



The integration of ICT in secondary education also serves as a bridge to the practical applications of knowledge. Virtual labs, simulations, and real-world examples provided through digital resources bring theoretical concepts to life. This connection between theory and application not only deepens students' understanding but also prepares them for future careers in fields driven by technology.

As secondary education is a critical phase in the academic journey, the importance of ICT is underscored by its role in equipping students with essential digital literacy skills. Exposure to ICT ensures that students graduate with the ability to navigate digital interfaces, critically evaluate online information, and leverage technology for academic and professional success.

### **Importance of ICT Knowledge for the Secondary Teachers**

In the modern landscape of education, the importance of Information and Communication Technology (ICT) competence among secondary-level teachers cannot be overstated. As digital technologies become increasingly integrated into various facets of our daily lives, teachers equipped with strong ICT competencies play a pivotal role in shaping the learning experiences of secondary students. At the heart of the matter lies the transformative impact on teaching methodologies. ICT-competent teachers have the ability to infuse innovation into their pedagogical approaches. Through the adept use of digital tools, multimedia resources, and online platforms, they create an environment that resonates with the diverse learning styles and technological fluency of secondary-level students. This not only captures the students' attention but also fosters a more interactive and engaging classroom dynamic.

One of the key advantages of ICT competence is its role in facilitating personalized learning experiences. Teachers proficient in ICT can leverage adaptive learning platforms, online assessments, and educational apps to tailor their approach to individual student needs. This customization ensures that each student can progress at their own pace, addressing specific challenges and harnessing their unique strengths. Furthermore, ICT-competent teachers are essential in preparing students for a globally connected world. Through virtual classrooms, collaborative projects, and online communication tools, teachers can transcend geographical boundaries, providing students with opportunities to engage with peers and educators from diverse cultural backgrounds. This exposure not only broadens their perspectives but also cultivates important skills for collaboration and communication in an interconnected world.

The development of digital literacy skills stands out as another critical aspect. ICT-competent teachers impart not only subject-specific knowledge but also the skills necessary to navigate the digital landscape responsibly. From teaching students how to critically evaluate online information to instilling a sense of ethical technology use, these educators play a pivotal role in shaping responsible digital citizens. In the context of workforce readiness, ICT competence is an invaluable asset. Teachers can seamlessly integrate technology-related skills and knowledge into the curriculum, ensuring that students are well-prepared for careers in an increasingly technology-driven job market. The ability to navigate, adapt to, and leverage technology becomes a cornerstone of students' success beyond the classroom.

Efficiency in administrative tasks is yet another dimension where ICT competence proves beneficial. Teachers proficient in ICT can manage grading, record-keeping, and communication with parents more effectively through digital tools. This streamlining of administrative responsibilities allows teachers to devote more time and energy to their primary focus: teaching and supporting student learning. As technology evolves, ICT-competent teachers exhibit a natural adaptability to incorporate new tools and methodologies into their teaching practices. This adaptability ensures that educational approaches remain current, relevant, and aligned with the latest advancements in the field of educational technology. In essence, the ICT competence of secondary-level teachers is a cornerstone of educational effectiveness in the 21st century. It not only enhances the quality of instruction but also shapes the overall educational experience for students. As the digital landscape continues to evolve, ICT-competent teachers stand as guides, preparing the next generation to navigate the complexities of the modern world with confidence and proficiency.

### **Review of the Related Literature**

Plair (2008) noticed that teachers that have been a long time in the field and were not trained to integrate technology, did not use ICT devices in their classroom. As well, Li (2007) noticed that ICT integration in classrooms is not positively received by many teachers, as they view ICT as a chore activity that is not directed at their core teaching goals. Sugar, Crawley and Fine (2004) recognized that teachers need to have personal reasons for integrating technology. Consequently, when they were already satisfied with their results, they did not have any incentives to integrate ICT in their classrooms.

Hew and Brush (2007) attempted to create a literature review around the barriers with integrating technologies. Some of these were: a) resources, b) institution, c) subject culture, d) attitudes and beliefs, e) knowledge and skills and f) assessment. Barriers to providing adequate resources involved outdated technologies, lack of adequate training, lack of personal support for maintenance and were considered a major issue in integrating technology.

