

ICTs and Education

Education is the sector of development where the highest early impact of ICTs is evident. Parents, even from poor households, are keen that their children should learn to use a computer, and state governments have been rolling out ICTs in school programmes, generally without much thought about the appropriate role of ICTs in education. Since the general assumption is that ICTs are best left to the private sector, ICTs in school programmes are mostly outsourced to private technology vendors. Rather than treating ICTs as a new form and space of regular pedagogy, they are taken to be a general purpose stand-alone skill, with few programmes going beyond building basic computer literacy. On the other hand, the interest of the large digital corporates in the public education system is understandable. It helps to 'catch them young', especially with regard to 'hooking' them to dominant proprietary software models. Educational content companies are interested in large captive markets for their proprietary products.

As software companies, for instance, offer their products at greatly reduced prices, or even free, and set up teacher training facilities, the idea is to capture the market, which because of the 'network effect' in digital space, mostly means that the market leader can quickly build an almost unassailable market share. This effect often makes the costs of opting out of a dominant system prohibitive, which sets the market leader in a position of almost perpetual rent seeking from user lock-in to its software or digital system. While appearing to subsidise important elements of public education, the concerned company profiteers through other targetted markets (which would include software for home use by the students, in post-school years and for households at large), and also subsequent sale of mandatory upgrades. Due to the lack of imagination among policy makers and strong and sustained lobbying by digital corporates, what should have been a new opportunity to use ICTs to shape participatory and collaborative processes of learning, which is the long held vision of our education policies, ICTs in schools programmes are becoming the route to privatising both content and pedagogy in the Indian public education system. Unfortunately, these programmes are now being quoted favourably to push wider processes of privatisation of education in India.

In the area of education, IT for Change works at four levels. These are (1) research aimed at gathering evidence regarding the relative performances of different ICTs in education models (2) policy advocacy with education policy makers, (3) capacity building of educators and policy makers in alternative, more progressive, ICT in education models, and (4) taking up demonstration projects which show the appropriateness of such alternative models for the Indian public education system.

Research

There is little research on the actual impact of ICT in education programmes on teaching-learning processes. The few studies which have been undertaken

suggest that while programmes have scored high on excitement due to the novelty and attraction of new ICTs, there is not much evidence of any positive pedagogical impact. To get a clearer understanding of the designs of

different programmes and their implications for learning, IT for Change conducted a study of the programmes in Karnataka (where the Build-Own-Operate-Transfer or BOOT model was adopted in the Mahiti Sindhu programme) and Kerala (which adopted an in-house model, relying on regular school teachers and teacher trainers of the education department). Our research shows that the Kerala programme effectively integrates computer learning with regular learning processes since the curriculum included software tools relating to regular subjects. It also focuses on the development of teacher networks and collaborative content creation processes, which support teacher professional development and ensures higher levels of teacher engagement. On the other hand, in the case of the BOOT model adopted by Karnataka, almost the entire programme is outsourced to technology vendors. The faculty provided by the vendor is usually a computer literate person with no background in education. The ICT programme and the outsourced faculty are not integrated with the mainstream school system, while the curriculum is restricted to teaching 'office suite' which may not be pedagogically very relevant. It was found that this programme was unable to make any significant impact on teaching-learning processes and outcomes.

We prepared a policy brief based on our research paper, which was disseminated to education departments across the country. A film capturing the experiences and perspectives of the different actors and stakeholders in the Kerala programme was also produced. IT for Change conducted a workshop for the education department of the state of Himachal Pradesh presenting our research

on different 'ICT in education' models. The research findings were also shared at a national level seminar on 'Globalisation and Challenges to Contemporary Educational Systems - Role of ICTs', organised by the University of Hyderabad.

We also carried out another study of ICT in education programmes for the Sir Ratan Tata Trust (SRTT) in Yadgir, one of the most backward districts of Karnataka, covering computer, radio and satellite/TV based programmes in government schools. The study indicated that though many teachers have looked positively at ICT possibilities, centralised design of programmes reduces ownership and commitment of schools and teachers. The study also noted an absence of a focus on the curriculum and the lack of teacher capacity building and participation. These factors contributed to rather sub-optimal outcomes for these programmes. The potential of ICT tools to support



information sharing as well as collaboration amongst teachers is immense, but programmes need to be driven by clear educational perspectives as well as focus on local contexts and priorities. SRTT is contemplating a holistic and long term school development

Children watching an educational TV programme in a government school in Yadgir, Karnataka

A study of two large-scale 'ICTs in School Education' programs of two neighbouring states of India brings on some interesting insights. The integrated model followed in Kerala since IT@School programs where the accent is on developing systemic in-house capabilities anchored around the role of school teachers, has shown considerable success. This has been in terms of much higher level of teacher engagement, integration of computer learning with regular learning processes, greater per-learner availability of computers, significant cost efficiencies and development of teacher networks and collaborative content creation processes, which support teacher professional development. All of these together have led to the overall strengthening of the education system and better learning outcomes.

