In this section we focus on the national ICT in education policies of three Asia-Pacific countries. All three policies include a strong emphasis on teacher training, with in-school teachers being trained in the Philippines and Sri Lanka. Bangladesh exhibits a strong policy focus on the ICT training of professionals in the tertiary sector.

All three nations also place much emphasis on appropriate content development, with the Philippines and Sri Lanka again focusing on the curriculum development of the secondary level. Bangladesh and the Philippines are directing their efforts towards developing content in Bangla and Filipino.

With particular emphasis on capacity building, Bangladeshi policy seeks to empower citizens, enhance democratic values and promote sustainable economic development. Bangladesh is working to realize its vision of an ICT-driven nation by 2006.

The Philippines is currently in the second phase of its implementation plan, which runs from 2002-2008, involving the implementation of projects on ICT and the monitoring of this implementation. The rich supportive policy includes programmes on Curriculum and Materials Development, Staff Development, Technology Access and a Funds Generation programme.

Sri Lanka meanwhile, having approved their National Policy on IT Education in Schools in October 2001, is coming to the end of the first stage of their six-year strategic plan, which runs from 2002 to 2007. Infrastructure development, human resources development and curriculum development are the main thrusts of their plan, with the additional component of infrastructure development.

**Bangladesh**

**Vision**

Bangladesh seeks to build an ICT-driven nation comprised of a knowledge-based society by 2006. To meet this overall vision, the nation must develop a country-wide ICT infrastructure to give all Bangladeshis access to information. This will empower citizens, enhance democratic values and promote sustainable economic development. The infrastructure will be used for human resources development, governance, e-commerce, banking and public utilities, among other functions. A National ICT Task Force, headed by the Prime Minister, has been formed to help Bangladesh realize its established vision.

**Objectives**

- Promote the use of ICT in all economic sectors for transparency and efficiency;
- Develop a large pool of world-class ICT professionals for the local and global markets;
- Provide incentives to local and foreign entrepreneurs to develop the ICT sector;
- Ensure that infrastructure provides open access to international and national networks;
- Train decision makers in ICT use and promote an ICT culture;
- Establish a legislative and regulatory framework for areas such as data security, e-commerce and ICT education;
- Set up national databases that are open to all citizens;
- Create a high level ICT organization to foster the ICT industry;
- Enact laws for uninterrupted growth of ICT.
The Bangladesh Telegraph and Telephone Board (BTTB) will shift from its role as a service provider to an infrastructure provider for telecommunication service providers and ISPs. The BTTB will work to make use of under-utilised resources of other public utility sectors (e.g. gas, railways). Such resources may include land, radio towers, power pylons, cable ducts, etc.

Establishing the national Internet access platform must not affect the functioning of the present telephone network. Increased teledensity is essential, and advanced and new technologies must also be introduced in all areas. A national high-speed backbone and high-speed gateway facilities will be established to facilitate the installation of ISPs.

Telecommunications facilities will be made available to all parts of society and at an affordable cost, and Internet-access will be provided to educational institutions and libraries. The country will promote the launch of cyber kiosks in all post offices and similar facilities.

Research and Development
R&D will focus on needs-based studies and applied research to improve quality and efficiency. The Bangladesh Computer Council (of the Ministry of Science and ICT) will co-ordinate R&D activities in the public and private sectors. The ICT industry will be encouraged to fund R&D through industry-academia collaboration.

The country will establish a central online data bank for scientific and technological information to be used by educational institutions and other research organisations. Furthermore, Internet content, translation utilities, voice recognition utilities and text processing programmes will be developed for the national language, Bangla, and for other local languages when practical. Bangladesh seeks to attract companies such as Microsoft, IBM, Computer Associates, Oracle and SAP to set up R&D centres in the country.

Key Areas
Bangladeshi national ICT policy addresses sixteen key areas from infrastructure to healthcare to tourism to national security. Three essential areas are outlined below:

Human Resources Development
The country seeks to produce a large ICT labour force. ICT education will be promoted at all levels. Universities, Bangladesh Institutes of Technology and both public and private colleges will be strengthened to produce graduates with four-year computer science and computer engineering specializations. The government will designate one of the three proposed science and technology universities as a centre of excellence in ICT and give resources to fulfill this position. Furthermore, the country will establish multimedia institutes to make use of the opportunity offered by the growing multimedia market. Public and private education institutes, including polytechnics, will offer diploma and trade courses in ICT. To enhance and upgrade the skills of existing technology professionals, in-service training programmes will also be created.

As Bangladesh faces a shortage of qualified instructors to teach aspiring ICT in education professionals, the country is introducing IT-Capacity-Building in the Teachers Training Institutes (TTI), intensive post-graduate diplomas and in-service programmes. Virtual ICT teachers will be used to fill the current lack of trained instructors, and CD and Web-based courseware will enable computer-aided instruction. A national certification and accreditation system will also be formed, ensuring standardised, quality ICT education.

