What is reasonable to expect from information and communication technologies in education?

This article outlines the considerations for implementation of massive computing access projects aimed at systemic low impact long term improvements through what we call “Technology Resource Centers”, where teachers and students may have access to ICT and additional technologies at their own pace and in their own terms.

UK and Venezuelan ICT experts awarded UNESCO King Hamad bin Isa Al Khalifa Prize

The Director-General of UNESCO Irina Bokova has designated the National Institute of Adult Continuing Education (UK) and Infocentro Foundation (Venezuela) as the laureates of the 2010 UNESCO King Hamad bin Isa Al Khalifa Prize for the Use of Information and Communication Technologies in Education.

UNESCO, INTEL connect ICT in Education policymakers

UNESCO Asia-Pacific Regional Bureau for Education and Intel convened the first-ever Asia-Pacific Ministerial Forum on ICT in Education or AMFIE 2010. Ministers of Education, Vice-Ministers and other high-ranking officials from 16 countries in the Asia-Pacific region participated in the high-level meeting for two days.

ICT-competency framework for teachers workshop

This workshop took place early December at UNESCO Headquarters in Paris, France. International experts in the field of ICT in education gathered to develop syllabus and assessment benchmarks for UNESCO’s ICT-Competency Framework for Teachers project.

Policy forum : « Taking the open educational resources (OER) beyond the OER community : policy and capacity »

UNESCO, in collaboration with the Commonwealth of Learning (COL) launched an initiative on open educational resources in order to expand understanding of OER by educational decision makers and quality assurance experts so as to promote their wider use.

UNESCO supports 5th APIN meeting and ICT literacy workshop

UNESCO and its Information for All Programme (IFAP) supported the 5th Asia Pacific Information Network (APIN) Meeting and ICT Literacy Workshop, organized in collaboration with the Asian Institute of Journalism and Communication (AIJC) in Manila, Philippines, from 23 to 26 November 2010. The assembly brought together information policy makers and executives representing APIN member-countries.

Advances in mobile services and broadband are transforming Asia-Pacific connectivity

Governments in the Asia-Pacific region have agreed to put in place a framework for regional connectivity that harnesses the rapid developments in mobile services and enhances broadband access for all in the region as a means for development.

Programmes & Projects

Fostering the use of ICT in pedagogical practices in science education

The FICTUP project (Fostering the Use of ICT in Pedagogical Practices), funded with the
support of the Lifelong Learning Programme of the European Union, aims to (1) create innovative training materials that suggest concrete pedagogical activities using ICT, accompanied by a close tutoring process, and (2) test the impact of the material and the tutoring on novice teachers’ use of ICT in the classroom.

Resources

Report on the status of ICT integration in education in Southeast Asia
This report presents a holistic picture of the status of ICT integration in education in the 11 SEAMEO Member Countries: namely Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor Leste and Vietnam. The report identifies strengths and examines how each country integrates ICT in their educational system.

Sustainable development and education in the digital age
What is the role of education, open education and online communities in sustainable development?

ICTs for development: Improving policy coherence
This publication examines access to ICTs, as a precondition to their use; broadband Internet access and governments' role in making it available; developments in mobile payments; ICT security issues; ICTs for improving environmental performance; and the relative priority of ICTs in education.

Emerging technologies in distance education
A one-stop knowledge resource, Emerging Technologies in Distance Education showcases the international work of research scholars and innovative distance education practitioners, who use emerging interactive technologies for teaching and learning at a distance.

Digital edition: E-learning 2010
The report aims to highlight the progress made in the e-learning arena, as well as the administrative, funding, and policy barriers that some experts say are slowing the growth of this form of education.

Highlight

What is reasonable to expect from information and communication technologies in education?

Two months ago a heated discussion took place on the Educational Technology Debate website after an article by C. Derndorfer described what seemed to be a hopeless outlook for the Peruvian OLPC program. What Derndorfer described were not problems with a particular ICT strategy but the daily problems you face when trying to improve an educational system in which many things have been failing at the same time for decades.

You simply don’t get three hundred thousand well educated, passionate, committed teachers overnight, nor you overhaul ninety thousand schools in two or three years. This
article describes one possible way to face the challenge of improving the Peruvian public education system by using a mixed strategy:

Let children and teachers have ICT available and explore it in a non-threatening way, try not to get involved in the quasi religious discussions between those who “believe” in the Wintel approach and those who interpret Negroponte as an enemy of teachers, and face what happens in the real world where there is no easy way to 100% Internet access, there is no money to give every child one computer, there is no way to “train” teachers who haven’t been properly prepared to teach, and teachers’ salaries will not improve overnight.

This article outlines the considerations for implementation of massive computing access projects aimed at systemic low impact long term improvements through what we call “Technology Resource Centers”, where teachers and students may have access to ICT and additional technologies at their own pace and in their own terms.

Several authors: Holt (1983), Kozol (1993) and Conroy (1987), have suggested that school education, as we know it, has lost its value as an instrument in the development of the individual. With different arguments and perspectives, they point out how the interest in processes and methods has shadowed the required genuine concern for the personal growth of students, transforming the educational system in a purposeless organism where everybody pretends: Teachers pretend to teach by delivering information according to established methods, students pretend they are learning by passing tests requiring repetition of the information received and society as a whole pretends this is good.

Some authors, Perelman (1992), Holt (1964) even suggest that there is no possibility for improvement in school education and the only hope for improving it is to replace traditional education with a completely new mechanism.

Gardner (2000) is more hopeful, he advocates for an Education aimed to the teaching of truth, beauty and morality and questions theorists who focus in the instrument rather than the purpose of Education. What can we do in an educational system where even the traditional is poorly performed and we are not able to attain even the modest aspirations of traditional educational settings? How can we prepare our new generations to cope with the challenges of the XXI century in a system where many want us to believe good teachers are the exception, infrastructure is poor and society as a whole seems to have been ignoring Education (in spite of discourse and writings about it) for decades? Guggenheim’s movie “Waiting for Superman” seems to be documentary aimed to demonstrate how poor is the American Public Education but has been severely criticized (also read R. Weingarten and G. Stager) for its lack of objectivity and biased point of view.

A few days ago I attended the opening of a demo center where a supposedly ideal ICT4E setting was showcased. It was really impressive in terms of the technology available: Fully wireless connected computers of all sizes, interactive networked whiteboards, etc. etc. I really got some really good ideas and information of what is available, my only objections were:

1. It was all conceived based on children and teachers as consumers of content; and
2. In order for the wonderful things described to happen great teachers in charge were needed.

I am not against consuming good contents, my concern is children usually learn more when they are producing contents than consuming it, unless it is really interesting for them, which takes me to the ideas R. Bao and myself wrote about in 2004: the lack of meaning crisis in the educational system. A crisis happening in spite of a well thought sensible curriculum designed and validated to be a tool for development of competences preparing children to succeed in the XXI century. Some specific characteristics define that meaning crisis:

1. Students do not perceive the educational system, as useful, or having a purpose, and conclude education is meaningless. In many cases, failing students regard formal education as useless.
2. School curriculum requires what Spiro calls oversimplification (Spiro, 1990, 1991, 1992) or reductive bias in order to be taught in the required periods. The result is that students usually forget most as soon as they pass tests. This can be easily demonstrated by asking simple questions about any school subject to adults who have been disconnected of the school environment for a while.
3. Teaching methods emphasize memorizing and repeating information. Even when teachers try to change these methods they are not concerned about giving students reasons why it should be important for them (the students) in their real lives to acquire any piece of knowledge. Teaching should emphasize a key factor in knowledge construction: cognitive flexibility (see Boher-Mahall paper)
4. The constructivist approach, which aimed at transferring control from teachers to students and set the foundations for learning in the students’ willingness to learn, can also fail if the teacher lacks the required knowledge to become an informed guide in the quest for knowledge construction. An ignorant constructivist teacher can be as negative as a well informed behaviorist one as described by Cromer (1997).

