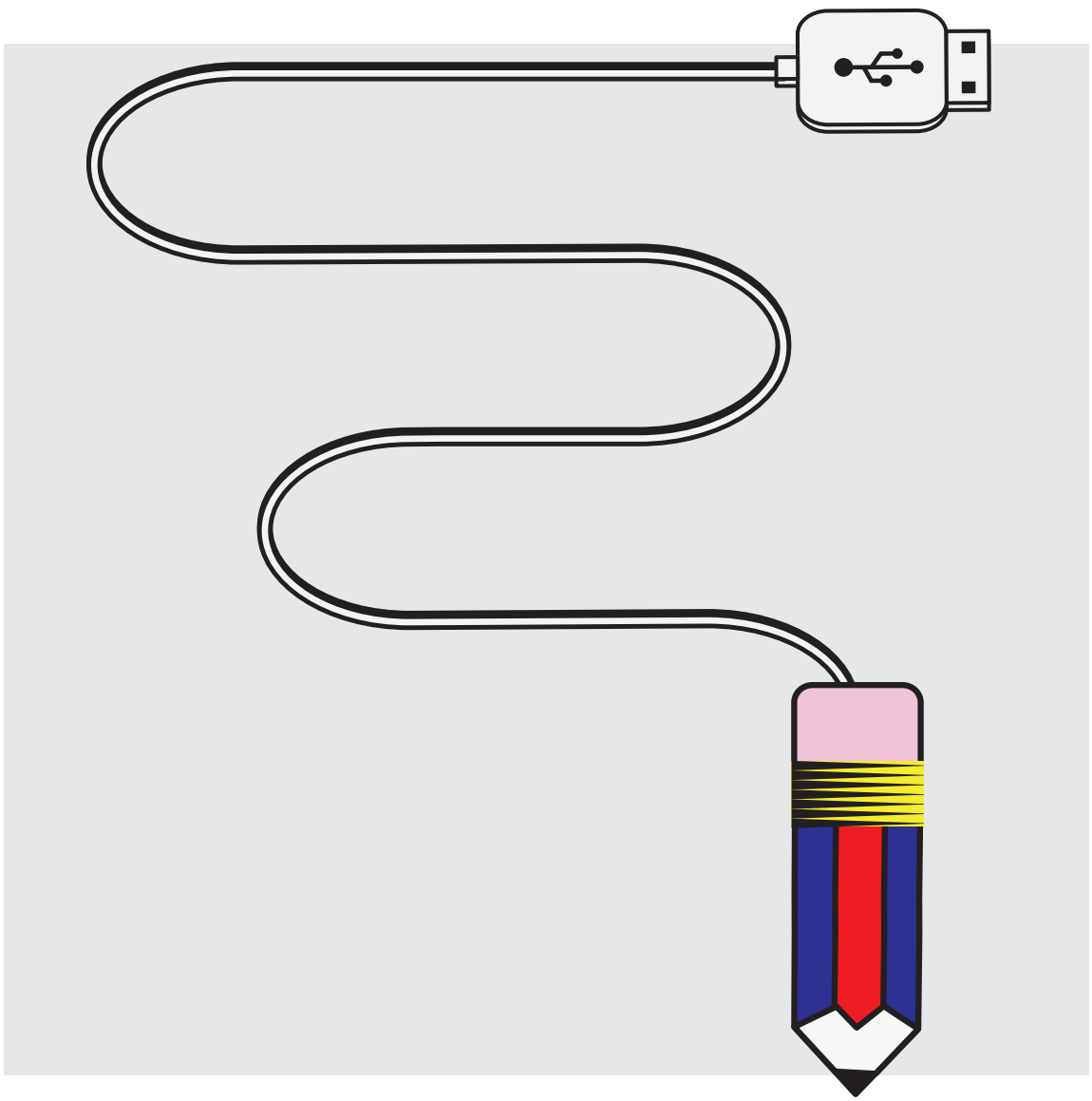
Ministry of Education, Youth and Sport
Kingdom of Cambodia

2009 - 2013

MASTER PLAN FOR INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION



PREFACE

The Ministry of Education, Youth and Sport has a dual role. It must prepare students to successfully assume their place in society, and it must also ensure that the country has all the qualified human resources that are necessary to develop, modernize and develop its economy, in line with the global strategies of the Royal Government of Cambodia.

For the first goal, the Education for All plan aims at ensuring that all Cambodians have access to quality of education. For the second one, the Ministry must ensure that those students who finish their education can be easily absorbed by the labor market.

The society and the labor market in which the students will have to integrate themselves have dramatically changed in the last ten years. Information and Communication technologies (ICT), from the phone to the computer, have penetrated both our personal and professional lives in a process that keeps moving forward at high speed, turning Cambodia into a knowledge-based economy. The education system cannot afford to stay behind, otherwise it risks giving its students skills that are obsolete for today's society.

It is not only to the students that the Ministry must give ICT skills; it must also ensure that its administration and teaching processes integrate technology whenever it adds value to them in a cost -effective manner, as the best possible solution.

This Master Plan for ICT in Education is an implementation tool for the Ministry's Education Strategic Plan 2009-2013 – which sets the educational milestones to be accomplished in the coming years, and the strategies to reach them. It then sets a high-level implementation plan to integrate these technologies into the heart of the education system, to ensure that they will be used in an efficient and sustainable manner.

The Master Plan has been developed in close cooperation with all the development partners, becoming a coordination plan for all their efforts. The Ministry of Education, Youth and Sport would like to express profound gratitude to all of them for providing technical and financial support to the formulation and implementation of this Master Plan.

Phnom Penh, 31 December 2010

IM SETHY
Minister
Ministry of Education, Youth and Sport

Summary

In application of Cambodia's Education Law, its Education for All National Plan, and the Education Strategic Plan 2009-2013, and also in line with the Ministry's vision to "establish and develop human resources of the very highest quality and ethics in order to develop a knowledge-based society within Cambodia", this Master Plan for ICT in Education 2009-2013 has the following general objectives:

1. To increase access to basic education, tertiary education and life-long learning, both formal and non-formal, by using ICT as alternative education delivery media.
2. To improve the relevance and effectiveness of basic education by harnessing the potential of ICT as a major tool to enhance the quality of teaching and learning.
3. To develop the ICT-based professional skills needed by graduates for employment in a knowledge-based society and in order to ensure that Cambodia can compete and cooperate in an increasingly interconnected world.
4. To increase the effectiveness and efficiency of Ministry and school management.

Coordinated by the ICT in Education Office, each major department of the Ministry of Education, Youth and Sport will be responsible for specific objectives of the Master Plan.

For General Education, the Plan concentrates on increasing the preparation and employability of students by giving them ICT-based professional skills and other pre-university skills.

For Higher Education, it focuses on expanding computer use, increasing access to information and research, reaching out to more students through distance education, and improving the distribution of research and subject-based materials through a web-based clearinghouse.

Teacher Training will be improved by using video and multimedia as a teacher education support materials, mainly for science subjects but also for general pedagogy. Pre-service teacher trainees (and in-service teachers whenever possible) will be taught how to improve their teaching and administration skills through the use of computers and other forms of ICT.

