

# MEETING THE CHALLENGE OF THE MILLENNIUM DEVELOPMENT GOALS THROUGH THE APPLICATION OF ICT'S FOR EDUCATION

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*The illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn, and relearn. Alvin Toffler*

## Overview

During the last decade, it has been widely noted and documented that Information and Communication Technologies (ICTs) have established themselves as an indispensable element in assisting countries achieve their national development needs and priorities and specifically assist in meeting international development goals enshrined in the Millennium Development Goals (MDGs).

In terms of assisting the achievement of development goals, ICTs inherently possess the characteristics as it facilitates consensus building and governance; creating and sharing knowledge; enhancing economic opportunities; empowering marginalized and disadvantaged communities; and addressing gender issues. The ability to strengthen national policies and strategies also lies in the new avenues created by ICT, which encourages greater collaboration and coordination with all stakeholders through enhanced communication and networking

In the past ten years, the Asia-Pacific region has witnessed numerous ICT4D pilot projects and initiatives attempting to link ICTs closer to national

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development agendas. Numerous documents, workshops and summits, and research papers point to the undeniable fact of the vast opportunities that ICTs are providing to the poor and marginalized communities. Case studies with rigorous methodologies have proven how these new ICT tools within the fields of education, environment and income generating opportunities are revolutionizing and helping nations develop socially and economically faster than ever before.

The most critical challenge to the region has moved significantly from the decade old debates on the role and relevance of ICTs towards the actual human dimension and capacities required to actually capitalize on these new technologies.

In the last decade, we have seen the advancement of technologies and software applications evolve rapidly as evidenced through the proliferation and availability of numerous ICT applications (and corporations) available in the market or freely downloadable from the web. Ravi Raina notes that *'the global ICT market size has steadily risen from approximately US\$1 trillion in 1993 to a value of nearly US\$3 trillion in 2005, and is projected to increase by about 6 percent a year to reach a size of US\$4 trillion in 2010. The growth of the domestic ICT market in the Asia-Pacific region has been growing faster than the world average<sup>2</sup>*. The question for development practitioners should now no longer be focused on dimensions of 'how' and 'what' and 'where' but more on 'who'?

At the macro level, we believe that technology even at the most basic level of advancement of software that was available ten years ago is sufficient to meet the current needs of this present day, as the fundamental issue is and should begin with a critical focus on content and users and not functions and applications. So where does that leave us in discussing the issues of impediment of the adoption of ICTs? Can we continue to perceive the digital divide merely an infrastructure issue as commonly discussed? Will we be able

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<sup>2</sup> APDIP e-Note 13 - ICT Skill Development in the Asia-Pacific Region - Part one: the gap between demand and supply, Ravi Raina, 2007.

to fully utilize ICTs to achieve the MDGs if a personal computer and Internet was made available to everyone?

The departure point for critical discussion on the modalities of how ICTs can assist the MDGs must begin with the fundamental question of the development of relevant and adequate capacities of the citizens to fully leverage and capitalize on these new opportunities that ICT provides to these nations.

The main challenge across the region is less a matter of access and distribution of technology *per se* and more a matter of creating the enabling environment and capacity building efforts that will lead to 'value' creation with ICTs for people, businesses and governments. The gap in opportunities occurring across and within countries is primarily due to differences in starting points; inaccessibility to technology and knowledge exchange; lack of appropriate policies and strategies; lack of infrastructure; and inhibiting social, cultural and linguistic factors. This digital gap does not seem to be narrowing if it is perceived from a capacity perspective.

### **Manpower Requirements for Education: Demand and Supply**

There are two key areas that need to be considered when attempting to link a discussion on ICT and Education and the MDGs and that is to be cognizant of the distinction of ICT as a economic sector and the other as ICT as an enabler. We will briefly look at the dimensions of ICT as an economic sector and the links to the education support and capacity building requirements of this sector and touch upon the utilization of ICTs within the education sector.

From the perspectives of ICT as an economic sector, we are witnessing on how the Asia-Pacific region has emerged as the major source of ICT products and services to the world ICT markets, with China and India recognized as world leaders in ICT hardware and software services, respectively. It has been noted by experts that, *the regional export of ICT products and services to markets outside the region, mainly to the developed countries of the west, has been rapidly increasing during the last ten years. This trend is likely to*

*continue and indeed accelerate in the next decade*<sup>3</sup>.

In terms of human capacity, the ICT industry's human resource needs involves not only software programmers, hardware engineers, ICT literate managers, but also in more recent times lawyers familiar with intellectual property and cyberlaw regimes.