According to Kaput (1992), teachers should learn not only how to use technology to enhance traditional teaching or increase productivity, but also should learn from a student centered perspective and how ICT can be integrated into classroom activities in order to promote student learning. Birch & Irvine (2009) also viewed that teachers need to use ICT in more creative and productive ways in order to create more engaging and rewarding activities and more effective lessons. Grandgenett (2008) recommends that, in order to provide adequate training for in-service teachers, the goals of the instruction should flexibly target teachers to help foster their skills and attitudes in using technology in thoughtful ways.

### **Objective:**

1. Explore the specific challenges secondary-level teachers encounter in integrating ICT tools into their teaching practices.
2. Understand the factors influencing the effective use of ICT tools in the secondary education context.
3. Provide insights to inform strategies for overcoming these challenges.

### **Methodology**

This is principally a qualitative research study. The required data for the study was collected from both primary and secondary sources. In case of generation of primary data, we have adopted non-probability sampling method instead of probability sampling method. Though the probability sampling method gives better accuracy in terms of confidence level of the inferences of the study, there are many practical difficulties in fully executing probability sampling methods. We only considered science teacher as sample for this study. The primary data was collected through semi-structured questionnaire for the teachers and perform classroom observations to observe real-time challenges during ICT tool application. We have selected 30 Secondary schools of Sivasagar district. And from each school we have selected one teacher who is teaching science in secondary level and thus the total sample of our study was 30 nos.

Secondary data was collected from different government publications, books, journals, e-journals, publications of semi government organizations and institutions, universities, research institutions, reports of different committees and commissions on various educational aspects.

### **Findings of the Study:**

The integration of Information and Communication Technology (ICT) tools into teaching practices at the secondary level presents both opportunities and challenges. Understanding the specific challenges that secondary-level teachers encounter in this process is crucial for effective integration. Here are some detailed explanations of these challenges which are faced by the secondary teachers of Sivasagar district of Assam in application of ICT in teaching.

1. Limited Access to Technology:

Explanation: Many secondary schools, especially in certain location, face challenges in providing adequate access to technology. Limited availability of computers, tablets, or other ICT devices in classrooms hinders teachers' ability to incorporate these tools seamlessly into their lessons.

Impact: Teachers may struggle to engage students in interactive and technology-enhanced activities when the necessary devices are scarce, leading to unequal opportunities for students to benefit from ICT integration.

2. Insufficient Technical Support:

Explanation: Teachers often encounter technical issues during the use of ICT tools, ranging from software glitches to network problems. Insufficient technical support can leave teachers feeling frustrated and ill-equipped to address these issues promptly.

Impact: The lack of timely technical assistance may result in disruptions to the learning process, and teachers might become hesitant to incorporate ICT tools due to the fear of encountering technical challenges.

3. Pedagogical Challenges:

Explanation: Integrating ICT tools effectively requires a shift in teaching methodologies. Some teachers may face challenges in aligning ICT tools with curriculum objectives,

ensuring that they complement the lesson plan, rather than being perceived as supplementary or distracting.

Impact: Without proper alignment, the integration of ICT tools may not contribute meaningfully to the learning objectives, and teachers may struggle to balance traditional teaching methods with technology-enhanced approaches.

4. Teacher Training and Professional Development:

Explanation: Teachers who lack training in the use of ICT tools may find it challenging to incorporate these tools effectively into their teaching. A lack of awareness about the latest educational technologies and teaching strategies can hinder successful integration.

Impact: Inadequate training may result in underutilization of available ICT resources, limiting the potential benefits for both teachers and students. Continuous professional development is crucial to keep teachers abreast of evolving technologies.

5. Student Engagement and Motivation:

Explanation: While ICT tools have the potential to enhance student engagement, some teachers may struggle to design lessons that effectively capture students' attention and motivation. Inappropriate use or over-reliance on technology may lead to disengagement.

Impact: If students perceive ICT integration as tedious or irrelevant, the overall effectiveness of technology-enhanced learning diminishes. Teachers need strategies to balance the use of technology to maintain student interest.