ICT Infrastructure
To meet growing demands, infrastructure will be expanded immediately in the public and private sectors, and will reach out into rural and under-served areas. Liberalization of telecommunications and little or no customs duties will facilitate the construction of this infrastructure. As cellular mobile phones are increasingly used for functions such as emailing, customs duties on these items should also be lowered.
The Philippines

Background

In 1996, the Philippines’ Department of Education (DepEd) began a series of initiatives embedded in the DepEd Modernization Programme. The 1996 General Appropriations Act (GAA) provided secondary schools funds for hardware, software, teacher training and courseware development, with these resources benefiting 661 schools and over 7000 teachers and principals. Numerous ICT programmes followed, including the current ten-year Information and Communication Technology Plan.

Objectives of the ICT Plan

The plan centres on five key objectives:

- Provide the necessary infrastructure and support to make ICT accessible and useful to students, teachers, administrators and support staff;
- Develop competence in the design, production and use of ICT-based instructional materials;
- Ensure access to the latest developments in ICT and promote research and development;
- Improve the curriculum by integrating technology;
- Promote the use of appropriate and innovative technologies in education and training.

Specific operational targets have also been set as more concrete and measurable goals:

- 75 per cent of public secondary schools and 50 per cent of public elementary schools should have a computer lab with basic multimedia equipment;
- All public science-oriented schools should be connected to the Internet;
- All public schools shall have an electronic library system;
- 75 per cent of public school teachers will have been trained in basic computer skills, the use of the Internet and computer-aided instruction (CAI);
- All public schools should be provided with appropriate educational technology equipment packages.

Phases of the ICT Plan

Phase I - Pre-Implementation 2000-2001
The first phase consisted of situational analyses and plan development for programmes.

Phase II - Implementation 2002 - 2008
Programmes are being implemented and monitored during the second phase.

Phase III - Post Implementation 2009
The final phase entails a comprehensive evaluation.

Thrusts of the ICT Plan

Upgrade the Curriculum
Introduce innovations. Streamline in scope but approach holistically. Introduce hands-on production and technology transfer to mathematics, science and English.

Improve the Delivery Support System
Quantify performance. Establish accountability. Provide resources. Source and promote appropriate technology.

Improve Fund Generation
Identify imaginative financing schemes through proactive programming, resource mapping and extra-budgetary financing.

Retool Human Resources
Conduct a wide variety of training programmes to meet differing needs.
Programmes and Projects

The government has developed six programmes to meet its ICT in education goals.

1. Curriculum and Materials Development Programme
An ICT-infused curriculum has been designed for five core subject areas – English, science and technology, mathematics, Filipino, and MAKAYABAN (technology and home economics; physical education, health and music; values education; and social studies). Continuing review will ensure consistency of the curriculum and content of instructional materials. While teachers have the field knowledge of what kinds of ICT-based instructional materials may be useful, they lack the resources to develop such tools. Bridging this gap, partnership between industry and education will be used as a strategy to develop and reproduce instructional materials. This can include industry-provided incentives to teacher-developers of ICT materials.

2. Staff Development Programme
The existing in-service teacher development programme will be institutionalized. The in-service programme will entail short courses for teachers on ICT as well as courses on curriculum development using ICT. Education managers in the Department of Education are targeted with a programme to promote positive attitudes towards ICT in education. IT foundations and service providers will help train teachers, facilitators, ICT experts and education managers on new educational technologies.

3. Facilities Acquisition and Development Programme
This programme addresses the need to acquire software and hardware (computers, peripherals, multimedia equipment and physical facilities). As the appropriate materials are put in place, the programme works to establish Internet connectivity and also standardization so that systems are compatible and interoperable. Private sector participation will be encouraged, along with the participation of local government units, NGOs and Parent-Teacher-Community Associations (PTCAs).

4. Advocacy and Promotion Programme
A primary component is advocacy focusing on students, teachers, administrators, public officials, NGOs and the private sector. The existing advocacy campaign is being intensified and, in addition to targeting the previously mentioned groups, seeks to raise greater awareness amongst the general public on the benefits of ICTs. Incentives are provided to teachers and administrators who promote ICT use in education. Some projects may be carried out with financial, technical or human assistance from IT foundations and service providers.

5. Technology Access and Development Programme
This programme is responsible for an inventory of available facilities and technologies. It also formulates definitions of the appropriate ICT equipment packages for schools of various types and sizes. Also, the programme will scan available technologies and adapt them for specific needs.

6. Monitoring and Evaluation Programme
ICT-based education materials and delivery systems are regularly monitored for effectiveness. The programme supports review by all stakeholders. Costs of monitoring and development may be shouldered by the industrial sector, as it is also a major stakeholder in basic education.
In an effort to fully utilise funding and other relevant resources, the Government of Sri Lanka established an IT Education Unit at the Ministry of Education in February 2001 and prepared a National Policy on School IT Education, approved by the Cabinet of Ministers in October 2001. A six-year strategic plan was implemented based on this policy.

