



**Kingdom of Cambodia  
Nation Religion King**



**Ministry of Education, Youth and Sport**

**Policy and Strategy on**

**INFORMATION AND COMMUNICATION  
TECHNOLOGY IN EDUCATION**



**May 2018**



## PREFACE

The Ministry of Education, Youth and Sport (MoEYS) recognizes that countries' competitive advantage is driven by their human resources capacity in 21st century skills, including the strategic use of Information and Communication Technology (ICT). Such capacities assist citizens to generate new knowledge and translate this knowledge into novel applications, supporting the transition of the national economy from trading in commodities to trading in high-end knowledge-based products and services.

To accelerate this transition to an ICT-based knowledge economy, the Royal Government of Cambodia (RGC) has introduced several policies that create an ICT-enhanced enabling environment. At the same time, the Cambodian ICT sector has made a significant progress in expanding ICT services in the country. These developments provide an opportune time for MoEYS to reform and modernize the education sector and deliver world class education, including ICT competencies, to all Cambodians.

MoEYS acknowledges that ICT is the main catalyst in advancing human resource development for the 21st century economy, and that - for education - ICT needs to be planned as a sector-wide intervention in which a systematic approach to ICT architecture and interventions is the key to efficiency and sustainability, getting away from the present model in which ICT is often applied in uncoordinated isolated silos.

This Policy and Strategy for ICT in Education has been developed through a consultative process involving the private sector, development partners, and representatives from all levels of the education sector. It is designed to help MoEYS adopt new ICT-based management practices to modernize its governance and management, and increase transparency and accountability. The Policy and Strategy supports evidence-based planning and resourcing, and increases effective and efficient management and administration of the sector. Furthermore, the Policy and Strategy also supports the adoption of new pedagogical methods that are made possible by ICT.

Assuming the responsibility for these improvements that we need to undertake, and with the coordinated support of our partners, we hope to be able to harness the power of ICT to build a better education system that will prepare students to become the professionals that the country needs.

Phnom Penh, 7 May 2018



A handwritten signature in blue ink, consisting of several fluid, overlapping strokes.

**Dr. Hang Chuon Naron**

Minister

Ministry of Education, Youth and Sport

## ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
CBR&D	Capacity Building, Research and Development Fund
DIT	Department of Information Technology
DoE	District Office of Education, Youth and Sport
EMIS	Education Management Information System
HEI	Higher Education Institution
HRMIS	Human Resource Management Information System
ICT	Information and Communication Technology
IT	Information Technology
LMS	Learning Management System
LSS	Lower Secondary School
MEF	Ministry of Economy and Finance
MoEYS	Ministry of Education, Youth and Sport
MPTC	Ministry of Posts and Telecommunications
NIE	National Institute of Education
OER	Open Educational Resources
PPP	Public Private Partnership
PoE	Provincial Department of Education, Youth and Sport
RGC	Royal Government of Cambodia
SDGs	Sustainable Development Goals
STEM	Science, Technology, Engineering and Mathematics
TTC	Teacher Training Center
TVET	Technical and Vocational Education and Training
USO	Universal Service Obligation
USS	Upper Secondary School

## INTRODUCTION

The Royal Government of Cambodia recognizes that ICT will increasingly become a key tool to transform the national economy and industry, and to improve the lives of its people. Consequently, it has continuously strengthened the enabling environment to facilitate the application of ICT in all aspects of life. The RGC's vision is to transform and modernize Cambodia's industry from labor intensive to knowledge and skill-driven by 2025, creating a technology-driven and knowledge-based modern industrial economy.

Achieving the above aspiration is contingent on the supply of appropriately qualified and highly empowered human resources with a broad range of ICT capabilities extending from applying ICT in every day work to creating new knowledge and new systems. In accordance with the Sustainable Development Goals (SDGs) agenda ICT must be harnessed to strengthen education systems, underpin research and knowledge creation, and facilitate information access and dissemination. This will improve quality and effectiveness in teaching and learning, and deliver more effective service provision through more rigorous monitoring and governance.

