

Supporting Nepal's School Sector Development Plan: The Role of ICT



October 2017



KNOWLEDGE SUMMARY

30-31 August 2017, Kathmandu, Republic of Nepal

TA-8813 REG: INFORMATION AND COMMUNICATION TECHNOLOGY
FOR DEVELOPMENT INITIATIVE FACILITY IN ASIA AND THE PACIFIC –
WORKSHOP ON SCHOOL SECTOR DEVELOPMENT PLAN IN NEPAL: THE ROLE OF ICT

About the Workshop

In 2016, the Federal Democratic Republic of Nepal launched the School Sector Development Program (SSDP) as its new flagship initiative to improve access, equity, and the quality of the entire school education system. The SSDP is the Nepalese government's major initiative in the education sector for FY2017–FY2023.

The program includes the adoption of information and communications technology (ICT) as a key objective for improving the quality and relevance of education in Nepal. Among the targets under the SSDP is the establishment of 1,000 model schools with improved learning environment, including the provision of ICT facilities.

Building on its extensive experience in the education sector, the Asian Development Bank (ADB) is supporting the SSDP through results-based lending (RBL), which will aim to catalyze capacity building in the sector. In implementing the SSDP, ADB supports a sector-wide approach in which ICT options are included.

This two-day workshop was designed to explore ways to strengthen ICT in the target schools and classrooms under SSDP. As well as discussing potential ICT options for enhancing education outcomes, workshop participants also learned from the case studies of Singapore and South Korea, two countries that have excelled in the use of ICT in education.

The workshop focused on:

- improving learning through ICT, particularly through improved pedagogy;
- cost efficiency of education services using ICT, particularly to make high-quality teaching and learning resources available to even remote classrooms;
- strengthening the operation and management of the education system; and
- enhancing the monitoring and evaluation of teaching and learning with use of ICT.

The workshop is expected to pave the way for the adoption of well-selected ICT interventions that can contribute to a better implementation of the SSDP in Nepal, leading to better returns for the students and teachers.

At a Glance

 Workshop Dates: 30-31 August 2017	 Workshop Participants:	 Cross-Country Learning: Academic experts presented case studies on the use of ICT in education in Singapore and the Republic of South Korea
Presenters/ Speakers: 14 senior officials from the Ministry of Education of Nepal and private sector experts 	77 individual participants from 59 government departments and agencies, multilateral agencies, and non-profit organizations	Organiser: Asian Development Bank 
Venue: Park Village Resort and Spa Kathmandu, Nepal		

Participants



1. Agat Awasthi
2. Achyata Nand Mishra
3. Adhip Poudyal
4. Ambika Prasad Regmi
5. Arjun Raj Pant
6. Baburam Dhungana
7. Badal Pradhan
8. Baikuntha Aryal
9. Baudha Raj Niraula
10. Bed Prasad Dhakal
11. Bijaya Timilsina
12. Birendra Raj Pokhrel
13. Bolaram Pandey
14. Brajesh Panth
15. Cavin Seung Yong Shin
16. Chhatra Hari Karki
17. Churamani Aryal
18. Dae Joon Hwang
19. Dal Bahadur Sunar

20. David Hung
21. Daya Sagar Baral
22. Deepak Sharma
23. Dhan Bahadur Shrestha
24. Dhurba Raj Regmi
25. Dibakar Durdashi
26. Dibakar Raj Pant
27. Eva Moo
28. Gita Rai
29. Govinda Sharma
30. Guru Prasad Mainali
31. Hari Lamsal
32. Indra Gurung
33. Jagath Bahadur Magar
34. Jayshree Oza
35. Keshar Khulal
36. Kim Jong Hun
37. Krishna Lamsal
38. Laura Parrola

UNESCO
NTCA
KULLABS
OCE
National Planning Commission
Department of Education (DOE)
GEMS School
Ministry of Education (MOE)
NCED
TU
Kantipur Daily
ADRAD
Rato Bangala School
ADB
NSDevil
Midas
MOE
Sungkyunkwan University
Search for Common Ground/
AIN
NIE Singapore
IOE Pulchowk Campus
DOE
DOE
MOE
Shivapuri Secondary School
IOE
NIE Singapore
Olympia Secondary School
MOE
MOE
MOE
Finland
Kamala School
ADB
Budaniikantha School
NRF
JICA Nepal
USAID

39. Laxman Sharma
40. Lekhnath Sharma
41. Manish Pokharel
42. Maria Melizza Tan
43. Min Bista
44. Mohan Aryal
45. Namta Gurung
46. Narayan Krishna Shrestha
47. Nashib Acharya
48. Natikaji Maharjan
49. Nepali Sah
50. Padam Raj Pant
51. Poishnu Acharya
52. Pramod Bhatta
53. Purusottam Kharel
54. Rabi Karmacharya
55. Rabin Katuwal
56. Rajendra Adhikari
57. Ravi Rajbansi
58. RB Katwal
59. Reg Bahadur Bhandari
60. Rina Maharjan
61. Roshan Chitrakal
62. Sanjaya Adhikari
63. Sanjeeb Pandey
64. Saroj Bhakta Acharya
65. Seok Yong Yoon
66. Shanti Jagannathan
67. Sharad Bhandari
68. Shishir Khanal
69. Smita Gyawali
70. Sudarshan Ghimire
71. Surya Bahadur Adhikari
72. Tarzan Reni
73. Tilak Kunwar
74. Tilottama Gyawali
75. Tulashi Prasad Thapaliya
76. Yashodhara Pant
77. Yukiko Okugawa

Satyawati School
Open University
Kathmandu University
UNESCO Bangkok
ADB
World Bank
WFP
MOE
NCED
Gyanodaya SS
UNICEF
KU
DOE
ADB
Kathmandu University
OLE Nepal
FISM
Confederation of Teacher Union
Sarada Secondary School, Morang
PABSON
Tribhuvan University
Adarsha Saula Yubak Sec. School
World Education
Ullens School
TCTC, IOE
Adarsha Saula Yubak Sec. School
ADB
ADB
ADB
Teach for Nepal
ADB
Sikai Online
NPABSAN
CDC
CNT
ADRAD
MOE
LRI School
JICA Nepal

Speakers/Presenters



Mr. Sanjaya Adhikari
Director
Ullens School



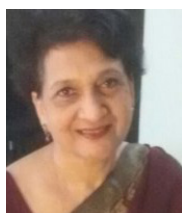
Mr. David Hung
Professor
National Institute
of Education
Singapore



