

# EDUCATION

**Priority #1**  
This is the first in a series of six thematic bulletins dedicated to each chapter of:



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### Bridging the digital divide: progress towards the eLAC2010 goals in education

With a new graph illustrating how connectivity in educational establishments can help reduce the digital divide, this article analyses the persistent gaps in access to ICT in the educational sector. It also offers an overview of some of the existing strategies in this area, which are in line with the education goals of the Regional Action Plan eLAC2010.

(More on pages 2 & 3)



### Progress towards framework goals

This section describes projects that are working towards eLAC goals 1 and 2, around the educational framework. OSILAC, LATIN and LACCIR are developing school curricula that cover data, information and knowledge management and that strengthen teamwork, or conducting studies on the impact of ICT use in the educational system.

(More on pages 4 & 5)



### Progress towards access goals

Goal 3 of eLAC2010 seeks to connect 70% of public educational institutions to the Internet, preferably via broadband connections. To this end, RedCLARA and Ceibal are examples of projects that are working to improve access to ICT in the educational sector.

(More on pages 6 & 7)



### Progress towards capacity-building goals

To optimize the use of ICTs, goals 4 through 6 seek to build capacities, with quantifiable goals to guarantee student use of computers for educational purposes and training for teachers and civil servants in the use of ICT. In this area, Computers for Education, Clase21 and UNESCO projects are featured.

(More on pages 8 & 9)

### Progress towards applications and content goals

Access and capabilities in ICT are not enough without appropriate educational content. To this end, RELPE and UNESCO are among those organizations working to produce applications and content, ensuring criteria for, and the exchange of experiences on, national and regional educational portals.

(More on pages 9 & 10)

[www.eclac.org/socinfo](http://www.eclac.org/socinfo)

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# Bridging the digital divide: Progress towards the eLAC2010 goals in education

Identified as the first priority for the second stage of the eLAC Regional Action Plan during the Ministerial Conference in San Salvador last February, the use of Information and Communications Technology (ICT) in education has started to stake its claim in the political agendas of the region. Knowing how to use these technologies is now considered a basic skill (just like reading, writing or mathematics). Moreover, they are tools to improve the management of educational establishments as well as the process of learning and teaching, which also represents an opportunity for economic growth. Nevertheless, in the countries of Latin America and the Caribbean, the incorporation of ICT in education also contributes to reducing the digital divide.

Within the countries of the region there is an important gap in access to these technologies, which recreates existing socio-economic differences. The graph below, prepared by the Observatory for the Information Society in Latin America and the Caribbean (OSILAC), of UN-ECLAC, illustrates how connectivity in educational establishments reduces the digital divide.

Upon analyzing the degree of Internet penetration by income quintile and place of access (home or school) in all of the countries studied, one can see that those with the lowest income are most likely to have access in educational establishments. In the poorest quintile, Internet use from home does not exceed 10%, while access levels from schools reach 30% in Costa Rica, 50% in Brazil and more than 60% in Chile. In the latter case, it is worth noting that the degree of Internet access in educational establishments among the lowest income quintile is similar to the degree of access from home among those in the quintile with the highest income. This situation clearly reflects how connectivity in this type of establishment can help to compensate for differences in origin.

Under the eLAC2007 plan, the objective was to connect 33% of schools to the Internet. The last monitoring exercise for eLAC2007 illustrated the great diversity among the countries of the region in Internet connectivity in schools, as well as how behind they were in relation to more advanced countries. In some of the best cases, Chile had 75% of their schools connected in 2005, and Argentina had 22%, rates which differ significantly from European averages, where in 2006 no country had fewer than 90% of its schools connected. As such, the eLAC2010 plan raised the bar for the access goal, seeking to connect 70% of public educational institutions to the Internet, or triple the existing number.

In several countries the issue of access is also being addressed with personalized computer strategies for students, such as the One Laptop Per Child (OLPC) initiative, which is being applied in Uruguay, under the Ceibal Programme (see page 7). Other countries, like Chile, have opted to consolidate previous steps by expanding the base of the types of technology and methods of integrating ICT into the curriculum, which education experts say is more appropriate for their optimal development.

