



THE CHALLENGES AND ISSUES OF ICT INTEGRATION IN RURAL SECONDARY SCHOOLS IN KERALA

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Abstract

Education at schools and higher levels is undoubtedly of high standards with high literacy rates whereas the most pronounced and evident digital divide occurs in the educational sector which exacerbates the existing divides in society penetrating economic, social, geographic, gender, age and other divides. This paper is an attempt to understand the wider gap in the digital access and use of Information and Communication Technology (ICTs) in education and to assess those factors that hinders its access and use. It is expected that education, particularly with the introduction of ICTs, contributes to higher rates of technology adoption. Still there are serious issues in rural schools which prevent students from fully benefiting these technologies due to lack of access, inadequate infrastructure, poor connectivity, insufficient number of ICT skilled teachers, absence of proper technical staff for support and timely maintenance of the age- old equipments etc. In most of the schools, ICTs are ubiquitous but its real integration in the teaching-learning process and in improving the quality of education is very minimal. Since the movement from the conventional education to a new phase, urge for innovation in education through technology is a benchmark.

Key Words: *ICT, Rural Education, Digital Divide, Access, Knowledge Society.*

Introduction

Education has become a vast and complex institution across the world stimulating social change and development. Information and Communication Technology (ICTs), offers new possibilities beyond the four walls of traditional classroom. It has the power to take education to a higher domain. The digital age has an integral role in bringing technology and education together. The use of ICT in school education in developed countries is quite different from that of developing ones. Developed economies are more advanced in integrating new technologies in its educational system. ICT in fact improves the quality of education but at the same time, it maximizes the gap between the rich and the poor. ICTs have brought about changes in schools which in turn provide wider educational opportunities. Education finds better place for integrating ICTs as it acts as a catalyst for bringing change in teaching styles, learning approaches and in access to information (Watson, 2006). The growing use of ICT improves education and offers a new academic environment for students.

Though rural education was given priority in the process of planning and policy implementations, the expected outcomes were not obtained. There is a strong relationship between education and regional differences. As the schools in urban areas are having required facilities, the rural schools struggle to achieve adequate provision of materials and facilities needed for better educational services. Rural areas have to face many gaps like physical infrastructure, institutional facilities and human capital. Besides, lack of knowledge, skills, time and equipment's, issues in maintenance, connectivity problems, insufficient funds and sustainability of ICT-enabled projects are challenges that schools in developing countries face in introducing ICTs (Ward, 2007 & Katoch, 2012).



Background of the Study

The application and use of ICTs in school education is on an increase where in the near future courses will be offered completely online. Most of the online learning platforms such as e-learning, virtual learning, m-learning, ubiquitous learning, blended learning, MOOCs etc has altered the scope of 21st century education. As these new technologies have been integrated to make education more efficient and effective. With them there are possibilities for transforming teaching-learning process substantially than ever before. Adoption of ICTs in schools is connected with several domains such as the overall institutional domain, school development, teaching - learning environments etc. Thus, the integration of ICTs in education has a varied effect at institutional, pedagogical and curricular levels. Therefore, it is essential for exposing students to acquire skills which are needed for the 21st century education. In spite of many technological developments, the provision of quality education to remote and rural areas remains poor. Lack of proper education, health care and inadequate infrastructure are the greater barriers for the effective implementation of rural development programmes like EDUSAT, Tele-education, E-learning etc.

Draft National Education Policy, 2016 (MHRD, 2016) also stated that though there were huge developments in ICTs during the past decades, the slow progress in its use in education has resulted in serious backdrops. The potential benefits and use of ICTs in education remains limited. Therefore, efforts need to be accelerated in order to improve the quality education through the use of ICT. The benefits of ICTs are not equal everywhere, it creates disparities in developing and disadvantaged communities. “Rural schools are often poorly repaired, equipped and staffed with poorly paid teachers” (Breccia & Hermanowicz, 2006). The main reasons behind the poor quality of rural education are dismal standards of rural education, infrastructural inequities, lack of connectivity and unavailability of teachers etc.

Objectives

The study aims to identify the major impediments in ICT integration in rural secondary schools in Kerala. It also attempts to examine what are the limitations of and challenges to ICT- enabled education into rural schools. It further addresses the broader issues prevailing in education and rural areas.

Methodology

The present study is descriptive and analytical in nature. It is based on primary data which was collected using a well-structured questionnaire from the school principals, teachers and students. The field work was carried out in three districts during August to December, 2017. Samples were collected through multi-stage random sampling technique as it involved the selection of districts, type of schools, medium of instruction and standard of study etc. A total of 43 schools including both Government and Aided schools were selected as sample for the study.