Non-formal and informal education will be reinforced by creating materials for self-training and for the training of students preparing for equivalency examinations, and also by developing video materials for income generation programs of the Community Learning Centers (CLC).

In regard to Ministry ICT Management and ICT in Education Support, the Ministry will centralize and standardize its databases and data formats across the Education system and decentralize data input – to schools when possible but also to Provincial and District Offices of Education. Ministry staff will be trained to use ICT in all those tasks in which computers will increase the efficiency and accuracy of their work.

The general strategy for implementing these activities will be to enable the Office of ICT in Education to guarantee that all ICT-related tasks are satisfactorily developed, coordinated, and implemented.

The Action Plan accompanying this Master Plan details the activities, coordination, and evaluation needed in its implementation, phasing them based on a realistic assessment of the above-mentioned situation, including access to electricity, the necessary infrastructure, and the required skills. It also defines the budget needed to accomplish the totality of the goals.

Funding is secured for all short-term and most probably for some longer-term items, it is hoped that this Master Plan will help the Ministry's development partners understand its commitment to use ICT to improve its management and the quality of education it provides and therefore support the rest of this Plan. The Plan is therefore open to all possible partners, in terms of both participation and resources (financial, technical and human).

List of Abbreviations

ADB	Asian Development Bank
AECID	Spanish Agency for International Cooperation for Development
AOP	Annual Operational Plan
CLC	Community Learning Center
DCD	Department of Curriculum Development
DF	Department of Finance
DHE	Department of Higher Education
DGE	Directorate General of Education
DOE	District Office of Education
DoEYS	District Office of Education, Youth and Sport
DSR	Department of Scientific Research
ECE	Early Childhood Education
ESP	Education Strategic Plan
EVEP	Elective Vocational Education Program
EMIS	Education Management Information System
FMIS	Financial Management Information System
HEI	Higher Education Institution
HEMIS	Higher Education Management Information System
HRD	Department of Personnel
HRMIS	Human Resources Management Information System
ICT	Information Communication Technology (or Information and Communication Technologies)
ICTEO	ICT in Education Office of the Department of Information and ASEAN Affairs
InWEnt	Capacity Building International, Germany
JFIT	Japanese Funds-in-Trust
MoEYS	Ministry of Education, Youth and Sport
NFE	Non-Formal Education
NFED	Non-Formal Education Department
NiDA	National Information Communication Technology Development Authority
NIE	National Institute of Education
MIS	Management Information System
ODL	Open and Distance Learning
OI	Open Institute
POE	Provincial Office of Education
PoEYS	Provincial Department of Education, Youth and Sport
PTTC	Provincial Teacher Training College
RTTC	Regional Teacher Training College
TTC	Teacher Training College
TTD	Teacher Training Department
VPN	Virtual Private Network
UNESCO	United Nations Education, Scientific and Cultural Organisation

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1 Introduction

The long-term vision of the Ministry of Education, Youth and Sport (MoEYS) is to "establish and develop human resources of the very highest quality and ethics in order to develop a knowledge-based society within Cambodia".

In alignment with its Education Strategic Plan 2009-2013, MoEYS is introducing various initiatives to make better use of information and communication technologies (ICT) in order to achieve this vision, to improve the effectiveness of education at all levels, and to produce a workforce for the country both technologically productive and able to think critically.

In this regard, in 2003 MoEYS began the process of developing a policy for improving education through the use of ICT. Taking into account then-current education policies and strategies, the document, "Policy and Strategies on ICT in Education in Cambodia", was approved in January 2005. This was considered the national policy guiding the use of information and communication technologies in education and indicating major lines of work required for MoEYS to effectively integrate these technologies for teaching and learning across all education sub-sectors.

Work on the present "Master Plan for ICT in Education 2009-2013" started in 2007 as part of the Open Schools Program, an ambitious joint venture of MoEYS and the Open Institute with technical support from UNESCO. This program was designed to plan the future use of ICT in the Ministry while also undertaking preliminary work on curriculum development, pre-service and in-service teacher education, infrastructure requirements, the preparation of needed Ministry structures and mechanisms, the training of Ministry officials, connectivity options, and the development of educational content for teaching in schools and in teacher education. The program included doing research on the technologies that could be best adapted for classroom use in Cambodia, especially considering the issue of sustainability, with an emphasis on low-power-consumption computing.

The Master Plan divides the work into five major areas: General Education, Higher Education, Teacher Training, Non-formal Education and Informal Education, and Ministry ICT Management. For each one of these areas, the Plan defines a number of objectives that are considered ambitious but achievable within five years.

2 Current Situation

2.1 Education System

The Cambodian formal education structure consists of three years of pre-school education, six years of primary school (grades 1-6), three years of lower-secondary school (grades 7-9), and three years of upper secondary school (grades 10-12).

The Education Law adopted in 2007 highlights that the education system also includes two other approaches to learning: non-formal and informal. Lifelong education is encouraged in Cambodia so that its citizens can upgrade the knowledge and skills they need to enhance creativity, productivity, and professional development.

Those who drop out of school without completion of the relevant education level still have the opportunity to attend non-formal literacy and life-skills programs, thus making it possible for them to enroll in vocational training programs offered by various institutions.

After completing nine years of basic education, students can either continue to upper secondary education or enter secondary-level vocational training programs. After completing upper secondary education, students may either enroll in university or enter vocational training.

Teachers for Cambodian schools are trained either at the National Institute of Education (for upper secondary school teachers), six regional Teacher Training Centers (for lower secondary school teachers), 18 provincial Teacher Training Centers (for primary school teachers), and one pre-school Teacher Training Center. A total 5,000 new teachers are trained every year, adding to the present pool of 80,000 teachers in the 2007-2008 academic year.

2.2 Current Status of ICT in Education

As various forms of ICT (ranging from the Internet and computers to television, radio, video, and mobile telephones) become increasingly accessible and interactive, their role at all levels of education is likely to be all the more significant in making educational outcomes relevant to the labor market, in revolutionizing educational content and delivery, and in fostering "information literacy".

During the last few years, the Ministry has also developed the use of computers to maintain the vast amount of data that is required to manage its operations. Five key areas have been computerized through an Education Management Information System (EMIS), a Human Resources Management Information System (HRMIS), and a Non-Formal Management Information System (NFMIS), a Financial Management Information System (FMIS), and a Higher Education Information Management System (HEMIS). These systems are independent and maintained by their respective departments.

The curriculum for Teacher Training Centers has included training on ICT for all teachers since 2003, but a lack of appropriate equipment has made this training possible only in a few centers. A number of schools received donations of computers and training directly from NGOs and development partners during the last decade.

In preparation for the execution of this Master Plan, the Open Schools Program – started in 2007 - has produced textbooks for the ICT "life skill" course (an introduction to ICT provided in grade 10 using Khmer-language software), trained teachers, and worked with the Ministry's partners to standardize a training course in the use of computers in upper secondary schools.

Data derived from indicators on the current level of use of ICT in Education in Cambodia – a result of the baseline study on ICT in education undertaken in 2009 by the Open Schools Program – is the starting point for this Master Plan.