Let’s try to describe the educational reality of Peru: There are 8.6 Million students: 75% public, 25% private; 80% urban, 20% rural, 200,000 children attend almost 10,000 one teacher schools. Of a total of 490,000 teachers 65% are public school and 35% private; 83% urban and 17% rural. There are 75,000 Schools, 75% Public 25% Private; 52% Urban, 48% Rural. Pre-K & K coverage is 66.3%. Primary (1-6) coverage is 94.4 and 76.5% for secondary school. According to 2009 reports almost 80% children 12-14 have finished primary school (6th grade) and over 60% of 17-19 youngsters have finished school (11th grade). In all cases the trend is growing.

In spite of the above the Latin-American average coverage ratios, quality remains an issue: Peru rated among the worst in Math reasoning and Reading comprehension in 2001 PISA (the last reported year available). Irresponsibly, Peru opted out of PISA and returned in 2009 (results to be reported in 2010). A census evaluation applied to 180,000 teachers in January 2007 showed 62% were below primary school level reading comprehension with 27% at 0 level; also, 92% were below primary school level in Math reasoning. Since then US$ 300 Million have been spent in teacher in-service education.
Test results on entry evaluations to teaching positions show dramatic increases since then. DIGETE alone has trained more than 80,000 teachers but it should be easy to understand these teachers need much more than training, they need to be completely re-educated. The Peruvian response is being developed in several simultaneous fronts:

1. We have developed a curriculum structure which aims to develop skills and competencies and is not based in specific items of certain disciplines to be covered (Ministry of Education, 2004);
2. A massive initiative to improve quality of teachers is being put in place;
3. Information and Communications Technology is being distributed to students and teachers to saturate the system with learning and teaching tools that are simple to use and available in a nonthreatening environment and long term.

The 1 to 1 One laptop per Child approach has been described and is being discussed globally, I will try to describe what we call the Technology Resource Centers as a first step towards 1 to 1 that allow us to get the benefits of ownership without waiting for the computers, connectivity and great teachers to arrive. We will show how this strategy can actually be a leap to better teaching and learning.

The whole idea was born one day Walter Bender entered my office and transformed my personal computer in a Sugar based machine just inserting a memory stick and downloading his Sugar interface into it. He actually transformed my workstation into his computer.

I wondered what would happen if we could find a way of making a child’s own personal computer to reside somewhere in such a way anytime they got hold of any computer it may turn into his or her computer. By then we had already developed the “portable Internet”: a 2GB memory stick with enough content from educational portals to give primary teachers and students the actual feeling of navigating the web without connectivity and more educational contents than would have been expected for their whole lives under their “normal” conditions.

We had also found that children loved to share interesting things like building artifacts with Lego bricks, making videos or solving puzzles (with or without computers). Of course these are not new ideas but would allow us to share resources in such a way that four children working with one Lego robotics kit and one laptop will have the feeling of having all the computers they need. The same thing happens when one teacher shares with the class some interesting contents using one laptop and a multimedia projector for as many as 36 children: Everyone feels they have all the computers they need.

The whole idea was to allow children and teachers to get involved in the construction of personally meaningful artifacts, whether they are graphic presentations, video pieces or computer programs as advocated by Seymour Papert.

Our approach to the project differs with most educational computing initiatives which have not necessarily helped answer the basic question: What purpose does Education serve for students? If we take into account the way Viktor Frankl (1959) quoted Nietzsche in his book
Man’s Search for Meaning, “He who has a why to live for, can bear with almost any how”, we may conclude that the educational system fails because it is more involved in supplying how’s and lacks the ability to provide why’s.

This also reinforces the findings by De Volder and Lens (1982), because seeing education as instrumental in reaching personally significant goals in the future is providing students with an answer to the basic question of why should I learn what I am expected to.

Systematic observation of schools’ outcome shows that, even for students with high GPA, most of the information acquired during school years, is lost and has to be relearned when it becomes necessary. During a series of meetings with parents associations, school boards, teachers training seminars and educational computing conferences from 1988 to 2001, Becerra and Bao (2004) attendees were asked some simple questions about concepts, facts and figures that are part of the school curriculum. The result was invariably they did not remember anything. On the other hand, skills and information not lost by students share certain characteristics:

- They were acquired in a natural learning process, what Gardner (2000) describes as apprenticeship or Stone-Wiske (2006) calls Teaching for Understanding, and we will call the natural way, i.e. the amount of time involved in learning is short, when compared with the time spent using the abilities acquired during the learning process.
- The role of the teacher during the learning process was to contextualize knowledge, i.e. provide examples of ways to use the new knowledge in solving meaningful problems or to accomplishing personally meaningful goals.
- Students had positive attachments to teachers and viewed them as resources in reaching their personal goals (Bandura 2007).

In most development economies’ school environments it is not unusual to find 45 and even 50 or 60 student classrooms which severely limit the options for school teachers to develop participatory approaches where students can use information to do things, instead of just hearing about them. Lowering the class size has not significantly impacted quality of Education in the developed economies, in spite of huge investments made towards attaining that goal.

The situation is especially critical in multi-grade one-classroom/one-teacher schools in rural zones. Peru has almost ten thousand of such schools where an average of 22 children from first to sixth grade share a classroom and one teacher. As a consequence, the perception of school education as non-instrumental in reaching personal goals for the future is reinforced.

The consequences of this situation are critical for development: Students drop out rates climb, discipline problems increase, teachers commitment decreases, community frustration reaches levels that threat social peace, just to name a few.

In a situation like this, when Information Technology is introduced in the classroom, the results are what Forrester (1971) called the counter intuitive behavior of complex social systems, with the result that the attempt to reform education using technology makes worst
what it aimed to improve. 20 years of multiple educational computing projects in Peru does not seem to have improved the system as a whole, in spite of promising, but isolated, results.

Examples of the above mentioned situation are classes where students learn the parts and components of a personal computer, or spend one school year learning numberless functions of a word processor or spreadsheet or programming language, without ever having the opportunity to produce something useful with the knowledge they are supposedly acquiring.

In many development economies, this situation is aggravated by the fact that computer courses in schools are taught by technicians with little or no background in Education. It is a hopeful symptom, however, that teachers are increasingly taking control of Computer Lab’s as was the case with project “Huascarán” whose driving factors were pedagogical rather than technological.

There are almost 36,000 public primary schools. Prior to 2007, as many as 3,000 schools have been receiving computers, as part of different government programs. In 1987 there was a National Committee for Educational Computing who developed a program to introduce computers in education. The emphasis was on CAI (Computer Assisted Instruction) packages and teaching programming languages.

During 1988 and 1989 a group of 200 public school teachers were given sabbatical time, to attend a program developed between the Ministry of Education and the National University of Engineering. As in most programs, the results were never evaluated or published. From the original 200, just 50 teachers concluded the program. It is very probable most of them are now working as computer programmers, since that was the emphasis of the whole program.

In 1989 the Ministry of Education announced a national contest for teachers to design CAI packages. The results were never reported, the packages were of dubious quality, mainly because the schools didn’t have the tools to make the development of such packages possible and the whole program for computers in education faded until the committee was dissolved.

During the nineties Peruvian teachers involved in ICT4E felt in love with Seymour Papert’s ideas. Constructionist projects mushroomed and the seeds of many projects still alive were sowed. G. Ruiz, who had founded INEDIC, an education research group, organized a live video conference with Seymour Papert; and the local representative of Lego Education translated the robotics software into Spanish and Quechua. Many of the kits acquired by the Ministry of Education back then, are still in use, which was an incentive to think of Educational Robotics as an important component of a Technology Resource Center.

