National Framework Plan for ICTs in Basic Education (2005-2010)
Harnessing ICTs for Quality Basic Education for All

The Department of Education envisions an ICT-supported system of quality basic education for all. It is committed to the appropriate, effective, and sustainable use of ICTs to broaden access to and improve the quality and efficiency of basic education service delivery.

I. INTRODUCTION

The Philippine Basic Education System is a system in crisis.

The poor performance of students across the country in national and international achievement tests, and the consistently high dropout rates at both elementary and secondary school levels, underscore the deterioration of the quality of the Philippine schools system. At the same time, the relative underdevelopment of the alternative learning system means that the needs of an overwhelming majority of the estimated 16 million youth and adults who have not completed basic education are not being met.

At the root of the crisis is a combination of under-investment and poor management.

The Philippines spends only PPP (purchasing power parity) USD417 per student per year compared to PPP USD995 in Thailand, PPP USD2,289 in Korea, PPP USD4,369 in The Netherlands, and PPP USD7,186 in the United States (UNESCO, 2005). Moreover, while the education sector gets the lion's share of the national budget (net of debt service), 89% of Department of Education's (DepED's) budget is used to pay the salaries of its more than 500,000 employees. It is therefore not surprising that teacher, classroom, and textbook shortages persist, and that the alternative learning system (covering both non-formal and informal education) receives less than 1% of the DepED budget.

DepED's highly centralized and hierarchical structure, its constantly changing leadership, myopic planning, and the bureaucratic practices that both discourage thinking out of the box and alienate the Department from the communities it serves, have exacerbated the impact of resource constraints.

While DepED continues to grapple with the problem of improving quality and broadening access, new challenges to educational institutions have emerged within the context of globalization, the rapid development of new digital technologies, and the transition to a "knowledge-based economy". In a knowledge-based economy, knowledge is the most precious asset—driving growth, wealth-creation, and employment—and education serves as the key to economic and social mobility. As economic borders continue to fall, and as computers and the Internet make possible exponential growth in information generation and exchange, the competitiveness of nations, corporations, and

individuals is increasingly becoming dependent on their ability to transform information into knowledge and to apply that knowledge in dynamic, cross-cultural contexts.

Educational institutions all over the world must evolve in step with the radically changing economic and social environment in which their graduates must work and thrive. Instead of being simply sites of knowledge transmission, schools are challenged to become enablers of learning, facilitating the development of higher order thinking skills and the acquisition of knowledge and skills for lifelong learning.

Information and communication technologies (ICTs)—the diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information, such as *computers, the Internet, radio, television, telephones, and audiovisual equipment*—can support the qualitative shift in the learning process, facilitate access to education, and improve administrative and instructional efficiency.

Recognizing the potential benefits of integrating ICTs in education systems, DepED launched the National Strategic Planning Initiative for ICTs in Basic Education in February 2005 as part of a system-wide reform process to bring Philippine basic education out of crisis. A series of round table discussions and consultative meetings were held with representatives of government, the private sector, academe, non-government organizations, and other education stakeholders (*see Annexes A-D)*, for the purpose of formulating a National Framework Plan for ICTs in Basic Education. The Plan sets the parameters and articulates the goals and strategies for ICT integration in Philippine basic education over the next six years. This Plan should: (1) serve as a reference for filtering ICT programs to ensure that they address the priority needs of DepED; (2) add focus and direction to current ICT programs; and (3) guide ICT program development, resource generation, and allocation.

II. POLICY FRAMEWORK

The integration of ICTs in basic education is in line with several national policies underpinning basic education in the Philippines.

The first of these national policies is the Medium Term Development Plan of the Philippines (MTPDP) 2004-2010, which envisions ICT as a development tool: "ICT will be harnessed as a powerful enabler of capacity development. It will therefore be targeted directly towards specific development goals like ensuring basic education for all and lifelong learning, among others." (National Economic Development Authority, 2004a, p. 2)

The education goal set forth in the MTPDP is that by 2010 "[e]veryone of school age will be in school, in an uncrowded classroom, in surroundings conducive to learning. Three thousand school buildings a year shall have been built and a computer put in every high school." (National Economic Development Authority, 2004b, p. 233) The MTPDP provides for the wider use of computers to support teaching-learning processes, the

promotion of e-learning and information literacy, and the establishment of e-learning competency centers.

The 2002 Basic Education Curriculum (BEC) likewise recognizes the need to harness ICTs in "the acquisition of life skills[1], a reflective understanding and internalization of principles and values, and the development of the person's multiple intelligences." (BEC, 2002, p. 8) BEC 2002 is conceived as an interactive curriculum that promotes integrated teaching and interdisciplinary, contextual, and authentic learning. The use of ICTs in all learning areas is encouraged as a means for promoting greater interactivity, widening access to knowledge that will enrich learning, and for developing "skills in accessing, processing and applying information, and…in solving mathematical problems and conducting experiments." (BEC, 2002, p. 15)

In addition to the MTPDP and BEC 2002, strategic planning for ICT use in basic education is framed by DepED's Schools First Initiative (SFI) and the National Action Plan to Achieve Education for All (EFA) by the Year 2015. Both policies recognize the extreme factors that impinge on the basic education system and offer a clearly articulated framework and strategies for mitigating the effects of these factors.