As normal at the early stage of ICT development, the use of computers at MoEYS started independently in the departments that could no longer work without them and also in schools which received donations of computers. The Ministry has now entered a new stage during which ICT policy and management are being more clearly defined, thereby standardizing the use of ICT to make it more efficient for both student training and administration. Development partners and the private sector have been asked to work with the Ministry in the framework of this Plan, which already includes the ICT projects of development partners active at this time and which will guide new programs and joint ventures in the future.

One of the major barriers to the use of ICT in Education – the cost of connectivity for education administration as well as for educational purposes – was overcome in 2009 by a private sector donation from Viettel which agreed, at no cost, to permanently connect all administrative offices of the Ministry as well as all public schools, universities, and Teacher Training Centers with access to electricity.

3 Applicables Policies

As mentioned above, in January, 2005, the Ministry of Education, Youth and Sport approved the document "Policy and Strategies on Information and Communication Technology in Education in Cambodia" as the lead policy on the use of ICT in education, thereby guiding major lines of work required for Cambodia to effectively integrate technologies for teaching and learning across all education sub-sectors. This policy integrated the major policies of the Ministry at the time, in particular the Education for All (EFA) Plan and the Education Strategic Plan (ESP). The updated Education Strategic Plan and the Education Law (December 2007), developed later, are still in line with the 2005 policy.

The Education for All National Plan 2003-2015 states that:

"ICT policies will include: (a) expansion of ICT as a teaching and learning tool, (b) as a means of improving education service productivity and management through improved information sharing, communication and knowledge management, and (c) expansion of distance learning opportunities especially for disadvantaged groups in remote areas. The overarching goal will be to ensure Cambodia's international competitiveness in an increasingly global and interconnected knowledge-based economy."

Specific strategies for ICT in Education are still in the process of being finalized. Key strategies are likely to include: (a) inclusion of ICT education and training, initially in selected secondary schools, teacher training institutions and technical higher institutes; (b) selective curriculum enrichment programs, especially where the small number involved does not justify significant investment in dedicated physical facilities, staff and equipment; and (c) ICT-based targeted programs for a diverse range of socially disadvantaged groups to ensure re-entry to mainstream formal education."

The Education Strategic Plan also specifies the need for the provision of ICT training for

teacher trainers, teachers and students; the use of ICT to improve the quality of teaching; the expansion of technology and ICT facilities; and the computerization of school management, monitoring, and finance systems, using ICT to enhance school efficiency. A substantial budget is allocated in both documents to ICT development.

Finally, the Education Law promulgated in December 2007 in Article 28 emphasizes that:

"The State shall promote and support research, development, invention, and production, which are scientific and technological, for education to meet the needs of the labor markets and globalization, to promote human resource capacity, and to enhance the development of the country.

The Ministry in charge of education shall determine the policies on science and technology for education at all educational levels of the Cambodian education system in compliance with the policy of the Royal Government of Cambodia."

The objectives of this Master Plan are integrated in the Education Strategic Plan 2009-2013, becoming an integral part of the development plans for the Ministry of Education, Youth and Sport and ensuring that relevant technologies will be applied wherever they can support the strategies of the Ministry. They will be operationalized through the MoEYS's Annual Operation Plans (AOP) with the understanding that the relevant departments will integrate ICT in their planning processes.

4 Goals of the Master Plan

This Master Plan aims at enhancing efforts to achieve the goals of Education for All (EFA) and to make education administration and management more efficient and effective through usage of all forms of ICT and multimedia; it also serves as a master guideline for the implementation of the Policy and Strategies on ICT in Education.

The goals of the Master Plan are:

- To increase access to basic education, tertiary education and life-long learning, both formal and non-formal, by using ICT as alternative education delivery media.
- To improve the relevance and effectiveness of basic education by harnessing the potential of ICT as a major tool to enhance the quality of teaching and learning.
- To develop the ICT-based Professional skills needed by graduates for employment in a knowledge-based society and in order to ensure that Cambodia can compete and cooperate in an increasingly interconnected world.
- To increase the effectiveness and efficiency of Ministry and school management.

5 Specific Objectives

To facilitate implementation of this Master Plan, each area of intervention has its own sub-plan, with objectives and results.

The following areas of intervention are considered:

- General Education
- Higher Education
- Teacher Training
- Non-formal Education and Informal Education
- Ministry Administration and ICT in Education Support

5.1 General Education

The goal of this Master Plan for General Education is to respond to a long-term vision (10 years) in which all students graduating from secondary education will have acquired the necessary ICT technical skills and the critical knowledge and thinking skills that will enable them to integrate quickly into their chosen workplace or to face with confidence a university career. In this vision, teaching and non-teaching staff and administrators in the General Education sub-sector will have fully integrated ICT in the performance of their respective tasks, especially in the delivery of education to students.

While integrating ICT deeply in the pedagogical processes will most probably take all 10 years, the emphasis that the Ministry is giving to a stronger professional and vocational orientation in education (and the fact that ICT is the first of the optional subjects in this area) has led to a strategic decision to accelerate the implementation of ICT courses for students, approaching the 10-year goal within the next five years.

Objective 1.1: The equipping of secondary education graduates with the ICT-based professional skills needed either by the labor market or for success in higher education – and to be able to continuously benefit from life-long learning.

Result 1.1.1: ICT-based professional and pre-university skills courses are systematically delivered in upper secondary schools.

Two categories of ICT curricula will be developed and incorporated into the education system:

(i) An ICT-based Professional Skills curriculum for students of grade 10 – a foundation and orientation curriculum serving as an introduction to professional competences.

(ii) An Elective Vocational Education Program (EVEP) ICT-based Professional Skills curriculum for students of grades 11 and 12 – an optional course to equip learners with basic communication, professional and technical skills for administration.

The courses for grades 10 and 11 will center on offering professional skills that make use of computers, including communication and administrative assistance skills. The curriculum and materials will develop technical, cognitive, and communication skills required to gather, sort, manage, and present different types of information to different audiences.

The course for grade 12 will further develop these skills, using new tools, and will also expose students to the different employment opportunities related to ICT in which they could develop a career, helping them make an informed and proper choice.

Students will learn from these courses how to use computer applications that are fully translated to Khmer and adapted to Cambodian culture.

Indicators: By 2013, students of all schools which will have computers for education will have received some ICT-based professional skills at school, either as a life-skill in grade 10 or as an optional course in grades 11 and 12.

Objective 1.2: Improvement of in-service teachers' pedagogical skills and effectiveness in providing better education.

Result 1.2.1: Training on ICT-based Professional Skills is provided to secondary school teachers.

In order to make it possible for upper secondary school students to attain the ICT professional skills as required, currently serving teachers at that level will require further training. Such in-service training will improve both their teaching and their administrative skills. Not all teachers can be trained in the first five years of the Master Plan, however, so priority will be given to teachers from schools with an adequate and regular supply of electricity.

Indicators: All schools will which have computers for education have trained 90% of their upper-secondary school teachers on ICT-based professional skills by 2013.