The need to increase the application of ICT in MoEYS's routine management and governance and in teaching and learning has led to a strengthening of IT support capacity within MoEYS. This is necessary to manage the significantly changing ICT landscape in the country and the expanding applications of ICT within MoEYS. It is becoming evident that ICT intervention can no longer be managed and supported through a fragmented and 'project' based approach. Hence this Policy and Strategy seeks to adopt a systems approach with standardized business processes and better coordination of priorities and investments in order to maximize the return on investment for MoEYS, and to be responsive to emerging ICT demands in the education sector.

MoEYS undertook intensive analytical work including a rigorous desk study, an empirical field study and stakeholder consultations to inform the design of a 'systems approach' for ICT Policy and Strategy formulation. While the policy statements in this document address key potential educational accomplishments, the strategy is structured around five key operational areas that facilitate this systematic approach, namely: infrastructure, connectivity and equipment; governance and management; finance; ICT resources for teaching and learning; and human resource development, all of which cut across traditional education sub-sectors.

MoEYS understands the level of resources required to accelerate applications of ICT in education, and is aware of the interest shown by Non-Government Organizations (NGOs), and private sector and development partners in providing support. MoEYS needs a mechanism to improve the management of such partnerships, leading to more positive outcomes. The Policy and Strategy draws on lessons from previous development projects nationally and from the ASEAN region. MoEYS is careful to avoid duplication and redundancy, for example the creation of alternative models, or conducting pilot programs that are not continued. Partners must be encouraged to align their support with the MoEYS strategy, applying MoEYS standards for hardware and software so that investment may be integrated into the education system at the end of the partner's intervention.

Furthermore, MoEYS - through the Department of Information Technology (DIT) - will develop capacity to lead ICT for Education innovation across the sector. DIT will assess the value of lessons learned in other countries for the Cambodian context, advising MoEYS technical line departments on possible options for increasing their efficiency through the use of Information Technology.

### **VISION**

This plan envisions a MoEYS in which ICT is systematically used to increase efficiency, providing sufficient information for leadership decisions to be based on evidence, and where enhanced teaching and learning for all students produces graduates who are innovative, creative, and ethical, and who can navigate the challenges of the information and knowledge economy and society.

### **GOALS**

The goal of MoEYS's Policy and Strategy for ICT in education is two fold:

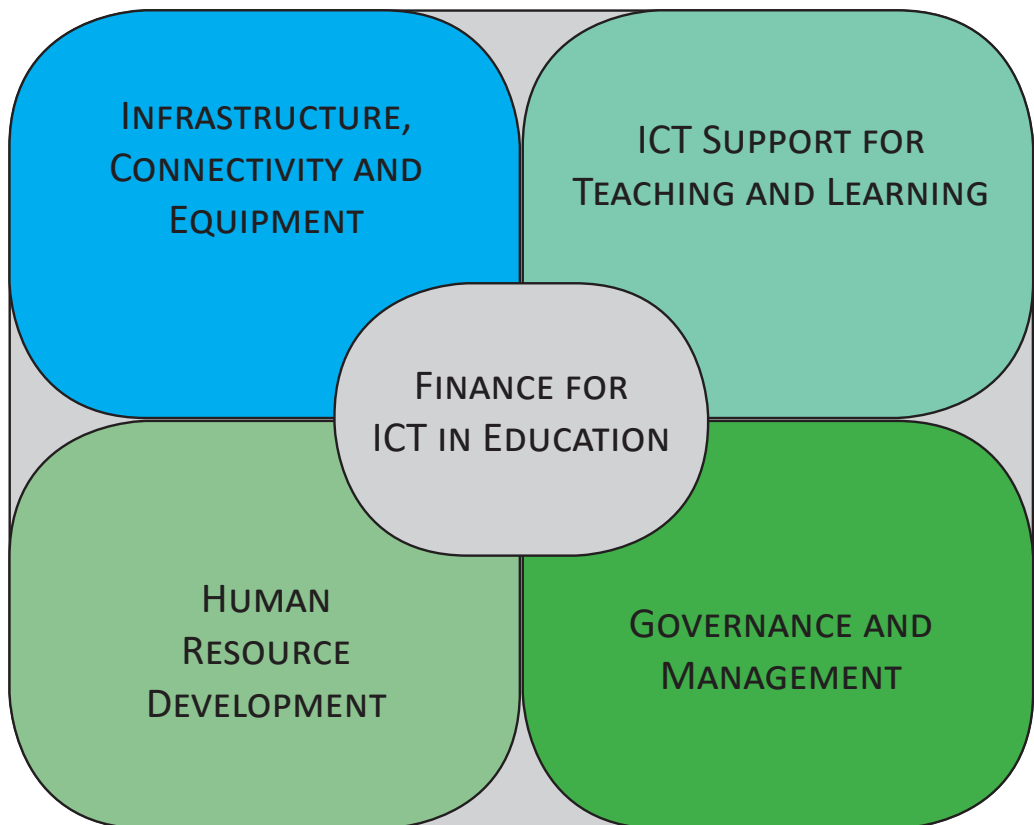
- 1- MoEYS will adopt new management and administrative processes to modernize practices and increase the efficiency, transparency and effectiveness of education sector governance and performance monitoring.
- 2- MoEYS will integrate ICT as a teaching, learning, and knowledge sharing tool across the education sector to equip students with ICT knowledge and skills to transition to the 21st century world of work.

