



# Role of Information and Communication Technology (ICT) in Education: A Study of the Student Community

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**Abstract:** Every element of human life has been impacted by scientific and technological advancements, and the field of education is no exception. ICT (Information and Communication Technology) gives educators and students access to a variety of platforms for exchanging and receiving knowledge. The learner community uses these platforms to further their education. As a powerful tool, technology has simplified many tasks, allowing individuals to perform activities more efficiently and connecting people across vast distances. Educational technology provides affordable means of connecting with students and gaining access to their knowledge in a variety of ways. Since COVID forced them to switch to online learning, ICT tools have been used extensively by students and teachers. Since education was spreading in dimensions that were not limited by time or space, it has altered the idea of traditional classrooms. This change brought to light the advantages and disadvantages of digital platforms as they became indispensable for collaboration, education, and learning. In order to maximize the impact of technology on academic success, this paper analyzes current trends and emphasizes the crucial role that technology plays in assisting students in achieving their educational objectives.

**KEY WORDS:** Information and Communication, Technology, Education, Students.

## 1. INTRODUCTION:

Technological developments have had a significant impact on people's social lives. Numerous aspects of people's lives have changed, and education has also gone through a process of change from traditional to modern. There are numerous online resources that make the educational process easier. But there are a lot of obstacles that make it difficult for people to use technology. First and foremost, one should be well-known for using technology. Second, using technology can lead to technical issues. The third dimension is time and space, which are inherent to the daily activities of social beings. The last dimension is economic, or perhaps more accurately, financial/economic access to technology. Technology is the use of knowledge to achieve measurable, useful objectives. Technology can also refer to the outcomes of such endeavours; these can include both tangible and intangible tools, such as machines or software. Despite being around for centuries, technology has advanced rapidly in recent years. The development of new materials, the shrinking of electronics, and the expansion of the Internet are some of the causes of this. Communication has completely changed since the advent of technology. Communication with people around the world is now easy thanks to social media, smartphones, and the internet. Friends, family, and business associates can now stay in constant contact even when they are on different continents thanks to email, instant messaging, and real-time video calls. Science has been significantly impacted by technology. The use of supercomputers, data analysis tools, and sophisticated laboratory equipment has accelerated scientific research. Scientists can now understand complex ecosystems, uncover genetic mysteries, and explore new regions thanks to technology. By making learning more accessible and engaging. Students can now access knowledge outside of traditional classroom settings thanks to e-learning platforms, digital textbooks, and online resources. The revolutionary ways that virtual reality experiences and interactive educational tools have changed how students comprehend complex ideas have made learning more fun and engaging. The largest donor to education in developing countries is the World Bank Group, which works on education projects in more than 80 countries to give everyone access to high-quality education and opportunities for lifelong learning.



As part of its broader education-related work, the WBG works with governments and organizations around the world to support innovative projects, timely research, and knowledge-sharing activities regarding the proper and efficient use of Information and Communication Technologies (ICTs) in educational systems, or "EdTech"—to enhance learning and contribute to the global fight against poverty. In order to determine the levels of "Learning Poverty" around the world, the World Bank determined the proportion of 10-year-old children who, by the end of primary school, are unable to read and understand a simple story. In low- and middle-income countries, 53 percent of people are "learning poverty"; in the world's poorest countries, the average is 80%.

The importance of ICT in education was further highlighted by the COVID-19 pandemic, which caused schools, colleges, and universities all over the world to switch to online and hybrid learning models. This change brought to light the benefits and drawbacks of ICT, as well as its potential to promote learning continuity. Virtual classrooms, learning management systems, interactive simulations, and social media platforms are just a few of the many ICT tools that students use today to improve communication, teamwork, and knowledge access.

The history of Information and Communication Technology (ICT) in education is characterized by a series of technological innovations that have progressively transformed teaching and learning practices. This study outlines the chronological development of ICT in education, highlighting key technological advancements and their implications for educational practices.

This study discusses the role of ICT in the educational community with the goal of offering an in-depth understanding of how these technologies are used, their advantages, the challenges that students face, and their overall influence on academic results.