5.2 Higher Education

It is expected that computer use and access to information in tertiary education will steadily increase over the next 10 years. Many students entering university will have received ICT-based professional and pre-university skills training by 2013 and all of them by 2015. Further training during the first foundation year of university will include advanced use of ICT for communication at the technological level possible with the tools available at that time. Therefore, during the five years of this Plan, it is important to ensure that all students finish their first year in University with basic ICT-based communication and other professional skills.

To meet the increased demands and expectations of their students, lecturers in higher education institutions of Cambodia will have to systematically use ICT to teach their classes, to share information with their students, to promote student-centered learning, and to evaluate their students. This Master Plan will therefore need to ensure that all teachers not only are computer literate, but also understand how to use ICT to improve their administrative and pedagogical skills.

Open and distance learning (ODL) will have become both a more acceptable and more affordable option for learning for students who do not have access to face-to-face education. This Master Plan will provide tools and knowledge to help ensure that ODL is fully regulated and integrated in universities and to reduce all possible technical barriers to e-learning.

A feasibility study will also be carried out to determine when and how to establish a National Open University to serve the entire nation, reaching all districts in which electricity and Internet are available.

The Ministry and universities will adopt international standards for the digitalization and exchanging of documents and academic publications. A Ministry-managed webportal will be established to ensure that all documents issued and used by the Ministry and universities are searchable and exchangeable and thus publicly available.

Objective 2.1: Improvement of the pedagogical skills of teaching staff and the effectiveness of non-teaching staff at higher education institutions (HEIs).

Result 2.1.1: Training on ICT Skills for higher education lecturers and staff is delivered in all HEIs.

In order to achieve this result, the MoEYS will need to directly support public HEIs and also issue directives to, and set standards for, private HEIs in regard to the in-service training of their professional staff, both academic and professional.

Indicators: All teaching and administrative staff of HEIs have acquired ICT skills by 2013. Lecturers of HEIs know how to apply these skills to a range of pedagogical and other professional tasks by 2013.

Objective 2.2: Systematic preparation of students graduating from Cambodian HEIs with the necessary ICT-based professional skills to join the labor market or to continue to further education.

Result 2.2.1: Training on ICT-based Professional Skills is delivered to students in all HEIs.

Based on this master plan, not all students reaching university by 2012 will have received the ICT course in grade 10, as its full-scale implementation will still be in progress. These students will therefore be offered equivalent training at the HEIs. ICT-based professional skills training will be provided at the foundation year, under a directive issued by the Ministry, as well as following the guidelines of the Accreditation Committee of Cambodia.

Indicators: By 2013, 100% students completing their foundation year at university from HEIs have acquired ICT-based professional skills.

Objective 2.3: The development of feasible and effective structures and mechanisms for providing, supporting, and managing Open and Distance Learning in Cambodia.

Result 2.3.1: Capacity of the MoEYS and HEIs is strengthened in regard to the essential principles of Open and Distance Learning (ODL) management, its development, and technology, using Khmer language tools and materials.

Under the coordination of the Department of Higher Education, MoEYS will establish an ODL training team, develop Khmer-based ODL tools and training materials, and train trainers on ODL. The team will then train selected staff of universities and other HEIs in the management and development of ODL and support the target HEIs to provide ODL starting from 2011.

Indicators: At least 25 universities have had their staff trained on the creation, operation and management of e-learning programs.

Result 2.3.2: An Open and Distance Learning Policy Framework will be formulated.

This framework will be used to regulate, guide, and monitor effective implementation of ODL programs in Cambodia.

Indicators: By December 2011 an ODL Framework will have been developed and officially approved by MoEYS.

Result 2.3.3: Cambodian HEIs will offer ODL courses.

Supported by the ODL Policy Framework developed by 2011, universities will have started developing their own courses.

Indicators: At least 5% of universities in Cambodia will offer a limited number of courses through ODL within a regulated framework by 2013.

Result 2.3.4: A study will be implemented to assess the feasibility and define the possible process of creating a National Open University in Cambodia.

A research report – coordinated by DHE - that details the feasibility of, and possible mechanism for the establishment of an Open University in Cambodia will be completed by 2011. The research study will look at existing open universities around the world, particularly in Southeast Asia, and then outline an appropriate model for a National Open University in Cambodia. The model will include proposals concerning a possible structure, fields of study to which ODL may add value, necessary infrastructure, possible partners, needed human resources, a time frame for its development, and any other factors that might affect the feasibility of the project. It must also study the integration of such an Open University into an existing public university.

Indicators: By 2013 Cambodian students are able to study a limited number of degrees in Cambodian universities through ODL. MoEYS agrees on a possible path to develop an Open University.

Objective 2.4: Researchers and higher education lecturers share and have access to available research, teaching materials, and other educational resources, and academic and research cooperation is activated through improvement in inter-university telecommunications.

Result 2.4.1: An electronic clearing-house or repository for all Cambodian research, training materials, and educational resources for higher education level becomes available.

By 2013 the web-based public repository for Higher Education will include or refer to all available research in Cambodian universities and other research about Cambodia, as well as provide free training materials that can be used by Cambodian lecturers to prepare their subjects.

The clearinghouse will play a role as a basic tool to advance research and as a warehouse for university-based knowledge in Khmer. The clearinghouse will include a public Course Management System in which training materials for courses of HEIs are made freely available to all learners.

Result 2.4.2: Research and academic cooperation are activated through the use of a high speed network that connects Cambodian Universities.

By 2013 a high-speed optic fiber network will connect 60% of Cambodian universities and is being used to share research, to communicate among lecturers and researchers, and to provide and exchange distance education among institutions. This network will be connected to the Third Generation Trans Eurasian Information Network (TEIN3) and, through it, to most universities in Europe and Asia.

Indicators: By 2013, research from Cambodian universities and on Cambodian subjects, as well as available training materials for higher education subjects, are available on the Internet.

Objective 2.5: All research and administrative documents of HEI are standardized.

Result 2.5.1: All documents and educational resources produced by the Ministry and HEIs, and all administrative documents inside HEIs and in their communication with the Ministry, use standard encoding and formats.

The effective delivery of education and administration of an education system require the efficient sharing of educational resources and administrative documents within and between the Ministry and HEIs. Databases now using different formats and encoding schemes will therefore need to be standardized.

Indicators: By 2013, 100% of information published by Universities and exchanges of information between Universities and MoEYS use Unicode encoding, ODF format and other standard formats specified by the Ministry.

5.3 Teacher Training

To significantly improve the quality of education and develop students' critical thinking and other 21st century skills, Cambodian teachers need to break the cycle of rote memorization and passive learning activities they are imposing on their students and move towards more learner-centered and interactive pedagogical approaches. There are two potentially effective ways in which ICT can assist in this process:

- the integration of ICT in teaching and learning processes to enhance the quality of teaching activities and learner learning outcomes.
- the use of ICT (in this case, video) as a tool for teachers' professional development through the analysis and modeling of good pedagogical techniques.

Over the duration of this Master Plan, these two modalities of ICT use are expected to produce profound changes both in what is taught and in the way teachers teach and children learn in Cambodian schools, beginning from the early stages of the education system. This, in turn, will help achieve the nation's education goals and improve the overall preparation of students for higher education and the labor market.