Analysis and Discussion

The barriers of ICT adoption in schools were mainly grouped into three levels- the school level, teacher level and student level. The perceived barriers related to the use of ICT in rural schools are enormous mainly due to geographical difficulties, poor infrastructure build-up, absence of proper electricity, shortage of smart classrooms, poor internet connectivity etc.



Table 1.1 Major Barriers in ICT – Enabled Education in Schools

Barriers	n	%	Rank
High cost of ICT equipment's	2	4.65	15.5
Inadequate funding	9	20.93	8
Lack of power supply	8	18.60	9.5
Delay in timely maintenance	8	18.60	9.5
High student – computer ratio	25	58.14	3
Insufficient number of computers	32	74.42	1
Insufficient number of networked computers	3	6.98	13.5
Absence of trained faculty	12	27.91	4.5
Poor connectivity	10	23.26	6.5
Lack of time	12	27.91	4.5
Difficulties in updating software's	7	16.28	11
Lack of interest of teachers	10	23.26	6.5
Constraints in ICT integration into normal school curriculum	4	9.30	12
Lack of adequate content/ material for teaching	3	6.98	13.5
Problems of accessibility to existing hardware	2	4.65	15
Any other	26	60.47	2

Source: Primary Survey

Table 1.1 shows the major constraints faced by schools in adopting ICTs. The result indicates that insufficient number of computers (74.42 percent) was the major problem for non- utilization of ICTs in schools. High student to computer ratio was shown as the significant barrier by 58.14 percent schools only 27.91 percent opinioned lack of trained faculty and lack of time as the major hindrances. Poor internet connectivity and lack of interest of teachers too were enduring issues in the adoption of ICTs. The other major reason is the lack of funds (20.93 percent), lack of power supply (18.60 percent) and delay in timely maintenance of ICT peripherals (18.60 percent). Besides, there were other challenges such as difficulties in updating software's, constraints in integrating ICTs into the normal school curriculum, insufficient number of internet connected computers, unavailability of adequate digital contents and problems in accessing ICT peripherals.

In addition, schools also faced many other challenges in their ICT adoption which are summarized as follows: -

- Worse/poor condition of classrooms (absence of electrified and networked classrooms)
- Unreliable Electric supply
- Lack of basic physical infrastructure facilities such as good building, secured classrooms (School buildings unfit for ICT usage)
- Unavailability of computer lab and absence of space, furniture's and internet connectivity.
- Large number of damaged computers (kept as E-wastes).
- Sharing of a single computer lab by U.P and High schools.
- Absence of Separate teachers for handling ICT
- Insufficient number of teachers
- Lack of ICT training for teachers
- Shortage of Smart classrooms
- Lack of maintenance staff
- Functioning of computer lab and smart class in the same room



Teachers’ Obstacles for Effective ICT use

The major inhibiting factors that led to teachers’ non- usage of ICTs in schools is related to insufficient, damaged and out- dated equipments followed by pedagogy related factors like teachers’ poor ICT skills, insufficient technical support and content, absence of earlier models and difficulty for ICT integration in teaching, lack of clear cut ICT goals and reluctance from the part of teachers to use it (European Commission, 2013). Lack of time and confidence along with fewer number of ICT equipments, difficulties in using ICTs in classrooms, inadequate training in handling these devices and indifferent attitude are the problems encountered by teachers in utilising ICT (Bhat, 2016).

Table 1.2 Barriers in effective Utilization of ICT

Barriers	n	%
Insufficient ICT equipment (Computers, projectors, Laptop, etc.)	91	54.17
Inadequate technical and administrative support	66	39.29
Lack of time	62	36.90
Lack of ICT experience/skills	56	33.33
Any other reason (specify)	55	32.74
Lack of interest/motivation	39	23.21
Limited ICT Training	30	17.86
Poor connectivity	30	17.86
Lack of adequate content/material	21	12.50
Lack of access	20	11.90
Difficult to integrate ICT into the curriculum	17	10.12
Language barriers	3	1.79

Source: Primary survey

Table 1.2 shows teachers’ perceived obstacles for the effective use of ICT in teaching which is ranked on the basis of the ‘most significant’ barrier to the ‘least significant’ one. They rated ‘insufficient ICT equipments’ (54.17 percent) as the most significant factor hindering the utilization of ICTs at school which is followed by inadequate technical and administrative support (39.29 percent) and teachers’ lack of time to integrate ICT in teaching (36.90 percent). While, 33.33 percent of teachers rated lack of ICT experience or poor ICT skill, 23.21 percent rated indifferent attitude towards ICT as major obstacles in integrating ICTs at school.