Since those initial efforts, the number of computers in public schools by 1997 was estimated by the Ministry of Education, to be any number between 10,000 and 15,000. It was not known how many were operative and/or used. The configuration ranged from 8086 diskless machines with monochrome monitors, to some 486 processors with multimedia, the later
ones acquired during 1995. There had also been a public effort to formalize the software licenses for all the computers since most of them were acquired with no software.

There was no evaluation of the official programs to provide schools with computers, but it was generally accepted the results had been poor or null. The main reason for this was the lack of support to the program, from the educational point of view. Most teachers had to improvise what to do with the computers; many of them took courses at local training centers, just to be able to use the computers for word processing and to be able to teach some programming.

In the 6 years of Huascaran, there was a strong will to improve the situation but it was not initially clear how this could be accomplished, since the results obtained had led many people to the conclusion that computers were of little or no use in education and it seemed there was evidence to support this idea.

There were also private initiatives aiming to improve the situation; in 1995, the Catholic University in Lima was the first Higher Education institution to introduce Technology in Education as part of the curriculum in the Faculty of Education and established a Research Laboratory for Computers in Education. It was expected this laboratory would be instrumental in the development of policies to improve the support for the use of technology in education.

The University Of San Martin De Porres put in place an Educational Computing strategy, which allowed a cadre of university professors to obtain their Masters’ degrees in Educational Computing and Technology at the University of Hartford, Connecticut. This seminal group served as an internal motor to transform ICT usage at the university and led to the creation (December 2003) of a Master’s Degree Program in Educational Computing in Peru. Eventually one of the members of that initial group of professors was appointed as the highest Education government officer in Peru (Mr. Jose-Antonio Chang, current Minister of Education since July 2006).

During the late 90’s, the Ministry of Education, supported by the World Bank, established several pilot programs to evaluate different approaches to integrate Information and Communications Technology in Education under an umbrella project named National Program to Improve the Quality of Education. The main approaches chosen were:

- Lego-Dacta material for primary schools
- Internet access for secondary schools

Each approach had some variations, which developed into sub-projects. This time the driving force behind the project was mainly educational not technological and the results seemed to be more rewarding. Evaluative studies showed the projects were yielding better results than their predecessors. But there still seems to be ample room for improvement, especially in the training of teachers which seems to be the critical success factor to those approaches.
It is becoming clear that a constructionist approach as the one suggested by Papert (1980, 1993) and others (Harel, 1991; Kafai & Resnick, 1994), by helping rethink the role of Technology in Education, may in fact do to Education what Reengineering has done to Business Administration (Hammer & Champy, 1993). Technology can be a powerful resource for the improvement of education, specially the development of critical thinking skills (Jonassen, 2000), and if it hasn’t yet it is because its use has not been properly directed and supported.

The emerging and increasing role of INTERNET in building school and classes networks (Lucena, 1997, 2002) with its almost infinite capacity for sharing and accessing information, paired with the availability of ever faster and more powerful computers and communications facilities is rendering the role of teachers, as sources of information, obsolete.

This of course does not mean, as some naively think, there will be no place for teachers in the schools of the future; teachers are the key success factor for learning in the classroom if they are prepared to assume a new role in the knowledge building process, because it is becoming equally obvious that students need informed guides to survive in the avalanche of information of dubious quality now available. Postman (1996) quotes several examples of utopian views of teacher-less education making it clear the proposed remedy could be even worse than the problem.

A recent report by McKinsey&Company (2007) shows how the best educational systems in the world are those with the best teachers and the best teacher selection processes. At the same time information is available, the need for critical judgment becomes a crucial necessity, in face of the vast amount of information now at the students’ fingertips. The paradox of being thirsty and unable to drink from the firemen’s pipe exemplifies the new kind of needs that education must satisfy.

As Stone Wiske (2006) explain there is a growing need to define the new role of teachers, as guides and counselors in the students’ quest for understanding; and also the role of schools as places where students will share and construct positive images of their personal futures and find ways to acquire the skills and competencies necessary to make them possible.

Our initial experience in Arahuay as reported by Carla Gomez (Arahuay Chronicles) and Businessweek journalist Gerry Smith (slide show) showed how lives of children could change if we provided them an environment where they could work with tools allowing them to reach personally meaningful objectives whether they were recording their favorite singer from the scarce radio receivers available in town, making digital pictures of their families, reporting the local festivities in video or finding out the meaning of words in the “Real Academia Española” dictionary available in Internet. Even the apparently trivial task of copying what teachers wrote for them in the blackboard acquired a new meaning because all involved felt their school was getting into the future. This kind of feeling and improved self esteem is the first step of any growth project.

The One Laptop Per Child (OLPC) program in Peru responds to the growing demand for quality and equity in education. It is aimed to provide one laptop to each child living in
areas of extreme poverty countrywide. These are mostly rural areas with high rates of illiteracy, social exclusion and human development in general. An April, 2010 study published by OECD (Are the New Millennium Learners Making the Grade?) has found a positive correlation between frequent home use of computers and no positive correlation between frequent school use of computers. This finding was a really welcome boost to our approach of letting children and teachers use the computers in “their own ways” and gave more confidence to the team who had worked on the framework for the Technology Resource Centers.

The pedagogical approach is Constructionist as described by Papert (1980, 1993). Students have access to a set of technology components, much in the way kindergarten teachers set their classrooms in special interest areas (“rincones de interés” is the Spanish name). The Technology resource Center is comprised of:

- A group of XO laptops enough to allow individual work by children at least two hours a week during class time and free access during off school hours. The XO is a versatile tool that enables them to use individual learning styles, offering a variety of learning applications, ranging from visual tools (still-image and motion camera with sound recording) to advanced programming environments of easy usage, to sophisticated music production software that is accessible to children as young as 5 years old. The laptops’ collaborative tools and immediate networking capabilities foster cooperation among students and between them and their teachers, thus contributing to raise students’ self-esteem and social skills. As mentioned earlier each of the 1.7 million students in connected schools will have an individual environment defined in the Internet Cloud (we use Google Apps and Microsoft Life@edu). Non connected students will have their environments defined at the “local cloud” residing in a school server.
- One Educational Robotics module enough for a group of 16-20, allowing children to work in teams of 4-5 kids sharing one computer. The idea is children will enjoy building models while learning teamwork and curriculum matters will be built into the construction process. Sensors will allow to explore science in a recreational way.
- One server to function as the “local cloud” and access point to Internet where connectivity is available. The offline portal is loaded at the server where there is no connectivity.
- One conventional laptop and a multimedia projector to allow teachers to project contents when required.

The strategy is completed with Technology Resource Centers being provided to every public higher education institution in order for them to provide pedagogical and technical support. The Technology Resource Centers will also leverage local government initiatives, like the one in place at Los Olivos where children produce TV programs that are broadcasted through Internet. By mid 2011, more than 800,000 XO laptops equipped with webcams will have been deployed so the 1.7 million children in connected schools, the Los Olivos pioneering experience of learning through video producing will be expanded nationwide.
The Technology Resource Centers will allow the integration of ICT taking into account fundamental capacities: development of creative thinking, critical judgment, problem solving and decision making, as established in NCD.

The initial experience which began in May, 2007 with ten schools around the country will by 2011 have expanded to 100% of K-11 schools countrywide. By then, the longer running school will be “Apostol Santiago” in Arahuyay, at 2,600 meters above sea level in the Andean mountains 4 hours from Lima. In general terms there is a new work dynamics at the school: teachers’ attitudes have moved from resignation to enthusiasm and development of new teaching strategies.

The sense of self control given by the ownership of laptops helped teachers plan more carefully and better organize class time. Of course this is not a panacea; the complete overhaul of the Peruvian education system will take 10 to 15 years of multiple strategies consistently put in place, meanwhile there will probably be many schools where the impact will be far from expected but we like to compare our strategy to Loren Eiseley (1907-1977) The Star Thrower story.