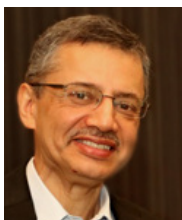
Mr. Dae Joon Hwang
Professor
School of Information
& Communication
Engineering, Sungkyunwan
University, South Korea



Mr. Rabi Karmacharya
Executive Director
OLE



Ms. Jayshree Oza
Education Consultant
Reaching & Educating
At-risk Children (REACH)
India) India



Mr. Brajesh Panth
Technical Advisor
(Education)
Asian Development
Bank



Mr. Birendra Pokharel
Chairperson
Action on Disability
Rights and Development



Mr. Manish Pokharel
Associate Professor
Department of
Computer Science and
Engineering
Kathmandu University



Mr. Deepak Sharma
Director
Department of Education
Nepal



Mr. Laxman Sharma
Principal
Satyawati Secondary
School, Dhading,
Nepal



Mr. Lekhnath Sharma
Vice Chancellor
Open University of Nepal



Mr. Seungyong Cavin Shin
Chairman
Technical & Business
Advisory Board
NSDevil Co. Ltd.
South Korea



Ms. Maria Melizza D. Tan
Programme Officer
ICT in Education Unit
UNESCO Bangkok



Mr. Tulashi Thapaliya
Joint Secretary
Ministry of Education
Nepal

Programme

DAY 1: 30 August 2017, Wednesday

Time	Speaker/Organisation	
08:30 - 09:00	Registration	
09:00 - 09:15	Opening Remarks	Mr. Dilliram Rimal, OIC, Ministry of Education, Nepal Mr. Sharad Bhandari, OIC, ADB
09:15 - 10:00	Session 1: Setting the Context Overview of ICT in the School Sector Development Program, main objectives and current practices in ICT use in Nepal public schools Key challenges in improving quality of education in Asia and the implications of using ICT in leapfrogging	Moderator: Hari Lamsai, Joint Secretary Ministry of Education Tulashi Thapaliya Joint Secretary, MOE Brajesh P. Panth, ADB
10:00 - 10:15	Coffee Break and Group Photo Session	
10:15-11:15	Session 2: Learning from Singapore's experiences in education sector development and implications for developing countries Educational reform program using ICT in Singapore – key policies, interventions and lessons learned Q&A and Open Discussion	Moderator: Brajesh P. Panth, ADB David Hung Professor, National Institute of Education, Singapore
11:15 - 12:45	Session 3: Current Practices on ICT in Education Current practices in ICT use in private schools Use of ICT and related online courses (MOOCs) in teacher development Current practices in ICT use in private schools in Nepal Q&A and Open Discussion	Moderators: Baburam Paudel Director General, DOE / Baikuntha Aryal, Joint Secretary, MOE Mr. Sanjaya Adhikari Director, Ullens School Mr. Lekhnath Sharma, Vice Chancellor, Open University of Nepal Mr. Laxman Sharma, Principal, Satyawati Secondary School, Dhading, Nepal
12:45 - 13:30	Lunch	
12.15 – 13.00	Session 4: Discussion on key ICT components for School Sector Development Program Establishing model schools: expected outcome and roadmaps, model school selection criteria, potential programs Planning the implementation of model schools OLE's experience in ICT application in improving science, math and English in Nepal Q&A and Open Discussion	Moderator: Ms. Shanti Jagannathan, ADB Mr. Deepak Sharma Director, DOE Jayshree Oza, Education Consultant, REACH India Rabi Karmacharya Executive Director, OLE

Time	Speaker/Organisation	
15:30-16:00	Coffee Break	
16:00-17.30	Session 5: Effective integration of ICT in education – policy and pedagogical Implications UNESCO’s experience in ICT application to improve teaching and learning in developing countries The use of ICT in promoting inclusive education Q&A / Open Discussion	Moderator: Min Bahadur Bista Maria Melizza D. Tan, Programme Officer, ICT in Education Unit, UNESCO Bangkok Birendra Pokharel, Chairperson, Action on Disability Rights and Development
17:30 - 20:00	Reception / Dinner	
DAY 2: 31 August 2017, Thursday		
09:00 - 09:15	Review of Day 1 and brief introduction of Day 2 program (for SSDP Action Plans)	Moderator: Baikuntha Aryal, Joint Secretary, MOE
09:15 - 10:15	Session 6: Innovative pilot project on ICT use at classrooms E-learning solutions: lessons learned from implementation of e-learning pilot projects, voice from u-learning hub at the Kathmandu University and teachers Equal Education Opportunity by U-Learning Technology Project in Nepal Q&A and Open Discussion	Moderator: MOE Mr. Seungyong Cavin Shin, NSDevil Co. Ltd., South Korea Manish Pokharel, Professor, Kathmandu University
10:15 – 11:00	Session 7: ICT application to improve teaching and learning Good practices from South Korea and implications for developing countries Q&A and Open Discussion	Moderator: Seok Yong Yoon, ADB Dae Joon Hwang, Professor, School of Information & Communication Engineering, Sungkyunwan University, South Korea
11:00 – 11:15	Coffee Break	
11:15 - 12:00	Session 8: Group Discussion and Way Forward • Policy, planning and budgeting • Teacher professional development and teacher resources • Head teacher cadre and professional development • Institutional arrangement for ICT application, web-based Educational Management Information System (EMIS) and monitoring school performance • Curriculum development and assessment using ICT (including online test materials for grades 8 and 10) • Hardware and software procurement/development and distribution with training	Moderators: Tulashi Thapaliya, MOE and Brajesh Panth, ADB
12:00 – 13:00	Lunch	
13:00 – 14:30	Session 8: Continuation of Group Discussion	
14:30 - 15:00	Coffee Break	
15:00 - 17:00	Session 9: Group Presentations on Way Forward: Implementing key ICT components with ICT Task Force Closing and Vote of Thanks	Moderators: Tulashi Thapaliya, MOE/Brajesh Panth, ADB Ms. Shanti Jagannathan and Brajesh Panth, ADB Dilli Rimal/ Tulashi Thapaliya, MOE

Enhancing Education: Nepal's Way Out of Poverty

The Federal Democratic Republic of Nepal has one of the youngest education systems in the world. Although the country saw the establishment of its first formal school in 1853, this was intended for the elite. It was only until 1951 with the birth of Nepalese democracy that classrooms were opened to a more diverse population.

