National policy

The Philippine government believes that to foster lifelong learning skills in learners, educational development with a principal focus on quality and access should form the core of its information and communication technology (ICT) programme. The Philippines’ Information and Communication Technology Plan sets forth the following objectives:
To provide physical infrastructure and technical support that makes ICT accessible and useful to students, teachers, administrators and support staff;

To develop competence in using technology, in designing, producing, and using ICT-based instructional materials;

To ensure access to the latest developments in ICT and to support research and development;

To undertake a curriculum improvement programme focused on the integration of technology;

To promote the use of appropriate and innovative technologies in education and training.

For the population of almost 80 million, the targets to reach by 2009 are:

- Seventy-five per cent of the public secondary schools and 50 per cent of the elementary schools will have a computer lab equipped with basic multimedia equipment;

- All public science-oriented secondary schools will be connected to the Internet;

- All public schools will have an electronic library system;

- Seventy-five per cent of the public school teachers will have been trained in basic computer skills and in the use of the Internet and computer-aided instruction (CAI);

- All public schools will be provided with appropriate educational technology equipment packages.

The use of ICT in education varies from school to school. A recent report\(^1\) shows that:

- In the majority of private elementary schools, familiarisation with the computer starts in grade 2, while in the public elementary schools, where the technology may be available, introduction to basic computer operations starts in grade 4 as an area of study in Home Economics and Livelihood Education (HELE).

- At high school, computer applications for further skills enhancement are introduced as an area of study in Technology and Home Economics (THE). This includes word processing, spreadsheet, database management, creating PowerPoint presentations and using the Internet. In some private schools, the study of computers extends to more complex operations such as programming and website development. The complexity of skills development depends on the availability of ICT resources in schools.

- Computers are used mainly in THE for formal study of the technology, with relatively limited application to other learning areas. The integration of technology across the curriculum has been constrained by the lack of ICT resources.

- In non-formal education, there is very limited use of information technology because out-of-school youth and adults participating in non-formal education programmes generally do not have access to computers.

Knowledge of gender issues in ICTs is hampered by the lack of reliable statistics. Few studies have kept gender statistics on users of public access facilities. However, in virtually all that have, the number of women users is much smaller than that of men.\(^6\) A survey on the use of ICTs by women’s organisations in selected countries of Asia and the Pacific, including the Philippines,\(^7\) indicated that women and men have not benefited equally. Women in particular have to contend with ideological, systemic and institutional barriers to accessing ICTs.
Highlights of the survey findings include the following:

- Women’s groups that have been able to tap into the potential of ICTs have experienced benefits and increased opportunities to conduct research and gain access to news and information, improve organisational and personal knowledge skills, monitor and participate in global women’s initiatives, disseminate information and publicise materials, lobby development causes at local and regional levels, exchange information and experience, coordinate activities both in country and abroad, contribute to civil society and local communities, identify new contacts and development partners and apply for donor funding and other forms of technical support;

- The dominant use of ICTs is for e-mail, which is primarily used for administrative purposes and correspondence with donors and regional and international partners. The Internet, on the other hand, was found to be useful for networking, information access and advocacy.

**Major initiatives**

Major initiatives of ICT use in education include the following:

- **The “DepEd Modernization Programme”**, which began in 1996, involves the introduction and use of modern technology to improve teaching and learning, educational management and support operations in the educational system.

- **The Act of 1998** (R.A. 8525) was passed to generate private sector participation in the upgrading and modernisation of public schools, especially those in underserved provinces. The project has four components: curriculum improvement, teacher training, courseware development and procurement of hardware and software. Recipient schools were selected based on the criteria adopted under the Computerisation Program. In all, 110 public high schools received computers in 1996 under the DOST Engineering Science Education Project (ESEP) and an additional 68 public high schools were recipients under the DOST Computer Literacy Program. DOST continues to allocate some PHP 20,000,000 to 30,000,000 (US$ 400,000 to 600,000) annually to support computer acquisition in schools. In 2002 and 2003, 125 public high schools were to be provided with 10 to 15 computers along with the corresponding teacher training programmes (see Appendix).

