



ICT @ SCHOOL Scheme in Himachal Pradesh, India

Sanjeev Kumar

Department of Elementary Education, Govt. Middle School, Rugra, Himachal Pradesh, India

sanjeev24778@rediffmail.com

ABSTRACT :

Himachal Pradesh is well known in all over the country for taking new steps regarding quality education at school level. The State has implemented various schemes for providing quality education to all students. This paper deals with the role of Information and Communication Technology (ICT) in school education system. The hilly State has implemented the ICT @ School Scheme in 2010 – 11 in 628 schools. ICT is a global phenomenon, and children who are computer literate at an early stage of their lives might deal better with the modern world. A sound knowledge of ICT makes it much easier for growing students to find and organize information. Many schools have dynamic and vibrant virtual learning methods which gives students access to study materials, skills questions, sample papers and assignments. Some schools even have [smart interactive white boards](#) for teaching. Children find it more interesting and become more adept in multimedia presentations when engaging with them in their assignments. The researcher discussed ICT @ School Scheme with respect to schools undertaken in the scheme; selections of subjects, topics included and even the number of hard spots in the subjects concerned. The main challenges related to finance, teachers' competency, administrative and social are being discussed in the thematic paper. The requirement of the trained staff, efficient equipments and need of motivation for using ICT in teaching – learning process are properly highlighted.

Keywords: ICT, School Education, challenges, Internet.

1. INTRODUCTION:

Present era is termed as Technological era and use of technological devices is usual in our daily life routine. Education is one of them. Students, teachers and administration are using the technology in various meaningful educational activities during school hours and off hours also. The devices like personal computer, laptops, mobiles and internet are in common use. Nowadays the role of Information and Communication Technology (ICT), especially *internet* in the education sector plays an important role, especially in the process of empowering the technology into the

educational activities. Education sector can be the most effective sector to anticipate and eliminate the negative impact of ICT. Technology (internet) in another side can be the most effective way to increase the student's knowledge (Sharma, 2010). Being aware of the significant role of ICT (internet) in our life, especially in the educational activities, education authorities should be wise enough in implementing the strategies to empower ICT in supporting the teaching and learning process in the classroom. ICT is not just the bloom of the educational

activities, but also it will be the secondary option to improve the effective and meaningful educational process. According to Bakshi, A. K., "Information and Communication Technology (ICT) is basically an umbrella term that encompasses all communication technologies such as internet, wireless networks, cell phones, satellite communications, digital television etc. that provide access to information."

According to Kaka, Saverinus (2008) the main purpose of the Strategy for Information and Communication Technology Implementation in Education is to provide the prospects and trends of integrating information and communication technology (ICT) into the general educational activities.

2. ICT IN EDUCATION SYSTEM OF HIMACHAL PRADESH:

Himachal Pradesh is well known for its hilly views and new creations and new upliftment in the field of quality education and sanitation. It is also famous as the land of various Gods and Goddesses. The State occupies its place in top States in the literacy as per the census of 2011. It has twelve districts and Hamirpur district is among the top districts in the country for literacy. Education rates among women are quite encouraging the State. The standard of education is the State has reached a considerably high level as compared to other States in India. There are 13374 Elementary, 3773 High and 2212 Senior Secondary Schools under department of education, H. P. Govt. The State Govt. is doing sincere efforts to provide quality education to all the children as education is the fundamental right of every child. The purpose of education is to ensure that all students gain access to knowledge, skills, and information that will prepare them to contribute to India's communities and workplaces in new era. Information and Communication Technology has permeated in every walk of life affecting the technology fields such as launching satellites, managing businesses across the