“Indicators reflecting the number of students per computer do not complete the image of the degree of technological use in schools,” says Ignacio Jara, Deputy Director of the Center for the Study of Educational Policy and Practices, of the Catholic University of Chile. “The diversification in ICT strategies makes traditional indicators misleading.”

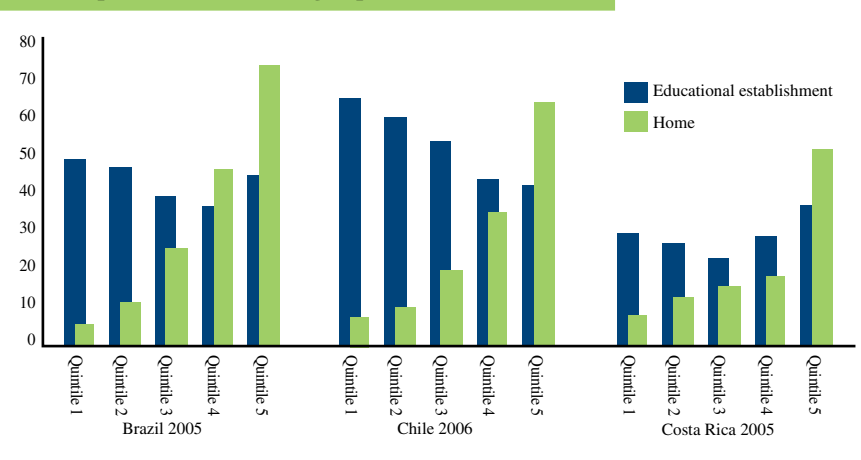
The creation of new indicators and programmes to study the use of ICT in the educational system are precisely what goals 1 and 2 of eLAC2010 aim to achieve. Work in this area is more recent, with a few groups developing new studies and methodologies, such as OSILAC at ECLAC (see page 4) and LATIN in Brazil (see page 5).

## Creation of Capacities and Content

The other measures of eLAC2010 focus on the creation of capacities, applications and content. The use of ICT in education began with distance education projects that promised to increase educational service coverage, particularly in remote areas, because they had the capacity to eliminate geographical barriers. However, as technologies evolved, new applications surfaced that go from their original conception to their incorporation as learning and administrative tools, giving place to a new concept: electronic education.

It consists in the application of ICT to all aspects related to education, from teaching and learning through electronic means, to training in their uses, as well as management of the organizations involved in these activities. For students, it implies the possibility of receiving educational programmes and learning systems through electronic means, accessing more information despite their location, besides becoming qualified in the use of those means. For educators, it represents the use of network technologies and communications to design, as well as select, manage, provide, and extend education, as well as organizing and administering information regarding their students.

Internet penetration according to place of access (Percentage)



Source: ECLAC, OSILAC Information System, official site online: <http://www.cepal.org/SocInfo/OSILAC>. OSILAC calculations are based on household surveys from these countries (for the most recent year available).



## Education goals for eLAC2010

Framework	
1	Develop school curricula that cover data, information and knowledge management and that strengthen teamwork, learning capacity, and problem-solving ability.
2	Conduct annual studies on the impact of ICT use in the educational system, which, inter alia, address the following: the impact of technologies on teaching-learning processes in public and private educational centres, the level of use of ICTs by teachers as a complement in their classes and the state of development of educational software.
Access	
3	Connect 70% of public educational institutions to the Internet, preferably via broadband connections, or triple the current number.
Capacities	
4	Ensure that, by the time they complete school, 90% of students have used computers for educational purposes for at least 100 hours, or double the current number. Such use requires appropriate training according to the type and level of education and should contribute to students' job skills.
5	Train 70% of teachers in the use of ICTs or triple the current number.
6	Train 70% of teachers and civil servants in the education sector in the use of ICTs for the development of school curricula, or triple the current number.
Applications and content	
7	Ensure that all national education portals meet the eligibility requirements for full membership in such portals' regional networks.
8	Seek to establish a regional market for digital services and content, to include the implementation of forums, through a public-private partnership with commercial providers.
9	Increase the exchange of experiences and high-quality content in regional networks of education portals, including Web 2.0 applications and other distribution channels such as television and radio.
10	Disseminate experiences with the use of virtual reality tools as ICT applications in educational curricula designed to foster cultural diversity and tolerance and to combat discrimination on the basis of, inter alia, race, gender, religion, ethnic origin, illness and/or disability.