## POLICY STATEMENTS

- 1 MoEYS will ensure that all Cambodian students completing a formal program of study are able to apply ICT knowledge and skills to support their further education and professional work.
- 2 MoEYS will increase the efficiency and effectiveness of teaching and learning in teacher training centers, schools and other educational institutions by using ICT tools and e-resources.
- 3 MoEYS will use e-learning to support the delivery of education services to all sub-sectors in education for students and for institutional human capacity development and lifelong learning.
- 4 MoEYS will increase its efficiency and its capacity for evidence-based decision-making and knowledge-sharing through systematic use of information, while at the same time increasing its capacity for administration, operations and digital data-collection.
- 5 MoEYS will create standards for infrastructure, connectivity and design, and will integrate all national and sub-national offices into a single networked system. The system will provide sufficient physical and logical security as well as offline replication to ensure resilience.
- 6 MoEYS will give preference to the use of Open Source software and Khmer language applications for teaching and learning while always ensuring compliance with Cambodian copyright laws. All ICT intervention proposals must include a total cost of ownership analysis to inform MoEYS of the options for institutionalizing to ensure the availability of an operational budget.
- 7 MoEYS will promote media literacy, user privacy, and the ethical use of ICT, preventing all forms of cyberbullying and unsafe use of technology.
- 8 MoEYS will provide the necessary financial resources to support ICT in education from the RGC budget and will coordinate PPP and donor partners' support for both capital and recurrent costs.

## STRATEGY

The preliminary analysis for this Policy and Strategy has captured the five strategical areas of intervention noted in the diagram below.



The policy statements provide overall direction; each one of them is affected by one or several of these strategic intervention areas. This approach of systematically associating similar interventions is the key strategy to efficiently produce the desired results.

Each of the intervention areas includes several strategies. Short-term and mid-term sub-strategies are then detailed for each strategy. The strategies, organized by intervention areas, are:



## STRATEGIC INTERVENTION AREAS AND MAIN STRATEGIES

### INFRASTRUCTURE, CONNECTIVITY AND EQUIPMENT

- Adopt the integrated ICT systems and network architecture to increase productivity.
- Equip Upper Secondary Schools (USS) and Teacher Training Centers (TTCs) using standardized equipment and institutional network design.
- Equip sub-national MoEYS offices with standardized equipment and systems design.
- Consolidate network bandwidth to increase effectiveness.