### 1.1. THEORETICAL FRAMEWORK:

The present study is grounded on Manuel Castells Information Society Theory to understand the role of ICT on student community.

**Manuel Castells Information Society Theory:** Manuel Castells is a prominent sociologist and communication theorist renowned for his contributions to understanding the relationship between technology, society, and the economy. His "Information Society Theory" is central to his work, especially as outlined in his influential trilogy, "The Information Age: Economy, Society, and Culture" (1996-1998). This theory explores how societies are transforming due to the rapid advancement and integration of information and communication technologies (ICTs). His analysis is foundational in understanding the modern world's shift to a knowledge-based economy and the profound social, economic, and cultural changes accompanying it. According to Castells, the production, processing, and sharing of information are essential components of social and economic endeavours in an information society. The idea of the "network society," which is a social structure made up of networks driven by ICTs, is central to the information society. Rapid information and resource exchange is made possible by these networks' decentralization, global reach, and interconnection. Every element of life is impacted by this structure, including politics, economics, culture, and individual identity. Castells' framework remains highly relevant in analysing phenomena such as globalization, the digital economy, and social media's role in identity and activism. It offers a framework for comprehending how technology alters communication, learning, and power dynamics in educational settings, this theory is especially pertinent when looking at ICT in education.

### 2. LITERATURE REVIEW:

Over the past few decades, there has been a significant increase in scholarly research on the use of information and communication technology (ICT) in education. The potential of ICT to improve learning outcomes, support individualized and collaborative learning, and address implementation challenges are the main topics of this literature review, which explores the complex effects of ICT on educational practices.

**P. Tadeu, C. Brigas, G. Martinez, J.M.F. Batanero (2019)** in their study on **NEW TRENDS IN EDUCATION: THE USE OF ICT IN DIFFERENT WAYS** reveals how ICT tools that can be used in educational environments to help students. ICT tools can be used to enhance learning, support the teaching process, and make it easier to incorporate some creative teaching methods into the curriculum. Additionally, its use in educational settings ought to be encouraged for social reasons, as students will need to be ready to navigate a technological society beyond the confines of the classroom. Students who are proficient, engaged, and capable of using new technologies to solve a variety of problems are required by society.



**D. Koushik. (2019)** in her study on **The Role and Impact of ICT in Improving the Quality of Education: An Overview** revealed how revolution in information and communication technologies has reduced national boundaries. By integrating ICT into different educational phases, it can improve educational standards and quality. However, the implementation of ICT in 21st-century development is hampered by a lack of resources in the educational sector. There are many obstacles in the way of using and integrating ICT in contemporary education. Issues such as the availability of ICT resources in educational institutions, inadequate funding, a lack of training, a language barrier, and a lack of expertise in using ICT equipment. However, we can overcome the obstacles: raising awareness of ICT education, developing policies to support widespread access to ICT-learning and ICT-adoption skills and competencies, expanding community involvement for ICT application self-sustainability, building supportive infrastructure like electricity, internet, etc.

**Stošić, L., Dermendzhieva S., & Tomczyk, L. (2020)** in their study on **Information and communication technologies as a source of education** reveals how ICT can help teaching learning process. ICT use in education raises the standard of instruction, and computer literacy development is greatly aided by ICT-based learning. Students concurred that most colleges and faculties should have technical equipment as a result of the study, and that faculty use of ICT should become an essential component of education and learning's teaching process. Opportunities to expand learning and expression processes are presented by the use of ICT in faculties. ICTs combine, reformulate, transform, and analyse facts from the vast amount of civilization's information, mediating the search for similarities and differences. The heuristic potential of informatization in education is particularly evident in this chance to classify knowledge. The inclusion of an individual or group in pre-existing social relationships and norms is mediated globally by ICTs. In other words, because it is inherently integrative, information technology in education fosters the development of skills necessary for proficient and successful problem-solving in the context of professional activities.