6. Time Constraints:

Explanation: Teachers often face time constraints in covering the mandated curriculum. Planning and implementing ICT-integrated lessons may require additional time, and some teachers may find it challenging to strike a balance between traditional teaching methods and technology integration.

Impact: Teachers may opt for traditional methods to meet curriculum demands, limiting the incorporation of ICT tools. Time constraints can impede thorough planning and preparation for technology-enhanced lessons.



### **Probable Solution to those Problems**

Addressing the challenges faced by secondary-level teachers in integrating ICT tools into their teaching practices requires a multifaceted approach. Here are probable solutions to the identified challenges:

1. **Infrastructure Investment:** Increase funding for schools to improve technology infrastructure, ensuring sufficient devices and reliable internet access.
2. **Technology Grants:** Seek external grants and partnerships to provide schools with additional resources for acquiring ICT tools.
3. **Professional Development:** Offer ongoing professional development for teachers to enhance their technical skills and troubleshoot common issues.
4. **Establish Support Systems:** Create a dedicated technical support team or hotline to assist teachers promptly with any technology-related challenges.
5. **Pedagogical Training:** Provide specialized training for teachers on integrating ICT tools into lesson planning and aligning them with curriculum objectives.
6. **Peer Collaboration:** Encourage collaboration among teachers to share successful pedagogical strategies and best practices for incorporating technology.
7. **Continuous Training:** Establish regular training programs to keep teachers updated on the latest educational technologies and effective teaching methodologies.
8. **Online Learning Platforms:** Provide access to online learning platforms where teachers can engage in self-paced professional development courses.
9. **Interactive Content:** Develop or curate interactive and engaging digital content that aligns with the curriculum to capture students' interest.
10. **Gamification:** Explore Gamification strategies to make learning with ICT tools more enjoyable and motivating for students.
11. **Curriculum Review:** Collaborate with educational authorities to review and adapt the curriculum, allowing for more flexibility in lesson planning and ICT integration.
12. **Time-Management Training:** Provide teachers with training on effective time-management strategies to optimize lesson planning and technology integration.



Implementing these probable solutions requires a collaborative effort from educational institutions, policymakers, and stakeholders. It also necessitates a commitment to ongoing support and professional development for teachers. By addressing these challenges systematically, the integration of ICT tools can become a transformative force in secondary education, enhancing the learning experience for both teachers and students.

## **Conclusion**

In conclusion, the exploration of specific challenges faced by secondary-level teachers in integrating ICT tools into their teaching practices highlights a range of complex issues that impact the effective utilization of technology in education. The identified challenges encompass both practical and pedagogical dimensions, emphasizing the need for comprehensive solutions to ensure successful integration and maximize the benefits of ICT in secondary education. The limited access to technology, coupled with insufficient technical support, poses significant barriers to the seamless integration of ICT tools. Addressing these challenges requires strategic investments in infrastructure and ongoing technical assistance to empower teachers to navigate and troubleshoot technological issues confidently.

Pedagogical challenges underscore the importance of aligning ICT tools with curriculum objectives and traditional teaching methods. Teachers must receive adequate training and professional development to foster a pedagogical shift that seamlessly incorporates technology into the learning environment. Additionally, strategies to balance technology use and maintain student engagement are crucial to ensuring that ICT integration enhances rather than detracts from the learning experience. The recognition of time constraints highlights the necessity for a realistic approach to curriculum planning and teacher workload management. Supporting teachers with effective time-management strategies and resources can contribute to a more balanced integration of ICT tools without compromising the coverage of essential content.

In conclusion, addressing these challenges requires collaborative efforts from educational institutions, policymakers, and stakeholders. Investments in teacher training programs, technological infrastructure, and ongoing support systems are imperative to overcome the identified hurdles. Moreover, fostering a culture of innovation and adaptability in education can contribute to a positive mindset shift, encouraging teachers to embrace ICT tools as valuable



assets in the educational landscape. Ultimately, the successful integration of ICT tools in secondary education demands a holistic and sustained approach that recognizes the unique challenges faced by teachers. By addressing these challenges, educators can harness the full potential of ICT tools to create dynamic, engaging, and effective learning environments for secondary-level students, preparing them for success in the digital age.

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