The alternative model of outsourcing or 'BOOT' employed by the Mahatma Jyoti Baबा program in the state of Karnataka, where private vendors were paid to run the program, does not show such positive outcomes. Funds were spent on vendor payments instead of building in-house capacities and hence the system itself did not benefit from the program outlay, and is largely unable to sustainably sustain the program beyond the BOOT period. Such outsourcing also seems to build in-house or learner permanent dependencies of the public education system on private players, which is significantly distinct pedagogical structures in critical ways.

The implications of this study for policy are critical. The IT@School model that demonstrated the advantages of developing competencies and local in-house capabilities in ICT Education. However, if due to some contextual reasons, it is at all found necessary to consider some degree of outsourcing, such decisions need to clearly distinguish between those core processes such as procurement, installation and maintenance of hardware, and core activities with direct pedagogical implications like content and in-house, teacher training and learning processes, and limit outsourcing to the former.

ICTs in School Education – To Outsource or Not

This policy brief is based on our study of two large-scale 'ICTs in School Education' programs for high school students (Classes VIII-X) of two neighbouring states of India, Karnataka and Kerala. The study specifically addresses the key question of whether or not outsourcing activities or to invest in developing in-house processes and competencies within the school system.

The Outsourcing Model

The state of Karnataka, like a few other states in India, has tried the outsourcing model for ICT in school programs, called *Mahatma Jyoti Baबा*. This model relied on private vendors who are primarily in the business of selling computer hardware (software or services) to run the entire program.

Typically, students learn directly on the computers, facilitated by support staff provided by the vendors, with teachers playing a minimal role. One consequence of this was that the teachers themselves had limited opportunities to learn and hence were not able to guide the learning process of the students in any meaningful manner.

Some methods were directly followed in such models, and their outcomes, are

programme for the district. In our report detailing the outcomes of the study, we have also proposed a plan of action for using ICTs for supporting processes of teaching-learning and teacher professional development.

Advocacy and Networking

During 2008-09, the Ministry of Human Resource Development (MHRD) initiated a drafting group for a proposed 'ICT in schools' policy which was dominated by private companies with a direct stake in the proposed policy, and barely any educationists. As expected, the outcome of this drafting process was a document that gave primacy to the views of technology vendors, ignoring educational contexts and aims. IT for Change organised a strong advocacy campaign involving prominent educationists challenging the draft policy, and the compromised process of drafting the policy. Our advocacy effort helped in stopping what was in effect an outsourcing of policy making, through a directive from the MHRD Minister to that effect. During 2009-10, MHRD came out with a revised policy draft, which was significantly different from the first draft. It incorporated many of the comments and suggestions that we had made in response to the first draft. Though the second draft also has limitations, such as its promotion of Public Private Partnership (PPP) models in education, the emphasis of the new draft on social development, the role of teachers, and processes of collaborative curriculum design and development, are significant improvements over the

purely techno-economic thrust of the first draft. We have sent our comments on the second draft as well. (The two drafts, and our comments can be viewed at <http://www.itforchange.net/edu-ict/74-edu-and-icts/281-npise.html>)

Our research suggests that the privatisation of curriculum and pedagogy through BOOT models is inimical to the future of our public school system. However, as we had feared, the 'apparent' success of BOOT models in ICT and education initiatives (which our research findings contradict) was cited to justify a new draft policy on 'Public Private Partnerships in school education', released by the MHRD in October 2009. This draft policy proposes a new model in India's public education system whereby business entities will be encouraged to run schools using government funding and infrastructural support. IT for Change, along with other organisations, held three workshops, in Delhi, Mumbai and Bangalore, during October-November 2009, to discuss this draft policy. IT for Change's earlier mentioned research on ICT in education highlighting the drawbacks of PPP models, documented experience in other countries that point to the dangers of privatising school education, and the learnings from PPPs in other domains of public policy were discussed at these workshops and feedback shared with MHRD. <http://www.itforchange.net/edu-ict/74-edu-and-icts/239-ppp-workshop.html>

The ICT-education-india googlegroups, a mailing list coordinated by IT for Change, continues to be an active online discussion space and network for educationists. During 2009-10, the network undertook two important advocacy activities relating to ICTs in education – a review of the revised ICTs in education policy draft of MHRD and

Policy brief prepared on the basis of our research study of the Kerala ICT@School programme

Positively, in my capacity I will bring awareness about public software in the (education) department.