This period will also witness a great expansion in the adoption of ICT by society as a whole. The education system and educators, as pioneers in this expansion, will have to assume a leading role in promoting the effective and ethical use of the new ICT tools. To ensure that the Cambodian education system is in the forefront of this process, this five-year Master Plan will ensure that all pre-service teacher trainees and a significant number of in-service teachers (especially in upper secondary schools) not only are equipped with ICT literacy but also are trained in the pedagogical principles and appropriate teaching methodologies for using ICT to improve the quality of education. Through the use of videos of good ICT practices, based on a large amount of training materials and a suitable methodology for their use, they will also see the best examples of the integration of ICT in the classroom.

Objective 3.1: Teacher educators, teacher trainees, and school directors improve their pedagogical skills and effectiveness through the use of ICT.

Result 3.1.1: Training in ICT-pedagogy integration is delivered to all teacher trainees in all Teacher Training Centers.

The training will aim at providing teachers with skills to integrate computers and other ICT as effective support tools to improve the delivery of education in class, to locate information for class preparation, and to facilitate classroom and school administration; broadly viewed, they will become agents of change who will lead their students into the new digital society.

Therefore, by 2009 all pre-service teacher trainees for upper secondary schools receive at least 60 hours of specialized ICT-based professional skills for teachers. By 2010, all lower secondary school trainees start receiving at least 144 hours of these skills; and by 2012, all pre-service pre-school and primary school teacher trainees will receive at least 60 hours.

Indicators: By 2013, 100% of pre-service teachers who graduate from teacher training institutions have acquired specific ICT-based professional skills for teachers.

Result 3.1.2: Teacher educators at TTCs integrate ICT in their pedagogy.

It is not enough, of course, for teacher trainers to have merely acquired ICT-based skills. They need also to use these skills to develop better training materials and then integrate ICT into their TTC courses.

Indicators: By 2010 all TTCs are equipped with facilities to enable teacher educators to develop electronic training materials. By 2011 all teacher trainers have been trained to integrate ICT in their courses. By 2013, the use of ICT is integrated in 20% of all classes delivered in Teacher Training Centers.

Result 3.1.3: Pre-service teacher education in pedagogy is improved by using video as a teaching support tool.

Videos of good practice will be used to illustrate how different teaching techniques can be applied to specific subjects, with a focus on science. Some of these materials can also be of use for training of in-service teachers (for example, through school cluster training), especially for under-qualified teachers in schools which have recently been upgraded to a higher level and which do not yet have adequate human resources for the subjects that they have to teach. The goal of the videos is to demonstrate and discuss good models of teaching and learning related to the pedagogical principles being discussed in teacher training classes.

Indicators: 50% of science subjects are taught at NIE and RTTCs using some video support starting in 2011 and 100% by 2012. 50% of other TTCs use some video support to teach pedagogical techniques starting in 2011. All TTCs use them by 2012.

Result 3.1.4: In-service leadership education for school directors is improved by using video as a training support tool.

School directors will also be able to use these materials for learning on their own or in the context of school cluster meetings. Special videos focused on good school leadership will also be developed for use at provincial and district leadership workshops where they will provide an opportunity for discussion, interaction, and practice.

Indicators: Videos on good school leadership are adopted in in-service leadership education workshops for school directors as training supporting materials starting in 2011.

Result 3.1.5: The program to upgrade primary school teachers to basic education teachers is improved by using video as a training support tool.

A major challenge in the reform of Cambodia education is the upgrading of primary school teachers to the level of basic education teachers (lower secondary school teachers). Video will be used as a training support tool for science training in the upgrading program starting in 2011.

Indicators: Teacher upgrading courses starting in 2011 use some video support for illustrating pedagogic techniques and for specific issues in at least 50% of the science subjects.

Objective 3.2: Upper secondary schools have qualified ICT teachers to deliver the ICT curricula.

Result 3.2.1: The National Institute of Education prepares and certifies ICT teachers for the ICT curricula of secondary schools.

A particularly innovative aspect of this Master Plan is the explicit attention paid to the training of specialized ICT teachers – some of the "pure" ICT teachers (fully devoted to ICT) and some with ICT as a second subject. Thus, by 2010 NIE will start graduating over 300 ICT teachers per year including at least 30 pure ICT teachers and 280 teachers for which ICT is the second subject (the first subject for these students being Mathematics, Physics, Biology, English, or Agriculture). All new ICT teachers will be prepared to train students as well as teachers.

Indicators: By 2013, the new ICT curricula is delivered at all upper secondary schools that have computers by qualified teachers who have been specifically trained by NIE to deliver these curricula.

Objective 3.3: School teachers have free access to teacher training materials and other educational resources developed by MoEYS and other teachers.

Result 3.3.1: A web-based repository of general educational resources is available to serve teacher training and teaching activities.

An important aspect of this Master Plan is the establishment of an electronic repository (a public website or repository) which will include, or refer to, all training materials made available by Cambodian teachers, as well as any other free training materials that can be used by Cambodian teachers to prepare their subjects.

Indicators: By 2013, training materials and educational resources developed by other teachers or by the Ministry are available on the Internet.

5.4 Non-Formal and Informal Education

In 10 years time, widespread access to and use of ICT-based learning materials will have an important impact on the results of equivalency examinations for learners moving from non-formal to formal education programs, on the later achievement of those learners in the education system, and therefore eventually even on rural productivity and income-generation. Marginalized groups will be motivated to seek further education in order to improve their work and livelihood through accessible, relevant, and good-quality ICT tools and other multimedia training materials in an expanding non-formal education program. Community Learning Centers of the

Department of Non-formal Education will provide training materials to meet the learning needs of local users, including video-based training for developing income-generation programs and for studying for a school degree and other types of computer-assisted learning materials for specific school subjects. These Community Learning Centers are expected to become electronic libraries where individuals can regularly access training materials to search for information for the equivalency examinations or for specific knowledge that will help them improve their living conditions or income. These materials will also be distributed to schools, Teacher Training Centers and other venues where they might be useful.

This five-year Master Plan ensures the development of sufficient video-based training materials that are relevant to this objective, including materials for the equivalency examinations (concentrating first on the grade 12 examination) and materials for the income-generating programs addressed to local communities.

Objective 4.1: Preparation for the upper secondary equivalency examination, especially for in-service primary school teachers, is supported by video-based training materials.

Result 4.1.1: In-service primary school teachers and out-of-school students are provided with good-quality multimedia and video-based training materials to help them prepare for the grade 12 equivalency examination.

An increasing number of out-of-school students – as well as serving primary school teachers with a grade 9 certification – study for the grade 12 equivalency examination offered by the Department of Non-Formal Education.

By 2013, both groups of learners studying for the high school examination have access to relevant and good-quality multimedia and video-based training materials for the science subjects in the curriculum.

Indicators: By 2013, video-based materials are available for supporting the most difficult parts of the science curriculum of the grade 12 equivalency exam.

Objective 4.2: Community members are supported to enhance their income-generating skills through video-based learning materials.

