

# Capacity Building on ICTs and Education

## IT for Change

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## About IT for Change

IT for Change<sup>1</sup> (ITfC) is an India-based NGO established in 2000. Through our research projects, we study current approaches to build a body of knowledge on Information and Communication technologies (ICTs) policy and practice. We also propose alternative models through our field projects that are participatory and pioneering. Our work spans a range of development arenas – education, gender, community media and governance and is at global, national and local levels. ITfC is in Special Consultative Status with the Economic and Social Council of the United Nations.

In the area of education, ITfC works at four levels. These are

1. Research aimed at gathering evidence on different ICTs in education models
2. Capacity building of educators and policy makers in progressive application of ICTs in education
3. Taking up pilot projects to demonstrate appropriate models for the education system.
4. Policy advocacy with education policy makers

## Background to our work - (Research)

### ICTs as a pedagogical device - Kerala IT@Schools

ITfC conducted a research study on the Kerala IT@Schools (<http://itschool.gov.in>) programme which has been running over the last decade, implementing ICTs for 'computer aided learning' in more than 8,000 schools across the state. This programme has had significant successes in teachers adopting ICT tools to enhance the quality of lessons, building teacher capacity for using ICTs for educational purposes, using and creating large amount of publicly owned freely shareable digital resources, and hence supporting teachers overall development. This programme has adopted the approach of training subject teachers on computer tools and looking at ways to integrate this into regular teaching-learning processes. This is significantly different from most other states in the country where the computer is still looked at as a separate subject for which a separate computer teacher is needed<sup>2</sup>. This pedagogical use of ICTs in Kerala has made it a pioneer in computer-aided learning.

### ICTs as a networking method - University School Resource Network

A second research study by ITfC, on the 'Regional Resource Centres for Elementary Education' (RRCE) of the University School Resource Network (USRN), New Delhi suggests there are enormous possibilities for teacher profession development through the creation of physical and electronic networks amongst peers and with teacher educators and others working in the field. Such networks help in cross learning and mentoring between classroom practitioners and those working on education at the college and university levels and in bridging theory and practice. This network combines physical meetings with virtual networking, using a web portal ([www.ElEdu.net](http://www.ElEdu.net)) that serves as a sharing space for discussions, blogging etc. thus disseminating the learnings to a larger audience.

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1 <http://ITforChange.net/>

2 Our study of the ICT programmes in Karnataka clearly indicate the issues with such designs.

## **Demonstration project – Teachers Community of Learning**

Based on our research, ITfC, along with the Department of State Research Education and Training (DSERT) have designed and implemented a “*Teachers Community of Learning*” (TCOL) programme in Bangalore district South 3 block during 2010-11. As part of this programme, regular workshops are held to build teacher's capacities on Mathematics, Science and English educational software; equip them with the skills to use these tools as part of their regular teaching-learning process. A virtual and physical network of Bangalore teachers have been formed and training has been provided to them on how to use discussion forums and blog among themselves.

We believe that only workshops for teachers is not sufficient to address systemic issues of teaching-learning and quality of education. Hence, it is necessary to train the teachers and teacher educators and others who work in the area of education on the possibilities of these tools as well as develop networks among them thus creating spaces for communication and sharing. Keeping this in mind, ITfC has organised workshops for the teacher-trainers (including DIET faculty, BRPs and subject inspectors) to create *State Master Trainers* who would then train others in a cascade manner. 150 such teacher-trainers have been trained across the State (4 per block) in the academic year 2010-2011. ITfC has also worked with NGOs working in Karnataka on the issues of education or technology and education as well as larger area of child rights and social justice. Workshops are conducted for these institutions keeping in mind their needs based on their programmatic areas.

In our workshops, we also facilitate discussions on larger educational issues (right to education), policies, curricular issues (National Curriculum Framework 2005), etc. and encourage participants to look at professional development possibilities and needs and how ICTs can support the same. We also encourage them to invest in acquiring resources, including netbooks/laptops or NCF position papers and other resources for their own learning.

Some of the workshops conducted by ITfC over the last year are discussed in this note.