Mexico has been leading the use of projection systems in classrooms, to support class content with multimedia material, using interactive touch-sensitive blackboards. The use of these projection systems is becoming widespread in the region.

“But beyond giving students greater digital competencies, the second stage necessarily has to focus on teachers,” explains Jara. “The quality of teaching cannot be measured by good content or new technologies if we do not have teachers who are able to take advantage of these technologies; and that takes time.”

Most professors do not feel comfortable giving classes in a computer room or laboratory, because it requires them to adapt to a new role in guiding students' activities. Teachers are afraid of losing control over the activity, which is taken on by computer programmes, and technical problems can make the class flow less smoothly. Lastly, teachers also inhibit themselves from making use of these new resources for other practical reasons, such as: the shortage of time to plan classes using ICT, as they require more preparation than traditional ones; or difficulties synchronizing the needs of their class with the availability of the computer room, which is a scarce and shared resource.


Moreover, the use of ICT in teaching requires support from the school's administration that is not always available, as well as the commitment and leadership of its board members and the necessary financial resources to acquire and maintain the equipment.

To confront these challenges, and make progress towards goals 5 and 6 of eLAC2010, various countries in the region are undertaking diverse training programmes for the use of ICTs, both at the level of educators, as well as directors and other personnel associated with the educational sector. Brazil, Mexico, Guatemala, Costa Rica and Colombia are all working on this area. In Chile, the national programme Enlaces has trained 110,000 educators in the use of ICT - more than 80% of the teachers in the public school system.

Beyond capacities, educators must also have access to applications and appropriate content. Digital contents allow student interactivity with educational material, which is very attractive and stimulating for developing a more active education through “learning by doing.”

Unfortunately, most schools in the region do not often have the appropriate digital contents to fulfill their needs: contents closely linked to the curriculum, which concentrate on topics where the teachers really require support and that include the orientations needed to facilitate their pedagogical integration. Moreover, there is a shortage of relevant material in Spanish, which is even greater when it comes to content in indigenous languages. In Colombia, Computadores para Educar (Computers for Education) are working on such locally-specific contents (see page 9), a project which is also providing assistance to Guatemala's Tecnología para Educar (Technology for Educating) programme.

In order to share contents, countries started working on national educational portals in early 2000. By 2004, a regional portal had been established – the Latin American Network for Educational Portals (RELPE) (see page 10). These efforts have permitted the free use and exchange of digital educational contents, even for isolated communities that do not have access to the Internet. But the majority of the countries of the region still lack local contents with learning strategies or pedagogical models associated with ICT. An absence also remains in terms of national policies for incorporating ICTs in the educational sector, or political commitments, which help to prevent wasted resources.

Experience has shown that all the previous elements, which are underlined in the eLAC Action Plan (framework, access, capacities and content) should be addressed in any ICT policy for education. School access to technological infrastructure is very important, but it is far from enough in the countries of the region. New strategies should be considered to provide educational contents, to teach educators to incorporate the use of ICT in the curriculum, and lastly to evaluate their use and impact 



# Framework-related education goals

## Opinion column by the Thematic Coordinator for Education for eLAC2010



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The regional plan eLAC2010 achieved its first success simply by designating the chapter on Education as its first priority. With that, the target is not only 2010, if not much further ahead, when existing and future generations of students will enter the workforce with better conditions and capabilities to contribute their skills and knowledge for the development and improvement of the quality of life of our people.

