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ICT (Information and Communications Technology) in Education: Change brings Challenges

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ABSTRACT

The history of use of ICT in Education goes back to the era of introduction of calculators, usage of overhead projectors, video projectors, and interactive boards and so on. Our current education system promotes usage of Computer and Mobile technologies for providing education. The Covid-19 pandemic situation has made us all dependent in a positive way on ICT to continue imparting education. It has also helped in providing a platform for interaction between students, teachers, parents and educational institutions. But as with any new change there are challenges. And to understand the challenges, one needs to ask the beneficiaries and check on their experiences. It will help to get the answer of whether we are able to achieve what we intend to or is the reality very different. This paper explores the role of ICT in education and touches upon reality by analyzing the views of students and parents in rural area of Gujarat. The paper also highlights areas of concern and need for change to make ICT more effective in Education.

Keywords: *Covid-19, challenges, education, ICT, Information Technology, online learning, rural area.*

1 INTRODUCTION

ORIGIN of online education can be found as early as mid-1800s used by the University of London through the postal system with the purpose to provide flexibility to students. This form of education is what we call distance learning. Also, from the same time period there is technology being used to simplify education. Some of the tools used thereafter are:

The Slide Ruler - it was originally designed for scientists and engineers as a substitute for the calculator. Later on it was used in classrooms till electronic calculators came into existence.

The Magic Lantern – it was used in theaters and classrooms to enhance and show images and objects. Those who were expert in using this device rapidly changed the images as if the images were moving. It was the projector of the olden days.

Slates and chalk – slates are small boards on which students could write with pieces of chalk. In the times when paper was not easily available this was a revolutionary invention. Though it had its shortcomings still it was widely used.

Blackboards – blackboards are bigger slates that can be used as a teaching aid in a classroom. They are still used in places where whiteboard has not reached.

The Calculating Machine – the father of 'modern digital computing' Charles Babbage invented the first calculating machine. Though not very useful in classrooms it led to the invention of digital computers.

The Typewriter – it introduced the QWERTY keyboard which is still used on all modern devices and computers.

The Film Projector – they were being used in classrooms to make education more interesting. A film strip would be moved along will audio recording.

Photocopier – it was a revolutionary invention by XEROX one which is still in use to copy and widely distribute educational material.

The handheld Calculator – it reduced calculating time greatly in classrooms but it also increased dependency for longer calculations.

The personal Computer – IBM came up with the first personal computer. Initially it did not have internet so it was mainly used for book keeping, accounting, typing, calculations etc. Then came the floppy, CD-Rom, DVD-Rom and many more such inventions. In these modern times the desktops have become smaller and are now called laptops. [1]

Last 10 years have seen a drastic increase in use of Information, Communications and Technology in education. With the advent of white boards all kinds of photographs and videos related to a topic could be showcased in the classroom to students easily. It also makes classes more interactive and interesting. Also, Massive Open Online Courses (MOOC) have made available all kinds of courses online from the best of the universities around the world. This has made it very easy for employees to learn without actually setting foot in a classroom or just upskill themselves.

2 LITERATURE REVIEW

Online learning can be termed as a tool that can make the teaching–learning process more student-centered, more innovative, and even more flexible. Online learning is defined as "learning experiences in synchronous or asynchronous environments using different devices (e.g., mobile phones, laptops, etc.) with internet access. In these environments, students can be anywhere (independent) to learn and interact with instructors and other students". [2]

According to Shivangi Dhawan (Online Learning: A Panacea in the Time of COVID-19 Crisis) several arguments are associated with e-learning. Accessibility, affordability, flexibil-

ity, learning pedagogy, life-long learning, and policy are some of the arguments related to online pedagogy. It is said that online mode of learning is easily accessible and can even reach to rural and remote areas. It is considered to be a relatively cheaper mode of education in terms of the lower cost of transportation, accommodation, and the overall cost of institution-based learning. Flexibility is another interesting aspect of online learning; a learner can schedule or plan their time for completion of courses available online. Combining face-to-face lectures with technology gives rise to blended learning and flipped classrooms; this type of learning environment can increase the learning potential of the students. Students can learn anytime and anywhere, thereby developing new skills in the process leading to life-long learning. The government also recognizes the increasing importance of online learning in this dynamic world. [3]

Across the country, the Government of India is encouraging several e-learning projects under the National Mission on Education through ICT initiatives such as Swayam, Swayam-Prabha, National Digital Library, e-Yantra, Virtual Lab etc. that are helping students as well as teachers in upskilling as well as providing them quality resources.