## 2.1 FOCUS OF THE STUDY:

The study's scope is restricted to the urban and rural regions of Kashmir. It offers insights into how ICT tools are used in various contexts and focuses on educational institutions at various levels, including schools, colleges, and universities. ICT ensures educational equity by providing opportunities for marginalized groups, like students in remote areas or those with disabilities, to be included.

The study discusses how the region's educational system can become more inclusive with the use of ICT. Limited studies exist on the specific role of ICT in education within the Kashmir context. This study is needed to fill this gap, offering localized and actionable insights.

## 3. OBJECTIVES:

- ❖ To examine the role and impact of Information and Communication Technology in the field of education.
- ❖ To analyze and understand the barriers faced by the student community while utilizing technology.
- ❖ To identify the most commonly used devices by students for educational purposes.

## 4. METHODOLOGY:

The information for this study was collected from students enrolled in a variety of courses to understand how technology supports their educational experiences. The primary aim of this research is to explore how students access technology and the barriers they encounter in its use. The study's target population comprised students from various educational institutions across Kashmir. These participants represented a diverse range of academic backgrounds and were selected to provide insights into the use of technology in education within this specific region.

To gather data, an online survey method was employed, with both open- and closed-ended questions designed to capture detailed responses.

A Google survey-based questionnaire was designed to collect primary data, keeping into consideration the objectives of the study. The link to the survey was made available to respondents from 20 October to 20 November, 2024, allowing for a data collection period of 1 month.

For this paper, respondents were selected, which include 70 Questionnaires as the sample. For this study, stratified random sampling was used to explore the role of ICT among students across different demographic and academic subgroups and then students were selected randomly. The population was divided into strata based on geographic location, academic qualification and access to technology. Stratified random sampling technique was chosen to ensure that each subgroup was adequately represented, allowing for a more nuanced understanding of how ICT impacts learning in different contexts.

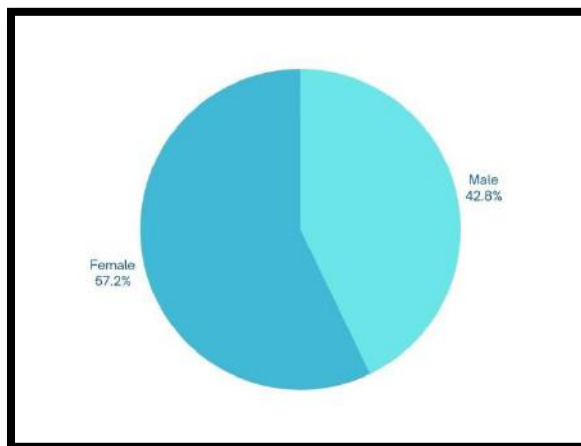
The data was then analysed, tabulated and interpreted.



**5. ANALYSIS & FINDINGS:**

Data provided by the respondents is presented under the following headings:

❖ **Gender distribution of the respondents:**

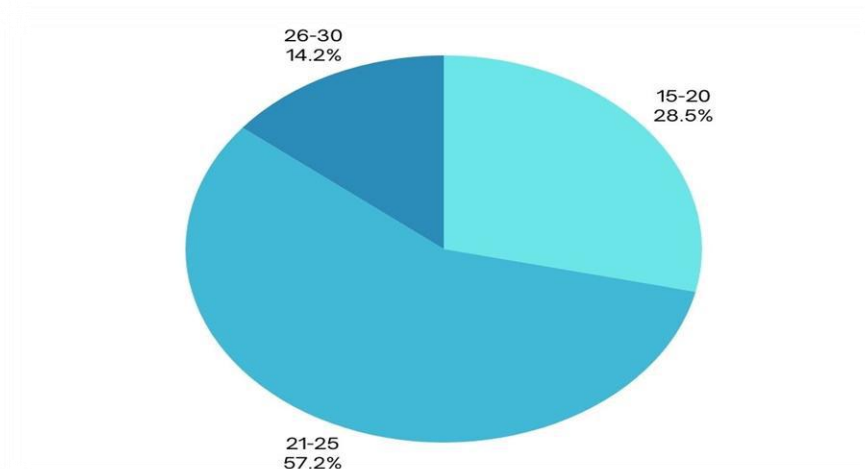


**Figure 1**  
**Gender Distribution of the Respondents**  
 Table 1

Gender Distribution of the Respondents	No. of Respondents	Percentage
<b>Male</b>	<b>30</b>	<b>42.8%</b>
<b>Female</b>	<b>40</b>	<b>57.2%</b>
<b>Total</b>	<b>70</b>	<b>100%</b>

40 students (57.2%) respondents, who responded to the survey were females, followed by 30 (42.8) male students depicted in Figure 1.