- **The Science Education Institute (SEI) initiatives** include the provision of Mobile IT Classrooms (MITCs), ICT Mediated Science&Technology Learning Programs, Mini Computer Laboratories, and development of Computer-based Teaching (CBT) modules. The MITC is a classroom housed in an air-conditioned bus, which is custom made to accommodate 32 students and a teacher. It is equipped with 17 laptop computers, two multimedia projectors, a television set, two VHS players, a public address system, two power surge protectors, a vacuum cleaner and two fire extinguishers. The ICT Mediated S&T Learning Program is for a selected number of elementary and secondary schools which are provided with one to three computers, one printer and one microscope that can be linked to the computer. These facilities are intended for teaching purposes and for limited hands-on activities for students. The Mini Computer Laboratory, installed in selected public schools, consists of four or five computers, a printer and software for Science and Mathematics. The mini-laboratory is used for demonstration and teaching, but may also be used by students for research-related activities. Some 164 schools were expected to benefit from the programme in 2002. Finally, the CBT modules are CD-ROMs, developed by SEI, to facilitate teaching and learning in General Science, Biology, Chemistry, Physics and Mathematics I-IV at the secondary level. The modules have been distributed to 110 S&T-oriented high schools, 1,145 recipients of the computer literacy programme of DepEd, 122 school recipients of the PCs for Public High Schools Project and 100 other school recipients in the different regions of the country.

- **The Bridgeit Programme**, locally called “text2teach,” is part of the global Bridgeit Programme, which delivers digital learning materials to schools using mobile technology. Each school is equipped with a satellite dish, 29-inch television set with rack, a 40-gigabyte digital video server/recorder to record and store video clips and two to three mobile phones. The Philippines is the only Asian country in the Bridgeit Programme which enables grade 5 and 6 students from selected public and private schools to view educational science videos downloaded with the help of mobile phones and satellite communication systems right into their classrooms. It is expected that more than 13,000 pupils will experience this teaching approach.

Other initiatives undertaken by the Department of Education (as parts of the Adopt-A-School Act) at the elementary level include the following:

- **Development of multimedia packages with ABS-CBN Foundation Inc**: To date 56 videotapes profiling outstanding instructional practices in
English, Science and Mathematics have been produced.

- **Computer Education for Elementary Schools (CEDES):** A computer education curriculum for grades 1 to 6 that has been developed and piloted in 10 divisions. A training programme in basic computer education supplemented the project for 24 teachers from six regions in August 2000.

- **TV-Assisted Instruction Project:** Launched by the Department and the ABS-CBN Foundation in 1994, this project aimed to introduce innovative technological approaches to upgrade instruction using tele-lessons. The 30-minute television shows such as *Sineskuela, Hiraya Manawari, Bayani, Math-Tinik* and *Epol/Apple* were aired from Monday to Friday.

- **Eskuela ng Bayan Project:** Proposes to standardise basic education by providing public elementary schools access to educational materials in English, Filipino, Mathematics and Science. It also provides access to the Internet and makes available information on non-formal education through an educational cable channel. The project includes a website for potential and currently participating schools which is also accessible to students and out-of-school groups. The website has teaching aids for teachers to use in enrichment programmes, e-mail services, chats and links to other sites for online education.

- **In collaboration with University of the Philippines National Institute for Science and Mathematics Education (UP-NISMED):** A project to integrate ICT in the 2002 Basic Education Curriculum (BEC). A framework for ICT integration in Science and Mathematics for K to grade 10 was developed. Similar frameworks for other learning areas are now being developed.

- **Information Technology Centers:** These centres of excellence in information technology, crossing traditional boundaries, were established in order to focus on the needs of a greater number of learners. There will be three IT Centers: two elementary and one secondary, in each of the 15 regions. Each will be provided with a laboratory equipped with computers, printers, peripherals, a multimedia projector, an air-conditioning unit and software programmes. Teacher training will also be a component. For the first year of operation, operating funds are provided by the Department, and the Local Government Unit (LGU) will supply funds for the maintenance and continuous operation of the facilities.