We are all pleased that in recent years noticeable progress can be seen in the field of education in Latin America and the Caribbean; but much remains to be done. According to UNESCO's Institute for Statistics,<sup>1</sup> among people aged 15 and older, 9.3% of men and 10.8% of women are illiterate.

Eradicating illiteracy and quickly achieving the Millennium Development Goals on education are the main premise so that the eLAC2010 plan can achieve its desired effect. To extend its reach and increase the quality of education is the overriding objective.

Cuba eradicated illiteracy in 1961; it introduced computers in all its primary schools in 2002, including 93 with only one student and 2368 schools powered only by solar panels; and it has shared its efficient Literacy Training Method "Yo sí puedo" (I can) – winner of the 2006 UNESCO prize – with the region and the world. Cuba has 65 universities and 3150 university campuses distributed across its 169 municipalities with 744,000 students; the University of Computer Sciences has 10,232 students; and its Youth Clubs alone have provided free ICT training to more than 1.2 million Cubans. With this record, Cuba offers its solidarity and assistance to the people of Latin America and the Caribbean 🌐

<sup>1</sup> [http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=134&IF\\_Language=eng&BR\\_Region=40520](http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=134&IF_Language=eng&BR_Region=40520)

## Developing indicators for ICT in education: a continuous learning process



OSILAC

In Latin America, ICTs have been gradually incorporated in the educational sector, determined to large extent by the individual development of each country. The logic behind this is economic, social and/or pedagogical in origin, but rather than being based on certainty over the effects and impacts of the incorporation of these tools, a gamble has been made on this approach based on confidence that it will improve the very objectives of education. Nevertheless, several results appear obvious and grounded in common sense. For example, ICTs offer communication and connection with remote communities and represent a leisure activity that both children and youth familiarize themselves with rapidly.

The development of ICT indicators in the educational realm arises from the need to quantify this reality in some way, beginning by a characterization of how they function: the structure. This is how a commonly used and widely accepted indicator for measuring the level of computer penetration in schools arose – being the computer-per-student ratio. This indicator is used for comparisons between countries and to measure the digital divide that separates Latin America from developed nations, among others.

Despite its limitations, associated primarily with the consensus around ways of measuring its components, this indicator provides relevant information regarding what is being measured and it is logical, particularly in the initial phases of ICT incorporation. Nevertheless, today there is a demand for the development of indicators that can measure certain effects or impacts around the very objectives of education. This aspect goes hand-in-hand with the development of other disciplines beyond those of a technological or pedagogical nature – such as cognitive psychology to evaluate the impact of ICT on the learning process. This constant reformulation is part of a digital paradigm that, together with the learning process, is continually generating new challenges in terms of applications, content, competencies, spheres of action and measurements.

What's missing is the development of a pedagogical model through ICT, in which the technology itself must become an integral part of the learning process as a whole. It is not about learning with ICT, but learning *through* ICT, and thus contributing to this process.

To take advantage of the heterogeneity that characterizes Latin America and the Caribbean, initiatives that combine efforts and promote cooperation between related experts and institutions are particularly relevant. One of these instances was the "Workshop on Editing in Latin American Portals and for the Definition of ICT Indicators in Education," held in Antigua, Guatemala in August 2008. This event was organized by the General Secretariat for the Coordination of Central American Culture and Education, in collaboration with the Regional Programme for Improving Educational Quality, of the Regional Cooperation Programme with Central America, of the Spanish Agency for International Cooperation and Development (AECID). RELPE was tasked with its coordination. ECLAC through its OSILAC project and the Group on ICT statistics of the Statistical Conference of the Americas, also contributed to the workshop in the definition of indicators.