The past decade, however, has been a period of massive political upheavals in Nepal. These led to dizzying changes in the country's political system — moving from monarchy to democracy in 2008, and recently to a federal structure where various groups are vying to amend the Constitution.

Landlocked between India and China, this South Asian nation with nearly 30 million people is also fraught with socioeconomic challenges. In 2015, a 7.8-magnitude earthquake struck its capital Kathmandu while massive floods and landslides in August 2017 killed more than a hundred Nepalis.

Despite these challenges, Nepal's economic engine continued to chug at an annual average of 4% in GDP terms over the past decade. The proportion of people living below the poverty line has also declined to 23.8% in 2015 from 31.0% in 2006.

National aspiration

To fulfill its vision to emerge as an inclusive, equitable, and prosperous middle-income country by 2030, Nepal is heavily investing in the education system. This is aligned with its ambition to graduate from being the least-developed country by 2022 and achieve the United Nations' Sustainable Development Goals (SDG), particularly the targets defined under SDG 4: “Ensuring equitable and inclusive quality education and promoting life-long learning opportunities for all.”

Nepal has also made significant progress over the last couple of decades when it comes to increasing access to education. Since 1990, net primary school enrollment rates have increased from 64% to 95%, with near gender parity. The quality of education, however, remains low, as are secondary school completion rates. Inadequately trained teachers, lack of appropriate learning materials, and insufficient support at home prevent children from developing



reading skills in early grades that will allow them to learn throughout their academic career.

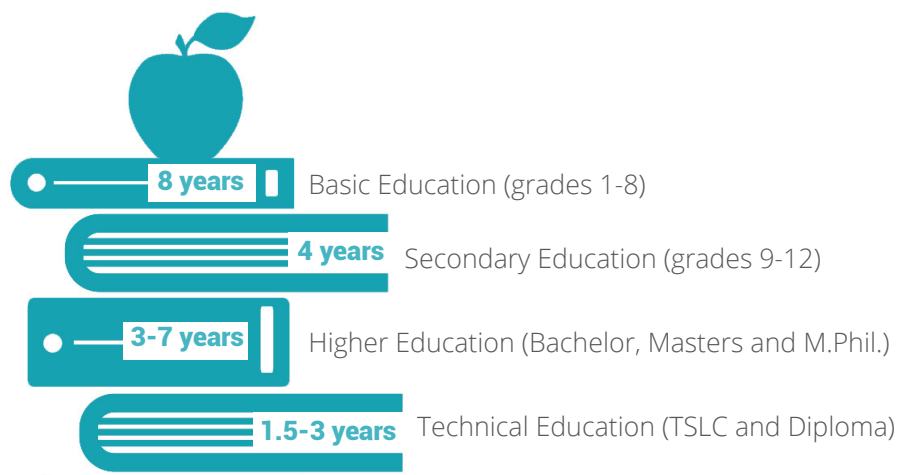
Reforming education

Two important developments have recently given rise to major school sector reforms: the 2015 Constitution that recognizes the citizens' fundamental right to education and provides free school education (grades 1–12); and the Eighth Amendment to the Education Act (2016) that paves the way for restructuring the fragmented school system into a holistic K-12 system and for implementing comprehensive reforms across the sector.

The Government of Nepal (GON), along with development partners that include the Asian Development Bank (ADB), developed the School Sector Development Plan (SSDP) 2016 to 2023, which serves as the GON's education sector strategy. As its new flagship initiative, the SSDP aims to improve access, equity, and quality of the entire school education system.

Nepal's Education System At a Glance

Formal Education Structure



By the Numbers



Net Enrollment Rates (NER):

Primary Education (grades 1-5):

2009 93.7% ↑
2015 96.6%

Basic Education (grades 1-8):

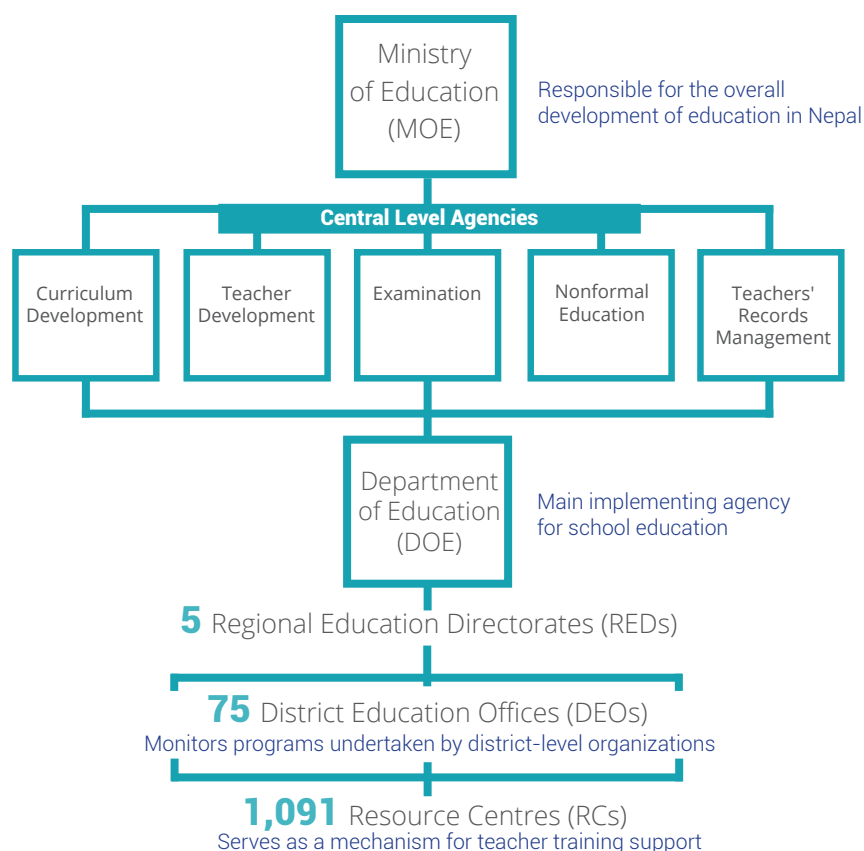
2009 83.2% ↑
2015 89.4%

Secondary Education (in 2015):