### GOVERNANCE AND MANAGEMENT

- Promote the use of evidence-based planning and resourcing by providing easy access to data, information and analysis.
- Increase management efficiency by using standard institutional ICT-based operational processes.
- Procure the necessary software and establish procedures for running core MoEYS ICT systems.
- Coordinate and provide oversight for all ICT activities that take place within this framework.
- Develop or procure the necessary software for management support.

### FINANCE TO SUPPORT ICT IN EDUCATION

- Provide continued, long-term financing to support ICT operations in MoEYS.

### ICT SUPPORT FOR TEACHING AND LEARNING

- Modernize the education curriculum to include ICT and 21st Century knowledge and skills.
- Procure and/or develop e-resources for supporting teaching and learning (contents).
- Develop and adopt teacher guides and tools to integrate ICT-based pedagogy in all teacher training and USS teaching.
- Encourage self-learning by adopting a Learning Management System (LMS).

### HUMAN RESOURCE DEVELOPMENT

- Train ICT teachers for all USS and Lower Secondary Schools (LSS).
- Improve teacher training in all TTCs through the integration of ICT into teaching and learning, while also training teachers on the use of this methodology.
- Develop MoEYS capacity to produce high quality and relevant e-resources.
- Develop MoEYS capacity to manage IT projects and to administrate IT systems and services.
- Increase MoEYS capacity to use LMS to deliver e-learning training.

## 1 INFRASTRUCTURE, CONNECTIVITY AND EQUIPMENT

Strategy 1.1 Adopt the integrated ICT systems and network architecture to increase productivity

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
1.1.1	ICT functional analysis of 50% of MoEYS offices at national level.	ICT functional analysis completed for all MoEYS offices at national level.
1.1.2	Establishment of an internal network and an integrated data center for back-end data and document repository with industry standard backup provisions (data center).	MoEYS technical line departments linked and connected to the data center and off-site redundant facility.

Strategy 1.2 Equip USS and TTCs using standardized equipment and institutional network design

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
1.2.1	Develop standards for equipment and networking of educational institutions. 50% USS and all TTCs have been equipped according to the standards.	50% of remaining USS have equipment compliant with MoEYS standards.
1.2.2	80% of non-public sector stakeholders providing equipment comply with MoEYS specifications.	100% of non-public sector stakeholders providing equipment comply with MoEYS specifications.

Strategy 1.3 Equip sub-national MoEYS offices with standardized equipment and systems design

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
1.3.1	MoEYS sub-national offices have been equipped with ICT devices according to MoEYS standards.	MoEYS sub-national offices receive bandwidth and speed according to MoEYS standards.

Strategy 1.4 Consolidate network bandwidth to increase effectiveness

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
1.4.1	Define standard bandwidth need for each type and size of institution.	Establish a national education network as part of the CBR&D and USO funds.
1.4.2	All education institutions receive connectivity bandwidth according to MoEYS standards through a centralized Ministry Network Operation Center (NOC).	

## 2 GOVERNANCE AND MANAGEMENT

Strategy 2.1 Promote the use of evidence-based planning and resourcing by providing easy access to data, information and analysis

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
2.1.1	MoEYS to establish integrated database framework to support analytical work on sector performance.	MoEYS integrated database framework captures data directly from sources in real time, generating periodic reports on sector performance that are published on the MoEYS website.
2.1.2	Implement common coding for all MoEYS data for cross comparative analysis and tracking of information.	
2.1.3	Streamline procedures for data collection. Adopt electronic data collection, and implement in all DoE and 50% of USS.	Implement digital data collection in all USS and 50% of LSS.