The result of this workshop was the proposal of a slew of indicators in line with goals 1 and 2 for the education sector, of the eLAC Regional Action Plan. With this begins a consultation phase, which will be elevated to RELPE's board of directors, composed of ministers of education from Colombia, the Dominican Republic and Costa Rica (in representation of 20 countries) and the secretariats of the ministries of Chile and Argentina. These types of initiatives take advantage of complementarities, promote horizontal collaboration and contribute to consolidating institutionality in Latin America, all of which are no doubt examples to follow 🌐





Jorge Werthein, Executive Director of the Latin American Technological Information Network (LATIN-RITLA)

## Studying access to ICT in Brazil's education system

In keeping with the eLAC2010 goal 2, which suggests the conduction of annual studies on the impact of Information and Communications Technology (ICT) use in the educational system, LATIN, The Sangari Institute and the Brazilian Ministry of Education undertook a study to measure the gaps in access to the digital world, with special emphasis on the educational field.


Published in late 2007, the study "Pencil, Eraser and Keyboard: Information Technology in Education," is based on previous information on the current situation of ICT use in Brazil, Latin America and the rest of the world. The report considers that gaps exist not only between countries but also, and most importantly, within our societies, and they are attributed to spatial, racial and income differences. The study states that such gaps are nothing more than traditional differences and divides, present in our societies and in the world. They are new forms of exclusion which reinforce existing differences.

With that scope, the study presents the use and possession of computers and the Internet by students and teachers from primary, secondary and higher educational levels and the impact of computers on the students' performance. Taking Brazil as an example, the results show that the gap is large in comparison with developed nations -Switzerland has an Internet Access Index 340% higher than that of Brazil. However, internal divides are much more significant. Between Brazilian states a 440% difference can occur and between groups with the highest and lowest income the differences reach 15,300%

According to the study, out of the 162 countries which participated, Brazil is in 49th place, with a total of 16 computers for every 100 inhabitants. Switzerland is in first place with 86 computers for every 100 inhabitants. In regards to Latin American countries, Costa Rica figures in front of Brazil, in 33rd place, with 23 computers per 100 inhabitants.

With this publication, LATIN began a series of works to deepen and classify available information on the theme. This contribution is of special importance since currently many countries in the region are formulating public policies aiming to diminish the digital gap which exists in relation to developed countries. To turn intentions into reality, the mobilization of considerable resources is necessary – not only in equipment, but also in infrastructure, the qualification of human resources, and the creation of appropriate contents (portals, educational software, etc.).

"We already have computer labs in all of the secondary schools," says Carlos Eduardo Bielshowscky, Secretary of Long Distance Education, of the Brazilian Ministry of Education. "By 2010, all 132,000 Brazilian public schools will have computer labs connected to the Internet." Over the past year, 32,000 computer labs were installed in public middle schools across the country.

However, the coordinator of the study, Julio Jacobo Waiselfisz, believes the government needs to promote access to public and free computer centers not only in schools. He argues that the creation of these centers should be part of a public social policy 



## LACCIR Virtual Institute promotes regional collaboration

The Latin American and Caribbean Collaborative ICT Research Federation (LACCIR) Virtual Institute ([www.laccir.org](http://www.laccir.org)) was created in May 2007 as a response to a Microsoft Research request for proposals to provide the universities of the region with a sustainable virtual collaborative environment, so as to increase the quality and quantity of technological research and innovation.

The primary goal of LACCIR is to encourage academic collaborative research in ICT as an enabler of economic and social development in the region. This research is applied to specific problems in the region, such as: education, health, security, environment, agro-industry, etc.


The medium- and long-term goals for LACCIR include:

- Advancing the ICT research agenda in Latin America and the Caribbean (LAC) and increasing research opportunities for faculty and graduate students
- Increasing the skills and visibility of the LAC research community, both within its geography and worldwide.
- Offering research resources and collaboration opportunities throughout LAC.
- Partnering with other organizations that support the growth of research capability and capacity in the LAC region.

In this way, LACCIR seeks to fulfill goal 1 of eLAC2010. Through collaboration with Microsoft Research, the Inter-American Development Bank and the Organization of American States, more than \$1.25 million US dollars have been contributed for the institute's first three years.