Grades 9-10: 58.0%
Grades 11-12: 16.8%

Source: ADB

Governance



Source: www.moe.gov.np

Nepal Policies on Education

- 2007 Interim Constitution** considers education as a fundamental right of the people
- 2011-2015: Education for All** lays down Nepal's national plan for educational development
- 2015 Constitution** recognizes the citizens' fundamental right to education and provides free school education (grades 1-12)
- 2016: Eighth Amendment to the Education Act** paves the way for restructuring the fragmented school system into a holistic K-12 system and for implementing comprehensive reforms across the sector.
- 2016-2023: School Sector Development Plan** maps out the strategy to improve the equity, quality, efficiency, governance and management of the education sector in Nepal. (See page 11)

Long Road to the Information Superhighway

As a developing country, Nepal realizes the significance of using Information and Communication Technologies (ICT) to achieve the broader goals of education. However, government officials, as well as public and private sector stakeholders, acknowledged that Nepal's education system still has a long way to go and the solution demands more than just getting on the information superhighway.

Insofar as education is concerned, Nepal knows where it wants to go. By 2022, it wants to graduate from being the least-developed country. How does it plan to do it? Simple. By providing its citizens with the appropriate knowledge, skills, and attitude that the country needs for its development and for its integration into the global community.

The solution, however, is far from simple. Nepal must leapfrog into 2022 by ensuring equitable access to and quality of education for all. And to do this, it has to use ICT as an innovative and effective means of teaching and learning.

Up until 2010, Nepal did not have a consolidated policy on the use of ICT in education. Students of schools in the urban areas have easier access to ICT whereas those studying in remote areas hardly have any access, creating a digital divide.

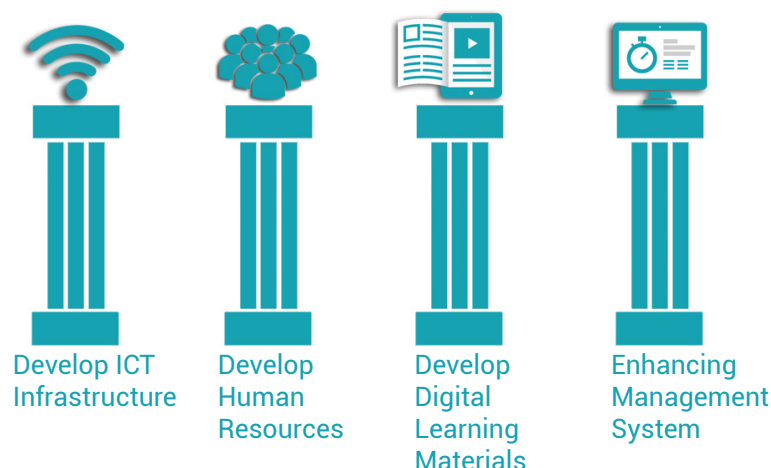
Nepal's IT policies

By 2010, however, Nepal has adopted an IT Policy that has the following provisions:

- Expansion of internet access to all schools;
- Coordination and collaboration with national and international institutions to develop skilled human resources for continuous, relevant and quality education;
- Promotion of Industry-Academia Collaboration (IAC); and
- Formulation and implementation of a special IT programme focusing on students, teachers and schools to develop competent human resources.

Three years later, in 2013, Nepal sought to address the digital divide by putting in place an ICT in Education Master Plan. This would ensure the extensive use of ICT in education and improve the quality of education for all.

Four Pillars of the ICT in Education Master Plan



Since the Master Plan was rolled out by the Ministry of Education (MOE), the Government of Nepal (GON) has undertaken several initiatives to provide ICT-related infrastructure. To date, it has already invested more than 1.5 billion Nepalese rupees (US\$14.4 million) in computer infrastructure (with 4 computers, a printer, and internet connectivity per school) in more than 4,000 schools, said Dr. Tulsi Thapaliya, joint secretary of the MOE.

The MOE has also implemented several programs on the use of ICT in education, including:

- One Laptop per Child (OLPC) pilot project;
- Lab Model (computer-sharing mechanism) Project in some schools;
- Internet connectivity in District Education Offices and schools;
- Computer labs with internet connection with local ISPs;
- Central Level Agencies under MOE, five Regional Directorates (REDs), and 75 District Education Offices have launched their websites; and
- The Department of Education (DOE), with the involvement of some NGOs, developed interactive digital learning materials for grades 2 to 6 students in Nepali, Mathematics, English and Science subjects.

Learning and Teaching Quality

While the GON has in the past few years invested heavily in developing ICT infrastructure in schools, experts in Nepal's education sector agreed that the current focus should be on integrating pedagogy and teaching.

Brajesh Panth, technical advisor for education of the Asian Development Bank (ADB), said lessons from countries with the best-performing school systems in the world such as Singapore, South Korea, and Finland show that "Teachers make an extraordinary difference" in improving students' academic performance.

Maria Melizza Tan, programme officer for ICT in Education at UNESCO-Bangkok, said: "The key elements for success are the teachers, school leaders and other decision makers who have the vision, and the ability, to make the connection between students, computers and learning."

Despite the huge investments being poured on developing ICT infrastructure, internet connectivity, content and systems to improve educational outcomes in schools, she said there is still "no evidence that such initiatives have delivered on that promise."



"Apart from enhancing planning and management, the ultimate goal of ICT in education is to improve teaching and learning." — Dr. Tulsi Thapaliya, Joint Secretary, Ministry of Education (MOE)

MOE's Dr. Thapaliya, however, stressed that teachers "cannot be forced to realize themselves the benefits of ICT in teaching." Thus, the National Educational Development Council of Nepal launched in March 2016 the Teachers Competency Framework and the Teachers Professional Development Framework to set standards for the professional development of teachers.

Among the eight focus areas under the Teachers Competency Framework is the use of ICT in classrooms to measure teachers competency. "When we design the curricula for teachers, these various expertise needed to be taken into account," added Dr. Thapaliya.

With the state policies now in place, the bigger question now for Nepal's education sector is how to surmount the challenges of development such as bridging the digital divide from urban-rural disparity.

Dr. Thapaliya emphasized that the GON must continue to collaborate with partner donors, non-government organizations and civil societies to provide support for capital formation to schools in need.

SSDP : Making Quality a Top Priority

Since setting a vision to become an inclusive, equitable, and prosperous middle-income country by 2030, Nepal has been heavily investing in its education system, particularly in enabling more Nepalese access to primary and basic education.