Launched in early 2005, the Schools First Initiative is part of Government's reform agenda to improve educational outcomes for all Filipinos, specifically by improving current performance, strengthening accountability and responsiveness, and enhancing management and leadership. (Department of Education, 2005a, p. 4) It calls for actions by Government to focus attention on and sustain the country's efforts in attaining improved educational outcomes for all Filipinos. "Outcomes" are measured as participation, completion, and achievement of several desired categories of educational results. "Improvement" is defined in terms of rising average, reduced variation around average, and accelerated reduction of variation below average. (Department of Education, 2005a, p. 5) Specifically, SFI targets the following:

- all children entering Grade 1 ready for school
- all children in school able to read by Grade 3
- teachers having English and subject proficiency
- all students obtaining adequate instruction
- increased demand for schooling leading to fewer dropouts (Department of Education, 2005a, p. 7)

SFI consists of three interlocking components—"Enhancement of Learning", "More Resources for Learning", and "Focused Organization for Learning".

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[1] BEC 2002 lists the following core life skills: self-awareness, empathy, effective communication, creative thinking, critical thinking, problem-solving, decision-making, understanding one's emotions, coping with stress, interpersonal skills, and productive/entrepreneurial skills. Life skills and lifelong learning skills are also at the core of the alternative learning system (ALS) curriculum, which is divided into five key areas: communication skills, critical thinking and problem solving, sustainable use of resources/productivity, development of self and a sense of community, and expanding one's world vision

Component 1 articulates 12 priority areas, including standard-setting for early childhood education, reading education in the early years, and English proficiency; upgrading science and mathematics education; and values education. Specific thrusts for the secondary school level are ensuring high school readiness, improving S&T education, providing a technical-vocational track in secondary schools, and using ICTs to improve teaching and learning. Emphasis is given to teacher preparation at the pre-service, induction and in-service stages, and to student assessment at the division and national levels. Also a priority is basic education for Muslim Filipinos, indigenous peoples, and those in conflict-afflicted areas. (Department of Education, 2005a, p. 8)

Components 2 and 3 of the SFI identify strategies for increasing resources allocation for education, and for managing these resources through responsive organizational structures. (Department of Education, 2005a:9-10) SFI seeks to "localize, decentralize and link educators with parents and local governments as schools are freed from bureaucratic restrictions to deliver results." (Department of Education, 2005a, p. 13) Empowered local political constituencies—taking the organizational form of school-governing councils that are composed of parents, students, local government officials, civil society groups, teachers, and school administrators—are envisioned as the drivers of sustainable reform.

"Education for All" (EFA), on the other hand, is a worldwide campaign launched by UNESCO in 1990 to ensure universal provision of primary education and significantly reduce illiteracy before the end of the decade. The National Action Plan To Achieve Education for All by the Year 2015 recognizes that "the greatest cost of widespread lack of education is the hardening and perpetuation of social exclusion as the uneducated also become the poorest, those most vulnerable to shocks, the voiceless in culture, the powerless in politics and those denied access to health and knowledge." (Department of Education, 2005b, pp. 10-11) Thus, it sets six tasks to be undertaken in the Philippines, as follows:

- Better Schools: Make every school continuously perform better.
- ECCD: Make expansion of early childhood care and development (ECCD) coverage yield more EFA benefits.
- Alternative Learning Systems: Transform non-formal and informal interventions into an alternative learning system that yields more EFA benefits.
- Teachers: Get all teachers to continuously improve their teaching practices.
- Longer Cycle: Adopt a 12-year cycle for formal basic education.
- Curriculum Development: Continue enrichment of curriculum development in the context of pillars of new functional literacy. (Department of Education, 2005b, pp. 24-32)

Three additional tasks have been identified to sustain effective implementation:

- Financing: Provide adequate public funding for country-wide attainment of EFA goals.

- Governance: Create a network of community-based groups for local attainment of EFA goals.
- Monitoring: Monitor progress of efforts towards the attainment of EFA goals. (Department of Education, 2005b, pp. 32-36)

Expanding access to basic education, curriculum change, localization, decentralization, and school and community empowerment are processes that both enable and are enabled by the effective use of ICTs. Indeed, the transformative power of ICTs is more likely to be realized when ICTs are introduced in the context of radical system-wide reform. With the Schools First Initiative and the National EFA Action Plan, and the shift to learner-centered pedagogy introduced in the 2002 Basic Education Curriculum, the conditions are ripe for ICTs to gain traction within the basic education system and, in turn, for the system to fully benefit from ICT integration.

III. PARAMETERS FOR ICT USE IN BASIC EDUCATION

This National Framework Plan sets three parameters for the use of ICTs—such as radio, television, audiovisual equipment, telephones, computers, and the Internet—in basic education, namely, appropriateness, effectiveness, and sustainability.