Perhaps the most surprising and unexpected result was the impact on the community as a whole as reported by Associated press journalist Frank Bajak in the Herald Tribune, where a wide commitment to support children development has emerged and an inner sense of proud can be noticed widely.

Apostol Santiago School has three levels: Pre-School, Primary and Secondary. 110 students are enrolled in those three levels, 47 of them in primary:

- First-Second grade: 8 students
- Third-Fourth grade: 21 students
- Fifth-Sixth grade: 17 students

Most students are required to help their parents with agricultural chores and this means they miss school several weeks a year when their crops require more attention. Since many of them live more than 4 hours away from school (walking time) a board house has been implemented where children spend from Monday to Friday in order to be able to attend school.

The secondary section of the school participated in Huascarán project and one computer classroom with a VSAT connection is available. It should be noted how technology guided the localization of the classroom because it was placed far away from the school (for technical and security reasons) and its usage is very limited and isolated from NCD.

From the beginning, OLPC was different from the previous approach:

- Students would be given the laptops to own them as an educational resource (same as textbooks or notebooks), they would take them home and bring them back to school every day. Intentionally, no special care instructions were given in order to test the laptops ruggedness.
• Teachers were offered limited and only basic operation training, in order to validate a model that might be easily replicable countrywide.
• The computers use would not have specially allocated time slots. Each teacher and student will use them as they think it best fitted their style, need or willingness.

The initial laptops used to implement the project were B4 prototypes of the XO laptop which by now have long been replaced by the 1.0 version, designed by OLPC foundation of Cambridge, Massachusetts. 120 units were donated by OLPC to the Ministry of Education in April, after an evaluation visit to their headquarters by a research team of the University of San Martin de Porres. The computers were equipped with several Linux based applications:

• Abiword (basic text editor)
• Paint (drawing tool)
• Video and camera (digital photography and video recording)
• Web navigator
• Calculator
• Tam Tam (music creation)
• E-Toys (multimedia programming environment)
• Block Party (logical game)
• News reader and PDF visualizing software

Prior to the beginning of the project a baseline evaluation test on reading comprehension and mathematical skills was applied. Data on the December 2006 national evaluation to second grade students is also available. A survey on attitudes towards ICT was applied to students and teachers.

The initial teacher training session was one day long and teachers were left with the laptops for one week without supervision. After one week a second session was held and the laptops were distributed to children during a special meeting with parents and authorities present. The principal reported it was the first meeting with 100% attendance in the school history. The objective of the meeting was getting everybody’s commitment to help the project succeed. Each child received a XO laptop and the whole community celebrated the event with a traditional ancient Inca meal. This kind of meetings has been replicated in over 10,000 towns since 2007.

The first day after receiving the machines, students had already explored them on their own and were eager to find out what could be done. Teachers kept on teaching, letting children explore their new laptops and encouraging them to do the class work. The children did all the activities. Some would put away the laptop while writing on the notebooks. Some others would write quickly on the notebook and then start punching here and there on the laptop.

Still others were totally into the laptop and so excited that they would be doing something totally unrelated to the class and calling the teacher to come and see what they had discovered. Teachers were pleasantly surprised by the little attention they had to pay to disciplinary problems so usual before.
The electric layout was not prepared to support so many devices connected simultaneously and some kids got entangled with the cables and some machines felt down, a few of them stopped working but students were able to fix them with their teachers help and the little training teachers received from the deployment team. Eventually, secondary students were trained as “support team” and they learned how to disassemble and reassemble the computers in order to fix minor problems.

Some software and hardware glitches were found and reported to the development team in Cambridge to be fixed in ulterior versions. About a month after the initial deployment, an OLPC server arrived and was installed at the school, making it the first OLPC server installation worldwide. It worked seamlessly and allowed easier communication and smoother Internet access.

Of course the initial enthusiasm has since then faded and the work done has settled to a more nature one with new teachers being trained by the senior ones and their students on the different ways they find the XO’s useful for school work.

Really important and unexpected collaboration came from international graduate and undergraduate students. The OLPC foundation helped the Ministry team to promote support missions to the Andes among American universities. Since 2008, about 100 students have gotten funding to spend 5 weeks in rural communities helping them take advantage of the XO’s received. Among them was former IBM Thinkpad University World Program manager Man Bui and his son who spent 5 weeks travelling through the Peruvian Andes helping students and teachers find their way with the XO. The French Peruvian Mision Andes Foundation has also supported more than 50 French students support missions to Andamarca in Ayacucho. German, Finnish, Spanish and Argentinian volunteers have also participated in support missions throughout Peru.

Some important considerations to engage in a project like the one described that we have found important are:

Students:

- Absenteeism and dropout rates in rural schools tend to be high. As a result of OLPC projects, a dramatic reduction in these rates should be expected and planned for in terms of machines availability and school service level.
- Students’ interest level in school matters increase and, as a variety of new class activities emerge, a robust support structure to capitalize on it is required.

Teachers

- The 24×7 availability of a personal computer will modify pedagogical strategies. Teachers will be able to personalize curriculum development planning. It was important that the new NCD allows for great flexibility in terms of localization and introduction of new resources. A rigid curriculum would definitely jeopardize the outcome of an OLPC initiative.
- Teachers’ engagement in discovery of new tools will require a support team to help them master them in their classroom settings.
- Time for student teacher interaction should be planned. The improved communication between teachers and students will require more teacher time than the traditional class schedule. Not planning for it might result in frustration. Rural schools will probably be better off than urban schools where teachers could be part time or have double jobs.
- Increased attention from students will mean additional pressure on teacher class preparation quality. Teachers should be prepared to expect more questioning and engaged participation in their classes and prepare accordingly.
- Improved peer to peer communication among teachers will help cope with the challenges posed by the new technology and must be encouraged and supported.

Technical Aspects

- Internet connectivity is a very important factor; when not available, a local server or a memory stick with the offline Internet application is used instead. A periodical refresh process is planned based on teachers’ feedback and request. Since most rural school teachers travel periodically to urban centers, their visits are ideal refreshment vehicles we are planning for.
- Electricity tends to be scarce and poorly reliable in rural areas. Plug outlets are scarce and one per classroom in the best cases. Children are not used to electrical devices and it is important, at least in the beginning, that teachers organize the battery charging to ensure safety. Community involvement in cabling and connectivity improvement is encouraged though there is a long way to go, mainly due to limited resource availability in extreme poverty areas.
- Solar power is an option for places where regular supply is not available. Location and scheduling becomes critical in this case and require special attention.
- Rural schools are usually isolated and hard to reach. Maintenance of sophisticated equipment could become a burden to any attempt of improving Education with technology. The special design of the XO laptops deals with this issue by allowing self maintenance service by students and teachers, however, lack of confidence is still a major obstacle in this area which we expect will reduce in time and with the involvement of nearby higher education institutions.

Other factors

- Many stakeholders’ interests are being affected by large scale project deployment. Lobbying and public arguments take significant amount of time and many times jeopardize the implementation. Hardware and software vendors advocating for particular products may and in fact attempt to affect the outcome of the project. A solid educational and technical deployment team is crucial to cope with these issues. We have to keep working on this matter.
- Educational theorists and opinion leaders who did not have a direct role during the planning process usually question the pedagogical approach or implementation. A sensible communication strategy is necessary to ensure all genuinely interested parties’ contribution will be capitalized and taken advantage of. So far we have failed
on this, the project execution has taken most of our energies, leaving little time for “advertising”.