It is important that a realistic picture is painted on the capacity gaps within the region as the expanding diffusion and adoption of ICT in the region will not only lead to increased demand for ICT professionals but also to significant changes in the demand for occupational skills across all economic sectors. In the wake of ICT adoption, some traditional occupations may disappear altogether, others will need significant changes in their skill sets and many new occupations will appear. In all occupations, however, the need for ICT skills will significantly increase<sup>4</sup>.

It is anticipated that by 2010, the total demand for professionals in the ICT supply industry will reach a level of about 17 million. However, the demand for professionals in the ICT user sectors will rise faster to reach a level of 73 million in 2010<sup>5</sup>.

Interestingly enough, India which hosts numerous software corporations and engineers and which has numerous research and IT dedicated parks and academic institutions is anticipated to face severe human capacity gaps by 2010. *Nasscom, which represents India's software companies, has estimated that there could be a shortfall of 500,000 IT professionals by 2010. There is also a severe shortage of good managers*<sup>6</sup>. Across the region, we see different degrees of the same phenomenon. An exponential growth is taking place in the demand for ICT professional skills and ICT user skills and these trends are likely to accentuate in the years to come.

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<sup>3</sup> APDIP e-Note 13 - ICT Skill Development in the Asia-Pacific Region - Part one: the gap between demand and supply, Ravi Raina, 2007.

<sup>4</sup> Ibid.

<sup>5</sup> Ibid.

<sup>6</sup> *The Economist*, 18 August 2007.

At the regional level, the capacity gap is alarming. UNESCAP notes that the total college and university enrollment in the developing countries of the Asia-Pacific region stands at an estimated 15 million per annum and rising each year by nearly 6 percent. In spite of the sharp increase in ICT professional training at the university/college level and training provided by private institutions. The supply is likely to fall far short of the demand for ICT professionals and an annual shortfall of nearly 3 million is estimated<sup>7</sup>.

On the flip side of looking at ICT within the education sector, enthusiasm on the proliferation of ICT in education programmes that have mushroomed have also raised a significant amount of concern. While there are many proponents of ICT in education, there is also another school thought that has focused its attention on localizing ICT in education. Claudio de Moura Castro, Chief Education Adviser of the Inter-American Development Bank for example noted that *'though rich countries have used technology to make education even better, if developing countries were to follow the same path, they would be choosing alternatives that, in addition to being very expensive, require high quality teachers who are not and cannot be made available. These experiments are, therefore, doomed to remain enclaves, catering to the elite but incapable of being scaled up to reach the number of people who are in dire need of better instruction'*.

### **ICT Skills Development: Bridging the Gap Between Demand and Supply**

There is a growing and widespread recognition in the region of an expanding gap between demand and supply of ICT skills but surprisingly and more alarming is the scenario whereby the nature and scale of the imbalance between demand and supply is not fully appreciated, especially at the policy level in most developing countries in the region<sup>8</sup>.

What is immediately required is to ensure that a macro perspective is

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<sup>7</sup> [Ibid](#)

<sup>8</sup> APDIP e-Note 17 - ICT Skill Development in the Asia-Pacific Region - Part two: Bridging the gap between demand and supply, Ravi Raina, 2007

developed and puts into place policies for both strategic design of interventions of ICT skill development programmes and also mechanisms for accurate and up-to-date forecasting of future needs as the country progresses from one stage of ICT diffusion to the next. The annual and long term aggregate national level demand and supply of ICT skills as well as at individual skill levels<sup>9</sup> has to be monitored. This robust mechanism should function in a cyclic way whereby it influences future policy and programme interventions before they are rolled out.

It is common logic and practice in most countries of the region that when a shortage of skilled labour is identified within a particular field, increasing the enrollment of specifically design courses in tertiary education and specialized institutions would be the first step that is immediately rolled out. However due to the nature of the needs of ICTs, which is pervasive and is seen in almost every facet of our daily personal and work life in every imaginable sector, these interventions will have proven to fall short of the anticipated needs. It is at this juncture that we need to seriously look at ICT at the primary and secondary school level to ensure long-term relevance of the country in a demanding knowledge economy. This long term solution would require that not only ICT skills be imparted at the primary school level by providing access to pc's and computers but concrete efforts have to be undertaken to develop appropriate and localized content on basic ICT in school curriculum<sup>10</sup>.

