

Integration of ICT in Bhutanese Schools - Common Obstacles and the Way Forward

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Introduction

Information and Communications Technology (ICT) is crucial for realising the national vision of transforming Bhutan into an IT enabled knowledge based society. To realise this vision, the Royal Government of Bhutan launched the Chiphen Rigphel Project in 2010 with financial assistance of Nu 2.05 billion from the Government of India.

Under this project, the Ministry of Education trained 4,817 teachers and equipped 168 schools with computer laboratories. It set up seven labs across Bhutan to train teachers in basic ICT skills and methods of integrating ICT in the teaching and learning process, one of the aims of the Chiphen Rigphel project. This is expected to encourage students to increasingly use ICT in school and at home. The success of any knowledge based society depends largely on the quality of its teachers and students.

Development of ICT at a Glance in Bhutanese Schools

Over three decades, people have started using computers in schools, at work, and in their homes. The ICT has revolutionised the way people work and learn, and is transforming the education system in Bhutan.

Table 1

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| <ul style="list-style-type: none"> ♦ ICT education in Bhutanese schools started in late 1980 with Gateway computers received under the Overseas Development Agency, to expose students to basic mouse and keyboarding skills. ♦ Since 1992, ICT was taught as an optional subject in some middle or higher secondary schools, such as Drugyel Higher Secondary School. ♦ In 2011, the Chiphen Rigphel project was launched to provide basic ICT literacy training for all teachers. A pool of master trainers was groomed from among teachers. ♦ Chiphen Rigphel laboratories were established in 168 secondary schools with Computer Aided Learning software. |
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Table 1

<ul style="list-style-type: none"> • During the 16th Annual Education Conference in 2013, a resolution to encourage schools in the use of ICT to improve teaching learning process was adopted unanimously. • Since 2011, a two-year project, 'Weaving Infotech Resources into Education', integrated ICT into the teaching learning process in five pilot schools. • In 2013, the WIRED concepts and skills were introduced in 20 secondary schools and 20 primary schools in 20 dzongkhags. • A 'One Laptop per Child' project was funded by the International Telecommunication Union. The project provided 210'XO Laps' in 21 schools. • In 2014, the Ministry of Education recommended iSherig (Education ICT Master Plan) in Bhutan Education Blueprint 2014-2018: Rethinking Education. • In 2016, the Royal Education Council aligned a new ICT curriculum with National Education Policy, iSherig-Education ICT Master Plan 2014-2018 and Bhutan Education Blue Print 2014-2024. • In 2016, ICT textbooks for Classes IV to VI was completed as per the ICT Curriculum Framework for Classes IV to XII. • In 2017, New ICT curriculum for classes IV, V and VI was implemented. The Royal Education Council conducted a five-day curriculum orientation programme for selected teachers from 89 schools (public and private). • In 2018, New ICT curriculum for Classes VII and VIII was implemented. • In 2019, New ICT curriculum for Classes IX and X was implemented. • In 2020, the Ministry of Education, Department of Information Technology and Telecom and Royal Education Council worked with Lead Learners under ICT Flagship programme to introduce Coding Education (Scratch and Python) from classes PP to 12. • In 2020, REC conducted a workshop for ICT teachers on Coding education (Scratch and Python) in two batches who were trained to teach ICT from Colleges of Education. • In 2020, New ICT curriculum for Classes XI was implemented in the schools. • In 2021, New ICT curriculum for classes XII will be implemented in the schools.

Elements of ICT in the school

According to REC (2011), there are nine elements of ICT in schools:

ICT Access: Student users need to be aware of and have access to ICT.

ICT Commerce: ICT users need to be educated about being effective consumers or sellers in a new digital economy.

Digital Communication: Students should be able to communicate using various options such as e-mail, cellular phone, social media, instant

messaging, etc.. Many students are not taught how to use technology, and how to make appropriate decisions in the digital world.

ICT Literacy: It involves the process of teaching and learning about technology and its uses. Schools need to know what ICT should be taught and how ICT should be used in the classroom or outside. New technology, such as video conferencing, and online sharing spaces, such as Cloud and Google apps, are not used in many schools. Students need to learn how to use that new technology quickly and appropriately.

ICT Etiquette: Electronic standards of conduct or procedures need to be taught. Many students do not know ICT etiquette and often behave inappropriately. They need to be taught the rules and regulations, and become responsible ICT consumers.