globe and also enabling social networking. The convergence of computer, communication and content technologies, being known as ICT, has attracted attention of academia, business, government and communities to use it for innovative profitable propositions. Year by year it is becoming simpler to use devices such as desktop palm top, iPod etc. 21st century is characterized with the emergence of knowledge based society wherein ICT plays a pivotal role. The National curriculum framework, 2005 (NCF, 2005) has also highlighted the importance of ICT in school education. With this backdrop, major paradigm shift is imperative in education characterized by imparting instructions, collaborative learning, and multidisciplinary problem-solving and promoting critical thinking skills. Government of Himachal Pradesh has announced 2010-2020 as the *decade of innovation*. Reasoning and Critical thinking skills are necessary for innovation. Foundation of these skills is laid at school level. It is desirable that affordable ICT tools and techniques should be integrated into classroom instructions right from primary stage so as to enable students develop their requisite skills. Most of the tools, techniques and tutorials are available in Open domain and accessible on web. At Primary and Upper Primary level, focus may be on simple access to information and trying to compile different views and analyze them to conclude in one's own way. At the Secondary level, gathering and structuring of data and computing to arrive at some reports may be taken up in any subject not necessarily Science and Mathematics. At the Senior Secondary level, when students are so exposed, they will get highly motivated to use ICT tools for taking up complex, multidisciplinary problems such as biochemistry, bioinformatics, environmental science, forensic science, nanotechnology, business intelligence etc. This may necessitate computing tools and techniques of generic nature as well as domain-specific. This is the time when the students and the teachers together will

work in global competitive environment. The schools affiliated to the CBSE have been at the forefront of adopting the most modern innovations and practices to ensure there is a continuous enhancement in the overall quality of teaching and learning. Technology can greatly assist teachers in classrooms to teach difficult and abstract subject matter concepts effectively if the right digital instruction materials, supporting technology infrastructure and intensive training is provided to the teachers to support instruction.

2.1 Need of the Hour for ICT @ School Scheme in School Education System for Improving the Quality in School Education:

The school education system basically requires improvement in some aspects for ICT education in schools. These aspects are: teachers, educational administration, technical support specialists, content developers and public – private partnership.

Teachers: Teacher professional development should have five foci:

- 1) Skills with particular applications;
- 2) Integration into existing curricula;
- 3) Curricular changes related to the use of IT (including changes in instructional design);
- 4) Changes in teacher role and
- 5) Underpinning educational theories (Zacks, J., 2009).

Ideally, these should be addressed in pre-service teacher training and built on and enhanced in-service. In some countries, like Singapore, Malaysia, and the United Kingdom, teaching accreditation requirements include training in ICT use. ICTs are swiftly evolving technologies, however, and so even the most ICT fluent teachers need to continuously upgrade their skills and keep abreast of the latest developments and best practices.

Education Administration: Administration and leadership plays a key role in ICT integration in education. Many teacher or student initiated ICT projects have been undermined by lack of support from

above. For ICT integration programs to be effective and sustainable, administrators themselves must be competent in the use of the technology, and they must have a broad understanding of the technical, curricular, administrative, financial, and social dimensions of ICT use in education.

Technical Support Specialists: Whether provided by in-school staff or external service providers, or both, technical support specialists are essential to the continued viability of ICT use in a target school. While the technical support requirements of an institution depend ultimately on what and how technology is deployed and used, general competencies that are required would be in the installation, operation, and maintenance of technical equipment (including software), network administration, and network security. Without on-site technical support, much time and money may be lost due to technical breakdowns.

Content Developers: Content development is a critical area that is too often overlooked. The bulk of existing ICT-based educational material is likely to be in English (see section on language and content below) or of little relevance to education in developing countries (especially at the primary and secondary levels). There is a need to develop original educational content (e.g., radio programs, interactive multimedia learning materials on CD-ROM or DVD, Web-based courses, etc.), adapt existing content, and convert print-based content to digital media. These are tasks for which content development specialists such as instructional designers, scriptwriters, audio and video production specialists, programmers, multimedia course authors, and web-developers are needed. Like technical support specialists, content developers are highly skilled professionals and are not, with the exception of instructional designers, historically employed by primary and secondary schools. Many universities with distance education programs, and those who otherwise make use of ICTs, have

dedicated technical support and content development units.

Public – Private Partnerships: Himachal Pradesh is empowering the school structure and methodology of imparting the quality education through Public – Private Partnership (PPP). These partnerships take many forms, including private sector grants with government counterpart contributions, donations of equipment and education-related content by corporations to state-run schools, and the provision of technical assistance for planning, management, and strengthening human resources at the grassroots level. Multilateral organizations and international aid agencies have also driven many of the most significant ICT @ School in education efforts.

2.2 Importance of ICT @ School Scheme in School Education System:

ICT in school education system is important. Information and communication technology (ICT) has quickly become one of the basic building blocks of modern society. ICT supports learners but more importantly, it extends the reach of the population in ways we have yet to imagine. Gaining in importance are the following competencies:

- critical thinking,
- generalist (broad) competencies,
- ICT competencies enabling expert work,
- decision-making,
- handling of dynamic situations,
- working as a member of a team,
- and communicating effectively.