Appropriateness refers to suitability in context. The following variables must be considered:

- Goals and objectives to be met
- Content to be processed or delivered
- Availability of technology
- Accessibility of technology
- Skills needed to use the technology
- Availability of support services

Appropriateness in the pattern of ICT usage should be a major concern. The most appropriate technology is "not necessarily the latest and greatest" but rather a "relative mixing and matching of old and new technologies." (Wachholz, 2005)

Effectiveness refers to the extent to which stated goals and objectives are realized. Effective ICT use in teaching and learning is measured against the goals of the formal education curriculum and the alternative learning system (ALS) curriculum.

When used appropriately, ICTs are powerful tools that can

- improve motivation and engagement in the learning process;
- develop multiple intelligences through multimedia presentation of materials;
- facilitate comprehension of abstract concepts by making them more concrete;
- develop basic skills (reading, writing, arithmetic) by giving learners opportunities for practice;
- promote inquiry and exploration through the use of interactive learning resources;

- enhance information literacy, critical thinking, problem-solving, and other higher order thinking skills;
- facilitate collaborative and cooperative learning by providing tools for learners to communicate and work with other learners; and
- develop lifelong learning skills, including learning how to learn. (Haddad and Jurich, 2002)

The objective of ICT integration in formal and nonformal basic education therefore, is not only learning the tool but also using the tool to learn (application in the subject areas and the learning strands).

Teachers and instructional managers have an important role in ensuring that the use of ICTs results in effective learning. "Educational technology is not, and never will be, transformative on its own—it requires teachers who can integrate technology into the curriculum and use it to improve student learning….teachers are the key to whether technology is used appropriately and effectively." (Carlson and Gadio, 2002, p. 119)

Effective teaching in ICT-enhanced learning environments requires teachers and instructional managers to develop not only ICT skills but also appropriate pedagogical competencies, such as skills in asking meaningful questions and in "interpreting information by integrating it with previously accumulated knowledge and giving it an appropriate context" (Sinko and Lehtinen, 1999, qtd. in Wheeler, 2001, p. 9). They must have the ability to develop higher-order thinking, information-reasoning skills, and collaborative learning skills "which are increasingly required in today's knowledge economy." It also requires teachers and instructional managers to be more learner-centered, "interdisciplinary, …and adaptive to individual learning styles." (Carlson and Gadio, 2002, p. 120)

Teacher professional development is a continuum (rather than a one-off event)—from initial teacher preparation or pre-service education in the subject or learning area, instructional design and pedagogical content knowledge, and classroom management; to in-service retraining, upgrading, and acquisition of new knowledge and skills. It includes various ICT-enhanced training modalities, such as "teacher professional development at a distance, asynchronous learning, and individualized training opportunities," and the use of appropriate technologies to provide teachers with "access to more and better educational resources, [and] multimedia simulations of good teaching practice." (Carlson and Gadio, 2002, p. 119) It also requires continuous technical and administrative support for teachers. Although they play a pivotal role in the process, teachers and instructional managers cannot single-handedly achieve the goal of effective learning with ICTs. They need to be part of a community of practice, through which they can receive the support and encouragement they need to increase self-motivation, become more competent, and reflect on their own practice. (Gobbo and Girardi, 2001)

In addition to improving the quality of teaching and learning, effective ICT use in education also refers to the extent to which ICTs broaden access to education services. Learners both in and out of school can use technology to access various learning

materials; communicate with instructional managers and content experts; and exchange ideas, experiences, and materials with other learners. Instructional managers, coordinators, and supervisors can use technology to monitor, assess, and guide learners.

Alternative (sometimes referred to as flexible or open) learning systems have a long history of being able to effectively apply available ICTs to reach greater numbers of learners and to improve learner-teacher interaction. Since the 1920s, radio has been used both as a teaching aid (through regular broadcasts for classroom use) and as an alternative school for both children and adults. With its high reach and low cost, it is particularly useful in remote areas. Television is another broadcast medium for educational programs intended not only for traditional learners but also for the general population. Its audio-visual character makes it possible to transmit content that cannot be effectively presented by audio alone. The major drawback, however, is cost, since it takes more resources to produce materials in video format, and even more resources to broadcast. More recently, the Internet (including electronic mail, videoconferencing, telephony, the World Wide Web), and interactive computer-aided instruction, have been used to effectively deliver educational content.

In the Philippine setting, the effective use of ICTs in alternative learning systems is based on the need to maximize reach despite limited resources, and the need to standardize educational content given the presence of multiple and diverse education providers.