Limited number of ICT training received, poor access to internet connectivity, inadequate digital contents, lack of access to ICT resources, difficulty in integrating ICT into the curriculum and language barriers were also considered as greater obstacles for teachers. It is understood from the in-depth interviews with teachers, that they also have other challenges such as content overload, poor infrastructure, delay in maintenance of damaged ICT equipment’s, electricity problems, shortage of classrooms to conduct ICT-enabled teaching, lack of technical staff for assistance, unavailability of computer labs/smart classrooms for access, lack of technical skills to operate projectors and other multi-media devices, physical constraints like difficulty in using computers for a long time period, lack of subject-wise ICT training and lack of continuous and regular training programmes.



Problems Encountered by Students

Factors that affect students’ access to and use of ICTs at school include insufficient ICT peripherals, lack of access to computers, internet and other ICT peripherals, inadequate ICT skills and knowledge and lack of necessary support and guidance from schools. Poor accessibility to ICT peripherals was the biggest problem marked by students. The non-utilization of ICTs in the teaching-learning process adversely affected students’ competence and achievements.

Table 1.3 Major Barriers encountered by Students

Barriers	n	%
Lack of access to computer	240	62.34
Lack of time	215	55.84
Poor ICT skills	194	50.39
Insufficient ICT peripherals	167	43.38
Lack of access to internet	104	27.01
Teachers lack of knowledge/skills	89	23.12
Poor/slow connection	73	18.96
Lack of guidance from school	66	17.14
Others	179	46.49

Source: Primary Survey

The major problems encountered by students in their access to and use of ICTs at school includes lack of access to computers (62.34 percent), lack of time (55.84 percent), poor ICT skills (50.39 percent), insufficient ICT peripherals (43.38 percent) including projectors, interactive white boards, speakers etc. Students indicate other barriers too, such as lack of access to internet (27.01 percent), poor ICT knowledge of teachers (23.12 percent), unreliable connectivity (18.96 percent) and lack of proper guidance from school (17.14 percent). There are still other problems like, absence of electric connection, unfit school buildings, damage of ICT equipment’s, language barriers, insufficiency of smart classrooms etc.

Lack of access to computers and internet is one of the major constraints faced by students in effectively utilizing ICTs as they got access to computers only at the computer lab and not in classrooms, library or other places. Moreover, students were allowed to use ICTs at school during the ICT periods and were not given any extra time for effectively using them.

Level of ICT Integration

In order to assess the level of ICT integration in schools they were categorized into three stages based on their extent of ICT utilization in education; introductory level, integration level or an advanced level of better ICT utilization in the teaching-learning process.

Table 1.4 Extent of ICT Integration

Level of ICT integration	n	%
Introductory stage	22	51.16
Integration stage	20	46.51
Effective utilization stage	1	2.33
Total	43	100.00

Source: Primary Survey



Though almost 10-12 years have passed since the implementation of ICTs in most of the schools, there is no drastic change happened in the school system. Table 1.4 shows that 51.16 percent of the schools remain in their beginning stage with absence of adequate ICT infrastructure, limited integration in the teaching-learning process, lack of time and teacher's inefficiency to use ICTs, whereas 46.51 percent showed some positive advancements towards ICT adoption. Greater efforts and active participation are still required for these schools to move towards complete ICT-enabled education.

Conclusion

Though the potential benefits of ICTs bring positive result in education, there continues to be difficulties in adopting these new technologies. It is evident from the findings that the integration of ICT in teaching-learning process is limited as lesser schools had so far embedded it into their educational system to a significant extent.

The issues and challenges of bringing ICT-enabled education especially to rural areas are massive. Lack of awareness, rural illiteracy, barriers for ICT access and utilization are the major problems faced. Ensuring its maximum utilization in the teaching-learning process could have wider impact in expanding educational opportunities.

Several new and innovative strategies were adopted for improving the quality of education which includes, Hi-Tech School Programme for equipping 45,000 classrooms into Hi-Tech by providing necessary laptops, projectors, interactive white boards, LCD TVs, speakers, high speed broadband internet connectivity etc, Online training platform for teachers (KOOL), SAMAGRA E-Resource portal for enabling adequate content for all subjects from class 1 to 12, Little KITES – student's IT Club for improving students ICT skills. Thus, the state government has recently made substantial interventions to revamp the public education system, especially with the creation of massive infrastructure for ICT integrated teaching and learning. However, all these could bring about positive outcomes up to the intended level, only if the impediments captured in the study are successfully overcome.

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