- The focus on fixed features and decreasing prices that is behind the XO laptop design guidelines goes against the ICT industry trend of increasing features and more or less constant price. Since these affect major players’ bottom lines, an aggressive reaction from their sales teams has been an important factor. Careful attention to common and conflicting interests between Public Education and commercial enterprises is hard to implement. We have partially succeeded in this, with Microsoft being a specially committed partner whose approach has been able to balance a genuine interest in education support with their logical expectations of market share. We try to work in order to ensure mutual gain whenever possible and minimizing of conflict in other cases.

In summary, the OLPC experience has renewed our hope that school education has not lost its value as an instrument in the development of the individual. Committed teachers can benefit of ICT availability and, without abandoning their concern for processes and methods, they can improve their performance with genuine concern for the personal growth of students, resulting in improved learning outcomes and commitment levels to school.

We are convinced the educational system can abandon the image of a purposeless organism where everybody pretends and get involved in a meaningful system providing not only instruction but the most important ingredient to success: Hope in a better future that may be beginning to be built now. December, 2007 seems long ago now, but we still remember our surprise when we found sixty Arahuy children reading comprehension level had risen 100% above the national average when the base line showed 0% performing at the expected grade level. Initial intrinsic motivation measurements in 139 schools showed dramatic improvement after the first year, though the results are not statistically reliable. The Interamerican Development Bank has committed the funds for an impact study which is underway. As expected no significant results have been found after 6-12 months and we are waiting for the second year evaluation which will be available by March 2011. So far, a more critical student body and increased community self esteem are on the positive side, while need for more teacher training is on the negative side. The last can be explained in the poor quality of teacher education, which has been an endemic problem in Peru for the last decades and cannot be solved with ICT training to in service teachers.

**Bibliography**


Further information:

- What is reasonable to expect from information and communication technologies in education?

Related links:

- Education Technology Debate
- Learning from national ICT/education agencies
- Senior UN, private sector officials define vision for globally connected society
- Singapore invests 610US$ million in ICT infrastructure for schools
- A new ICT maturity model for education institutions in developing countries
- Personalizing learning – The important role of technology
- White Paper Information and Communication Technologies (ICT) in Education for Development

Previous issues of the e-newsletter:

- UNESCO “ICT in Education” Announcement e-newsletter

What do you think about this topic?

- Visit our on-line forum and share your views

News & Events
UK and Venezuelan ICT experts awarded UNESCO King Hamad bin Isa Al Khalifa Prize

The Director-General of UNESCO Irina Bokova has designated the National Institute of Adult Continuing Education (United Kingdom) and Infocentro Foundation (Venezuela) as
the laureates of the 2010 UNESCO King Hamad bin Isa Al Khalifa Prize for the Use of Information and Communication Technologies in Education.

The winners of the Prize, focused this year on the theme Digital Literacy: Preparing Adult Learners for Lifelong Learning and Flexible Employment, were selected on the recommendation of an international jury.

The National Institute for Adult Continuing Education (NIACE) is the leading non-governmental organization promoting the interests of adult learners in England and Wales. The Jury found that NIACE has developed a national network of 6,000 internet access centres to serve adults in both rural and urban settings, in addition to 194 internet projects for adults in sheltered housing. Close to 3000 E-Guides were trained as tutors to work with adults supported by national and regional networks. NIACE is also considered to provide an exemplary model to other countries looking to help adults achieve digital literacy.

The Infocentro Foundation was selected for its project “Technological Literacy for Older Adults”. The Foundation is a governing body supported by the Venezuela Ministry of Popular Power for Science and Technology, providing free access to ICTs to enable adults and other users in achieving lifelong learning. Through 680 education infocentres established across the country and a high-quality series of modules to enable adult learners to move from basic computer literacy to more advanced ICTs skills. Infocentro Foundation has enabled almost one million individuals, including those with disabilities, to develop technology literacy skills.

The Director-General will present the Prize – a diploma and US$25,000 – to each of the laureates at a ceremony on 12 January, 2011 at UNESCO Headquarters. They were chosen from among forty-nine projects in 34 countries* and one proposed by an Intergovernmental Organization, the Southeast Asian Ministers of Education Organization, SEAMEO.

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*Azerbaijan; Bangladesh; Belgium; Bosnia and Herzegovina; Democratic Republic of the Congo; Colombia; Cuba; Czech Republic; Egypt; Germany; Greece; Ireland; Kuwait; Kyrgyzstan; Lebanon; Lithuania; Malaysia; Maldives; Mexico; Morocco; Qatar; The Philippines; Peru; Romania; Saudi Arabia; Senegal; Sri Lanka; Thailand; Tunisia; Uganda; United Arab Emirates; United Kingdom; Uruguay; and Venezuela

Further information:

- Connecting the disconnected: UK and Venezuelan ICT experts awarded UNESCO King Hamad bin Isa Al Khalifa Prize

Related links:
The Rector of the Moscow Institute of Open Education and Jordan’s Ministry of Information and Communications Technology are the winners of the 2009 UNESCO King Hamad Bin Isa Al-Khalifa Prize

Chinese and Egyptian laureates receive UNESCO prize for the use of ICT in Education

Shanghai TV University and Egyptian Ministry to receive the 2008 UNESCO King Hamad Bin Isa Al Khalifa Prize for the Use of ICTs in Education

Celebrating Innovative ICT in Education Practices: From Idea to Impact

Previous issues of the e-newsletter:

- UNESCO "ICT in Education" Announcement e-newsletter

What do you think about this topic?

- Visit our on-line forum and share your views

UNESCO, INTEL connect ICT in Education policymakers

UNESCO Asia-Pacific Regional Bureau for Education and Intel convened the first-ever Asia-Pacific Ministerial Forum on ICT in Education or AMFIE 2010. Ministers of Education, Vice-Ministers and other high-ranking officials from 16 countries in the Asia-Pacific region participated in the high-level meeting for two days.

According to Director Gwang-Jo Kim of UNESCO Bangkok, this is to become an annual event to provide countries a regular platform to share experience between and among policymakers. In this year’s AMFIE, policymakers discussed common issues and challenges Ministries of Education face when integrating ICT in various aspects of education.

AMFIE covered a lot of ground in updating participants with presentations on the latest trends and best practices in ICT in education. Presenters coming from all over the globe were organized according to the five keynote sessions. These are: 1) ICT for Better Education Policies; 2) ICT for Better Teachers; 3) ICT for Better MOE; 4) ICT for Better Learning; and 5) ICT for Better Access to Education. Mr. Anjan Ghosh, Regional Director of Intel Asia-Pacific, who delivered the welcome address to the Ministers, stressed that ICT is only a tool and that focus must remain in education.
Countries recognize there is no one-size-fits-all type of solution to the challenges they are facing. But in an increasingly globalized and connected world, ideas, especially the innovative ones, can inspire a nation. Korea and Singapore presented their journey guided by their own ICT in Education Master Plans. United Kingdom, China and Thailand train their teachers using television. Australia and Portugal share their experience of putting in place a national ICT infrastructure.

Another highlight of the event was the Ministerial Dialogue, an entire afternoon reserved for policymakers to voice out their opinions, requests and visions for developing ICT in education in their respective countries. These are significant inputs to UNESCO and Intel to implement appropriate programs and provide relevant support to the countries. They also served as indicators as future agenda items.

AMFIE 2010 took place at Plaza Athenee Hotel in Bangkok, Thailand last 25-26 November 2010. For more details, visit UNESCO Bangkok’s website.