At the secondary level these initiatives have taken place:

- **DepEd Computerization Program (DECS):** In 1999 and 2000 undertook to provide networking among schools, access to the Internet and capability for electronic instruction. Three hundred and twenty-five public secondary schools have benefited from the programme.

- **Project LINK:** Scheduled to be operational in 2003. It has two components: technology access and development and teacher training. The former involves upgrading computer facilities to ensure connectivity that will provide access to the information highway. The latter involves the teachers of recipient schools, who will receive instruction on the use of the Internet for research and distance learning.

- **Continuing Studies Via Television (CONSTEL):** The first educational TV programme in the country to make use of the latest broadcast satellite technology combined with well-researched and carefully produced tele-lessons. The project aims to train elementary and secondary school teachers to become more competent in teaching English, Science and Mathematics. The project is being implemented in co-ordination with UP-ISMED and NBN. Telecourses in English and Science have already been developed.

- **Sci-DaMath Competition:** An annual Sci-DaMath competition which is a collaborative endeavour in sustaining the Science and Mathematics education through drama activities, which intend to increase the awareness of the learner and the public in Science and Mathematics.

- **e-MAGE 2000 (Math Games for Excellence):** A collaborative intervention with the private sector to enhance the teaching skills of math trainers through the use of information technology. Teacher training on using indigenous games in instruction and teacher-made computer-aided instructional materials in Mathematics were to be developed.

- **PCs for Public Schools Project (PCPS):** funded through a grant of PHP 600,000 (US$ 12 million) from the Government of Japan, secured largely through the initiative of the Department of Trade and Industry. The grant has benefited 996 public secondary schools across the country through the provision of 20 desktop computers, two printers, one fax/data/voice external modem with cable, one software package and teacher training to each of recipient-schools.
In the non-formal education sector, a network of 25 community-based radio stations has been set up under the Tambuli (born) project. It was set up in 1993 as part of Aklan College’s agricultural extension work, and was designed to promote community radio. To become part of the Tambuli Aklan network, a radio station needs to use a community participatory model of operation, which has to be managed by a community media council (CMC) that ensures local participation through representation from a variety of sectors of the local community to which it is broadcasting. The media council includes representatives from the local church, government, market vendors, police, health authorities, taxi drivers, farmers, senior citizens, rural women, youth and business. One example of a member radio station is DYMT-FM, which broadcasts from the premises of the Aklan State College of Agriculture (ASCA).

**Examples of training**

Starting in 2000, the Philippine Department of Education has given preference in hiring teacher-applicants who were computer literate. In most teacher training institutions, computer education is now a required course. For those who are already employed as teachers, inservice is provided in several ways:

- Intensive training on electronics and assembly of computers for THE teachers of 110 S&T-oriented high schools and other special science high schools is offered. The objective of this training is to ensure that teachers in schools with special S&T programmes have the appropriate technology skills. The Science Education Institute (SEI) allows recipient schools to keep the computers assembled by their teachers after the completion of their training.
- Training using computers in classroom management and instruction started in 1997 as a component of the Department’s computerisation programme. It has reached about 7,500 teachers of English, Science, Mathematics and THE (including those in elementary schools) and 691 school administrators.
- The PCs for Public High Schools Project is aiming to train 20,000 teachers over a period of two years under the Intel Teach to the Future Training Program. The training was initially for 1,000 teachers of the recipient schools. Each one of these 1,000 teachers is expected to train 20 additional teachers to reach the goal of 20,000 teachers trained by the end of the project.
- Training is provided by SEI of DOST on robotics and the use of advanced ICT facilities in Physics. The Physics teachers of the Philippine Science High School acted as trainers for Physics teachers of other public science high schools being supervised by the DepEd. Robotics facilities were given to the participating schools in the programme.
- Training programmes have been developed on the use of graphic calculators for Mathematics and Calculus for Science and Mathematics teachers in public schools. The Mathematics Association of Teacher Education Institutions (MATHTED) was tapped to handle the teacher training programme participated in by Mathematics teachers from 110 S&T-oriented high schools and other public science high schools.
- Distance training through CONSTEL is available for teachers who are unable to partake in face-to-face training in English and Science. The project has three components: development of instructional materials for teachers; production and distribution; and teacher training. The materials that have been produced and distributed to more than 2,000 schools nationwide include videotapes for English and Science teaching. Fifty-eight teachers of English and 91 teachers of Physics have been trained in the use of the materials. Videotapes in Mathematics will be produced and distributed by the Foundation for Upgrading the Standard of Education (FUSE).
- Training and capacity-building of women’s non-governmental organisations (NGOs) and grassroots groups on various ICT skills is available. Some examples are the Women’s Electronic Networking Training (WENT) series by AWORC and Wired Fridays, a grassroots women’s training project on ICTs by Isis International-Manila.

