

## What should ICT Integration look like in a 21st century education system?

### **Introduction**

Most national ICT plans contain the term 'ICT Integration' as a key deliverable, but are all stakeholders clear on what is meant by ICT integration and are they in a position to measure it? There appears to be few explicit definitions of the concept. In fact, there is some evidence to suggest that the term ICT integration can often mean no more than 'ICT use' in classroom teaching. Despite the lack of clear criteria it is generally agreed that 'ICT integration' denotes a change in pedagogical practices that makes ICT less peripheral in classroom teaching.

So let us briefly consider what ICT integration should look like today and some implications for policy makers.

### **What is ICT integration today?**

In 1993 Larry Cuban stated that schools were finding ways to fit ICT into their existing structures, the "preservationist scenario", without making any substantial change to the nature of schooling and particularly to teaching, learning and assessment.

*It is NOT the technology that matters. It's the TEACHER in the class!*

*More recent research on ICT integration highlights the need for change within the classroom setting, with a move away from teacher as lecturer and students sitting passively. In classrooms where ICT is successfully integrated students are actively engaged in "constructivist activities" using ICT to find information, collaborate with others and to share their knowledge with others within and outside the classroom. We know that ICT investment alone will not bring about the type of transformational change described above, as this change is a complex process. Others have described classrooms where ICT is integrated successfully as 21st century*

*learning classrooms where students and teachers are co-learners. There is also a growing belief that ICT can play a major role in helping learners acquire the 21st century skills of creativity, innovation, critical thinking, problem-solving, communication and collaboration.*

### **Implications for Policy Makers?**

So what does this mean for policy makers who are keen to bring about 'ICT integration'? Firstly, each national policy or action plan should articulate, as clearly as they can, what they mean by 'ICT integration'. It may not be the same in every country or every school as issues such as school leadership, teacher quality, curriculum & assessment reform, teacher professional development and ICT infrastructure will have a bearing on what is achievable. The plan should identify the key stakeholders in bringing about such change and outline their role in achieving 'ICT integration'.

*A careless ICTs and Education Policy leads to failure of ICTs integration in education and wastage of resources.*

A recent example of such an approach is the Australian Digital Education Revolution Project<sup>1</sup>, where the focus is on redefining the classroom learning experience for students and where ICT is central to their plans. Another example is Singapore, where the Education Ministry creates the 'ICT integration' vision centrally but each school is given the freedom to implement it to suit their needs (Lim, 2004). Countries should consider if they are willing to change their schooling paradigm and if it is feasible, both from a political and economic perspective. Even if the political will is there, issues such as class size, levels of equipment, telecommunication infrastructure, school leadership, teaching & assesment culture, parental support and teacher-ICT competency need to be considered. There is also the issue of cost, which is considerable for all countries, and money can be

easily wasted if the overall implementation plan is not well thought out. There appears to be no one-size-fits-all definition or model of 'ICT integration' and each country and ultimately each school and classroom teacher will need to consider what it should like for them.

If countries are serious about integrating ICT into existing school systems it appears they will need to consider if they are ready to transform their existing systems, in order to take full advantage of ICT. Otherwise there is a danger their investment could go to waste. Rather than the concept of 'integration' maybe we should consider the role ICT can play in 'transforming' or 'reforming' our schooling systems in the 21st century (Bosco, 2009; Dede, 2007; Tapscott 2008).

*References:*

- *Partnerships for the 21<sup>st</sup> Century:* <http://www.p21.org/>
- Australian Digital Education Revolution Project:  
<http://www.deewr.gov.au/Schooling/DigitalEducationRevolution/Pages/default.aspx>

## **What are ICTs?**

ICTs are often associated with high-tech devices such as computers, and software, but ICTs also encompass more conventional technologies such as radio, television, and telephone technology.

The term ICTs refers to forms of technologies that are used to transmit, store, create, share or exchange information. This broad definition of ICTs includes such technologies as radio, television, DVD, telephone (both fixed and mobile), wireless technologies, satellite systems, different types of computers and networks; as well as the equipment and services associated with these technologies, such as videoconferencing, digital cameras, camcorders, web cameras and electronic mail.