Result 4.2.1: Relevant video-based training materials on income-generating skills are developed and disseminated to Community Learning Centers.

In order for ICT-based video materials to have an impact on rural income-generating skills and ultimately on family income, relevant video materials need to be developed, disseminated, and used. By 2013 videos will exist for at least 24 income-generating topics. They will be distributed to Community Learning Centers (CLCs) and used systematically to deliver the income generating classes.

Indicators: By 2013, 50% of training classes for income-generating skills use video as a support.

Result 4.2.2: Communities without electricity supply and internet connectivity in six border provinces are served by ICT-based mobile learning services.

By 2013, marginalized adults and children in disadvantaged communities of six border provinces, namely Preah Vihear, Oddar Meanchey, Mondulkiri, Rattanakiri, Svay Rieng, and Koh Kong, will be able to access

educational video-based learning materials on income-generating skills and other essential topics through an introduction to the operation of laptops, digital cameras, and other ICT devices using mobile learning units known as m-learning vans.

Indicators: Six m-learning vans are deployed and operate in the selected provinces.

5.5 Ministry Administration and ICT in Education Support

In order to ultimately provide more and better education, the Ministry of Education, Youth and Sport needs to manage and process large amounts of information about its management and administration of education, including its staff and finances. An Information Management Strategy is needed to quickly access, exchange, analyze, and apply education information to facilitate the planning and management of educational activities in Cambodia. This interconnected information management system will enable MoEYS leaders to easily and directly access the information needed to make evidence-based decisions concerning educational policy and practice.

In the coming five years the Ministry must harmonize, standardize, and interconnect its information databases; this will include decentralizing data collection and input to the place of origin of the information (schools, district and provincial education offices, etc.), ensuring data security, and delivering information to those who most need to use it. This Plan recommends specific actions that should take place for the standardization, interconnection and interoperability of data; the development of physical infrastructure; the usage of data collection and management software in schools and Teacher Training Centers; and the creation of Ministry structures that will support the computerization and information management process.

When implementing this Plan, the Office for ICT in Education (ICTEO) will increase its ability to manage and coordinate information management systems of the Ministry in addition to its responsibilities to guide the use of ICT in education.

Objective 5.1: MoEYS applies a clear Information Management Strategy that harmonizes, standardizes, and interconnects information and databases in all of its departments.

Result 5.1.1: An Information Management Strategy for MoEYS has been defined.

The Information Management Strategy – which will include the standardization of how data is exchanged and kept at MoEYS, security measures, tools to be used and standard training to be offered to Ministry staff – will be approved by MoEYS by 2011.

Indicators: All Departments and offices of MoEYS apply the designated Strategy by 2012.

Objective 5.2: The standardization and interoperability of data and electronic communications inside MoEYS are accomplished.

Result 5.2.1: Basic standard formats for the exchange of data and electronic communications inside the Ministry are specified and implemented.

Standards specified in the Action Plan will be implemented, as well as other complementary standards that might be considered necessary. In particular, the entire Ministry will be equipped and mandated to use Unicode, Open Document Format (ODF) and Portable Document Format (PDF) by 2010.

Indicators: All Departments, offices of MoEYS, schools and HEIs use the designated formats by the end of 2010, eliminating the exchange and storage of new data using legacy fonts or other data formats.

Objective 5.3: All Education Management Information Systems and other databases in MoEYS are homogenized and integrated.

Result 5.3.1: A new information management system is established to integrate existing databases and accommodate all information needs of the Ministry.

All databases in the Ministry of Education will be centralized to one integrated information management system to minimize maintenance costs and ensure interconnectivity. All existing database and information systems (EMIS, HRMIS, FMIS) will be harmonized into this Open-Source integrated information management system with centralized management and security control and with end users sharing similar interfaces. Unicode will be used as the encoding system for Khmer in all databases. The new integrated information management system will serve the management of Higher Education Information and Non-formal Education Information. A new database that will include data on all students will also be defined and developed.

ICTEO will supervise the specification, development and deployment of the new databases. In order for it to develop these databases, it will undertake an assessment study that covers: (a) Analysis of databases and information management tools that are presently used at the Ministry; (b) Analysis of education management information needs (of line departments as well as of regional offices) that are not yet covered by the information presently collected and provided by the current EMIS; and, (c) Data points that permit exchanging data among different databases and standards currently used by the Government of Cambodia (province codes, etc.).

Resulting databases (all using the same technology, Open Source whenever possible) will be specified and developed to cover all the information needs of the Ministry, using its defined standards. These databases will be prepared for both direct data entry and consultation through the intranet of the Ministry or through the Internet, as well as for off-line data entry. Applications for such off-line entry must be developed as part of the system, as well as the mechanisms for the integration of off-line data generated by the above mentioned applications or by school management systems.

Reports to be produced automatically by the databases will include the information presently being received and requested by line departments and regional offices.

The EMIS and concerned MoEYS departments collecting information on the education system will add to their questionnaires all the new information that needs to be included in the integrated Information Management System.

Indicators: By mid 2011 all above mentioned systems are operational using the new databases.

Result 5.3.2: Departmental, provincial and district offices have adopted the new information management system.

Departmental, provincial and district staff will be trained to use the new databases. Training will be given first to provincial and then to district offices on how to enter data on the

databases and how to obtain information from them. Data entry and the use of this data will be decentralized whenever possible. Data will be migrated from the old systems to Unicode encoding and to the format of the new databases. New databases will be used by Ministry staff, replacing the old ones: EMIS , HRIMS and FMIS by 2011, NFMIS and HEIMS by 2012.

Indicators: All authorized personnel of line departments, offices of MoEYS, schools and HEIs use the designated formats by end 2011 (EMIS, HRMIS and FMIS) or 2012 for the rest. PoEs and DoEs are able to enter data in the system, and data can be imported from schools that have School Management systems.

Objective 5.4: All administrative offices of MoEYS are able to exchange data internally through an intranet.

Result 5.4.1: Definition and implementation of a basic computer network that will serve the administrative needs of the MoEYS.

The network connecting the administrative offices of the Ministry will be established and its running costs integrated in the Ministry Program-Based Budget by 2011. The network will connect to international public and research networks (such as the Trans Eurasia Information Network) and serve as a distribution channel for this connectivity to higher education institutions.

Indicators: Electronic communication among all administration offices of MoEYS and public HEIs through an intranet is possible by 2011.

Objective 5.5: ICT is used to facilitate administration of schools and Teacher Training Centers that have access to electricity.

Result 5.5.1: Teacher Training Centers and secondary schools use information management software to facilitate their administration.

All Teacher Training Centers and 120 upper secondary schools will use computer software to register and manage their students, activities, and budget, sending data regularly in a format that can be integrated in EMIS.

Indicators: 120 upper secondary schools and Teacher Training Centers with electricity manage their administration using computers by 2013.

Objective 5.6: District Offices of Education (DOEs) use ICT to facilitate their administration.

Result 5.6.1: Electrification of all District Offices of Education that do not yet have access to electricity.

District Offices of Education which do yet have access to electricity will be equipped with alternative electrification sources by mid 2011.