**Constraints on the use of ICT**

Even though the Philippine government has initiated several programmes and projects for the use of ICT in education, real implementation in day-to-day learning is still limited. Teachers’ fear of technology still hinders the optimal use of ICT-related skills in their teaching activities. Other constraints include the traditional mindset of the school principals, inadequacy of ICT facilities, the lack of adequate maintenance of the available/existing ICT resources, dependence for financial investment on the central government and dependence on ICT service providers for software/courseware.

Despite various training programmes having been provided to teachers, there is still a need to embark on a comprehensive and sustained inservice training for teachers. Likewise, a systematic development programme for education managers needs also to be implemented to change the mindset of principals so they appreciate the value of ICT in education.
Although almost all initiatives involve some allowance for procuring ICT hardware and software, equipping schools with ICT facilities is still a problem. Therefore, given the budgetary constraints, the participation of other stakeholders like local government units, parent-teacher-community associations (PTCAs), NGOs, and the private sector needs to be encouraged to provide the education technology packages. Considering the lack of technical staff for maintaining computers and computer networks, as well as providing user support for Internet-related activities, lease arrangements rather than procurement should be explored as an alternative.

Another constraint that has had a significant impact on the use of ICT in classrooms is the availability of courseware. Applications and courseware currently available are predominantly productivity tools provided by ICT service providers. Schools, therefore, are limited to teaching the tools rather than using the tools to teach and learn. Without a variety of subject-specific applications, the curricular usefulness of the technology will not be fully realised. It is therefore necessary to develop a system to produce ICT-based education, including the development of ICT-based materials in teacher training.

Analysis

Data and information available show that the Philippines have eagerly embraced ICT in education. With facilitation by the Department of Education, and collaboration with the private sector, several initiatives have successfully equipped a number of schools with ICT facilities. Nevertheless, the initiatives have not insured that teachers fully use the facilities for teaching purposes.

A survey of 4,310 secondary schools (both public and private), conducted by DOST, showed that 84.1 per cent of the computers in schools are being used for instruction while the rest are used for office work. Among the computers used for instruction, 50 per cent were being used in THE while only 11 per cent and nine per cent of these computers were being used for Science and Mathematics instruction, respectively. Likewise, 15.2 per cent of the teacher-respondents said that they used computers for instructional purposes (56.5 per cent) and office work (43.5 per cent). Student-respondents also claimed that 92.1 per cent use computers for learning while 7.9 per cent use computers for other purposes. The survey also found that recipient schools are still dependent on external agencies for the maintenance of computers. About 45.1 per cent of the 2,405 schools surveyed engage the services of outside technician. A factor hindering bringing Internet to more schools is that only 38.9 per cent have telephones. Among schools that have telephone lines, the majority (81.1 per cent) do not have an Internet connection.