ICT is one of the key skills needed to access and enrich learning of all kinds. It's all about communication, and in the world in which our children are growing up, it is vital: whatever they do, they will have to be ICT- literate. ICT connects all areas of the curriculum. The internet can be a powerful resource; if children aren't connected at home school provision becomes even more important, (Carr, Andrea; McKenzie, Kate and Copeland, Clare, 2012). As per key findings of regional surveys held in [Africa](#) it is the

importance of fostering an ICT 'ecosystem' with numerous constituent parts working in collaboration to provide opportunities for innovative educational approaches. ICTs can be seen as a platform to overcome the worst parts of education and learning while creating new opportunities and innovative ways to teach and learn. Meeting this demand can take many forms - from distance learning on a radio or TV, to newer devices like the widespread mobile phone. Through it all though, the importance of local context and systematic capacity building is key. Careful monitoring and evaluation, and coordination, are critical to success, (Kelly, Tim, 2010). The following points clearly indicate the importance of ICT in school education:

1. Expanding educational opportunities
2. Increasing efficiency
3. Enhancing quality of learning
4. Enriching quality of teaching
5. Facilitating skill formation
6. Establishing and sustaining lifelong learning
7. Improving policy planning and management
8. Advancing community linkages

The importance of using ICT for improving education has been emphasized in the policy framework for over a decade now in Himachal Pradesh. Many initiatives are being taken from the Govt. side to make the ICT as the internal part of imparting the education in schools.

2.3 Categories of ICT in Education:

ICT in education can be broadly categorized in the following ways as:

- ICT as a subject (i.e., computer studies).
- ICT as a tool to support traditional subjects (i.e., computer-based learning, presentation, research).
- ICT as an administrative tool (i.e., education management information systems/EMIS).
- ICT as a medium of knowledge exchange.

3.0 Objectives of the Study:

- 1) To study district – wise schools undertaken in ICT @ School Scheme.

- 2) To study class-wise subject – wise topics covered and hard spots ICT @ School Scheme.
- 3) To study the penalty for failure of ICT @ School Scheme in schools due to various causes.
- 4) To study the challenges for ICT in School Education.

4.0 Results and Discussion: The data has been collected from the office of State Project Director, Shimla and inferences have been drawn which are discussed as follows.

District – Wise Schools Undertaken in ICT @ School Scheme: The ICT @ School Scheme has been launched by the Himachal Pradesh Govt. in 2009 – 10 but implemented this scheme in 2010 – 11. It

has been started in first phase in 628 Govt. Senior Secondary Schools under Himachal Pradesh Govt. in 2010. The project is proved very successful in the schools and the Himachal Pradesh Govt. decided to expand this project in more schools of the State. Therefore in the second phase in 2014-15, the project is carried over to more 615 Govt. Senior Secondary Schools, 835 Govt. High Schools and 70 upgraded Govt. Senior Secondary Schools/Govt. High School. Currently, the ICT @ Schools Scheme is running in 2148 Govt. Schools and five Model schools. The district – wise list of existing schools (1st Phase) and GSSS/GHS/Upgrades schools (2nd Phase) is given in the Table 1 as follows.

Table 1: List of ICT @ Schools in 1st And 2nd Phase of the Scheme Since 2010 – 11.

Sr. No.	Name of District	Phase 1	Phase 2			Total
		Existing Schools	GSSS	GHS	Upgraded GSSS/GHS	
1.	Bilaspur	35	46	44	4	129
2.	Chamba	29	55	86	0	170
3.	Hamirpur	70	10	54	2	136
4.	Kangra	149	87	173	4	413
5.	Kinnaur	07	20	21	0	48
6.	Kullu	26	31	46	11	114
7.	Lahaul & Spiti	06	16	11	0	33
8.	Mandi	98	99	110	22	329
9.	Shimla	80	107	108	16	311
10.	Sirmour	42	66	75	2	185
11.	Solan	29	43	58	4	134
12.	Una	57	35	49	5	146
Total		628	615	835	70	2148

It is clear from the Table 1 that maximum 149 schools are included from the Kangra district in the 1st phase of the scheme and only 07 schools were taken from Kinnaur district. But, in the 2nd phase 107 Govt. Senior Secondary Schools, 108 Govt. High Schools along with 10 upgraded schools are included from the Shimla district.