**Picture Gallery**

**Opening Keynotes**

- [ICT in Education: Key Policy Questions and Lessons Learned](#)  
  Dr. Gwang-Jo KIM, Director of UNESCO Bangkok  
  (pdf, 1.2mb)

- [Education Transformation](#)  
  Dr. Martina Roth, Director of Global Education Strategy, Research and Policy Corporate Affairs Group, Intel Corporation  
  (pdf, 1.7mb)

**Keynote Session 1: ICT for Better Education Policies**

- [ICT in Education Policy of Korea](#)  
  Dr. Dae-Joon Hwang, Professor of School of Information & Communication Engineering, Sungkyunkwan University  
  (pdf, 2.5mb)

**Keynote Session 2: ICT for Better Teachers**

- [ICT in Teacher Professional Development: Case from Thailand](#)  
  Dr. Sombat Suwanpitak, Deputy Permanent Secretary for Education, Ministry of Education Thailand and team  
  (pdf, 400kb)

- [Development and Implementation of ICT Competency Standards for Teacher: Case from China](#)  
  Dr. Zhiting Zhu, Dean of Distance Education College, East China Normal University,
Keynote Session 3: ICT for Better MOE

- National Education Information System and Its Effects
  Dr. Boseon Kim, Senior Researcher for School Administration Team, National Education Information Service Centre, Korea Education & Research Information Service (KERIS)
  (pdf, 1.5mb)
- Paradigm and Philosophy in Educational Leadership and Management via Flexible Learning: The SEAMEO INNOTECH eXCELS eSolutions
  Mr. Pierangelo B. Alejo, Head of Flexible Learning Solutions Unit, SEAMEO INNOTECH
  (pdf, 1.8mb)
- Open and Distance Learning for Higher Education: A Case from Korea
  Dr. Tae Rim Lee, Korea National Open University
  (pdf, 4.4mb)

Keynote Session 4: ICT for Better Learning

- Impact of Assessment Changes and Introduction of ICT on Transforming Education in the Indian Education System
  Representative from Central Board of Secondary Education, India
  (pdf, 4mb)
- Digital Media, Content and Tools for the Next Generation of Learning
  Mr. Gerard Smyth, Skoool™ Programme Manager and Intel® Performance Learning Solutions, Intel Corporation
  (pdf, 1mb)
- ICT Masterplan 3: Student-Centred Learning
  Mr. Kwan Yew Meng, Assistant Director, Technologies and Design for Learning, Ministry of Education, Singapore
  (pdf, 2.2mb)

Keynote Session 5: ICT for Better Access to Education

- Investing in an integrated infrastructure: the Digital Education Revolution in Australia
  Dr. Evan Arthur, Group Manager of National Schools and Youth Partnerships, Department of Education, Employment and Work Place Relations, Australian
ICT-Competency Framework for teachers workshop

The workshop on teacher’s ICT-competency: Developing the knowledge deepening strand took place early December at UNESCO Headquarters in Paris, France. International experts in the field of ICT in education gathered to develop syllabus and assessment benchmarks for UNESCO’s ICT-Competency Framework for Teachers project.

Today’s classroom teachers need to be prepared to provide technology-supported learning opportunities for their students. UNESCO’s ICT Competency Framework for Teachers is an important guideline towards that goal. The objectives of this project are:

- to constitute a common core syllabus (defining various ICT competency skills for teachers), which can be used to develop learning materials;
- to provide a basic set of qualifications that allows teachers to integrate ICT into their teaching and learning;
- to extend teachers’ professional development so as to advance their skills in pedagogy, collaboration and school innovation using ICT;
- to harmonize different views and vocabulary regarding the uses of ICT in teacher education.

In a five-day workshop, international experts gathered to further develop the ICT modules to move on from the Phase I version to a more detailed syllabus, including assessment benchmarks. The meeting was opened by UNESCO’s Assistant Director-General for Communication and Information, Jānis Kārkliņš, and the Assistant Director-General for Education, Qian Tang, who stated: “This programme is very important for UNESCO, because teachers are our priority and they are key for reaching the Education for All (EFA) goals. Teachers’ ICT competency becomes an important element of teaching and learning in the 21st century.”

Discussions during the workshop reflected the diverse backgrounds and experiences of the international experts, coming from all regions and from countries with different levels of economic development and ICT-readiness.

Jānis Kārkliņš stressed that “ICT-CFT has already become an international reference document - the work of the international experts will ensure ICT-CFT continues to be a valuable resource to Member States.” The syllabus will undergo a broad online peer review.
by some 150 additional international experts, plus another UNESCO-financed review meeting.

The ICT-CFT project has been developed in partnership with Cisco, Intel, ISTE and Microsoft. Its Phase I produced a Policy Framework, Competency Standards Module and Implementation Guidelines, which included syllabus approaches for the three main areas: Technology Literacy, Knowledge Deepening and Knowledge Creation. Phase II began in April 2010 to develop the next versions of the syllabi, starting with the Technology Literacy strand and now the Knowledge Deepening strand. The final workshop is expected to take place in spring 2011, to further develop the Knowledge Creation strand to provide a complete international reference for teacher education.

The three booklets produced by Phase I of the project are available online.

Further information:

- Policy Framework
- Competency Standards Modules
- Implementation Guidelines

Related links:

- UNESCO ICT Competency Framework for Teachers
- UNESCO and University of Pretoria collaborate to improve information literacy of teachers
- UNESCO and partners set up ICT competency standards for teachers
- How to integrate ICT in your school

Previous issues of the e-newsletter:

- UNESCO "ICT in Education" Announcement e-newsletter

What do you think about this topic?
Policy forum : « Taking the open educational resources (OER) beyond the OER community : policy and capacity »

UNESCO, in collaboration with the Commonwealth of Learning (COL) launched an initiative on Open Educational Resources in order to expand understanding of OER by educational decision makers and quality assurance experts so as to promote their wider use.

The objectives of the initiative are to:

1. Ensure greater support for the use of OER creation and use both in developing and developed countries by educational decision makers (governmental and institutional)

2. Enhance the capacity of educational practitioners in developing countries to create and use OER.

The project focuses in the first instance on higher education institutions (universities) in Africa and Asia and the Pacific and is being implemented in partnership between UNESCO and COL as part of a Joint Work Plan Agreement between the two organizations. It will build on the results of the previous and ongoing projects of the two organizations.

The basic premise of the project is that OER will not be able to help countries reach their educational goals unless awareness of their potential can rapidly be expanded beyond the communities of interest that they have already attracted.

The project is financed thanks to extrabudgetary funds provided by the Government of the United States, regular programme funds from the Division of Higher Education and the Commonwealth of Learning. It is part of UNESCO’s inter-sectoral activities in the field of ICTs and Education.

The initiative was concluded for 2010 with the UNESCO OER Policy Forum ‘Taking the Open Educational Resources (OER) beyond the OER Community: Policy and Capacity’ which took place on 1 December 2010 at UNESCO Headquarters in Paris.

The Forum was organized within the joint initiative focused on higher education institutions in Africa and Asia and the Pacific implemented by UNESCO and the Commonwealth of Learning (COL). The Forum brought together decision makers in governments, institutions and funding agencies. The objectives of the Policy Forum were to:

- Establish a common understanding of OER and their potential to promote access to quality higher education in developing countries.
- Explore how OER can maximize the impact of investment on education.
- Discuss the role of OER in advancing the Millennium Development Goals.
- Review progress made in the Initiative ‘Taking OER beyond the OER Community’.
Discuss and propose a way forward for UNESCO, COL and other relevant agencies to harness OER for the greatest benefit of education and explore related issues, in particular Open Licensing and their adoption in intergovernmental organisations’ policies.