Computer education in schools began in Sri Lanka in 1983 when some schools were provided with basic computers. However, since the initiative did not have a significant impact at that time with its limited direction, another project followed, hoping to meet the challenge of engendering substantial change. With the assistance of the Asian Development Bank, a network of Computer Resource Centres (CRCs) was created. While these CRCs provide students computer learning opportunities during vacation periods, computers have not yet been integrated into the curriculum. IT is not offered as a subject and is, in most cases, absent from the formal curriculum or only marginally included.

In February 2001, the Ministry of Education and Higher Education of Sri Lanka created the IT Education Unit. The Ministry considers Sri Lanka to be lagging behind in ICT development compared to countries at similar stages of socio-economic development. The officials of the Ministry realized that in the world’s new information economy, it is absolutely essential for schools to foster an information society and e-culture. In response, the IT Education Unit produced the National Policy on IT in School Education (NAPITSE) and a supporting three-stage, six-year action plan, which has been developed as a rolling plan; changes will be made when necessary according to professional inputs. The plan focuses on ICT for teaching and learning, as well as ICT for management of education. The NAPITSE action plan outlines five major goals. To meet these targets, the team generated focused objectives grouped under four strategic issues.

### Overarching Goals

- Envisage future global challenges in ICT education and lay the human resource foundation to meet these problems;
- Enable the effective use of ICT at all levels of school education;
- Provide “information literacy” for all school dropouts or others who cannot attend school;
- Involve the school system in lifelong education for citizens;
- Create an information-literate population of teachers and teacher educators.

### Four Strategic Themes

#### Curriculum Development

- Introduce, sustain and enhance ICT involvement in general education;
- Introduce ICT into pre-service and in-service teacher development and training.

#### Human Resources Development

- Provide necessary training to teachers in all government schools;
- Upgrade education officers to competently handle ICT-related activities;
- Create opportunities for the out of school population to utilise school-based ICT resources.

#### Infrastructure Development

- Allocate and distribute resources in an equitable manner;
- Set up 11 Information Technology Education Resources Centres for teacher training, an IT education library for curriculum development, and a Multimedia Education Software and Web Development Centre;
- Establish a National College of Education to train ICT teachers;
- Provide innovative means of training such as mobile training laboratories.
Support Initiatives Development

- Establish school ICT clubs and school websites;
- Encourage teachers to own personal computers;
- Create funds and awards to promote innovative ICT use in education;
- Convene ICT R&D conferences;
- Set up a professional body for those involved in ICT education;
- Design a website to assist schools in e-learning and information management;
- Forge strategic partnerships with other institutions, groups and sectors to enhance the quality of ICT education in schools.

General Information Technology (GIT)

NAPITSE has already launched the course General Information Technology (GIT) as the first component of the plan. The GIT course is aimed at Grade 12 students. Students learn the basic concepts of IT, identify further study paths based on individual ability, gain knowledge on related employment opportunities, discover the importance of IT in national development and become aware of the technologies’ social, ethical and safety issues.

Because of the lack of ICT access, the availability of computers is not required for the course, but they are of course utilised whenever possible. The course emphasizes student-centred learning and the preparation of wall charts, reports and exhibitions. The syllabus is structured around six units: IT Fundamentals, Mathematics for Computing, Information systems and IT, Computer Programming, Use of Computer Software, and IT and National Development.

e-Sri Lanka

The initiative e-Sri Lanka is an ICT roadmap created by the Ministry of Economic Reform, Science and Technology. The Ministry has worked to include all stakeholders to ensure support and efficacy. The plan was discussed via a video-conference with representatives from the World Bank, Silicon Valley, India’s software association NASSCOM and the Sri Lankan ICT business industry. After extensive research and discussion, a five-programme approach was developed as a way to create global markets for employment generation, expand e-government, reduce poverty and increase the quality of life and opportunities for Sri Lankan citizens.

Programme 1: Build Implementation Capacity

A National Taskforce will be chaired by the Prime Minister. An ICT Agency will be established to provide programme leadership and forge public-private partnerships.

Programme 2: Build National Information Infrastructure and Enabling Environment

The government will support development of “hard” infrastructure of affordable telecommunications, as well as “soft” infrastructure, i.e. an enabling environment for the Sri Lankan software industry.

Programme 3: Develop ICT Human Resources

This programme will focus on training and professional development in order to capture the global markets for software and ICT services.

Programme 4: e-Government: Delivering Citizen Services

The activities of this programme will enable the government to deliver public services more effectively, to improve co-ordination between government agencies and to empower civil servants with more powerful tools to carry out their duties.

Programme 5: Use ICT as a Key Lever for Economic and Social Development

Poverty will be reduced through a “social venture capital fund” for social and rural development. Mass media will be deregulated and instilled with values such as freedom of expression, equality and multiculturalism.