A 2018 study and article on Educational Technology in India: The Field and Teacher's Sensemaking (Neha Miglani, Patricia Burch) [4] highlights the progress and challenges of use of Educational Technology in India like government and other stakeholders investment, expected teacher's role and its acceptance, government school teacher's dilemma and work under pressure.

Our entire country was under lockdown and later on moving out of the house was greatly restricted due to the Covid 19 pandemic. All educational institutions that were previously reluctant had to immediately implement online/e-learning. Even examinations were conducted online. The biggest advantage of online learning was that teachers were able to reach students sitting in different parts of the country and all they needed was a computer/smartphone and an internet connection. Now the important aspect of online education has become the quality that is being imparted. This study is a small contribution in that direction.

3 OBJECTIVES

The objectives of this study are:

- A comparative analysis on the views of parents and students on online education in rural area of Surat, Gujarat.
- To study the quality of education being imparted via use of technology.
- To identify areas of concern to improve online learning.

4 METHODOLOGY

- Total of 50 students and 50 parents were asked about their views on use of smart phones and computers for imparting education.
- The sample was from two rural areas of Surat district of Gujarat namely village Althan and village Bhandut of taluka Olpad.
- School going children and their parents were involved in the survey.
- It was conducted using a questionnaire with eight questions. Questions were asked in two languages – English and local language Gujarati.

5 DATA ANALYSIS

Total of 50 students and 50 parents were asked about their views on use of smart phones and computers for imparting education.

Out of 50 students who answered the questionnaire, 46 students studied in Gujarati Medium schools and 4 students in English Medium schools. There were 24 male students and 26 female students. Out of the 50 parents who answered the questionnaire, there were 23 males and 27 females. In most cases one parent answered for the whole family and so total 50 different families were covered. The data collected showed the following patterns:

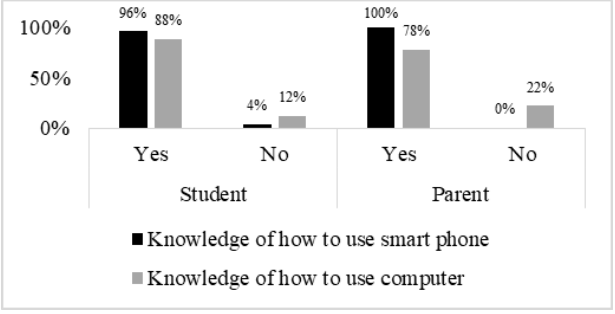

Fig. 1. Response of students and parents on two questions: knowledge of how to use smart phone and knowledge of how to use computer.

As answered by them, 96% of students and 100% of parents answered in affirmative when asked about their knowledge to use smart phone. Compared to that only 88% students and 78% parents have knowledge to use computers.

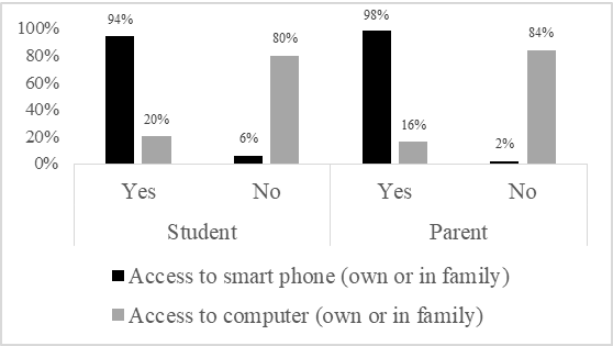

Fig. 2. Response of students and parents on two questions: access to smart phone and access to computer

94% students and 98% parents have access to smart phones whereas when it comes to computer or laptop, only 20% of students and 16% of parents have access to it. As smart phones have become a part of routine lifestyle, its access is much higher compared to computers, especially in rural households.

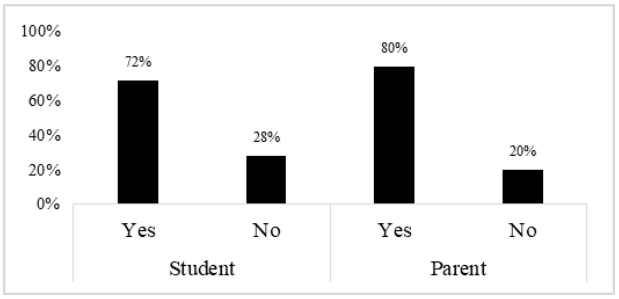

Fig. 3. Response of students and parents on availability of satisfactory phone and internet network in their area

28% students and 20% parents felt that the phone and internet network was not satisfactory in their area for beneficial usage of ICT for education purpose. Even though 72% students and 80% parents felt that the network is satisfactory, they have more or less accepted that whatever is available is the best possible network.