## **Expanding Educational Opportunities - Range of ICT Formats**

It is unrealistic to assume that conventional delivery mechanisms will provide educational opportunities for all in affordable and sustainable ways. ICTs have the potential to help reach this objective. They can overcome geographic, social, and infrastructure barriers to reach populations that cannot normally be served by conventional delivery systems. Additionally they provide feasible, efficient, and quick educational opportunities. The potential of ICTs to reach large audiences includes the following mechanisms.

### **Radio Broadcast**

Radio has the potential to expand access to education. It is almost universally available, inexpensive, reliable, easy to use and maintain, and usable where there is no electricity infrastructure. Radio can offer many educational advantages, but it also has some drawbacks, including:

- Radio programs are restricted to the audio dimension of knowledge.
- Radio programs follow a prearranged schedule, to which listeners have to adjust.
- There is no interactivity with broadcast programs. Since there is no explicit response from students, it is difficult to know how effective the program is.

### **Interactive Radio Instruction (IRI)**

There are mechanisms to deal with this last issue, however, such as Interactive Radio Instruction (IRI). IRI is a methodology that requires learners to stop and react to questions and exercises through verbal response to radio characters, group work, and physical and intellectual activities, all *while the program is on the air*. Short pauses are provided throughout the lessons after questions and during exercises to ensure that students have adequate time to think and respond. *(For details about Interactive Radio Instruction, refer to the other handout)*

### Television Broadcast

TV programs can bring abstract concepts to life through clips, animations and simulations, visual effects, and dramatization. They can also bring the world into the classroom. However, TV broadcast shares with radio programs' rigid scheduling and lack of interactivity.

Experience has shown that TV can be successful in expanding educational opportunities at a national large scale by:

- targeting young adults who have left primary or secondary schools before graduation, allowing them to follow the curricula by watching television, and
- facilitating effective installation and implementation of schools in sparsely settled rural areas.

### Virtual High Schools and Universities

Virtual institutions generally provide all the services that a conventional institution does except for physical facilities. It is important, though, to distinguish between Websites that provide individual courses and those that offer a complete online program through which a student can obtain a diploma.

### Other ICT-enhanced solutions

Applications and resources that advance educational opportunities, efficiency, quality of learning, and quality of teaching are also applicable for improving skill formation. Certain solutions, however, have been particularly effective in this area. Examples include simulations, competency-based multimedia, video and interactive media, and workplace e-training—providing opportunities through the Internet, video conferencing, videos, CDs, television, audio, custom-designed multimedia programs, etc.

Note: These resources, tools and applications will be discussed in detail in successive sessions and materials for the course)

### To What Use Are We Putting ICTs?

The impact of ICTs for education depends to a large extent on the purpose for which ICTs are used. For example, if videos are talking heads (lectures, etc.) and software is digital text (like on textual PowerPoint presentations), we should not expect learning results significantly different from classroom lecturing or textbook use. However, these instructional technologies may extend educational opportunities and access to situations where there is no lecturer or textbook.

Thus the selection of a technology and the way it is used is partially determined by what is expected of it in terms of educational, learning, or teaching objectives.

## Handout - Policy Matters

### Why do we need a National Policy on ICT in School Education?

Most developing countries do not have a concerted Policy on ICT in School Education. The reasons can be many; they have decided that they do not need a separate Policy on ICTs in Education, already have an IT policy with sections on Education or have a Telecom policy which has references to both IT and Education. The mere establishment of a written national ICT policy for School Education has value in itself, even though it is quite clear that ICT policies do not and cannot exist in isolation. They have to take into account a range of other policies and existing frameworks such as education policies, information policies, trade and investment policies, and cultural and linguistic policies. At a minimum, it conveys the message that the government is progressive and intends to pursue the utilisation of ICT in society seriously. Governments, because of their inevitable role in policy making should assume a leadership role in the implementation of ICTs in schools. They must aspire to become role models by putting policy into practice and creating sustainable mechanisms to keep the policy updated and dynamic, so that it can keep pace with the fast changing technology in the business world.