Effectiveness of ICT use for planning and management of education institutions refers to the extent to which ICT use supports and enhances the speed, accuracy, and completeness of collection, analysis, and dissemination of data on which education stakeholders base their decisions. If used effectively, ICTs enable data-driven decision-making. It minimizes the guesswork, opinion, and emotions in the decision-making process, and replaces these with quantifiable proof (American Association of School Administrators, no date). It also enables educators and decision-makers to gain informed and thoughtful perspectives of current situations, options, and considerations before formulating plans of action. (Creighton, 2000)

Effective use of ICTs in education planning and management presupposes that education administrators and non-teaching staff are skilled ICT users. At the minimum, they should be able to use a computer to create and process documents, perform computations, communicate, and make presentations, following norms for acceptable use. (Commission on Information and Communications Technology, 2005) Furthermore, education administrators and non-teaching staff need specialized competencies that enable them to use ICT hardware and software optimally in fulfillment of their job functions.

Sustainability is defined as the extent to which the implementation of an ICT-based project (in the context of basic education) can continue after initial project funding or support has ended. There are five dimensions of sustainability, namely, economic, social, political, technological, and educational.

- *Economic sustainability* refers to the ability of a school system to finance an ICT-enhanced program over the long term. Planners must reckon with the total cost of ownership—defined as the full cost of using ICTs over its useful life, including the cost of infrastructure; hardware and software; operations, repair and maintenance; upgrades and replacement; and professional development and staff services—and develop multiple channels of financing through broad-based, stakeholder participation.
- *Social sustainability* is a function of community involvement. The success of ICT-enhanced programs depends in part on the extent of buy-in from parents, political leaders, business leaders, and other stakeholders. Ultimately, those who will use the technology, or who will in some way be affected by its use, must accept it as necessary and desirable.
- *Political sustainability* revolves around issues of policy and leadership. When ICTs are introduced in schools, leaders must be prepared to manage the change processes involved, including the identification of the requirements for successful adoption both at the level of policy and of implementation.
- *Technological sustainability* involves choosing technology that will be effective over the long term. The rapid evolution of technologies makes obsolescence a practical concern. On the other hand, the latest technologies may not be the most stable or the most appropriate tools for achieving the desired educational goals. Availability of technical support is also key. (Adapted from Cisler, no date; Tinio, 2003; and UNESCO Bangkok, 2004)
- *Educational sustainability* is a function of 1) the effectiveness of new ICT-supported pedagogical practices in facilitating the achievement of curricular goals, and 2) the extent to which these ICT-supported practices have been institutionalized. (Kumar, 2000, cited in UNESCO Bangkok, 2004, p. 74)

IV. CURRENT STATUS OF ICTs IN BASIC EDUCATION

At present, the delivery of the alternative learning system (ALS) curriculum is mainly print-based. The Bureau of Alternative Learning Systems (BALS, formerly the Bureau of Nonformal Education) has developed more than 500 print modules, some in two languages (English and Filipino). The modules are distributed to ALS service providers as hard copies and in CD-ROM format. Some modules are supplemented by audio and video materials that are made available in selected learning centers. Unfortunately, the BALS' laudable efforts in materials development are not matched by broad-based, high-impact deployment.

There is currently a pilot project on radio-based instruction in support of the Accreditation and Equivalency (A&E) program. Set to run for six months, this pilot targets out-of-school youth and adults, particularly mothers, in five regions and will be aired on the Southern Broadcasting Network (SBN).

Although there are many educational programs on television, there is no system that organizes topics according to the ALS curriculum, or a system for mentoring based on topics aired.

Interactive CD-ROMs based on the ALS curriculum are also being developed by non-government organizations such as the Educational Outreach through eLearning and Sandiwaan Center for Learning, in coordination with BALS. Concrete targets for materials development for the ALS curriculum have been set. However, this is being done on a pilot basis and needs to be evaluated and scaled up, as appropriate.

ICTs are hardly used for monitoring ALS efforts in the field. Training is done face-to-face, with mobile teachers and contracted service providers brought to central training centers.

The use of ICTs is considerably more prevalent in the formal education setting. DepED estimates that 69% of public secondary schools already have at least one computer, and is hoping to raise this figure to 75% by the end of 2005.

Computers in schools are acquired mostly through purchases using school funds (45%) or through donations by government and private groups (40%). (Project TAO CARES, 2003, pp. 13-14) For the past seven years, DepED has conducted a massive computerization program for secondary schools. This has been supplemented over the years by ICT-related initiatives of other national government agencies, local government units, non-government organizations, private firms, foreign governments, and international aid donor agencies. These initiatives include not only computerization and connectivity but also teacher professional development, technical training, and content development, and strategic planning.

However, much work still needs to be done to ensure that computers and other ICT equipment deployed in public secondary schools are used to improve the quality of teaching and learning. In a 2002 survey of ICT use in 100 Philippine public secondary schools, Tinio (2002) reports that in majority of the schools surveyed, only half or less of their teachers and students had been able to use the computer as an educational tool. Moreover, the predominant use of computers was in Computer Education classes taken by students in their junior and senior years. This means that although the 2002 BEC advocates using ICTs to learn in the subject areas, such as Science, Mathematics and Makabayan, learning the tool itself, or computer skills training, continues to be given priority.