❖ **Age of the respondents:**



**Figure 2**  
**Age Distribution of the Respondents**

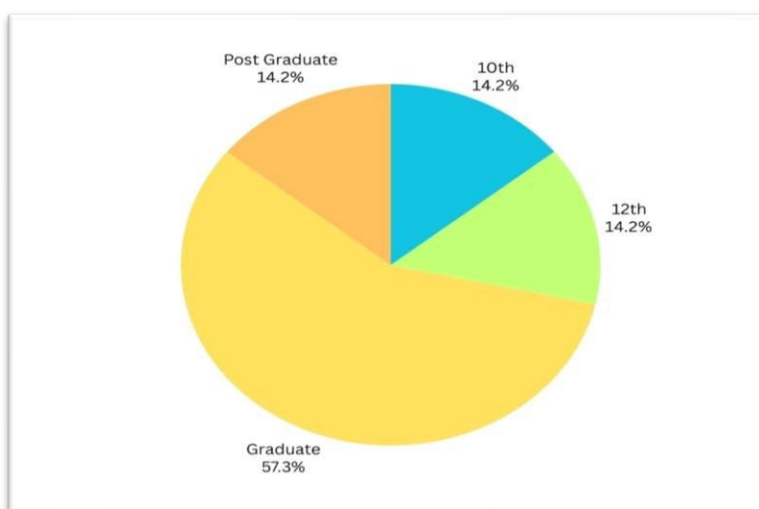


**Table 2**

Age	No. of Respondents	Percentage
15-20	20	28.5%
21-25	40	57.2%
26-30	10	14.2%
Total	70	100%

Most of the respondents (57.2%) belonged to the age group of 21-25, (28.5%) in the age group of 15-20 followed by (14.2%) in the age group of 26-30.

❖ **Educational Qualification of the Respondents:**



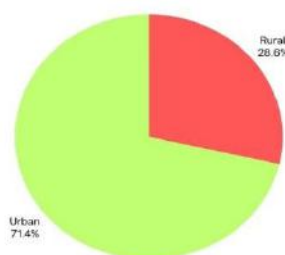
**Figure 3**  
**Distribution of the Respondents by Educational Qualification**

**Table 3**

Educational Qualification of the Respondents	No. of Respondents	Percentage
10 <sup>TH</sup>	10	14.2%
12 <sup>TH</sup>	10	14.2%
Graduate	40	57.3%
Post Graduate	10	14.2%
Total	70	100%

The educational qualification of the respondents revealed in figure 3 reflects that (57.3%) were graduates 10 respondents who were graduates, 14.2% were in 12<sup>th</sup> followed by 10 respondents in 10<sup>th</sup> grade.

❖ **Residence of the Respondents:**



**Figure 4**  
**Distribution of the Respondents by Residence**



**Table 4**

Residence of the Respondents	No. of Respondents	Percentage
Urban	50	71.4%
Rural	20	28.6%
<b>Total</b>	<b>70</b>	<b>100%</b>

The distribution of the data in Table 4 reveals that the sample population consisted of (71.4%) of urban residents and (28.6%) rural residents.