View the presentations:

- Policy forum: « Taking the open educational resources (OER) beyond the OER community: policy and capacity »

Related links:

- 7 things you should know about open educational resources
- The impact of openness on bridging educational digital divides
- Toolkit for academics on Open Educational Resources released
- OpenEd at Creative Commons
- Open Educational Resources: Conversations in Cyberspace

Previous issues of the e-newsletter:

- UNESCO "ICT in Education" Announcement e-newsletter

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UNESCO supports 5th APIN meeting and ICT literacy workshop
UNESCO and its Information for All Programme (IFAP) supported the 5th Asia Pacific Information Network (APIN) Meeting and ICT Literacy Workshop, organized in collaboration with the Asian Institute of Journalism and Communication (AIJC) in Manila, Philippines, from 23 to 26 November 2010. The assembly brought together information policy makers and executives representing APIN member-countries.
The 5th APIN Meeting in Manila was organized under the theme, Information Policy: Information Access, Media and Information Literacy, following the commitments made during the 4th Meeting in Hanoi in 2008. It focussed on improving access to information, and promoting media and information literacy, which are two of the five priorities of IFAP.

The forthcoming meeting aimed to align the APIN Constitution to the overall priorities of IFAP. A draft of the revised Constitution, reflecting these priorities, had been presented for ratification to the participating APIN members. Participants also developed an action plan for collaboration in the development of information tools and sharing of experiences among APIN member-countries. APIN members reported on the status of access to information, and media and information literacy in their respective countries. Their varied experiences provided inputs to the action plan.

Ivan John E. Uy, Secretary of the Commission on Information and Communications Technology (CICT), the Philippines’ primary agency for ICT policy-making and development, delivered the keynote speech on 23 November. Other speakers at the meeting included Jeannette D. Tuason, Deputy Executive Director of the Philippines National Commision for UNESCO; Susanne Ornager, from UNESCO’s Bangkok Office; Timoteo Angelo Diaz de Rivera, Vice Chair of the IFAP Bureau; Ramon R. Tuazon, President of AIJC; and Florangel Rosario-Braid, President Emeritus of AIJC.

Back-to-back with the three-day meeting, a one-day workshop on competencies for developing ICT literacy was conducted by Elena Pernia, Chair of the Communication Research Department at the College of Mass Communication of the University of the Philippines and author of Strategy Framework for Promoting ICT Literacy in the Asia-Pacific Region. Executives of the Philippine Long Distance Telephone (PLDT) Co., the Philippine Daily Inquirer and the National e-Library were also expected to give inputs on the Philippine media and communication sector.

Further information:

- UNESCO supports 5th APIN meeting and ICT literacy workshop

Related links:

- Strategy Framework for Promoting ICT Literacy in the Asia-Pacific Region
- Asian Institute of Journalism and Communication (AIJC)
- Educating the educators: Capacity-building essential for successful ICT in Education
- International Literacy Day (8 September): UNESCO launches new Knowledge and Innovations Network for Literacy (KINL)
- A call to arms: e-Skills book launch
Previous issues of the e-newsletter:

- UNESCO "ICT in Education" Announcement e-newsletter

What do you think about this topic?

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Advances in mobile services and broadband are transforming Asia-Pacific connectivity

Governments in the Asia-Pacific region have agreed to put in place a framework for regional connectivity that harnesses the rapid developments in mobile services and enhances broadband access for all in the region as a means for development.

This was the key outcome of the Second Session of the Committee on Information and Communication Technology (CICT) of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), held from 24 November to 26 November 2010.

“Information and Communications Technology (ICT) has opened up an array of previously unimaginable possibilities for even the poorest members of society,” said Undersecretary-General of the UN and Executive Secretary of ESCAP, Dr. Noeleen Heyzer. “Nowhere is this more evident than in the mobile phone revolution,” Dr Heyzer said, adding that mobile phone usage has reached more than 60 per cent of the population which marks an achievement of the targets set by the World Summit on Information Society (WSIS). Nevertheless, she cautioned that “we still have much work to do, and that by recalibrating ICT policies towards enhanced economic and social connectivity, and disaster risk reduction, ICTs could become true enablers of the achievement of Millennium Development Goals (MDGs) by 2015.”

The Royal Thai Government’s Minister for Science and Technology, Mr. Virachai Virameteekul said in his remarks that disaster events which have happened in the region have “washed away the development gains and aspirations of millions of people” and the global economic crisis has “compelled us to recognize the vulnerabilities of the current financial system and their negative implications to poverty reduction and achievement of MDGs”. He pointed out that technological progress in ICT, including space applications, as a tool for development and for disaster risk reduction is more important than ever before to create and protect sustainable socio-economic development.
Phase one of the Asia Pacific Gateway for Disaster Risk Reduction and Development was also launched. The Gateway, a web portal focused on mainstreaming disaster risk reduction into development planning, will also support an online community of practice on ESCAP promoted regional mechanisms to reduce disaster risks.

The Committee concluded with the recommendation that the members and associate members of ESCAP continue to strengthen cooperation in the development and application of ICTs, including space applications. They should build on new developments such as cloud computing and sourcing, enabled by the rapid advances in mobile devices and broadband networks.

The Committee is organized by the Information and Communications Technology and Disaster Risk Reduction Division (IDD) of the United Nations Economic and Social Commission for Asia and the Pacific.

Further information:

- Advances in mobile services and broadband are transforming Asia-Pacific connectivity

Related links:

- UN chief spotlights broadband’s potential to accelerate development
- UN Millennium Development Goals
- Mobiles and internet improve the livelihoods of the poorest
- UN rolls out action plan to expand global broadband access
- Senior UN, private sector officials define vision for globally connected society
- UN ICT Hub publishes ICTD Briefing Note Series
- UN urges improved access to information technology in hospitals, schools
- Technology and innovation can help expand education for all
- ASEAN’s future ICT leaders awarded scholarships to explore the role of ICT in achieving the Millenium Development Goals

Previous issues of the e-newsletter:

- UNESCO “ICT in Education” Announcement e-newsletter
Programmes & Projects
Fostering the use of ICT in pedagogical practices in science education

The FICTUP project (Fostering the Use of ICT in Pedagogical Practices), funded with the support of the Lifelong Learning Programme of the European Union, aims to (1) create innovative training materials that suggest concrete pedagogical activities using ICT, accompanied by a close tutoring process, and (2) test the impact of the material and the tutoring on novice teachers’ use of ICT in the classroom.

The innovative training material, developed collaboratively by both experienced and novice teachers to ensure its accessibility, focuses on specific classroom activities that use ICT. Each case includes a detailed description of the activity (PDF file) and three short, pedagogical videos (ca. 2-6 minutes each) that describe the transversal ICT skills brought into play during the activity. During the first year of the project, nine cases were implemented, some of which focused explicitly on the use of ICT in science education. This paper presents a number of different sample applications, such as “Device – measurement – evaluation: Use of ICT in physics (Hungary)”, “Exploring growth factors: Applying inquiry learning in biology (Finland)”, and “GeoGebra software: Mathematics teaching (France)”. The increased use of ICT has led to the introduction of new pedagogical approaches, including Resource Based Learning (RBL) where varied learning needs are supported by a wide range of ICT assets. Science subjects in particular are extremely amenable to the advantages offered by RBL and the associated ICT assets. The implementation of technology-supported collaborative inquiry allows teachers to design the educational setting as an integrated whole that provides students with relevant technological tools, directs them to collaborate effectively, and promotes epistemologically high-level and creative ways of working with knowledge.

Source: ELearningpapers

Read the full report:

- Fostering the use of ICT in pedagogical practices in science education
Related links:

- New UNESCO publication: ICT transforming education: A regional guide
- Educating the educators: Capacity-building essential for successful ICT in Education
- The pedagogical enhancement of open education: An examination of problem-based learning
- Indonesian teacher educators revamped ICT-based curriculum with the help of UNESCO Bangkok and UNESCO Jakarta
- Pedagogical innovation in new learning communities: An in-depth study of twelve online learning communities
- Project-based learning and tele-collaboration launched in Thai schools

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What do you think about this topic?

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Resources

The report on the status of ICT integration in education in Southeast Asia


The report identifies strengths and examines how each country integrates ICT in their educational system. The SEAMEO Secretariat hopes that this report will be useful for SEAMEO Member Countries to further develop ICT integration in education with the aim of proving greater access to quality education in the Southeast Asia.