## **Teacher Oriented Programmes**

### **Orientation Workshops**

At the beginning of a programme for teachers/any other stakeholders, an orientation workshop is held to understand their needs and their contexts. This helps us get to know the participants as well as gives us information to plan future workshops. At this workshop, interactive discussions are held on technology and education, the possibilities and the challenges. Participants are then introduced to the computer and some educational software. The focus is to have a mutual understanding on expectations and needs to be addressed in the future workshops. The basic principles of the programme – such as voluntary nature of participation, focus on larger professional development, systemic change etc are discussed in the workshop. Participants understand that workshops would be demand-driven, conducted on a voluntary model where teachers who enlist themselves are deputed. Even the curriculum of workshops would be designed in consultation with teachers which creates a high level of ownership of participants over the entire process.

### **Computer literacy workshops**

Though the focus of the programme is more on ICT enabled learning (treating ICTs as a pedagogical method) rather than ICT learning (which treats ICTs as a subject), if some of the participants have never been exposed to ICTs, an orientation workshops is useful, which covers operating system, basic text, number editors, web browsers etc. In this workshop (and all others), the actual software tools that are covered are shared with the participants, so that they can install the same on the computers to which they have access. This is possible with publicly owned software tools, so the programme uses a wide variety of public software tools for these purposes.

## Curriculum – computer literacy tools

Subject Area	Basic software tools
Operating system	Ubuntu GNU/Linux
Text and number editors	OpenOffice
Web browser	Firefox
Mail client	Thunderbird
Media player	VLC player

## Subject wise workshops on educational tools (Mathematics, Science, English, Social Sciences)

After the orientation workshop, the next set of workshops introduce the participant to educational tools which are relevant to the curriculum. Separate workshops on Mathematics, Science and English are held. These small workshops maintain an academic environment where peer review and constructivist learning are encouraged. The format of the workshop includes sessions where teachers make lesson plans on concepts that are part of the curriculum using these educational tools. Pedagogical issues of teaching-learning processes in these subjects is also discussed. At each workshop, a relevant academic paper is discussed by the participants.

## Curriculum - educational tools

Subject Area	Educational Software
Mathematics / Algebra / Geometry	Geogebra, Kbruch, G Compris
Physics / Chemistry	K Tech, Kalzium, Stellarium, K Stars, Phun, Phet
Language	K Lettres, K Anagram, K Hangman
Geography	Kgeography , Marble , Sun Clock

## Workshops on Internet and web-based tools

In between workshops on subject oriented educational tools, we also introduce the participants to the Internet and the wide variety of information available on it. Along with browsing for subject oriented material, websites like [www.wikipedia.org](http://www.wikipedia.org) and other news sites, both local (Kannada papers) and global (BBC one minute news) etc are shown. These sessions also cover the use of application like Google Translator, Google books, Google Scholar etc. Through this, we would like to convey to the teacher, the importance of learning on an everyday basis and how the Internet is crucial for this. We also encourage the teachers to contribute to Kannada Wikipedia (<http://kn.wikipedia.org/wiki/>), maintaining the fact that the in our society, the teacher is the knowledge creator and disseminator.

At these Internet based workshops, the importance of networking and self expression is also discussed. Basics of email and email lists are covered. We help all the participants create an email id if they do not already have one. An email list is then created for the teachers to keep in touch with one another. The ITfC team regularly sends emails to this list on current topics and debated. The teachers are encouraged to express their opinions on these.

At these workshops, participants learn how to create and use a blog and a discussion forum. We first conduct a physical discussion on an issue that is of relevance to them (example: Right to Education

Act). We then look at how to do a similar discussion in the virtual space. This is extremely important as the virtual can be accessed from anywhere and the teachers do not need to physically be together to express and share opinions. We have a community of learning portal – <http://Bangalore.Karnatakaeducation.org.in> where teachers are encouraged to blog, share digital resources including lesson plans etc.

## **Workshops on hardware and software trouble shooting**

For teacher profession development to be realised, the teacher must be equipped to address problems that might come her way with respect to technology. Thus, we conduct workshops to introduce different parts of the computer system to the teacher so that she may feel aware of the technology that she is working on. These sessions cover hardware and software troubleshooting, so that even if a teacher cannot fix the problem in entirety, she is aware of what the problem is and is able to communicate this to the technician. These are also hands on sessions where the teachers are encouraged to open up the computer and examine its different parts.