The Survey of Information and Communication Technology Utilization in Philippine Public Schools, conducted by the Foundation for Information Technology Education and Development (FIT-ED) in the latter part of 2001, revealed that student-computer and teacher-computer ratios are still considered poor and need to be improved. Furthermore, it was revealed that institutionalisation of technology integration in the curriculum has not been realised. One hundred recipient-schools under the 1996 DECS Computerization Program were included in the study.

In summary, it is fair to state that the use of ICT in teaching practice in Philippine schools is still not widely implemented because of uneven access to ICT facilities and the Internet, poor ratios of students to computers and teachers to computers, and the low levels of technology integration in the school curriculum.

NOTES

5 See note 3 above.
8 See note 3 above.
11 See note 3 above.
### The Adopt-a-School Partners

<table>
<thead>
<tr>
<th>Company/Organisation/Institution</th>
<th>Recipient school</th>
<th>Name of project</th>
<th>Support/Intervention</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS-CBN Foundation, Inc.</td>
<td>Multimedia Project</td>
<td>56 educational videotapes comprising Hiraya Manawari, Bayani, Apol Epol, Math Tinik and other ABS-CBN produced shows for viewing by public school children</td>
<td></td>
</tr>
<tr>
<td>Aboitiz Foundation</td>
<td>17 schools in Cebu</td>
<td>Aboitiz Adopt-A-School Project</td>
<td>20 computers and printers for teacher and student use</td>
</tr>
<tr>
<td>Ayala Foundation Inc.</td>
<td>CENTEX Mla. and CENTEX Batangas</td>
<td>Center of Excellence (CENTEX)</td>
<td>Funds for the establishment of a computer laboratory, with 11 PCs and 2 printers for each school; access to the Internet for high schools</td>
</tr>
<tr>
<td>AMA Foundation</td>
<td>100 schools under the PCPS project</td>
<td>Computer training programmes</td>
<td>Series of computer training programmes for teachers</td>
</tr>
<tr>
<td>A. Andes (author and publisher)</td>
<td>80 public high schools</td>
<td>Book Donation Project</td>
<td>Computer application books</td>
</tr>
<tr>
<td>Books for the Barrios Foundation</td>
<td>36 public elementary schools</td>
<td>Model of Excellence Project</td>
<td>Computer hardware</td>
</tr>
<tr>
<td>Citibank</td>
<td>Mandaluyong High School</td>
<td>Computer donation</td>
<td>21 computers</td>
</tr>
<tr>
<td>Coca-Cola Export Foundation Corp.</td>
<td>15 high schools in Metro Manila and the Visayas</td>
<td>Ed. Venture Project</td>
<td>Internet connectivity for schools; teacher training in the use of the Internet; telecollaboration among schools</td>
</tr>
<tr>
<td>Intel Phils.</td>
<td>755 high schools (1st batch) 500 high schools (2nd batch)</td>
<td>Intel Teach to the Future Training Program</td>
<td>Funding support for the conduct and monitoring of the school-based training for high school teachers</td>
</tr>
<tr>
<td>Japanese government</td>
<td>1,000 public high schools</td>
<td>PCs for Public High Schools Project</td>
<td>Curriculum development; procurement of hardware; training of teachers; courseware development</td>
</tr>
<tr>
<td>Makati Business Club</td>
<td>100 high schools</td>
<td>Connect ed. ph</td>
<td>Computer laboratories; software; training; Internet connections</td>
</tr>
<tr>
<td>Metrobank Foundation</td>
<td>6 special science elementary schools 16 RSHS</td>
<td>Computer donations; lab equipment donation</td>
<td>60 computers (486 model) Around 2.5M-worth of lab equipment and PCs</td>
</tr>
<tr>
<td>Philips Electronics and Lighting Co.</td>
<td>Manila Science High School P. Burgos Elementary School</td>
<td>Philips Educational Room (PER) Project</td>
<td>10 PERs, each PER serving as a one-stop electronic Library for learning and data gathering</td>
</tr>
<tr>
<td>STI</td>
<td>4,500 public high school teachers</td>
<td>Teacher training programme</td>
<td>Hands-on training in basic information technology</td>
</tr>
</tbody>
</table>