❖ **Do you have access to the technology? If No? Why?**



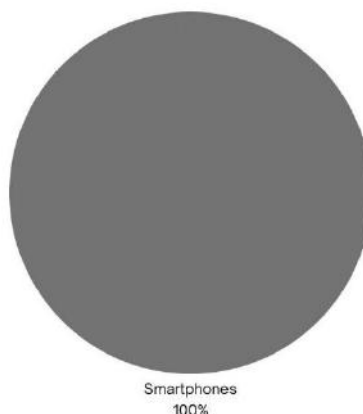
**Figure 5**  
**Distribution of the Respondents on the basis of access to the Technology**

**Table 5**

Respondents access to the Technology	No of Respondents	Percentage
Yes	70	100%
No	-	-
<b>Total</b>	<b>70</b>	<b>100%</b>

The distribution of the respondents in Table 5 reveals that (100%) were having access to the technology.

❖ **Which gadgets do you use?**



**Figure 6**  
**Distribution of the Respondents using different Gadgets**

**Table 6**

Gadgets used by the Respondents	No. of Respondents	Percentage
Smartphones	70	100%



Tablets	-	-
Laptops	-	-
Any Other	-	-
<b>Total</b>	<b>70</b>	<b>100</b>

The distribution of the data in table 6 reveals that (100%) respondents user smartphones.

❖ **What obstacles do you face when using the ICT?**

**Distribution of the Respondents on the basis of obstacles faced while using Technology**

**Table 7**

Obstacles faced by the Respondents	No. of Respondents	Total
Lack of Technical skills	20	28.6%
Connectivity Issues	50	71.4%
Complex Software Interfaces/Device Affordability	-	-
Any Other	70	100%

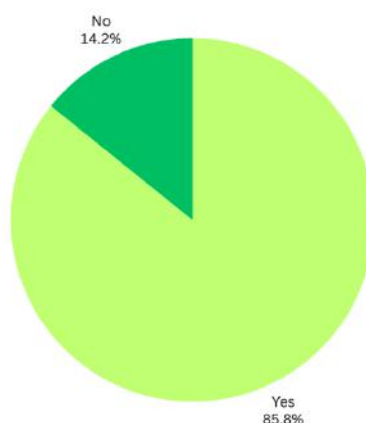
The distribution of the data in table 7 reveals that (71.4%) of the respondents face connectivity issues following while using the technology. (28.6%) of the respondents revealed that they face obstacles using technology due to insufficient technical skills.

❖ **Does ICT support you in your educational endeavours? If Yes? How?**

The data collected from 70 respondents revealed that (70%) found ICT to be highly beneficial in the educational endeavours. Technology enables seamless communication and collaboration, especially in group work or remote learning environments.

The responses also revealed that how technical support is essential to the continued viability of ICT use for every learning institution. Due to lack of specialized skill personnel, Educational Institutions fail to implement technology in education.

❖ **Do these devices fulfill the educational requirements?**



**Figure 7**

**Distribution of the Respondents on the basis of fulfilment of Educational Requirements**

**Table 8**

Respondents fulfilment of Educational Requirements	No. of Respondents	Percentage
Yes	60	85.8%
No	10	14.2%
<b>Total</b>	<b>70</b>	<b>100%</b>



The distribution of the data in table 5 reveals that (85.8%) of the respondents educational requirements are fulfilled by ICT.

## 6. CONCLUSION:

ICT is very important in education. The conventional methods of instruction and learning as well as the administration of education are under threat from new and developing technologies. ICT integration in education is crucial for raising educational standards and increasing their efficacy. Without education based on ICT, no nation can advance. It is thought of as the development's engine. Teaching and learning at all levels are changing significantly as a result of the use of ICT. Using ICT in the classroom is crucial for providing students with opportunities to acquire and use 21st century skills. ICT has been instrumental in advancing education. It has had a significant impact on the educational process by providing educators and students with new opportunities.

The study also revealed that there are countless wastes on the internet, and learners can readily and freely access modern, vulgar materials, which has led to the destruction of society's ethics, human values, and culture.

The findings reveal that ICT plays a significant role in improving students' access to information, fostering collaborative learning, and increasing engagement with course materials.

## 7. LIMITATIONS:

- ❖ Since the study's focus was on student community of Kashmir, equivalent studies could be done in other regions.
- ❖ The study was limited by its sample size which could also be increased to ensure more representation of the population under study.

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