Mr. S.R.S. Nadhan,
Deputy Director of Public Instruction, Bengaluru, Karnataka

providing inputs to the ministry (mentioned earlier), and writing to the Government of Maharashtra protesting against its intention to enter into an MoU with a vendor of a dominant proprietary software system, whereby government school teachers would only be taught about its proprietary software and would be required to teach the same to their students. IT for Change drafted a letter, endorsed by sixty-four prominent educationists, including the Chairperson of the National Focus Group on Educational Technology, highlighting the pedagogical drawbacks of such an approach. The representation urged the state government to ensure that the ICT curriculum conforms to the principles enshrined in the National Curricular Framework 2005, which stresses constructivist approaches, which are not possible using closed proprietary software applications. Building on its work as a part of this network, IT for Change is now a member of the Comparative Education Research Group, India, (comprising some eminent academics involved in the area of education) as a part of which we propose to undertake further research relating to ICTs and education.

Capacity Building

During the year, ITfC and other organisations formed a consortium to conduct a pilot training programme for high school teachers in government schools in Bengaluru, where the ICT@Schools programme had been implemented. Though the ICT@Schools programme is on FOSS platforms, in the absence of teacher capacity building, it was largely restricted to the vendor

faculty, teaching basic computer literacy to students directly.

ITfC training for the teachers on these FOSS platforms was well received, debunking myths that teachers are unable or unwilling to learn ICTs. These programmes also helped us to develop a better understanding of teacher needs and expectations. Teachers are keen to learn computers and adapt it in teaching-learning, however vendor driven models bypass teachers. Likewise, teacher educators² who are responsible to provide academic support to teachers or monitor the programmes are not able to do so, since they are also left out in the outsourced model. While many of the DIET faculty are inhibited when it comes to using computers due to a high degree of unfamiliarity, such inhibitions would make the adoption of ICTs by teacher educators, and their support to teachers on ICT based learning in schools, difficult. Based on our request to DSERT to build the capacity of teacher educators, and based on feedback from the successful pilot, DSERT invited the consortium to train DIET faculty on the same platform so that they could, in turn, train other school teachers across the state. Approximately a hundred DIET faculty across Karnataka were trained to install and use FOSS platforms and tools and also provided CDs with actual software resources (this is not possible with proprietary software) and many of the DIET faculty were able to install the same in their offices. Sarva Shiksha Abhiyaan (SSA) provided support including computer lab facilities and DSERT coordinated the programme along with the Policy Planning Unit of the education department.

It was a meaningful interaction both pre-workshop and during the workshop. The effort various organisations and persons have made towards public software is inspiring.

*Dr. Nutan Bharati, NIIT
University in Neemrana,
Rajasthan*

2 From the academic support institutions at district (DIET), block (BRC) and cluster (CRC)

For the first time in my 15 years endeavour, I find a group which is truly committed to India's interest (vis-à-vis the government's software policies).

*Mr. C. Umashankar,
Commissioner for
Small Savings, Tamil Nadu*

These two capacity building programmes prove that there is no need for the education system to depend on technology vendors for organising capacity building on ICTs and once the basic infrastructure of computer labs is created, the department can organise a large number of capacity building programmes internally.

Demonstration Project

Along with conducting research, policy advocacy and capacity building, IT for Change has felt the need to design and implement a pilot project which uses ICTs in ways that would best address various educational priorities in a forward-looking and visionary manner. One such pilot project called 'Teachers Communities of Learning' (TCOL) is being implemented by IT for Change in 30 government schools in one block in Bengaluru, supported by Edukans, a Dutch organisation, through their local

representative, Development Focus. This programme focuses on two critical components; (1) building a network of government school teachers, focusing on their professional developmental and motivational needs, and (2) collaborative design and development of digital learning resources, using FOSS educational software tools.

a progressive educationist about the potential of ICTs has largely been countered as they are increasingly aware and concerned about the dangers of proprietisation of curricular and pedagogical processes through BOOT models of ICT education. Governments have become more open to FOSS, in many cases, retreating from their earlier claims over the years of being 'neutral' to different software models, acknowledging that free sharing of software and other digital resources is aligned to the principles and needs of the public education system. A large group of individuals and organisations across the country have come together in formal and informal ways to promote the adoption of pedagogically appropriate ICT models that favour systemic teacher development and the use of FOSS tools. It may however still be a long way to go before these new notions displace the mainstream thinking in education and ICT departments of most states in India that still consider outsourcing to 'computer specialists' inevitable.