That is the ideal situation; the truth is that ICT evolution will take place (as we have seen) with or without a systematic, comprehensive and articulated policy. While there is no denying that some good will come out of the process, it is also a fact that it will inordinately delay the journey, cause huge wastage and leave out large tracts of communities that can most benefit from the use of technologies.

So why do we need a specific Policy on ICT in School Education? While there can be several reasons for this, some of the most plausible reasons are:

1. A National Policy on ICT in School Education will enable the country's government and its people to develop and participate in an "envisioning exercise" that provides a prelude to where we are headed with all this investment. It will help channelize government funding and the tax payer's money into sustainable mechanisms of educational development which are likely to benefit generations of school goers.



2. A National Policy on ICT in School Education will perform have to provide a linkage with the country's National Education goals and enhance existing education policies and frameworks. Traditional education delivery mechanisms are not meant to suddenly encourage incorporation of technology tools. Deep rooted, systemic changes have to be made so that the country's education system can adopt and adapt to new age technology tools. This requires thorough assessment of the existing systems and a clear understanding on the capacity to which they can adapt to change. The policy development process, if it is an open one, will throw up all these challenges and seek to address these issues. Failure of most ICT pilot programmes to mainstream, scale up or sustain is caused by the single factor of not being linked to the over-arching, larger educational priorities of the country. For eg; The IT-Action Plan of the Government of India ( 1998),the Education Policy (1986 and subsequent amendments) and the National Curriculum Framework ( 2005) provide recommendations for what should be happening in schools, making generous provisions for promotion of ICT in schools. However, these recommendations are less likely to be implemented unless supported by a policy defining a robust implementation strategy. It therefore calls for a strong marriage between the IT Policy, the Education Policy and the National Curriculum Framework(2005)
3. A National Policy on ICTs in School Education will encourage new technology tools to be used in teaching and learning. This will help in knowledge creation and knowledge sharing among key stakeholders and community of practitioners. ICTs are all about new collaborative learning tools and having free and open access to information. Undoubtedly, technology can succeed in influencing outreach, access and creating new tools for learning and teaching, but these are less likely to emerge on their own without the support of sustainable frameworks and policies.

According to the feasibility report by McKinsey & Company , the essence of the challenge is to transform today's fragmented, supply-driven, largely uncoordinated pilot efforts for ICT in education into efficient, demand-driven, coordinated end-to-end systems implemented by strong partnerships involving all key players.

There are more reasons too for developing a National Policy on ICTs in School Education, some of which are elucidated below:

A national vision on the use of ICTs will provide the country with much needed direction, focus, guidelines and aid to prioritize the initiation and implementation of ICTs in Schools. This will result in huge savings as large school groups (and even State school education departments in the present scenario of centralised decision making) can leverage economies of scale in their purchase of hardware, software and content. Specific norms and standards can be created for development and use of curricular content, Teacher training on ICT and for student assessment.

When large school groups take a collective decision, it is more likely to be governed by real need rather than by professed need articulated by corporations and businesses that have access to the ministry. These decisions are also more likely to involve communities of parents who are professionals and who can provide unbiased advice on most things the schools wish to purchase.

ICT is developing fast and most technologies can be harnessed to address endemic issues of access, equity and quality. Delay in adapting to ICTs can cause loss of precious time and deprive many school-leaving teenagers the possibility of exploring new career options that require a good understanding of technologies.

There are more reasons yet, all of them supporting the need for an "end to end framework" or a comprehensive National policy to guide the use of ICTs in Schools.

Reference:

'Capturing the Promise of a Global e-Schools & Communities Initiative' – report by Mckinsey & Company to the UN ICT Task Force.

Source:

<http://www.digitallearning.in/articles/article-details.asp?articleid=2081&typ=POLICY%20MATTERS>