Indicators: All DOEs have enough electricity to run two computers by mid 2011.

Result 5.6.2: Provision of ICT equipment and training of staff of 193 DOEs.

193 DOEs will be equipped with computers, printers and other equipment by 2011 and ICT training will be provided to their staff.

Indicators: All District Offices of Education use computers to assist their daily work, manage education data and enter the integrated information system by 2011.

Objective 5.7: The Office of ICT for Education will be strengthened to co-ordinate ICT activities of the Ministry.

Result 5.7.1: The Office of ICT for Education is coordinating all the ICT activities of the Ministry.

The ICTEO will have enough resources to support the administrative and educational technological processes inside the Ministry, and to ensure their efficiency, continuity, and sustainability. The right equilibrium of internal and external resources for technological needs will have been reached. The necessary resources to lead and manage these processes will have been added to this Office by 2010.

Indicators: The ICT Education Office is properly structured with enough resources to ensure that the ICT in Education Master Plan can be implemented by 2010.

Result 5.7.2: The technical infrastructure needed for the new information management system has been developed and made available.

The ICTEO will coordinate the development of a web-based application that will be used later for the repositories of both teacher education and higher education.

Indicators: The application is available and operational by mid 2011.

Objective 5.8: Investment costs and recurrent expense in implementing ICT in Education are shared with stakeholders.

Result 5.8.1: A Partnership Program is established.

By 2011, a Partnership Program will be established to raise funds and mobilize support from as many national and international stakeholders as possible, including donors, the private sector, local communities, professional associations and individuals who can help to share the cost of ICT in education expenses. New partnerships that support the goals and technical specifications of this Master Plan will also be sought.

Indicators: Existing partnerships with Metfone and Intel grow in scope while new ones come into place along the remaining years of this Plan (by 2013).

6 Essential Elements for Successful Implementation of the Master Plan

6.1 Curricula

6.1.1 ICT-Based Professional Skills for school students

Courses to be created

ICT-based Professional Skills courses will be developed for grade 10 (as a life skills course) and for grades 11 and 12 as part of the Elective Vocational Training Program. The competencies learned (also known as "21st century skills") will include understanding of, and communication in, the workplace, including skills in administrative assistant tasks (drafting letters, filing, scheduling, communicating, searching for information, preparing budgets). From a more technical standpoint, students will learn how to use Khmer-language computer tools, including a word processor, a spreadsheet manager, a presentation tool, an e-mail program, and an Internet browser.

The above mentioned EVEP course will be integrated into the curriculum and piloted starting in 2010-2011. For 10th grade the course will remain a more basic life skill, but schools will be authorized to use teaching hours as if it were a curriculum course.

Teachers of ICT-based Professional Skills

Starting in 2009-2010, the National Institute of Education will train all Math, Physics, English, Economics and Agriculture teachers also as ICT teachers as a second subject. As a result, 40% of all new teachers will be prepared to teach ICT in their schools.

6.1.2 ICT literacy for teachers

In all Teacher Training Centers in which computers are available, all pre-service teachers will receive specific training on ICT-based professional competences for teachers, including both educational and administrative tasks. New curricula will be developed for all Teacher Training Centers during the 2009-2010 academic year.

6.2 Equipment

6.2.1 For schools and Teacher Training Centers

Computers

The Ministry will issue specifications for computer labs in schools. All computers deployed in schools and Teacher Training Centers under this plan must be desktop computers that fulfill the requirements of low-power-consumption (under 70 watts, including monitor) and low maintenance, with screens large enough to clearly see Khmer text (at least 16"). Computers labs will tend to have 26 computers whenever possible, and accommodate classes with 40 to 60 students. Labs should be fully networked. Maintenance costs must be minimized, and all computers should be procured with three-year maintenance contracts.

Schools with computers for students should also have computers for teachers to enable them to develop computer-based administration and education materials. The ratio of computers to teachers should be between 1:5 and 1:10.

Software

As advanced software in Khmer language - well adapted to Cambodian culture - is already available, and there are also training materials approved by the Ministry for this software, the Ministry will ensure that:

- Only software that is 100% in Khmer language, and well adapted to Khmer culture and to the requirements of the Ministry, may be approved by the Ministry and used at schools and universities to teach ICT literacy[1].
- Only software for which textbooks approved by the Ministry are available can be taught. Textbooks must follow the existing curricula to ensure that students acquire professional competencies and not only technical skills.
- The Ministry will have full ownership and copyright of all training materials and software that it develops in the context of this Master Plan. It will license all these materials under an appropriate sharing license that will allow others to use them, modify them, and distribute them, allowing improvement, personalization or development of better or different materials by third parties; this will help improve the materials that are finally used by teachers and students[2].

Connectivity

All Teacher Training Centers and schools that have computers for education will have all their education and administration computers connected to the Internet.

6.2.2 For the whole Ministry

End-user and server software

The advantages of Khmer language software apply also to the administration of the Ministry. The same rules used for procurement of end-user software for schools will be applied to Ministry offices making it easy for all MoEYS employees to use basic computer software. The Ministry will tend to use Open Source Software whenever possible for its own databases and back-office.

Standards

The use of standards is the key to scaling the use of ICT. National and international standards will be used in the deployment of this Master Plan. These include the Unicode character encoding standard (ISO 10646). The NiDA Standard Unicode Keyboard V1 defined by the National ICT Development Authority in 2005, or later standards, but only if they are fully compatible with the prior one. The Open Document international (ODF) standard (ISO 26300:2006) will be used for office documents

1 All software distributed must be able to do spell-checking in Khmer, order words according to Cambodian standard character order, and format numbers and dates in Cambodian traditional formats (in agreement with the formats that are taught in Mathematics classes in schools). The applications taught must be able to use correctly Unicode, as well as produce all formats considered standard by the Ministry (ODF, PDF). Only applications that have been legally procured will be taught in the education system, and manufacturers must show that their software cannot be easily attacked by viruses or malware. Software must run at a reasonable speed in low-power-consumption computers defined in this plan. When choosing among competing pieces of software that comply with these requirements, lowest standard retail price of software will be the most important decision factor for choosing the one that will be used in schools. Specifically for software, students will learn to recognize which software they can use freely and share (as in the case of Free and Open Source Software), and which software is proprietary, requires payment for the use of a license, and cannot be shared with others, sold to others, or transferred to another computer. Students will be discouraged from using proprietary applications in computers for which licenses have not been paid.

2 Software will be licensed either through the GNU General Public License (GPL) or the GNU Lesser Public License (LGPL). Content will be licensed through a Creative Common Attribution License, allowing commercial use of the materials (to encourage private development of better materials, and competitive printing prices) and their modification, but requiring that the original work be attributed to the Ministry.

that might still be modified or whose content might be useful in other documents. The Portable Document format (PDF) can be used for documents that will no longer be modified. In addition to these, the Ministry will define standards for computer facilities and for the deployment of computers to schools.