ICT Law: ICT or digital law deals with the ethical use of technology. Unethical use of ICT manifests in the form of cyber crime. Students should be educated about such wrongdoing — stealing, causing damage to other people’s work, identity, or property, online bullying, infringement of copyright, hacking into other information, creating destructive virus or worms, illegally downloading music and videos, plagiarising and sending spam messages.

ICT or Digital Security: Electronic precautions to guarantee safety for ICT users. Schools and students need to know about virus protection, data backups, surge control of equipment and protecting information from outside forces.

ICT Rights and Responsibility: These freedoms are extended to everyone in a digital world. ICT education facilitates the democratic process, but students must be taught that rights come with responsibility and accountability.

ICT Health and Wellness: Physical and psychological wellbeing in an ICT world would ensure the safety of users and promote good practices. ICT users suffer from Internet addiction. Schools need to teach students the inherent dangers of using technology.

Common Obstacles to ICT Integration in Bhutanese Schools

While the Ministry of Education has tried to infuse schools with ICT, much remains to be done, especially in primary and secondary education. Many teachers are not competent in using ICT in daily teaching and learning. Even competent teachers fail to use ICT in classrooms, due to many factors. I strongly believe that teachers are critical, followed by infrastructure and facilities. Classrooms are overcrowded, teaching and learning resources and reference materials are limited, the method of instruction is still predominantly chalk and talk, student learning materials are confined to centralised textbooks and a real measurement of learning is absent in most classrooms.

Shortage of Qualified Teachers

Classroom learning in Bhutan is obstructed by the shortage of qualified teachers and accessibility to information and support outside the classroom. Some teachers had received some form of ICT workshop or training; it is evident in many schools that such workshops or training has minimal or no impact on the abilities and confidence of teachers to use ICT in classrooms. The quality of an education system depends on the quality of its teachers. The only way to improve output, outcome, and impact is to improve ICT instruction. Thus, enhancing the capacity of teachers in the use of ICT should be a priority.

Lack of Infrastructure

Many teachers have expressed concerns about the availability of and access to resources and facilities for teaching and learning. There is still a dream in school - “one lap for one teacher” and “one tablet for one student” during 12th Five-Year Plan. Schools are inadequately equipped with computers and Internet facilities. Just over one third of schools have computers, and only 13 percent might have Internet facilities. Even those with Internet facilities have found them to be too slow and irregular, and are unable to download or watch YouTube videos. Data charges are also exorbitant for urban users. A digital divide separates the haves from the have-nots. This is unfortunately often true for teachers and children across Bhutan. Most schools I have taught in complained of not having enough computers

for students. Available ones are mainly used by ICT students; those who pursue other optional subjects such as Economics, Environmental Science, Media Studies and Agricultural Studies, have limited access to computer laboratories.

Discussions with students reveal that they felt neglected; most did not have access to computers, whether at home, in schools or elsewhere. With the introduction of the ICT curriculum, students get to use computers once a week for the duration of one period, which in most cases is 50 minutes.

There is a high degree of disparity in access, differing from school to school; some students are fully exposed to ICT, while others have not even touched it. Most students in rural schools do not have access. The teaching profession in general suffers from lack of access to adequate resources and facilities, compared with other professions in Bhutan. To enforce successful ICT integration in the classroom, there should be at least basics like a comfortable work station and easy access to supporting facilities, such as printers, paper, photocopier, equipped laboratory Internet, and sufficient computers.

Ban on Carrying Electronic Gadgets

All students are banned from carrying electronic gadgets, such as mobile phones and tablets, during school hours. In the past 15 years of my teaching career, I have seen only a few innovative teachers, and persistent principals who use ICT, and who practice quality education. They are few in number and isolated from each other; it is very difficult for other teachers to draw inspiration from them.

Poor and Uncoordinated Professional Development

While teachers and educational officials generally agree that professional development has increased over the last few years, there is still a lack of opportunities for teachers to continue their professional development in schools. Most professional development courses offered did not address the main concerns of classroom realities. Professional development suffers in terms of resources, expertise, time, content and delivery. Although the Ministry of Education encourages professional development programmes in ICT, many teachers fail to practice, due to limited resources and heavy workloads. As a teacher, I feel that insufficient training and a paucity of

professional development programmes for integrating technology into the existing curriculum are major hindrances to ICT integration in schools. Professional development should be continuous and dynamic, with new ideas and developments in ICT education. The frequency of professional development in ICT should be increased at schools.