Under the School Sector Reform Program (SSRP), implemented by the Government of Nepal (GON) from fiscal year 2010–2016, considerable progress has been made in ensuring near-universal primary enrollment and basic education.

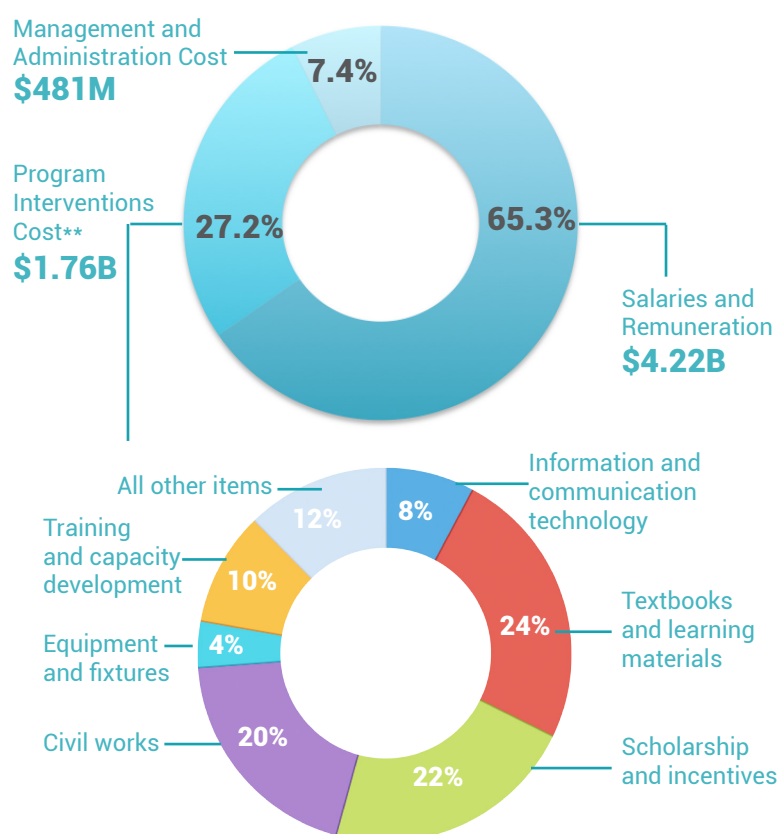
Yet while net enrollment rates (NER) for primary and basic education have increased, a number of challenges remain, with quality issues topping the list.

The problem is more acute in the secondary level where a larger number of students drop out in higher grades. A combination of factors, including lack of qualified subject teachers and head teachers, inadequate learning resources beyond textbooks, ineffective in-school support, and inadequate capacity of school management committees to effectively manage school performance, has hampered overall improvement in quality.

Building on the achievements and lessons learned from SSRP, the GON and its nine development partners (including the Asian Development Bank) launched the School Sector Development Program (SSDP). As the GON's new flagship initiative, the SSDP aims to improve access, equity, and the quality of the entire school education system, but with particular focus on secondary education. The program targets to benefit 6.3 million students, 153,200 teachers, and more than 34,000 schools.

Compared with the earlier SSRP, the SSDP also emphasizes enhancing the quality of human capital in Nepal. Specifically, it is designed to increase the supply of teachers who use modern pedagogy and know how to use activity-based teaching and learning materials in classrooms.

SSDP PROGRAM EXPENDITURE FY 2017-2021



Another salient feature of the SSDP is the upgrading of existing large secondary schools into "model schools." The program targets 1,000 model schools to be supported with a number of interventions, including the provision of a separate head teacher, full complement of subject teachers, infrastructure, water and sanitation facilities, library, science laboratory, ICT facilities, connectivity and e-resources.

As 80% of the \$6.46-billion SSDP funding is programmed to be spent at the school level, a web-based accounting and procurement system (Education Management Information System or EMIS) has also been installed in the 75 district education offices spread throughout the country to monitor budget spending.

The School Sector Development Plan (SSDP) 2016-2023



GOAL:

Improve the equity, quality, efficiency, governance and management of the education sector in Nepal.

EXPECTED PROGRAM OUTPUTS

OUTPUT 1: Improved access to basic and secondary schools



75 districts to receive pro-poor scholarship program, with targeted interventions for girls to take up secondary science education

4,500 schools to each get teachers for math, science, and English in grades 6-8 and 9-12



Program expenditure:
\$6.46 billion

OUTPUT 2: Improved quality of school education



Provide activity-based teaching learning materials in math, science, and English to schools and additional ICT and e-resources to introduce students to modern pedagogy;

Strengthen the continuous professional development of subject teachers to use the materials in the classrooms;

Establish an autonomous National Examination Board to transform student assessment and testing; and

Introduce international good practice in public examinations at the end of grades 8 and 10.



Funding Partners:
Government of Nepal,
ADB, Norway, Finland,
European Union,
World Bank, Australia,
UNICEF, JICA, GPE

OUTPUT 3: Piloted model school program



Upgrade existing large secondary schools into model schools that will act as demonstration sites for improving teaching and learning

OUTPUT 4: Improved school system governance and management

Roll out a web-based accounting and procurement system in all the districts to improve fiduciary management and upgrade the education management information system (EMIS)

Target Beneficiaries

6.3 million students
153,200 teachers
>34,000 schools



5 Ways ICT in the Classroom is Changing Education in Nepal

Bringing information and communication technology (ICT) into the classroom may seem easy as putting laptops or tablets in the hands of students and connecting them to the internet. But there is still hardly any evidence that such investments in infrastructure and connectivity have delivered on the promise of improved educational outcomes in schools, said Maria Melizza Tan, UNESCO Bangkok programme officer for ICT in Education.

Citing a study by the Organisation for Economic Cooperation and Development (OECD) in 2014, Ms. Tan said: "More Internet use in schools does not translate to improved student performance." Instead, she said the key elements for success in the classrooms are the teachers, school leaders, and other decision makers "who have the vision and the ability to make the connection between students, computers and learning."



In Nepal, more than 4,000 schools now have access to the internet but many students remain unaware of its potential to advance their education and aspirations. The Government of Nepal's School Sector Development Plan (SSDP) 2016–2023 considers technology to be essential for the country's future development. However, Dr. Tulsi Thapaliya, joint secretary of the Ministry of Education (MOE), said ICT equipment in schools are still mostly being used for administrative purposes.