Several reasons account for this state of affairs. One is the lack of ICT facilities in schools. While more secondary schools now have computers, student-to-computer and teacher-to-computer ratios remain extremely poor. At the elementary level, computer penetration is negligible. Latest DepED estimates place computer penetration at one computer for every 25,000 elementary pupils (1:25,000), one for every 111 secondary school students (1:111), one for every 728 elementary teachers (1:728), and one for every three secondary school teachers (1:3).

Schools that have computers also lack hardware peripherals (such as scanners, digital imaging devices and projectors) that would expand the functionality of computers,

networking, and Internet access. In 2001, only two percent of schools nationwide had Internet access. (Project TAO CARES, 2003, pp. 8-9) Of the public schools with Internet access, only 9% use the Internet for instructional purposes. Furthermore, 44.5% of public secondary schools that use the Internet for instructional purposes have only one computer that can go online. About half of these schools access the Internet for an average of less than one hour per day. Most have dial-up connections with maximum speeds of 56.6kbps. (Tinio, 2002, pp. 15-16)

Other ICTs, such as television and radio equipment, are also not widely available. As of 2001, less than half (42.2%) of all public and private elementary and secondary schools had radios and cassette players, slightly more than a quarter (26.80%) had television, and less than a fifth (17.19%) had VHS players. Only 6.98% had overhead projectors and 3.6% had VCD players. (Project TAO CARES, 2003, pp. 5-6)

Two initiatives launched in early 2005 offer the promise of improved connectivity in the basic education system—the GILAS project, a public sector-private sector partnership that aims to provide Internet access to all public secondary schools by 2010, and the Commission on Information and Communications Technology's Broadband Deployment Program which targets both schools and local community centers.

A second reason is the limited number and variety of subject-specific educational software (e.g., simulations, drill and practice, tutorials, etc.) available in schools. Software in schools consists mostly of "office software" or "productivity tools" (e.g., word processing, slide presentation, spreadsheet, database management). The educational software that are available tend to be for Science, English and Mathematics. There are few, if any, educational software "for music and arts classes, and particularly for subject areas that require local content in the local language such as Araling Panlipunan (Social Studies) and Filipino (National Language and Literature)." (Tinio, 2002, p. 13)

The absence of specific curricular standards and guidelines for integrating computers into the subject areas is another important reason for the limited use of ICTs in classroom instruction. Although the 2002 BEC advocates the innovative use of ICTs to make learning more interactive, interdisciplinary, collaborative and authentic, there is as yet no nationally prescribed technology-enhanced curriculum, except for an IT curriculum covering basic computer and Internet literacy skills (and in some cases, basic programming) for the last two years of secondary school. For the elementary level, the Standards for Quality Elementary Education (SQEE) states that learners should be "highly literate and adept in using technology available in the community"[2]. The SQEE

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[2] In this regard, the elementary learner is expected to:
- Exhibit ability to intelligently process, evaluate and utilize information obtained from multi-media: press, movies, television, radio, videos, internet, and others.
- Demonstrate basic computer literacy skills and observes ethical practices in the use of word processor, presentation software, electronic mail, internet, video camera, cell phone, fax machines, overhead projectors, automated teller machines, and others.
- Upgrade his/her knowledge and skills continuously in the use of modern and/or appropriate technology.

also states that the curriculum should "provid[e] for effective participation in a technology-oriented society"[3]. However, there are no subject area-specific guidelines, and ICT facilities for elementary schools are sorely lacking.

Nevertheless, several initiatives to promote ICT-enhanced learning are being pursued in some elementary and secondary schools, in cooperation with private foundations. Among these are the educational television-based programs of the Knowledge Channel Foundation and ABS-CBN Foundation, and the computer-based teaching and learning programs of the Foundation for IT Education and Development (FIT-ED), Intel Philippines, and Microsoft's Partners in Learning (PIL) Program. A key feature of these programs is teacher training in ICT use.

DepED estimates that only one out of seven schools has teachers who are computer literate. (Abad, 2004) In Tinio's (2002) survey of schools:
- 52% of the respondents said that at most, only half of their teachers have some knowledge of computer fundamentals and can use productivity tools
- In 13% of the schools, 10% or less of the teachers have basic computing skills
- In almost a third of the schools (29%), at least 75% of the teaching staff is computer literate.
- The number of teachers with Internet skills (e.g., ability to use email and do research online) is much lower: 75% of the schools reported that only up to 10% of their teachers have the Internet skills for teaching-related activities.