Black Box

Classrooms across the globe unfortunately remain a Black Box for policymakers. What happens inside the classroom is often unseen. Lack of appropriate ICT, laboratory experiments, visual tools to make learning come alive, the scarcity of equipment and limited access to Internet are roadblocks in integrating ICT in the classroom.

Overworked Teachers

Teachers are overloaded with academic and non-academic activities and have to manage a large number of students in the classrooms. A teacher's workload stretches beyond normal working hours. Teachers are assigned to carry out clerical tasks, such as Class Teacher, House Mastership, Cultural Coordinator, Clubs, Mentors and regular preparation and submission of students' data to the school, MoE, *Thromde* (municipality), and other stakeholders. When heavy workload creeps into personal and family lives, the possibility of not using ICT in classroom increases, because such use entails preparation of resources, PPT and videos, requiring time and access to the Internet, printers, photocopiers, and projectors. Another major barrier to integrating ICT is the lack of classroom time for students to use computers.

Chalk and Talk Method

Most of the time, students sit listening to teachers, taking notes from class lectures and from their own reading of teaching learning resources. While "quality education matters" is the message and objective, pass percentages are the actual operating performance metrics of quality for all schools in Bhutan, and the main criteria for ranking schools. I have seen the ranking of universities across the globe, but not ranking for schools. In addition, there is a trend to initiate policies top down, without proper dialogue with teachers and students. Policymakers are unable to understand ground realities, creating frustration and resistance.

ICT as a Source of Distraction

Recently, I heard many complaints about ICT use at home. Some parents worry that ICT, such as the Internet and smart phones, are distracting students. It is true many students are lured by temptations, like games, videos, or chats. Parents have limited time to monitor ICT use at home. TV is seen as another distracting technology. Parents find it impossible to manage and monitor their children's time watching TV.

Absence of Online Professional Materials

Professional journals must also be made available in schools for ICT integration. Teachers do not have easy access to national and/or international learning resources to enhance their professional standing. The access to and availability of electronic resources or library are essential components of learning for teachers and students. The Ministry of Education should explore opportunities to partner with international schools and institutes to address such resource gaps, and to keep up to date on any new technology developments. We need to develop an ICT-driven curriculum to support ICT teaching and learning in Bhutanese schools. This will transform educational practices to make education more relevant and facilitate inclusiveness. ICT provides opportunities for teachers and students to collaborate with other countries.

Willingness of Teachers and Students

Web based and online distance education are becoming popular and are being used increasingly, viewed as an innovative strategy to attract teachers to study and update ICT skills. For ICT to be widely adopted and used in schools, the willingness and commitment of teachers are important. The recent outbreak of COVID-19 has pushed teachers and students to adopt online teaching and learning. However, many teachers are still sceptical, and uncomfortable with the change, perhaps believing that such online learning promotes a one-way knowledge transmission without face-to-face discussions and interactive learning. Many teachers still prefer face-to-face interaction in the classroom. Such negative attitudes towards ICT usage hamper the integration of ICT in the classroom. There is inadequate technical support for ICT in schools. Not all children and parent own smart phones, television, and computers at home.

Pre-service Teacher Training

The most visible aspect of teachers' ICT development skills is in pre-service teacher training, which helps to refresh teachers' knowledge of ICT pedagogy and innovative practices. Delivering relevant and continuous in-service or pre-service training programmes is important for Bhutanese teachers. Trainee teachers need to be prepared in ICT with opportunities to demonstrate and practice 21st century skills and strategies. However, in reality, none of the teacher training institutes takes serious measures to incorporate ICT in the classroom. In many areas, it is alarming to see that there is mediocre preparations for ICT use in the classroom.

Way Forward

I feel our policymakers should analyse how teaching learning is being infused with ICT. Our plans, policies, and programmes should be supported from the grassroots level. We need to prepare our youths for a digital world. Our teachers and students should have easy access to ICT and should be given opportunities to learn ICT at school and at home. A notable feature of the 12th Five-Year Plan is the flagship programme, "Digital Drukyl". Teachers in Bhutan in general are positive about the teaching profession. The morale of teachers has improved significantly over the last few years.

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