## **Workshops on larger education issues**

Along with academic skill building, equally important for teacher profession development is discussion on larger issues in the education system. This can include philosophical aspects relating to ICTs and education to issues of Right to Education, NCF etc. While working with specific subject teachers, the philosophy, approaches and issues of the specific subject have also been discussed in workshops, with an idea that ICTs cannot be standalone systems for both teachers and students and should be integrated into regular teaching learning practices. At these workshops, external resource persons who are experts are invited who can bring in alternate viewpoints for these teachers. Web resources relating to the issue/subject are also provided and discussed to support their use beyond the workshop interactions.

## **Workshop on other ICTs**

Computers are not the only ICTs which can be use in teaching-learning processes. Photo, video and audio have great possibilities as well and this is what we explore in these workshops. Once teachers are comfortable with use of computers and the educational tools, we introduce them to the digital camera and how to use it as a teaching-learning material. Brainstorming sessions are held with the teachers on the use of these other ICTs in the classrooms, the challenges that they may face as well as how it can improve classrooms processes. These are also hands on workshops with teachers using photographs, sometimes making it into a video to carry out an activity in the classroom.

## **Teacher Trainer Oriented Programmes**

### **Subject matter expertise - workshops on educational tools**

The purpose of these workshops is to build capacities of teacher-trainers to use these tools in the regular teaching-learning processes in mathematics, science and social science subjects. Since these tools are publicly owned, a copy of the software applications is given to all the teacher-trainers to install in their offices and elsewhere. These workshops, like the ones for teachers adopt a learner centered approach, its core idea being that knowledge is actively constructed by the learner, building on her existing knowledge and it is not passively received from the teacher. The premise also is that by the teacher herself experiencing this pedagogical approach through use of these educational tools, she would be more comfortable to adopt it while teaching in her classroom.

## **Workshop on internet and web-based tools**

It is important for teacher-trainers to keep in touch with one another as well as the teachers that they train. Hence, these workshops cover topics like E-mail, e-mail lists and discussion forums as spaces for them to interact. It is also extremely crucial for the trainer to be up to date with current issues that are happening around the world, especially related to curriculum and subject. Therefore, sessions on web browsing and web-sites showcasing this information are covered in these workshops.

## **Workshop on NCF and constructivist learning models**

A major issue in our education system is the lack of constructivist learning and instead the emphasis on rote learning. This trend needs to be broken at the level of the teacher and the teacher trainer. Therefore, our workshops cover basic differences between constructivist learning and behaviourist learning and why the former needs to be embedded into the classroom. The NCF and its position papers are also discussed to initiate ideas on how to bring this into reality. The teacher-trainers find these extremely useful sessions as it ties into the training sessions on the educational tools and helps them form their training programmes accordingly.

## **NGO Oriented Workshops**

ITfC conducts workshops with NGOs working on issues of education as well as education institutions, introducing them to the possibilities of free and open source educational software for their programmatic areas as well as developing a network of such institutions and collaboratively building platforms for knowledge creation and sharing. Such workshops are small and more focussed on specific needs of the organisation. As these development practitioners are well-versed with the government school environment, the focus is on building one's own skills to counter the challenges of not only the school environment but one's own relationship with technology, curriculum and constructivist learning.

## **Some Future Plans**

Based on our work over the last year, we would like to expand this model of teacher training to cover more government schools in Bangalore and rest of the state. Our aim is to provide a 'proven model' to organisations that are working to support ICT programmes in schools, so that we can upscale it across the state and ensure ICTs are used in a manner that actually impacts teaching learning processes and outcomes through teacher professional development and local digital resource creation.

Till the end of the current academic year, we will be working with the network of government school teachers to support them in the creation of lesson plans using the educational software that they have been trained on. Trainings will also be conducted for the education officers (BRPs, CRPs etc.) who have expressed need for such workshops. Further refresher courses on networking and having virtual discussions will be carried out with the teachers.

ITfC is also talking to the DSERT through the PPU on including such teacher training as part of the Annual Work Plan, thus making such workshops as part of the education system.

ITfC is also in discussion with couple of organisations to work with the NGOs and schools they work with or fund, to build similar capacities of 'ICT enabled learning' for their members, in other geographies in India.



Above is a picture of one of our subject workshops for teachers.