Teachers are critical to the success of technology integration in the classroom. However, training opportunities in ICT-enhanced teaching are generally limited. In Tinio's survey, only 20% of the schools reported that more than 75% of their teachers have undergone some kind of ICT training. Majority of the schools (58%) reported that 50% or less of their teaching staff have undergone computer-related training, while 12% of the schools reported that teachers have had no computer-related training at all. For those that have undergone ICT training, the nature of the training and its effectiveness is unclear. (Tinio, 2002, p. 20)

On the other hand, policy measures have been taken to encourage teachers to acquire ICT competencies at the pre-service level. The Commission on Higher Education has issued the Revised Policies and Standards for Undergraduate Teacher Education Curriculum which mandates the inclusion of six units (two 3-unit courses) of education technology in the teacher education curriculum. On the whole, however, implementation across teacher

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[3] The performance indicators for this curricular standard are as follows:
- The curriculum specifies and describes the competencies needed in computer education and other technologies.
- The curriculum encourages access to various sources of information through technology available in the community, e.g., cellular phones, electronic mail, video, video camera, automated teller machines, print and projectables, and others.
- The curriculum promotes ethical and moral use of various information through technology.

education institutes (TEIs) has been uneven, due in part to the lack of ICT facilities in many TEIs.

ICTs, specifically computer and Internet technologies, are being used by DepED to support administrative functions but in a limited way. National-level systems exist to support mission-critical functions and priority projects. The major systems currently in use at the national level include the Basic Education Information System (BEIS), the Electronic National Government Accounting System (eNGAS), the Department of Education Text (DEText), the Monitoring Network (MONET), and the Department of Education web site (www.deped.gov.ph). There are also a few smaller systems that support the needs of specific offices such as the Records Division database, Property Division database, Budget Division database, and others. However, only a few regional and division offices are currently using these existing systems, principally because of a lack of essential hardware, software, and connectivity.

At the school level, where hardware, software, and Internet penetration are relatively higher, non-instructional use of computers has largely been limited to the use of productivity tools for such tasks as preparing class schedules, communicating with external parties, and computing grades. (Tinio, 2002, p. 18) Since most regional and division offices are dis-integrated from national systems, the deployment of these systems in constituent schools has not been pursued.

Furthermore, the ICT resources that do exist cannot be maximized fully because of the lack of ICT literacy skills among administrators and non-teaching personnel. As of 2001, only 13% of school heads had received some form of ICT training. (Project TAO CARES, 2003, p. 18)

Given the low level of computer networking within the DepED system, it is not surprising that there is at present no standard architecture that guides the development of systems. Existing systems are, for the most part, designed for stand-alone use on a variety of platforms, and are therefore not designed to share or exchange data with each other automatically.

V. GOALS & STRATEGIES

A. Use ICTs to broaden access to basic education.

ICTs will be used to provide educational opportunities to those who have little or no access to the formal schools system: school age children who are not in school, as well as those over 16 years of age who have not finished the requisite 10 years of basic education.

1. Strengthen the use of ICTs to improve delivery of the alternative learning system (ALS) curriculum.
   a. Conduct an analysis of ICT-supported initiatives in ALS, both local and international.

b. Strengthen existing and develop new ICT-enhanced programs for children in remote and conflict-afflicted areas.
   c. Build and pilot new ICT-supported models for informal education, education for Muslim Filipinos and indigenous peoples, and family basic literacy.
   d. Scale up radio-based instruction for the Accreditation & Equivalency Program.
   e. Develop ICT-supported systems that will improve communication between learners and mobile teachers or instructional managers and enable tracking of learner progress.
   f. Develop and deploy an ICT-supported mechanism for centrally managed testing/assessment.
   g. Monitor and evaluate the implementation of models in diverse learning contexts in terms of appropriateness, effectiveness, sustainability, and scalability.
3. Harness the ICT resources of the community to support ALS curriculum delivery.
   a. Support the establishment of multi-purpose Community eCenters which will also be a venue for ALS curriculum delivery.
   b. Work with community radio stations for the delivery of the ALS curriculum.
4. Deploy appropriate ICT equipment, hardware, peripherals, and connectivity for ICT-supported ALS to augment community resources.
5. Conduct research and special studies on ICT-supported ALS.

B. Use ICTs to improve the quality of learning.

ICTs will be used to promote learner motivation, mastery of basic concepts, and the development of higher order thinking and lifelong learning skills.

1. Promote good practice in ICT-supported learning in basic education, in both the formal and the alternative learning settings.
   a. Conduct an analysis of ICT-supported initiatives in elementary and secondary schools, both local and international.
   b. Provide guidelines for appropriate, effective, and sustainable ICT integration in different learning contexts.
   c. Implement ICT integration models in accordance with national guidelines.
   d. Build and pilot new ICT-supported learning models.
   e. Monitor and evaluate the implementation of models for diverse learning contexts in terms of appropriateness, effectiveness, sustainability, and scalability.
2. Integrate ICTs into special basic education programs and projects, as appropriate.
   a. Integrate ICTs into the multigrade program.
   b. Adopt ICT-enhanced reading materials and strategies for the Every Child a Reader Program.
   c. Use ICTs to improve high school readiness.
   d. Use ICTs in the learning management program for secondary schools.
3. Provide ICT-enhanced learning resources for elementary and secondary schools and for alternative learning programs, when appropriate.

a. Use formal school and ALS curriculum standards to classify and adopt or adapt existing ICT-enhanced learning resources.

b. Develop ICT-enhanced learning resources for key learning areas and topics.

c. Systematically deploy ICT-enhanced learning resources, including those from other government and private sector providers, to elementary and secondary schools and to ALS service providers.