Strategy 2.2 Increase management efficiency by using standard institutional ICT-based operational processes		
	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
2.2.1	Adopt use of standardized ICT-based productivity tools to enhance the operations of national and sub-national MoEYS offices, increasing their efficiency.	Enforce use of standardized ICT-based productivity tools to enhance the operations of national and sub-national MoEYS offices, increasing their efficiency, including digital data collection.
2.2.2	Develop and deploy a standardized school management system to 50% of USS.	Develop and deploy a standardized institutional management system to the rest of USS and to TTC.
Strategy 2.3 Procure the necessary software and establish procedures for running core MoEYS ICT systems		
	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
2.3.1	ICT-based management and administration processes established in DIT to manage ICT projects and monitor ongoing IT operations.	Provide high-level data analysis and management software and procedures to all MoEYS national level offices.
2.3.2	DIT will advise on ICT procurement, coordinate ICT technical support and help-desk services, and act as a clearing house for all ICT for education projects.	Set up application software for managing document archiving and digital data collection processes in all MoEYS national level offices.
2.3.1	DIT will set up a help-desk to support first level trouble shooting at national, sub-national and school levels.	
Strategy 2.4 Coordinate and provide oversight for all activities that take place within this framework		
	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
2.4.1	All stakeholders liaise with DIT to ensure compliance with MoEYS standards for ICT procurement, equipment and systems design, and for total cost of ownership analysis.	
2.4.2	Develop robust M&E and accountability mechanisms for effective implementation and institutionalization of every ICT project in MoEYS.	
Strategy 2.5 Develop or procure the necessary software for management support		
	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
2.5.1	Procure software for document archiving and retrieval of all official MoEYS documents.	Archive system extended to cover all MoEYS documents.
2.5.2	Develop teacher professional development tracking system developed as extension to HRMIS.	All stakeholders provided with authenticated access to tracking system based on need.

### 3 FINANCE TO SUPPORT ICT IN EDUCATION

Strategy 3.1 Provide continued, long-term financing to support ICT operations in MoEYS

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
3.1.1	Adopt long term planning with Ministry of Post and Telecommunications (MPTC) (in reference to the CBR&D and USO funds) and Ministry of Economy and Finance (MEF) for matching partner capital spending funds for infrastructure and connectivity with MoEYS budget lines for recurrent costs of the infrastructure.	Continue long term planning with MPTC and MEF to secure funds for capital infrastructure and recurrent connectivity costs.
3.1.2	MoEYS will secure finance for recurring costs incurred by ICT interventions from MEF.	Process institutionalized as routine MoEYS budget planning process to cover recurrent costs.
3.1.3	80% of non-public sector stakeholders providing equipment comply with MoEYS specifications.	100% of non-public sector stakeholders providing equipment comply with MoEYS specifications.

### 4 ICT SUPPORT FOR TEACHING AND LEARNING

Strategy 4.1 Modernize the education curriculum to include ICT and 21st century knowledge and skills

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
4.1.1	USS curriculum provides ICT-based professional and pre-university skills aligned with 21st century knowledge, skills and career paths.	
4.1.2	NIE curriculum tailored to prepare USS teachers for ICT subjects and also provide training as school level ICT administrators.	

Strategy 4.2 Procure and/or develop e-resources for supporting teaching and learning (contents).

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
4.2.1	Identify and localize available free educational e-resources, aligning them to the national curriculum and disseminating them through the MoEYS Open Educational Resources (OER) portal.	Develop or procure and disseminate through the MoEYS OER portal educational e-resources for all STEM topics for which materials are not available in local language.
4.2.2	Mirror the OER portal on all TTC and USS ICT systems.	

Strategy 4.3 Develop and adopt teacher guides and tools to integrate ICT-based pedagogy in all teacher training and USS teaching

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
4.3.1	Develop and adopt ICT-integrated teacher guides and lesson plans for teaching USS STEM subjects.	Develop and adopt ICT-integrated teacher guides and lesson plans for teaching all key USS subjects.

Strategy 4.4 Encourage self-learning by adopting a Learning Management System (LMS)

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
4.4.1	MoEYS adopts a generic Open Source LMS platform for all levels of education.	Public universities use generic Open Source LMS platform to provide education through e-learning.
4.4.2	Promote the use of e-learning in life-long learning and equivalency programs.	