The Karnataka education department has decided to focus on teacher capacity building through teacher educators who are part of the education system, emphasising computer-aided learning instead of just computer learning, and using of FOSS educational software tools. This shift draws from our Kerala study as well as from the pilot capacity building programme that we have been conducting in Karnataka. IT for Change will continue to work with the local network of organisations, both teacher education institutions and FOSS NGOs and communities, to support this new direction that the Government of Karnataka is taking. We will conduct state level trainings in computer literacy and computer aided learning to create a resource base of master trainers in the



Capacity building for government school teachers

Looking Ahead

A combination of IT for Change's research, policy advocacy, networking, capacity building and demonstration projects has started to build a new and favourable discourse around the use of ICTs in education. The skepticism of many

Department of Education, Karnataka, who in turn can train teachers through a cascade model. This programme will also help in creating a local pool of teacher educators who have expertise on computer-aided learning.

IT for Change will continue to study ICT in education programmes, including evaluating a project of the 'University School Resource Network' (a collaborative programme of Delhi University and Jawaharlal Nehru University with government and private schools and teacher education institutions in Delhi) that aims to build networks of teachers in these different institutions—schools, DIETs, colleges, universities and NGOs—for supporting their professional development and creating learning resources based on their experiences. The project presents a new model for self-paced and self-directed teacher professional development, which is a refreshing contrast to traditional top-down in-service teacher training programmes. This project uses a web portal (www.EIEdu.net) as a platform for its knowledge construction and sharing processes.

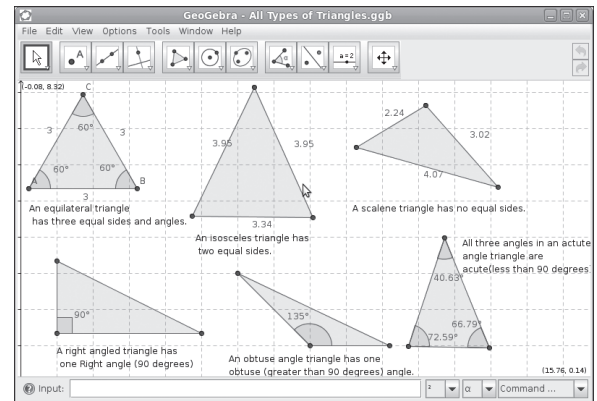
Partly due to our advocacy efforts, the Central Advisory Body of Education (CABE) of the Government of India recently discussed the issue of ICTs in education, and decided to set up a sub-committee to evolve guidelines with respect to programmes in this area. The lack of appropriate guidelines or frameworks has resulted in several state governments embarking upon poorly conceptualised and designed programmes.

IT for Change will support a 'demonstration project' in Yadgir district of Karnataka, as a part of the Kalike Samruddhi Upakram (Learning Enhancement Initiative) of the Sir Ratan Tata Trust (SRTT), which will aim to work

on processes of teacher professional development through ICTs. It will also contribute to the design and implementation

of existing ICT programmes in schools in Yadgir. This proposed new project, along with the TCOL demonstration project in Bengaluru, aims to build on-line communities of teachers to enable them to network, share resources, seek assistance and voice their opinions on education programmes and policy. These projects also aim to introduce teachers to possible ways of effectively integrating ICTs in their regular classroom transactions to enhance the quality of the teaching-learning process, by making lessons more engaging, active and connected to real life. The larger and long-term objective of the project is to support the professional development of teachers and foster their ownership vis-à-vis the public education system. This should help them see themselves as active contributors to the much-needed overall renewal of the government school system. The outcomes of the project will be used for advocacy not only in the area of ICTs and education, but also vis-à-vis the overall role of teachers in education programmes.

During the coming year, we plan to further share our learnings from the Kerala 'ICT in schools' programme, the New Delhi based University School Resource Network (USRN) network, discussed earlier, and also from our demonstration projects, to promote pedagogically relevant ICT models with various state governments. The Governments of Gujarat and Tamil Nadu have shown some interest in exploring new models of 'ICTs in schools' and we will maintain our advocacy efforts with these states.



FOSS educational software 'Geogebra' being demonstrated in a training session