Currently, a growing number of experiments and innovations on introducing ICT in the classroom are being implemented in Nepal in a bid to ensure equitable access to and quality of education for all by 2022.

Among the innovations made in introducing ICT in Nepal's classrooms are the following:

The One Laptop Per Child (OLPC) program in Nepal's public schools allow students from different classrooms to share a set of laptops. In addition to significant cost savings, the model makes it easier for schools and teachers to manage the programs. (Photo courtesy of OLE Nepal)

One Laptop Per Child Program

In 2008, OLE Nepal, a tech-friendly social benefit organization, pioneered the integration of technology in classroom teaching-learning process in Nepal when it partnered with the Department of Education to launch a shared-model laptop program as a way to reach more students with limited laptops.

OLE Nepal has gradually expanded the program to more schools over the years and has benefited more than 6,000 students from the remote areas who now have access to child-friendly XO laptops with inbuilt software. This allows students from grades 2 to 8 to learn about their courses using the latest technology.

OLE Nepal has also designed and developed digital learning materials, trained teachers to use them to enhance student learning, and set up appropriate infrastructure in schools to enable learning using technology.

Currently, its programs are running in more than 225 schools in 34 districts across Nepal and have reached over half a million students who are now benefiting from its digital learning methods. OLE provides digital libraries, thousands of e-books and videos through its server to schools in the remote areas.

Massive Open Online Courses (MOOCs)

Nepali students connected to the Internet can access educational opportunities by joining Massive Open Online Courses (MOOCs). This e-learning platform allows students to register for a digital online course offered by various universities around the world.

In 2016, Kathmandu University pioneered and implemented open online courses in Nepal. The Kathmandu University Open Online Courses (KUOOC, <http://mooc.ku.edu.np>) is an initiative of Kathmandu University to put course materials online, freely and openly available to anyone, anywhere.

The university deployed a learning management system (LMS) called Moodle. This year-long initiative, called “MOOC for Higher Education in Nepal,” is supported by IDRC, Canada and FIT-ED Philippines and has contributed a lot in enriching learning among Nepalese.

e-Learning Platforms

Innovations in meeting the educational needs of Nepal students started in 2012 when MiDas eCLASS was launched. The website (www.midas.com.np) and mobile application offer curriculum-based study materials, communication tools, and other e-learning tools to students from nursery to grade 10, as well as that of their parents.

After MiDas, a slew of other e-learning platforms have spawned in Nepal. One is the KULLABS Smart School website developed by Kul Techno Lab and Research Center (KULLABS). Launched in February 2015, the site digitized components of the Nepali school curriculum, as designed by the government. This is meant to replace bulky textbooks that students carry to school with light and resourceful digital devices like tablets and laptops.

The website makes it possible for students of classes eight to 10 to continue their learning online. Unlike MiDas eCLASS which charges for online courses, KULLABS is free for everyone and is also not limited to providing study materials alone. Teachers can also use the platform to teach their students more effectively. It is also possible to form an educational community by connecting with teachers or other students or joining a study group.

U-Learning

Ubiquitous-based Learning (“U-Learning” for short) is defined as learning anywhere, anytime and is therefore closely associated with mobile technologies. It involves powerful, handheld and networked devices as primary tools for educators to explore and implement ubiquitous learning environments to include applications and services delivered to mobile devices.



Massive Open Online Courses (MOOCs). This e-learning platform allows students to register for a digital online course offered by various universities around the world.

Case Study

Starting in 2014, NSDevil, a private sector organization based in South Korea whose mission is to realize "equal educational opportunity" using U-Learning technology around the world, partnered with the National Research Foundation of Korea, Changwon National University, and Nepal's Kathmandu University and Tribhuvan University to bring the UBT (Ubiquitous-based Test) in Nepal. Using the UBT computerized test method, tests or examinations can be conducted anywhere and not limited to places or devices like chairs, papers, stationeries, and dedicated rooms. It will not only reduce the cost of the tests, especially in examining the answer sheets and test management, but also reduces the carbon footprint.

Nine model schools were identified in Nepal as pilot sites for the two-year initiative which are expected to benefit more than 800 students in grades 3 and 5, and 19 teachers. Professor Manish Pokharel of Kathmandu University said the project helped enhance the learning and teaching environments in the model schools and bridged the digital divide between urban city schools and schools in the remote areas. "There were positive feedback from various stakeholders. The use of U-Learning attracts student attention because of multimedia educational contents, and the UBT offers an appropriate technology even for remote areas," he added.



Cavin Shin (2nd from left in photo), chairman of the technical and business advisory board of NSDevil.co.Ltd., demonstrates the Ubiquitous Learning Platform capable of overcoming limitations in the teaching process.

Social Media Engagements

Laxman Sharma, principal of Satyawati Secondary School in Dhading, Nepal, also said there are also initiatives to use social media networking sites such as Facebook to engage students and teachers alike. He said teachers in rural villages who learn how to email in internet cafes and send SMS messages from their mobile phones actively participate in online discussions. One of these is the Facebook group, Teachers' Discussion on Educational Issues, which has more than 1,500 active members who freely exchange ideas outside their classrooms. Others are engaged in "self-learning platforms" using their mobile phones.

Teachers' Discussion on Educational Issues

Secret group

Discussion

Members

Events

Videos

Photos

Files



Joined ▼

Notifications

...

Singapore's Education System Shows the Way

Singapore's education institutions are considered among the most advanced in the world when it comes to information and communication technology (ICT).

But before the city state became world renowned for bringing ICT to education, it has gone through decades of experimentation and growing pains.

After the former British colony gained independence in August 1965, it became clear that science and technology were the quickest and most effective way for it to emerge as an industrialized economy.

By 1979, efficiency became Singapore's focus. It started streaming students into academic tracks according to their aptitudes. It also limited class size to 40-45 students per class for a more targeted and tailored approach to teaching and learning, said Professor David Hung, Associate Dean and Director of Research at the Office of Education Research at the National Institute of Education in Singapore.

Starting in 1997, teachers and schools were given more autonomy to create a responsive education system, offering students multiple pathways for learning.