3. CLASS-WISE SUBJECT – WISE TOPICS COVERED AND HARD SPOTS ICT @ SCHOOL SCHEME:

This scheme implemented in four classes of Govt. schools, 9th, 10th, 10+1 and 10+2. The multimedia educational content of identified hard spots for computer aided teaching and computer aided learning in the selected schools. The three subjects Maths, Science and Social Science in Hindi medium and Physics, Chemistry, Maths, Biology and English in English medium are taken to run this project at the first stage. The complete detail of the topics covered and hard spots taken in the selected subjects and classes is given in the Table 2 as follows.

Table 2: Class – Wise, Topic – Wise Break Up of Selected Subjects in ICT @ School Scheme

Sr. no.	Class	Subject	Medium	No. of Topics	No. of Hard Spots
1.	9 th	Mathematics	Hindi	11	24
		Science		10	22
		Social Science		13	20
Total					66
2.	10 th	Mathematics	Hindi	12	24
		Science		14	28
		Social Science		14	18
Total					70
3.	10+1	Physics	English	12	68
		Chemistry		14	22
		Biology		22	70
		Mathematics		9	32
		English		6	17
Total					209
4.	10+2	Physics	English	10	100
		Chemistry		13	22
		Biology		16	90
		Mathematics		11	44
		English		7	13
Total					269

Source: (educationhp.org).

4. PENALTY FOR FAILURE OF ICT @ SCHOOL SCHEME IN SCHOOLS DUE TO VARIOUS CAUSES:

There is a provision of penalty and termination of contract due to non – fulfillment of contract. If the smart classroom or ICT laboratory remains down for more than 3 working days continuously from the date of lodging of complaint then 7.33 USD for 1 – 15 days, 14.66 USD for 16 – 30 days, 29.32 USD for 31 – 60 days will be imposed as penalty per day, per equipment, per school. If the multipurpose printer, UPS and LC TV / Monitor are not in functioning position, then there is penalty if the problem is not rectified within 3 working days from the lodging of complaint, then 14.66 USD for 1 – 15 days, 29.32 USD for 16 – 30 days, 43.99 USD for 31 – 60 days will be imposed as penalty per day, per equipment and per school from the day one. Same is the penalty for non – working of Internet and Networking per school per day.

If the rectification does not take place up to 90 days from the date of lodging the complaint and occurs in 15% or more allotted Govt. Senior Secondary Schools, then the contract will be terminated at the risk and cost of the bidder.

There is also provision of penalty @ 14.66 USD per day per Cluster Coordinator or State Project Officer if s/he remains absent without written intimation and does not respond to the queries raised by the Deputy Director of Higher Education and Director of Higher Education. There is provision of Refresher Course of teacher on the specified schedule. If the bidder fails to conduct this, then penalty @ 14.66 USD per day per school will be imposed till the bidder conducts the refresher courses of the teachers. All the schools in this project are monitored continuously by the authorities. There is also provision of penalty @ 7.33 USD per school per day if the bidder fails to submit the Monthly Monitoring Reports (MMRs) of all schools under the project. The Monthly Monitoring Reports

(MMRs) are submitted in specified formats and structures. If the bidder fails to submit according to this, then the report of the concerned schools is rejected and penalty @ 7.33 USD per MMR is imposed until the submission of MMR. The bidder is expected to complete all the liabilities covered under this project in each school within a stipulated period of time which is mentioned in the implementation schedule. But, if the bidder fails in this respect, then the penalty amount is 29.32 USD for 1 – 15 days, 43.99 USD for 16 – 30 days, 73.33 USD for 31 – 60 days and 146.66 USD for the days 61 onwards per school per day (Chand, R., 2015).

All the furniture and fixtures with power point fittings which need repairs or replacement during the usage in the contract period, the bidder is stick to install a new equipment of the same or higher configuration till the repaired equipment is received and installed properly. The bidder is allowed to take away the faulty equipment after replacement with new one of same or higher configuration.