4. Deploy appropriate ICT equipment, hardware, peripherals, and connectivity based on national guidelines for ICT integration and in support of ICT integration pilots.

a. Rationalize the Department of Education computerization program.

b. Harmonize public and private sector provision of ICT equipment, hardware, and connectivity.

5. Develop national standards for ICT-supported learning.

a. Set ICT competency standards for learners in all grade/year levels, in accordance with curriculum guidelines and national ICT literacy standards.

b. Set ICT-related curriculum standards for all learning areas at the elementary and secondary school levels.

6. Conduct research and special studies on ICT-supported learning at the elementary and secondary school levels, as well as in alternative learning environments.

C. Use ICTs to enhance the quality of teaching.

ICTs will be used in pre-service and in-service professional development programs for teachers and instructional managers, to develop teaching competencies, including but not limited to competencies necessary for the effective and appropriate use of ICTs to improve the quality of learning.

1. Develop ICT-supported professional development programs and ICT-based resources to enhance the subject area knowledge, pedagogical content knowledge, and learning management skills of teachers and instructional managers.

a. Expand existing ICT-supported programs for upgrading the knowledge and skills of subject area teachers.

b. Develop and pilot ICT-supported training programs for mobile teachers and instructional managers.

c. Develop and deploy ICT-enhanced resources for teachers, such as video and audio tapes, and interactive multimedia materials.

2. Improve pre-service and in-service training in ICT-curriculum integration for teachers, instructional managers, and master trainers.

a. Support the Commission on Higher Education (CHEd), teacher education institutions (TEIs), and other concerned units in the integration of ICTs in pre-service teacher education.

b. Develop, based on existing local and international good practice, a national curriculum for in-service training in ICT integration.

c. Rationalize the delivery of the in-service teacher training program to include various modalities (e.g., school-based or community-based training, training by distance education mode, school-university partnerships).

d. Monitor and evaluate the delivery of in-service training to ensure quality and maximum participation.

3. Provide systematic support for ICT-enhanced teaching at the school, community, division, and regional levels.

   a. Improve access to ICT equipment, hardware, and connectivity to enable teachers and instructional managers to innovate with ICTs.

   b. Provide instructional support, and other educational materials, especially to teachers who are non-majors, teachers of multigrade classes, subject area teachers at the elementary level, and instructional managers in priority ALS programs.

   c. Establish a mechanism for sharing of resources (including technical expertise) among teachers, instructional managers, and schools at the division and regional levels.

   d. Implement a recognition system for innovative and effective ICT integration in schools and in alternative learning programs.

   e. Foster the building of a community (online and offline) of teachers, instructional managers, students, parents, education administrators and policy makers, researchers, technology experts, and other education sector stakeholders who support ICT-based innovations in the classroom.

4. Include ICT competencies in the formulation of the National Competency Standards for Teachers.

   a. Adapt national and international ICT competency standards for teachers to local context(s) of teaching and learning with ICTs.

   b. Acquire baseline information on the ICT competencies of teachers, instructional managers, and master trainers to determine capacity-building requirements.

   c. Monitor compliance with the standards through, among others, a system of periodic assessments and accreditation of teachers, instructional managers, and master trainers.

D. Use ICTs to improve educational planning and management.

ICTs will be used to improve information collection, analysis, and dissemination within DepED and between DepED and education stakeholders, support administrative functions, and enhance monitoring and evaluation.

1. Harness various forms of ICTs to improve communication within DepED, and between DepED and education stakeholders.

   a. Intensify the use of traditional ICTs (radio, television) to publicize information affecting education stakeholders.

   b. Intensify the use of the DepED web site to disseminate relevant information to and to gather feedback from all education stakeholders.

   c. Encourage the use of DEText and MONET for prompt communications within DepED.

2. Design and implement an overall ICT architecture to guide ICT systems selection and development.

a. Integrate systems vertically and horizontally, when applicable; i.e. systems should be able to exchange or aggregate data with little to no human intervention.
b. When possible, utilize system architectures that can communicate with each other at a minimum of additional cost and technical intervention.
c. Secure and protect departmental data against unauthorized access or force majeure.

3. Augment the ICT facilities for educational planning and management at the national, regional, division, and school levels.
a. Deploy the necessary ICT hardware and peripherals to enable the various DepED offices to make use of computer-based systems (see #4).
b. When appropriate and possible, provide the various DepED offices with networking capabilities (intra- and inter-) to enable interfacing with related systems and to facilitate aggregation of data.