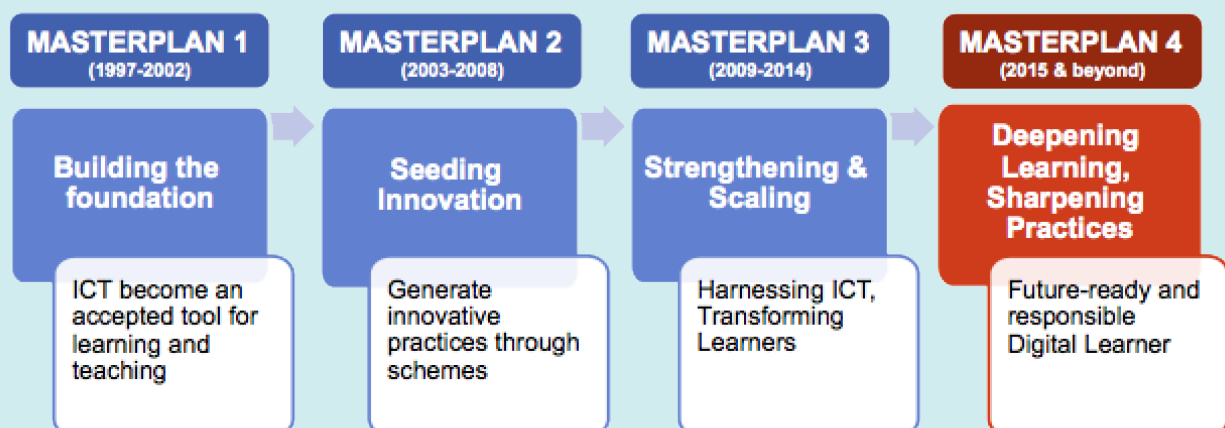
Singapore also started faithfully implementing a master plan in 1997 for integrating technology into education.

Under Masterplan 1 (1997-2002), students were allowed to use the computer for 30% of their time in fully networked schools and at a computer to pupil ratio of 1:2. Masterplan 2 moved beyond the provision of ICT resources to encourage teachers to use ICT in teaching and learning. Masterplan 3 (2009-2014) transformed the learning environments of the students through ICT and equipped students with the critical competencies to succeed in a knowledge economy.

Under the current Masterplan 4 (2015 and beyond), Singapore is trying to be "future-ready": turning school leaders into culture builders, teachers into learning designers, and students into empowered learners. Singapore educators said the focus now is on deeper learning and student engagement rather than on the pace of ICT adoption among schools.

"It doesn't matter whether the schools are ICT-ready. A mindset of urgency is more important," said Prof. Hung.

Singapore's ICT Masterplan Journey



Integrating ICT in Nepal's Education System

The shift to federalism has planted a new seed of hope that a new form of government will help Nepal graduate from its status as a least developed country. The Government of Nepal's (GoN) plans to pursue e-governance, the installation of optical fibre throughout the country, and expansion of internet connectivity are expected to benefit Nepal's education system in the long haul.

Over the years, Nepal's education officials stressed the need for information and communication technology (ICT) integration as one of the strategies to provide access and improve the quality of education. Private sector initiatives have started to equip students with computers and online resources, as well as encourage teachers to increasingly use ICT to deepen students' learning and keep them actively engaged during lessons.

But scratch beneath the surface and one will realize that the realities on the ground still pose many challenges for Nepal's education system. For instance, the rate of adoption of ICT is still slow and uneven. Students in a few private schools use personal learning devices while those in public schools still rely on shared facilities such as computer labs for ICT-based lessons.

While the intention may be strong, Nepal's education officials and experts agree that implementing ICT-based education interventions is not as simple as ABC.

During a two-day workshop on the role of ICT in Nepal's School Sector Development Plan organized by Asian Development Bank on August 30-31, 2017, participants identified the challenges of integrating ICT in the education system. These are summarized below:

Infrastructure

Two key factors that affect the delivery of ICT for education services are power supply and connectivity. In Nepal, both of these utility services are not readily available outside the main urban areas.

As Nepal has a mountainous terrain, running power lines can be a challenge. Grid electricity is not readily available in all parts of the country and if at all, it does not come cheap. More schools need to be connected to the grid or alternatives such as solar should be considered to power the ICT for education interventions.

As for connectivity, the usual internet speed in the country ranges from 128 to 512 kbps, which is not



broadband speed and is often unreliable. However, the GoN is issuing more licences for wireless broadband services that have potential to expand internet penetration in the medium term.

Human Resources

While there is sufficient supply of qualified ICT personnel to support ICT intervention in the country, the same cannot be said for those in the education sector. Most teacher training programs do not have much exposure to ICT for teaching and learning application. Expecting teachers to use ICT in their classrooms and curriculum requires strategically planned and systemic interventions starting at the policy level to support the implementation of the ICT master plan.

Teaching and Learning Resources

The educators noted that teachers play a vital role in the adoption of ICT in the classrooms. Thus, e-learning resources must be provided to teachers, and not the other way around. While the ideal setup is for teachers to lead ICT innovations by developing e-learning resources, this may not apply in the case of Nepal where teachers have insufficient exposure to ICT-based interactive instructional design, have limited or no access to the internet, and have low ICT skills to create interactive learning materials.

How South Korea is Investing in the Future

Technological powerhouse South Korea has always been a mainstay in global rankings when it comes to its high-performing education system. And for a reason.

The Republic of Korea has been making the shift to a technology-focused education system since the 1970s when it introduced audiovisual education in schools. This was followed by carefully calibrated steps, carried out systematically over a long period of time with full support from government, parents, teachers, and other stakeholders, along with sufficient resources.

These included the introduction of formal computer education in the 1980s, and a series of master plans starting in 1996 through to the present, that have fully embedded ICT in the system. By 2000, every school in the country had internet connectivity.