Download this resource:
• The report on the status of ICT integration in education in Southeast Asia (pdf, 5.7mb)

Related links:

• Background paper for identifying the best practice of ICT implementations in Asia and the Pacific
• Asia and Pacific Database on Education launched - Giving policy makers and practitioners evidence for action
• Korea hosts an international expert meeting on ICT in Education Indicators

Previous issues of the e-newsletter:

• UNESCO "ICT in Education" Announcement e-newsletter

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Sustainable development and education in the digital age

What is the role of education, open education and online communities in sustainable development?

The classical definition of sustainable development is that we should use the global resources only so that the generation coming after us will inherit the planet in as good shape as it was when we were born. We got something from the earlier generations and should past it forward for our children and grant children.

Sustainable development is often divided to (1) ecological, (2) economical, (3) social, and (4) cultural sustainability. The different elements of sustainable development are in a close interaction, having an effect on each other.
The ecological sustainability means that the ecosystem, the global system as a whole (climate etc.) and all local ecosystems, are protected. For instance, as long as there are species disappearing cause by human behavior and reckless usage of non-renewable natural resources, there isn’t sustainable development in the ecological sense.

In economical sustainable development the growth should be stable and balanced. We should not be in depth and consume only according to the sustainability of the ecological system. For instance, it is reasonable to ask is the climate change is a result of unsustainable economical development?

Social sustainability would mean that all people of the world would have basic living conditions: health, well-being, education, dignity and freedom to do sustainable choices. If you follow any world news you know that we are far from this.

Reaching cultural sustainability we are not doing much better than with the social sustainability. Cultural sustainable development would mean that we protect the cultural diversity of the world. All cultures should have a right to persist and develop. With the fact, that humankind is loosing language every two week we are far from a cultural sustainability.

As said before the ecological, economical, social and cultural sustainable development are interlinked: they have an effect to each other. In the Global North, in the wealthy world, we easily put a lot of attention to the questions of ecological and economical sustainability. Engineers and economics often see that this is something they can solve: we simply develop clean technology and build economical system that is sustainable. Unfortunately the actual problem is far more complex: there is the complexity caused by the social and cultural aspects, the complexity of a human and mankind.

In the Global North we largely have — though not for all (that is a huge shame) — socially and culturally sustainable life. We all get maternity package, basic health care and education. Because of this we are able to focus on ecological and economical sustainability. This is also behind the illusion of seeing the question of sustainable development trivial; technological and economical challenge.

Majority of the world is not like Finland, Europe, Australia or North America and the causes of unsustainable development do not respect national boarders. Because the sustainable development is a global phenomena, we in the Global North must pay attention to social and cultural sustainability, too. Without doing it our investment on ecological and economical sustainability will be lost.

A simple example. You may have the perfect technology and logistics to collect and recycle domestic waste, but if you do not have incentives for all the ordinary people to “feed” the system it will be useless. You must understand what is the cultural-historical practices of waste management in homes to design experiences and new practices that will have the incentives in them.
What is the role of education in sustainable development?

Educational system (schools, colleges and universities) should primarily contribute to social and cultural sustainability, and from that angle provide skills and knowledge to solve the problems of ecological and economical challenges.

Understanding human behavior, social structures, culture and cultural differences is critical when we aim to reach sustainable development. Having solid knowledge on science, technology and economics is needed, too, but it is not enough.

Educational system should guarantee, that all the people of the world will have critical thinking skills and a set of basic skills and knowledge that will empower them to choose sustainable lifestyle. Education should provide people with ability to balance with the different aspects of sustainable development.

Paradoxically the real problem lays in the point when people move from absolute poverty to have more material resources. In absolute poverty people often have ecologically and culturally sustainable life. The unbalance is in the social and economical sustainability; unstable economical situation, no health, no well-being, no education, no dignity, nor freedom of choice.

When people get more material resources they also get more social good. Same time their effects on ecological and cultural sustainability often gets unbalanced. Suddenly the things that use to be good from the sustainable development point of view becomes problems: people start to have a greater impact on issues related to ecological and cultural sustainability: They start to consume more, ask for cheaper products, produce more waste and same time loose connection to their original cultural heritage.

To provide people with skills and knowledge that will help people to keep the balance in sustainable development is a task of the educational system. People should be “educated” enough to recognize how the achievements in social and economical development will effect on ecological and cultural development.

What about open education and online communities?

A huge challenge for the “official” educational system is that more and more of learning takes place outside the “system”. We learn online with others: sometimes in more or less structured manner (like in Open Education) but mainly informally in our social network. We read and watch what our friends in the network are recommending for us and share our discoveries with them. The big question is: what is the quality and value of this kind of learning?

I am afraid that the quality of learning in online social networking, if measured with classical factors — such as deep understanding, assimilation, proportion and seeing the big picture — stays relatively low. The use value, the exchange value, of knowing the latest buzz can still be very high.

To have quality we need schools, colleges and universities. We need people who are committed to guide new generations to explore and discover the big picture, to have critical
thinking and problem solving skills. Having these requires years of hard work, often called studying.

Schools, colleges and universities are there also to bootstrap the open education and other communities in social media to achieve discourse that is constructive and progressive. This post is related to the lecture I gave last week at the Aalto University School of Science and Technology. The lecture (in Finnish) is available online, too.

Author: Teemu Leinonen, FLOSSE Posse

Further information:

- Sustainable development and education in the digital age

Related links:

- FLOSSE Posse Blog
- Sustainable ICT in further and higher education
- Sprout - learn to create lasting change
- Ecological Footprint Calculator
- Presentation: ICT and sustainable development

Previous issues of the e-newsletter:

- UNESCO "ICT in Education" Announcement e-newsletter

What do you think about this topic?

- Visit our on-line forum and share your views

ICTs for development: Improving policy coherence
Information communication technologies (ICTs) are crucial to reducing poverty, improving
access to health and education services and creating new sources of income and employment for the poor. Being able to access and use ICTs has become a major factor in driving competitiveness, economic growth and social development. In the last decade, ICTs, particularly mobile phones, have also opened up new channels for the free flow of ideas and opinions, thereby promoting democracy and human rights.

The OECD and infoDev joined forces at a workshop on 10-11 September 2009 to examine some of the main challenges in reducing the discrepancies in access to ICTs and use of ICTs between developing countries. The workshop discussed best practices for more coherent and collaborative approaches in support of poverty reduction and meeting the Millennium Development Goals.

There is much work to be done on improving policy coherence and there is a need to engage more actively with partner countries. Making the most of ICTs requires that they are seen as part of innovation for development, rather than just another development tool.

This publication examines access to ICTs, as a precondition to their use; broadband Internet access and governments' role in making it available; developments in mobile payments; ICT security issues; ICTs for improving environmental performance; and the relative priority of ICTs in education.

The book is available in a free online browsing edition or may be purchased as paperback.

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- [ICTs for development: Improving policy coherence](#)

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Emerging technologies in distance education
A one-stop knowledge resource, Emerging Technologies in Distance Education showcases the international work of research scholars and innovative distance education practitioners, who use emerging interactive technologies for teaching and learning at a distance.

This book, edited by George Veletsianos, aims to harness the dispersed knowledge of international experts who highlight pedagogical, organizational, cultural, social, and economic factors that influence the adoption and integration of emerging technologies in distance education.

Emerging Technologies in Distance Education provides expert advice on how educators can launch effective and engaging distance education initiatives, in response to technological advancements, changing mindsets, and economic and organizational pressures. The volume goes beyond the hype surrounding Web 2.0 technologies and highlights the important issues that researchers and educators need to consider to enhance educational practice.

The book is available as a free ebook download or may be purchased as paperback.

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