Over and above developing the necessary content at the relevant levels and having policies and a monitoring mechanism in place, there should also be concrete efforts to establish national ICT skills certification centers to ensure a acceptable degree of standards in the quality of ICT education is in place. Certifying skills of ICT professionals as they graduate from their universities and colleges and over their working life as new technologies appear is an urgent need if the goal of quality ICT education and life-long learning is to be

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<sup>9</sup> APDIP e-Note 17 - ICT Skill Development in the Asia-Pacific Region - Part two: Bridging the gap between demand and supply, Ravi Raina, 2007

<sup>10</sup> Ibid

attained<sup>11</sup>.

It is within this vein of localizing education and reaching out to the masses and marginalized communities that we truly see the value of strong project design and exemplary and inclusive vision. Two key examples come to mind. The distance education initiative of Southeast Asian Ministers of Education Organization (SEAMEO), which established a regional open and distance learning centre to supplement or substitute conventional classroom instructions, is inspiring as it includes the development of online courses for senior secondary school students, training institution personnel, field extension workers and university lecturers, production of web- and CD-based multimedia learning programmes for online access, integration of IT in teaching mathematics and science and in the education and prevention of HIV/AIDS. In addition, India's outstanding success story in distance education was a one-of-a-kind project initiated by the Ministry of Human Resource Development using television to reach out to India's students. Well into its 20th year, the project has seen resounding success in equipping student communities in backward areas with the knowledge they require<sup>12</sup>.

### **The Importance of Strategic National ICT Vision and Agenda**

For the countries in the region to fully leverage and capitalize on the tools and opportunities provided by ICTs in meeting their respective MDG targets it is imperative that the strategic national ICT vision is grounded and built upon vision tempered by realism; planning hinged on adequate and coherent coordination, and adoption of localized solutions for localized challenges. The vision sets the stage and the agenda is defined by a strategic plan, followed by an action plan<sup>13</sup>.

There are three aspects that need to be considered from a strategic planning standpoint. The first is the importance of maintaining a human development perspective and focusing on the achievement of benefits for people through

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<sup>11</sup> Ibid

<sup>12</sup> UNDP, Regional Human Development Report 2005, (Elsevier, New Delhi:2005)

<sup>13</sup> Labelle, R.; [ICT Policy Formulation and e-Strategy Development: A comprehensive guidebook](#) (Elsevier, 2005: New Delhi)

the appropriate use of ICTs. The MDGs capture the most important objectives or outcomes sought from development initiatives from a human development perspective. ICT visions, agendas and plans need to consider MDGs<sup>14</sup>.

Having agreed on a people-centric approach, the second step is defining the process, agreeing on the steps involved, and managing this process<sup>15</sup>.

A third aspect is the impact of changes in the international economy, on the diffusion of technology and of ICTs, in particular. This aspect has a strong bearing on the strategic ICT vision and agenda. Understanding the issues that affect access to ICTs is also important and is included here for this purpose<sup>16</sup>.

The ICT vision and strategy should focus on human capacity and not just on technology. For this to happen, it is important to develop both the ICT vision and strategy with the end users in mind and with the input of these very same target audience<sup>17</sup>.

### **Final Thoughts of Realism**

It is best to conclude on a realistic view of the regional needs by tempering the perceived needs by also looking at day-to-day realities within the region. While ICTs do without a shadow of doubt offer numerous beneficial opportunities for education, they are no substitute for formal schooling. The role of technology is to support primary education not replace it, though the technology may play a part in meeting the needs of children or adults who cannot go to a conventional school or class.

Access to ICTs ensures enhancement of traditional or formal education systems, enabling them to adapt to the different learning and training needs of societies. Computer simulation, telematics, video-audio computer conferencing and virtual learning, along with educational television and radio, have the potential to reach larger audiences than possible through the

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<sup>14</sup> Ibid

<sup>15</sup> Ibid

<sup>16</sup> Ibid

<sup>17</sup> Ibid

traditional classroom<sup>18</sup>.

In principle, ICTs can increase the effectiveness of the process of education by providing cheaper and more interactive tools. They can enhance the teaching aspect of education and improve educational administration (the planning, monitoring and evaluation of education). Value addition to education represents the greatest advantage in the use of ICTs<sup>19</sup>.

On a macro level, while ICTs in education will assist the achievement of the MDGs, the final critical factor is to ensure that the approach taken is a multi-prong approach that works at all levels of education and workplace requirements. Only if the capacity assessments and long term strategies are in place can any discussion on ICT and education make a significant impact, as a piecemeal approach would not have the desired results or impact.

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<sup>18</sup> UNDP, Regional Human Development Report 2005, (Elsevier, New Delhi:2005)

<sup>19</sup> Ibid