5.0 Challenges for ICT @ School Scheme in School Education:

The Government of Himachal Pradesh is spending a lot of money on ICT @ School scheme from the last seven years. Many researchers agree with the idea that ICT's role is to be a reliable tool to improve the quality of life and this reduces the economic gap between developed and developing countries. Applying ICT to schooling is an urgent task for developing countries to implement (Parliamentary Office of Science and Technology 2006). However, there are challenges that the developing world is facing and these make the 'Digital Divide' continue not only between countries but also within countries (Parliamentary Office of Science and Technology 2006). The hurdles are mainly divided into four categories; a lack of financial resources, poor access to the internet, limited trained teachers, and lack of policy.

Lack of Financial Resources: Financial

resources are the first to implement any scheme at the ground level. The State Govt. has not enough funds to carry the ICT @ School scheme in all of the school in all over the State. Therefore it is implemented in selected schools in the first phase in 2010-11 and revised in 2014-15 for other selected schools.

Limited Internet Access: Himachal Pradesh is totally the hilly State and some areas remain cut off from the rest of world for four to five months. In such conditions, it is a challenging task to provide the Internet access to all the schools properly. The remote areas of Chamba, Lahaul & Spiti, Kinnaur, Sirmour and Shimla are not connected with roads till now. It is very challenging to establish the computer and ICT labs in the schools situated in these areas.

Lack of Trained Staff: The trained and skilled staff is the pre-requirement of this scheme to implement in schools. When it comes to practically applying ICT, which is new to traditional teachers, many may not know how to deal with it and sometimes they are reluctant to accept new technologies in their classrooms. Thus, tutors who can train these teachers about new technology and IT professionals who can technically install and maintain the system are needed.

Lack of Proper Policy: The policy is not framed keeping in view all the conditions of the State. It is implemented in a very haphazard manner. All the areas must be surveyed properly before the implementation of the scheme and proper infrastructural facilities should be provided there.

Main Obstacles:

- Classes do not have hardware beyond perhaps one computer.
- Computer is in the Principal's office and accessible for academic purposes.
- Teachers suffer from ICT phobia.
- ICT teacher controls and limits access to the computer lab.
- Those with computer knowledge are unable to integrate and have technological lessons.
- Classes size too large (30-60 students)

- for access and effective use.
- Internet connection not in the classroom.
 - Internet connection too slow. Government does not invest in resources that result in new methodologies like re orientation of the curriculum implementation approaches.
 - Our country and State has a general policy on ICT in education, but it's just on paper.
 - Teachers have no resources or technical support or professional development mechanism.
 - Lack of time, resources does not allow us to implement ICTs in our classrooms. (Angule, 2009).

6. CONCLUSION:

The most fundamental cause seems to have been the deep-seated belief that teaching is an art or at best an imperfect science with no role of technology in the design or delivery of instruction. But, it is observed in this paper that now times have changed and the paradigm of education and learning has changed from art or science to technology-mediated instruction and learning. ICT can, therefore, be perceived as a big change agent for education. India has the third largest system of education in the world, next only to USA and China, (Kumar, Sanjeev 2012) with more than 500 universities and around 30000 colleges. To introduce ICT-enabled education in such a large system one needs to have high quality multi-media enriched content in different disciplines for various courses including its multilingual conversion, capacity building of teachers and students in ICT skills and state of the art infrastructure along with networking and internet connectivity via Virtual Private Network (VPN) / broadband connectivity for disseminating the content and affordable access devices so that it reaches the doorsteps of the learners. The ongoing National Mission on Education through ICT (NMEICT) is a major initiative of the Govt. of India in this direction with an aim to leverage the

potential of ICT in providing high quality personalized and interactive content, free of cost, to all the learners. ICT in education is the need of the hour. It has the potential to provide solution too many of the challenges higher education faces today. As per the research observations of Nayak, R., (2011) the common fear that ICT shall replace a teacher is totally unfounded. Realization now seems to be slowly dawning on the teaching community that ICT is primarily to empower them and not to replace them. ICT is, therefore, not to be feared but to be embraced so as to empower our future generations by providing them high quality ICT-enabled education.

The role of ICT in Himachal Pradesh in the education sector is significant and critical for its rapid economic success. But, when implementing the ICT @ School Scheme in the education sector, there are considerable challenges such as cost, internet access, training and policy issue. But, each issue has its own ways of addressing which is effective practice around world. However, all these changes for development through applying ICT to the education sector must consider the environment each country faces, because the situation of each nation is totally different from each other. It might be different from region to region within the country and it changes as time goes by. Thus, there is needed to take the appropriate steps from the authorities to promote the role of ICT in the present school education system of the State.

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