Professor Dae Joon Hwang of the College of Information and Communication Engineering at Sungkyunkwan University in Seoul said cyberlearning

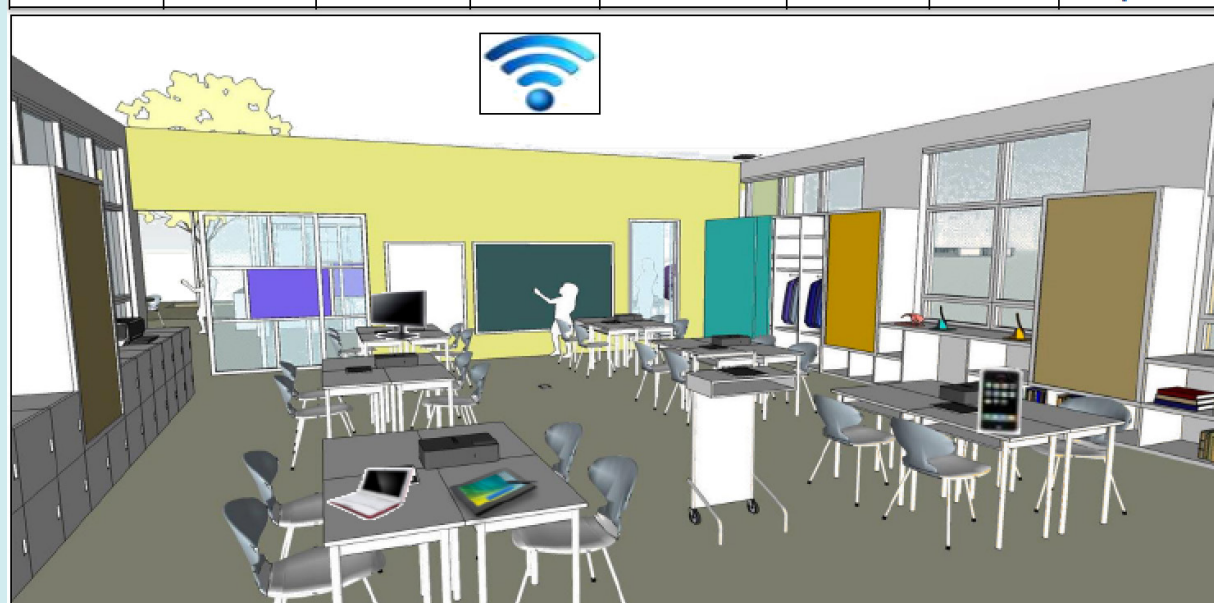
was adopted in 2004 with the goal of reducing out-of-school expenses and narrowing the education gap between regions in the country. A free internet-based, e-learning service based on the national curriculum enables students to supplement school classes.

In 2007, the country opened a new chapter in Korean education when it piloted digital textbooks to encourage greater interaction between students and teachers.

Currently, Professor Hwang said the Korean education system aims to put students at the center of learning. There is also a recognition that ICT is merely an enabler for pedagogy innovation, and not the cure-all solution.

"The future of education is having an open, personalized, collaborative, accessible, fun, eco-friendly, connected and secure environment where teachers empower students to learn," he added.

Tablet PC	RFID	LED 46" monitors	SCSD board 22"/32"	Smog glasses (LED 46" 3X3)	Electronic podium	Kiosk	Projectors
Learning and collaboration device	Student's presence and identification	Electronic bulletin board	Mobile studio	Collaboration space	English robot tutoring	Webcam	Real image:3D VR Beam : Video conferencing system



Typical classroom environment in South Korea

Policy Brief



Resource materials displayed on the shelf of a Nepal classroom.

In addition, teachers in Nepal have a full teaching load and do not have the time to develop interactive ICT learning materials. Teacher absenteeism is also high that some institutions are being called "ghost schools" for having no teachers in attendance. It is a constant challenge for teachers to find time to undergo training in ICT. More than teacher professional development, teacher management is more important.

Principals and School Management

Principals need to understand how to maximize the use of ICT in education. Often due to lack of understanding and ignorance, principals keep the computers locked inside cabinets or limit access to learning centers to protect the equipment from breaking. School leadership must learn to truly embrace the importance of ICT in education for ICT integration to work.

Strong Political Commitment

As it takes time to demonstrate the benefits of ICT integration, a strong political commitment and sustained leadership are critical for its successful implementation. Most interventions to date have been project-based and are thus lacking systemic design.

Nepal is not alone in jumping on the technology bandwagon; other countries are also devoting time and resources to incorporate the use of ICT in schools.

Global studies have shown that technology can lead to positive educational outcomes. However, it is anchored on educational objectives and sustained by teachers' training and professional development.

Researchers also found that technology has a positive effect, not only on students' academic performance, but their attitudes towards learning as well.

For Nepal to graduate from the least developed nation status, educational experts agreed that schools have to ride the technological wave and reap the benefits. However, "Technology alone cannot solve problems in the absence of other enabling conditions in schools," said Rabi Karmacharya, executive director of OLE Nepal.

Since 2007, OLE has been pursuing its mission as a nongovernment organization to use ICT to improve the quality of education and ensure uniform access to quality learning materials in Nepal. Over the course of a decade, Mr. Karmacharya said OLE has learned some lessons in implementing its ICT-related programs and these are:

Process:

- Keep things simple.
- Set realistic targets.
- Allow for gradual incremental changes.
- Caution against overwhelming schools and teachers.
- Constant support is necessary.
- Simply providing devices and materials is not sufficient.
- Require regular interactions and engagements.

Enabling Conditions:

Success of intervention is correlated with:

- leadership and management
- commitment
- teacher qualifications
- community support

Infrastructure:

- Efforts must be made to provide power solutions at schools to allow for regular use of technology.
- Pay attention to minimize the chances of technical glitches.
- The internet should be used for communications and updates, and cannot be relied upon for regular access to learning materials.
- Maintenance remains a big challenge.

Content:

- Teachers prefer when they are provided with set content that help them to deliver their lessons. Most teachers do not have the time and motivation to search and find relevant content.
- Learner-centered interactive content is more effective and preferred over displayed content. Students learn better when they are actively engaged.
- Content has to be tailored to different levels and types of learners.
- It's possible to bridge the disparity in access by developing and distributing high-quality digital content.

Implementation:

- It's important to have enough devices for teachers to conduct effective class using digital materials.
- It's also important to start in early years so that students have a strong foundation.
- Schools should be required to prepare a detailed plan on how they will use the digital resources.

Impact:

- In Nepal, impact evaluation of OLPC program did not show improvement in math and science.
- Qualitative studies show increased confidence and improved attitude and interest towards learning.

Educators in the workshop believe that technology can play a big role in addressing the twin problems of quality and disparity in Nepal's education system. While there have been several ICT-for-education interventions, most were project based and consequently stopped when the project ended or were fragmented. However, there is greater hope and enough commitment now to take a more integrated approach in making Nepal's leapfrogging aspirations come true.



Educators and experts during workshop discussions.