4. Identify, develop, and deploy software applications that promote quality educational planning and management at the national, regional, division, and school levels.
a. Deploy office productivity tools.
b. Upgrade and expand the Basic Education Information System (BEIS) to include:
   • Basic Education Statistics
   • Performance Indicators
   • Student Information System (for both formal schools and alternative learning systems)
   • Class Information System
   • School Mapping System (Global Information System)
   • Private Service Providers Database (Government Assistance to Students of Private Education (GASPE), Pre-school Providers (under the Bureau of Elementary Education), Alternative Learning Systems Providers and Voucher system for Madrasa schools)
c. Develop and/or scale up the use of ICT-based administrative systems:
   • Electronic National Government Accounting System (eNGAS)
   • Human Resources Information System (HRIS)
   • Payroll System
   • Materials Resource Information System (MRIS)
   • Procurement Tracking
   • Programs and projects tracking system
d. Implement a Library Cataloging System that inventories and tracks circulation of books in division libraries and elementary and secondary schools.
e. Pilot a research and planning system to include:
   • Research Project Monitoring System
   • Research Archive and Catalogue System (for DepED funded or commissioned research)
   • Data Retrieval System (for researchers, planners and policy-makers)

5. Develop and implement professional development programs on the appropriate and effective use of ICTs for educational administrators, non-teaching personnel,

and technical support staff. The program should include but should not be limited to the setting of competency standards, development of training curriculum, training of trainers, instituting incentive schemes, monitoring and evaluation, and establishing a support network.

    a. Establish ICT competency standards for administrators, non-teaching staff, and technical support staff at different levels.

    b. Design and implement a professional development program for education administrators.

    c. Design and implement a professional development program for technical support staff.

    d. Design and implement a professional development program for non-teaching personnel.

VI. STRATEGIES FOR ACHIEVING SUSTAINABLE ICT USE

The following strategies are proposed to ensure the sustainable use of ICTs in the four programmatic areas identified above. The strategies, taken together, address the five inter-related dimensions of sustainability—political, social, technological, educational, and economic.

1. Strengthen policy and leadership on ICT concerns by establishing a Bureau of Educational Technologies within DepED, with corresponding units at the regional and division levels. This Bureau shall be DepED's policy making, implementing, and coordinating body that will also be responsible for initiating national level programs and projects, and for research and development, monitoring and evaluation, and policy advocacy.

2. Mandate strategic planning for ICTs in Basic Education at regional, division, and school levels, in line with national goals, strategies, programs, and projects.

3. Perform research-based standards setting (in relation to curriculum and competencies as well as technology choice), model building and piloting, systematic monitoring and evaluation, and the upscaling of good practice models.

4. Develop an ICT advocacy and promotions program, and encourage the same at local levels.

5. Encourage community participation in program/project development and implementation, when appropriate.

6. Foster the building of a community (online and offline) of teachers, instructional managers, students, parents, education administrators and policy makers, researchers, technology experts, and other education sector stakeholders as a mechanism for providing instructional, technical, administrative, and other necessary support for ICT-based innovation, and to encourage a sense of ownership among all stakeholders.

7. Rationalize personnel positions and/or functions to more effectively and efficiently support the integration of ICTs into DepED, including the creation of appropriate incentive structures.

8. Optimize use of available resources and intensify resource mobilization, at national and local levels, to defray the total cost of ownership of ICT-supported initiatives.
   a. Rationalize national budget spending for ICTs in Basic Education in accordance with the National Strategic Plan for ICTs in Basic Education.
   b. Create a National ICT for Basic Education Fund to be used for, among others, ICT facilities improvement, curriculum-based materials development, training of trainers, research and development, and monitoring and evaluation, and encourage the same at local levels.
   c. Harmonize the ICT-related initiatives of and strengthen cooperation on ICT-related matters among the different government agencies, in particular between DepED and the Commission on Information and Communications Technology, the Commission on Higher Education, the Department of Science and Technology, and the Department of Trade and Industry.
   d. Encourage greater and more efficient local government investment (through the Special Education Fund and other local funding instruments) in ICT-based initiatives to meet locally defined strategic goals for ICTs in Basic Education
   e. Exploit various forms of partnerships—with the private sector, nongovernment organizations, academic and training institutions, local communities, etc.—and develop alternative financing models, including but not limited to setting educational rates on ICT-based goods and services, school-university twinning, harnessing existing community assets, fund raising through parent-teacher-community associations (PTCAs), alumni associations and other community groups; commercialization of ICT facilities and services; and lease (not buy) arrangements.
   f. Strengthen the Adopt-a-School Program, and develop other programs and projects that offer incentives for the private sector to invest in ICT-supported initiatives.

CONCLUSION

This Framework Plan makes recommendations for the appropriate and effective use of ICTs to broaden access to basic education, improve the quality of learning, enhance the quality of teaching, and improve educational planning and management. Underlying these recommendations are strategies for sustainability. These recommendations are intended to help DepED to achieve the goal stipulated in BEC 2002, SFI and EFA documents—to deliver quality basic education to more Filipinos.

It should be emphasized, however, that while ICTs can be agents of change, they do not determine policy direction or desired outcomes. Reforms to the educational system will be achieved by people, possibly through technology. Success lies in the vision, dedication, and commitment of our educational leaders, administrators, teachers, staff, and the learners and communities whom they serve.

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