## 5 HUMAN RESOURCE DEVELOPMENT

### Strategy 5.1 Train ICT teachers for all USS and Lower Secondary Schools (LSS)

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
5.1.1	The National Institute of Education (NIE) supplies the necessary number of ICT subject teachers for all USSs to be able to teach the ICT subjects, capacitating them to configure and troubleshoot school ICT infrastructure.	TTCs start training ICT teachers for LSS.

### Strategy 5.2 Improve teacher training in all TTCs through the integration of ICT into teaching and learning, while also training teachers on the use of this methodology

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
5.2.1	USS teachers are trained to teach using e-resources. E-resource-based training is also integrated in pre-service teacher training.	All TTCs teach and model ICT-based instructional practices using OERs in pre-service and in-service teacher training.

### Strategy 5.3 Develop MoEYS capacity to produce high quality and relevant e-resources

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
5.3.1	MoEYS has increased capacity to identify and localize existing e-resources, as well as to develop high quality e-resources for USS STEM teachers.	TTC staff capacity developed to procure, aggregate, and customize e-resources for teacher training.
5.3.2	TTCs and public university teachers have increased capacity to use multimedia skills to develop high quality e-resources.	

### Strategy 5.4 Develop MoEYS capacity to manage IT projects and to administrate IT systems and services

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
5.4.1	MoEYS will developed capacity to manage new ICT interventions, as well as management of routine IT operations, including management of data center and of all systems and applications.	MoEYS will developed capacity to provide skills on high-level data analysis and management tools that have access to all available information.
5.4.2	DIT to build capacity to provide advice on ICT procurement, coordinate ICT technical support and help-desk services, and act as a clearing house for all ICT for education.	Capacity will also be developed to ensure first-level management of the data center and of all systems and applications used.
5.4.3	DIT to build capacity of other MoEYS national level offices to set up and manage document archiving and digital data collection processes.	

### Strategy 5.5 Increase MoEYS capacity to use LMS to deliver e-learning training.

	SHORT TERM SUB-STRATEGIES	MEDIUM TERM SUB-STRATEGIES
5.5.1	DIT to build capacity to advise TTCs, USS and universities on all the stages of producing and managing courses through the LMS system.	Public universities and teacher training centers have capacity to create e-learning courses and manage them.
5.5.2	Develop MoEYS capacity to develop and deliver school leadership capacity development through LMS to manage and support use of ICT systems.	

## MONITORING AND EVALUATION

Rather than detailing activities, the Policy and Strategy for ICT in Education offers guidelines on how ICT should be deployed throughout the education system. It defines a systematic approach that MoEYS and its partners are expected to follow in their ICT interventions.

In this light, the goal of monitoring the application of the Policy and Strategy focuses on compliance of interventions with the principles here stated, ensuring that the coordinated approach leads to the expected long term results.

Each activity that takes place within this framework will have to define its goals and objectives, specifying its own indicators and Monitoring and Evaluation plan. The Monitoring and Evaluation for the Policy and Strategy will ensure that all proposed ICT in Education activities have a comprehensive work plan in which infrastructure, connectivity and resources are developed according to MoEYS standards, and that they include a calculation and a provision for the total cost of ownership.

## CONCLUSION

This Policy and Strategy for ICT in Education adopts a systematic approach to designing, implementing and maintaining ICT investments in the education sector. This integrated approach avoids fragmentation and duplication of interventions and builds a resilient and sustainable ICT for education program within MoEYS. The document provides critical guidance on how the use of ICT in Education in MoEYS will be expanded to improve management efficiency and delivery of high quality learning experiences.

This Policy and Strategy provides a framework to encourage all development partners, private sector stakeholders, national level offices of MoEYS to adopt a common and coordinated approach to support MoEYS's efforts to improve its efficiency through the systematic deployment of Information Technology. MoEYS would like to express its gratitude to all of them for contributing their time to the development of this document.

MoEYS requests all stakeholders to work in consultation and coordination with the Department of Information Technology to ensure that ICT in Education interventions conform to MoEYS standards, helping build a better education service for all Cambodians.

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