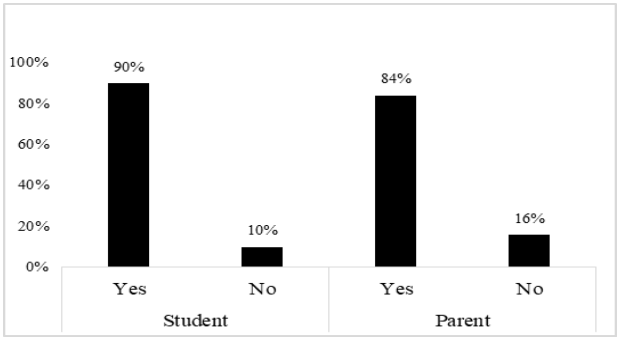

Fig. 4. Response of students and parents on ICT improving motivation to study

The positive impact of use of mobile and computers on motivation to study was seen both in students and parents. 90% students and 84% parents felt that use of technology, improves the motivation to study compared to traditional books and school learning.

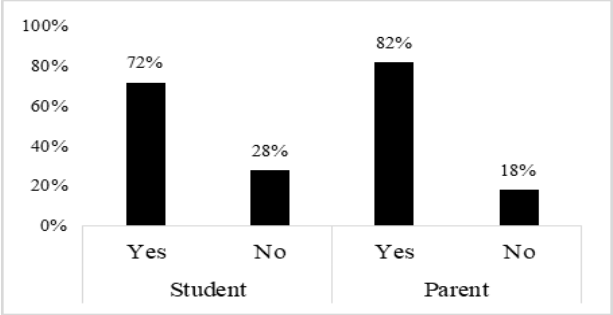

Fig. 5. Response of students and parents on ICT improving performance in other subjects

72% students and 82% parents felt that use of ICT helps in improving performance in other subjects also apart from computers as a subject. The understanding using various multimedia, presentations, videos help in better understanding of concepts and clarifications which is difficult when the same subject is taught using chalk and board and textbooks.

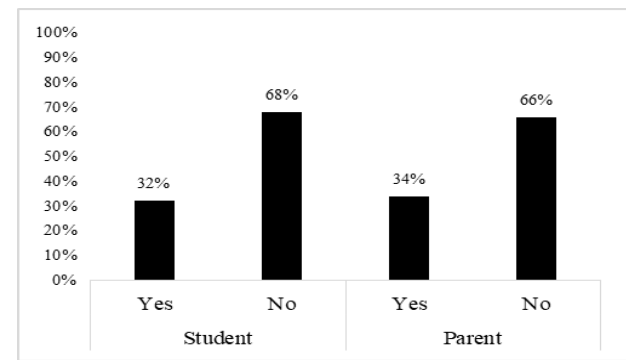

Fig. 6. Response of students and parents on ICT improving performance in other subjects

When asked about the difficulties faced while communicating with the teacher for asking questions and solving doubts compared to face to face communication, 32% students and 34% felt that there is some level of difficulty faced.

6 FINDINGS

The following are the findings of the study:

- There is good acceptance among students and parents in rural area, to online education and use of different modes of technology.
- Students have easy access to smart phones but not to computers and laptops even though they have knowledge to use them.
- Use of technology makes the learning process interesting and results in increased motivation to study compared to traditional learning methods. It also helps in simplifying the subject.
- Hindrance to communicating with teachers is an unavoidable issue of use of technology which can be worked upon.
- Mobile network and internet connectivity remains to be an area of concern.

7 RESEARCH GAP

This study involves views of students and parents of rural area and does not involve teachers. Teachers, educators and schools would have their own views, benefits and difficulties in utilizing technology in imparting education. This is not included in this study. Views of technology developers, providers and regulators are also not a part of this study. There is scope to fill this gap and make the research more detailed with an overview from all stake holders.

8 CONCLUSION

ICT in education has a rich history and is ever evolving. So is our education system. It has evolved and taken to online learning with great optimism, but still there is a long and rigorous journey ahead. The users of ICT that are the students and parents have started to accept this new method of learning. Active role in promoting online education and use of technology by Government is crucial for rural areas. With all the facilities and learnings available, connectivity remains a hindrance in delivery of education. This pandemic has also taken toll on our ICT infrastructure where it has shown shortage of chips, devices, laptops, and increased usage of internet with people working

and studying from home. With thorough study of these limitations and rectifying them, we can improve it for a better tomorrow. Despite of device, internet connection and other limitations of rural areas the positive attitude is a ray of hope that ICT will help in making education more accessible, acceptable and affordable.

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