Consultation on 'National Policy on ICTs in School Education'

Short Discussion Paper
ICTs in secondary education

Manas Chakrabarti
Learning by Design, New Delhi

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Introduction
After the fun and games of elementary education, where it's relatively easy to talk of learner-centricity, children are hurled into the world of board examinations where nothing matters other than scores. It is in this context of meaningless rote learning that we have to see ICTs in secondary education. Although we can use ICTs for "delivering results," I will stay away from such uses in this document. Rather, my comments and observations below are informed by the National Curriculum Framework.

A word about ICT itself – I am aware that ICTs include many different technologies, such as radio, television, phones and computers. But for the purpose of this document, I have used ICT and computer interchangeably. My comments relate to the use of computers in school only. The fact that I have not included other technologies is largely a matter of personal ignorance.
I have structured the issues around ICT in secondary education in terms of a SWOT analysis – strengths, weaknesses, opportunities and threats.

Strengths of ICT
Given the wide variety of tasks that can be done on computers, they are clearly the most <u>versatile learning tool</u> available today. Students can write, draw, paint, model, program, discuss, animate, speak, record, report and calculate. In secondary classes, concepts and principles become increasingly complex; computers support cognitive flexibility through hypertext, simulations and microworlds.

One of the biggest gaps in our current model of education is the absence of opportunities for learner articulation. It is only during the process of articulation that learners clarify their own ideas and concepts. Traditional learning tools support a very limited number of forms of articulation, excluding children who are not linguistically intelligent. Computers provide the opportunity for students to articulate their ideas using many different media and many different strategies. This support of <u>constructionism</u> and <u>multiple intelligences</u> can transform the lives of children who have been traditionally labelled as non-performers because they are not linguistically or logically intelligent.

ICTs open up a <u>world of ideas</u> for children. They can see that there are different cultures and languages that make up not only our country, but also the world. They can see how different species interact with each other and with geological systems to create ecosystems. This awareness of differences, and the understanding that these differences are valuable, is the critical first step in ensuring a sustainable and peaceful future.

Computers have also been found to be useful in the context of education of <u>children with special needs</u>. Especially with children who find it hard to relate to social settings, computers can have a transformational effect. This holds not only for autistic children, but also for children with hearing or visual impairment. This area of ICT use has immense potential and we are only beginning to scratch the surface.

Weaknesses of ICT
The most obvious weakness of computers in school is the huge costs associated with them. Computers are expensive to procure, maintain and run.

The whole idea of ICT in secondary schools has been actively promoted by hardware, software and e-Learning companies. As a result, there has been <u>little evaluation,</u> especially at the secondary level, of the effectiveness of having computers in school. The assumption is that bright, attractive screens of information are better than poorly produced textbooks. Unfortunately, human learning is more complex than that.

The biggest weakness, and perhaps the hardest to change, is the <u>information access model</u> of education that most ICT-in-school programs use today. Large volumes of e-content are created to match specific Board requirements. This content is dumped in schools, where they mostly lie unutilized. What compounds the problem is the <u>low-level of design skills</u> available to most e-Learning companies. Content creators typically are trained in message design based on the ideas of Gagne, Merrill, Keller or Bloom. Very few graduate to the core ideas of human learning. Unless we can help people understand the difference between knowledge and the representation of knowledge, we will always design programs that are pretty but ineffective.

The issue of supporting infrastructure continues to haunt ICT programs. Computers need reliable <u>power supply</u>, which is all but absent in most schools in the country. The usual solution is to provide backup through a UPS—a costly and unreliable solution. Some solar power installations have been experimented with, but costs continue to be prohibitive.

Opportunities of ICT
If we want to transform teaching-learning in the classroom from a rote learning, teacher controlled and mind numbing process to a process that promotes understanding and empowerment, we need <u>disruptive change.</u> ICTs have the potential to create that disruption, where teachers have to unlearn their habits and re-learn what it is to engage children in authentic learning. It is easier to change habits in a new environment than in a familiar environment. For this, ICTs will have to be integrated in the teaching-learning process as a facilitative tool, rather than a separate activity that gets done in a computer lab. The fundamental approach will have to be experiential, collaborative and integrated, rather than "seductive augmentation" of content with multimedia bells and whistles.

The feeling of confidence, self-esteem and empowerment that can come from having your work published can be matched by very little else. Although there have been cases of children publishing books in the past, the process and costs can be daunting; also, this is hardly accessible to rural children. ICTs provide the opportunity to children to publish their work electronically in a variety of formats and languages at very little cost. Making children <u>creators of content</u> can change their lives.

Threats of ICT
In India, there are many dimensions of disparity among schools – teachers, textbooks, furniture, roof, toilets and location. ICTs are likely to add yet another <u>dimension of disparity</u> to this bleak picture. The temptation will be to provide ICTs in schools that have better infrastructure and are closer to urban centres. If we think ICTs are important, which seems clear from all the policy-making effort underway, they have to reach ALL schools. There is no such thing as a "trickle down model of education." Of course, the same argument holds for all the other dimensions of inequality among schools. It is imperative to arrive at a set of minimum standards that ALL schools must adhere to.

Another potential threat is that the ICT-in-school <u>agenda</u> might be driven by hardware, software and e-Learning companies. Although there is nothing intrinsically wrong with most of these companies, their agenda will be to promote their products and services. Often, these products and services are irrelevant, ineffective or expensive, but other better alternatives are not allowed to take a foothold. It is critical to ensure that ICT use in schools is driven by educational imperatives, not by anything else.

A little-known threat of ICTs is the issue of <u>e-waste.</u> Computers and other ICTs have a fairly short lifespan, after which they are discarded. E-waste has many toxic substances and is usually sorted by hand for scavenging spare parts. To get around this problem, many organizations donate their used computers to schools and NGOs. After this, the responsibility of waste disposal passes to the so-called beneficiary. It is another matter that these used computers are rarely in a ready-to-use condition. They are also likely to need higher levels of maintenance.

Many schools with ICT programs that I have visited have converted games and activity periods into computer periods. In secondary schools, there is tremendous pressure to complete the syllabus, and schools cannot imagine giving up teaching time to make room for computers. Although this suggests an underlying problem with the whole schooling and examination system, the short term result is that students are denied the <u>opportunity for activities</u> that might be more valuable than knowing the definition of endoplasmic reticulum.

Policy Directions
The above is not an attempt at a comprehensive listing of issues related to ICTs in secondary education. I am sure there are others that can be added. But I must comment on one issue I thought about and consciously left out. This is the issue of teacher training in ICTs. Initially this came to me as a big weakness of ICTs, but when I thought about it, I realized that it is much easier to train a teacher on ICT use than it is to train a teacher to facilitate learning in the classroom. If we can do the latter, which we haven't, the former should be a breeze.

The strengths, weaknesses, opportunities and threats I have outlined above all lead to specific policy ideals. For example, the strength of ICT for special needs must be articulated in the policy. Similarly, the weakness of inadequate design skills must be countered by policy for creation of an ecosystem that promotes education, training, certification and standards in the field of ICT in education.

However, my objective here was to put across the issues I feel are relevant and let the consultation process do the rest. Ideas and opinions can be individual, but policy must be consensual.