Connectivity

The main offices of the Ministry in Phnom Penh will be connected through a local network or a VPN over the Internet as soon as possible and will be able to share information. Over the long run this network must cover all the Ministry offices and all public higher education institutions. As much as possible the network will have to be owned by the Ministry or by the government to avoid recurrent connectivity costs that will otherwise grow significantly when large numbers of centers are connected. The network will also grow to cover as many upper secondary schools and Teacher Training Centers as possible on the long run. The Ministry administration network will connect to the research network, to the government network and to international networks such as the TEIN3 research network.

6.3 Human Resources

6.3.1 ICT-related roles in schools

ICT teachers will normally be the most highly trained staff in a school when it comes to computers. They will normally assume the role of supporting other members of the staff when necessary. Besides their role as student trainers, they will also play a role in the training of their colleagues and in supporting the automation of the administration of the school. Besides the knowledge necessary to teach the ICT subjects, ICT teachers will also be trained in basic computer maintenance in order to provide first-level support for the computers in their schools. These teachers will need to slowly adapt their role to teach more and more communication, self-confidence and soft skills as part of the ICT courses, concentrating the technical learning in project-based collaborative work performed by the students.

School directors will also be a focus of the Ministry and taught how to support the teaching of ICT in their schools.

6.3.2 ICT-related roles in Teacher Training Centers

Each teacher training center will have at least two ICT Master trainers who not only know how to deliver the curriculum but also can do first-level maintenance of computers and support the automation of the administration of the TTC. These Master trainers will need to slowly adapt their role to teach more and more communication, self-confidence and soft professional skills as part of the ICT courses, using learner-centered techniques for the technical learning of the teacher-trainees.

The Senior Master trainers at the National Institute of Education are the most highly trained ICT trainers in the Ministry. They will train pre-service ICT teachers, master trainers from TTC, and all teacher trainees at the NIE.

TTC directors will also be encouraged by the Ministry and taught how to support the teaching of ICT in their institutions.

6.3.3 ICT-related roles in the Ministry and Municipal-Provincial Offices of Education

The Office for ICT in Education of the Department of Information and ASEAN is in charge of coordinating ICT activities across the Ministry. As part of this Plan, it will coordinate the proper growth of the use of ICT in the Ministry by enforcing standards and encouraging communication, providing guidance to the different departments,

coordinating the actions and donations of MoEYS partners, and ensuring that the content of this Master Plan is executed satisfactorily.

At a second stage, Provincial Offices of Education should have an office responsible for ensuring that ICT training and operations in their province are taking place as planned.

6.4 Further ICT Development and Program Management

The lack of sufficient computer infrastructure and communication in the provinces makes it difficult to consider using computers for education in subjects other than ICT since the infrastructure being provided will not be sufficient in the first instance for student training on ICT, for teacher education, and for administration. Resources needed for using computers for learning other subjects would lead to excessive costs that cannot be provided in this current Plan. Also, developing computer-based materials for teaching in Khmer will be a long process that must be started now but which will not lead to results significant enough to have an impact during the duration of this Plan.

Video, on the other hand, is a technology that can reach quite far, as even remote villages have televisions and video players used for local entertainment and working on 12-volt batteries in areas that have no electricity.

Video is quite a good training tool as it uses one of the learning methodologies that works best: copying good teaching-learning practices that are seen in the video. The usual process of learning theory in a class and then converting this into practice without ever having seen it modeled is quite difficult given the level of training of most teacher-trainees. By seeing how good teaching is actually done by experienced teachers, analyzing what makes it good, and then trying it out in their own teaching, trainees learn how to teach better – and that it not as difficult as it might seem.

Video training materials are not expected to replace teacher trainers but to give them an additional tool that they can use interactively to train teacher-trainees. Such materials can also be used during in-service training; for example, they can be used in the weekly school cluster meetings where video facilities exist.

Throughout the implementation of this Master Plan, the expansion of current technologies to more remote areas and lower levels of education will be planned and the use of other technologies appropriate to Cambodia (such as cell phones) will also be explored.

ICT Program Management in MoEYS

One of the key components of this Master Plan is to ensure that the Office for ICT in Education has sufficient human and material resources to manage and monitor the program. To ensure this, during each of the first three years of this Plan, the four top graduates in ICT of the National Institute of Education will be assigned to this office to assume essential training and management tasks with the Ministry planning for this annual increase in the number of staff members attached to this office.

6.5 Equity and Ethics

Any society is marked by disparities that cannot be solved entirely by the education system, but this Master Plan and all other plans of the Ministry attempt to ensure that all their actions will help reduce these disparities and in no case increase them. Monitoring and correcting are the main tools that this Plan will use to detect and correct any negative effects of the work that will take place under it.

While it is not possible for the Master Plan to decide which students should have access to ICT training or what teachers should be trained (the numbers of enrolled students and of employed staff are fixed), the Plan must ensure that no special barriers to ICT or professional training exist, monitor results to ensure no bias, and detect early any deviations that might create further inequities – between rich and poor, rural and urban, male and female. Combating gender imbalance is especially critical. The Ministry must not only take affirmative action to ensure roughly equal balance between men and women in teacher training for ICT but must also ensure that curricula and training materials not only are free of gender bias, but also project gender equality as part of their content.

Ethics

The Education system must ensure that the behavior that it teaches is ethical and correct, not only explicitly, but also implicitly. This respect for the law and customs must be reflected across the training materials.

This plan was developed under the supervision of the **ICT in Education Committee** of the Ministry of Education, Youth and Sport:

Chairman: **H.E. Mr. Im Sethy - Minister of Education, Youth and Sport**

H.E. Dr. Nath Bunroeun	Secretary of State	Vice Chair
H.E. Dr. Phoeurng Sackona	Secretary of State	Vice Chair
H.E. Mr. Hak Sengly	Under Secretary of State	Member
H.E. Mr. Koeu Nay Leang	Director General of Education	Member
H.E. Mr. In The	Director General of Administration and Finance	Member
H.E. Mr. Pak Thavin	Director General of Higher Education	Member
Mr. Om Sethy	Director of Information and ASEAN Affairs Dept.	Permanent member
Mr. Leang Seng Hak	Director of Teacher Training Dept.	Member
Mr. Thong Borann	Director of Personnel Dept.	Member
Mr. Sam Sereyrath	Director of Planning Dept.	Member
Mr. Ly Sethik	Director of Finance Dept.	Member
Mr. Chroeng Lim Sry	Director of General Secondary Education Dept.	Member
Mr. Eng Kimly	Director of Pedagogical Research Dept.	Member
Mr. Phung Hansin	Director of Non-Formal Education Dept.	Member
Mr. Roth Sokha	Director of Higher Education Dept.	Member
Mr. Chan Rath	Director of Scientific Research Dept.	Member
Mr. Im Chhay Hieng	Deputy Dir. of Info. and ASEAN Affairs Dept.	Member
Mr. Sok Tha	Head of ICT in Education Office, Information and ASEAN Affairs Dept.	Secretary

Master Plan development process

While drafted by a core team of Ministry and partner's staff, this Master Plan for ICT in Education has been developed following a strict consultative process. Interaction with all implicated departments of the Ministry has taken place at each step of the process through three consultative meetings in which different drafts of the Master Plan have been discussed. The process has also included public consultation with line ministries, NGOs and development partners.

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