Chile is the managing agent for the hub, which is jointly run by the Catholic University of Chile and the University of Chile, with Dr. Ignacio Casas as Executive Director. Universities in Argentina, Mexico, Costa Rica, Uruguay and Brazil are also associated with this federation, which includes ties to organizations such as CLARA, FAPESP, NSF and WINDS.

In March 2008, LACCIR issued its first call for regional collaborative ICT projects, granting a total of \$250,000 US dollars to five research proposals, which involve 23 researchers from 12 universities in seven Latin American countries.

LACCIR also undertakes other activities with the goal of strengthening the ties between the universities of the region, such as implanting videoconferencing infrastructure (based on Conference XP), granting scholarships for graduate students, and implementing a website with a map of researchers and Latin American projects. The objective is to promote collaboration in ICT research and education at a regional level 



# RedCLARA: Connecting schools and academic researchers

Since its creation, RedCLARA has been fundamental for research and education in Latin America, linking 12 countries and 729 universities (which altogether comprise more than 671,986 academics, 104,607 researchers and 3,763,142 students; summing up, more than 4,539,735 people potentially connected) across the continent, at speeds of up to 622 Mbps.

RedCLARA works to create the physical side of the network, via common infrastructure, which currently links 12 countries in the region (and aims to incorporate Bolivia and Costa Rica by the end of 2008). This is complemented by the collaborative work undertaken by the 17 members of Latin American Cooperation for Advanced Networks (CLARA). It has helped to promote joint projects and facilitated communication between researchers, by providing an infrastructure that is not otherwise available at an accessible price, which serves as a platform for testing the services of the future.

“We want to move the frontier of what is currently done on the Internet, from technical protocols to applications,” explains RedCLARA’s Executive Director, Florencio Utreras, who is clearly passionate about his work.

Thanks to the efforts since the creation of this network in 2003, scientists in Latin America can use equipment in European laboratories, and researchers across the region are meeting online to test out new signals or technologies.

“If you want to integrate visualization systems, astronomical images or simulations of advanced climate-change calculations, for example, you need a faster Internet,” explains Utreras. “Science will become more dispersed in the future and it is possible to integrate the power of various computers to do joint simulations or divide the task of processing complex problems for cancer research, the search for intelligent life in outer space, etc.”

RedCLARA already has more than a dozen projects along these lines:

- a project to connect researchers working on climate change and adaptation to crises, for data exchange and processing to predict variabilities;
- the RINGrid Project, between Europe and Latin America, which facilitates the remote use of scientific instruments to take advantage of scarce and costly resources. This includes the installation of an access service to instruments such as electronic microscopes, astronomical observatories, DNA sequencing machines and others, with a system for expediting the delivery of samples, online analysis results, etc.;
- the Global Project, an initiative of the Polytechnical University of Madrid, to create a global virtual conference platform, to generate content; and
- the European Union’s EGEE project, which links a group of researchers in Sicily with geologists in Ecuador to analyze the behaviour of volcanoes, converting seismic patterns into music.

Beyond connecting national networks to a regional platform, RedCLARA is also linked to continental platforms such as Géant (Europe), Internet2 (USA), Canarie (Canada) and APAN (Asia Pacific). In the Caribbean, CLARA’s equivalent is the Caribbean Knowledge and Learning Network (CKLN), which is working to connect a physical network under the name C@ribNET. In addition to fulfilling goals in the education chapter of eLAC, these efforts also aim to meet goals in the chapters on access and infrastructure, where RedCLARA and C@ribNET are both mentioned specifically in the follow-up of goals 13 and 19, to connect centers of investigation and education, particularly at an advanced level.

## Connecting schools


Although RedCLARA’s initial purpose was to create academic networks for the post-secondary sector, several of its networks have expanded to the educational sector in general, connecting schools and national educational portals, thereby contributing to eLAC2010’s goal 3 in education.

“A natural convergence has been occurring,” explains Utreras. “Funds are gathered for connecting schools by using the resources from universities and the end result is a network of much higher quality, with a more specific purpose. This also helps schools work on the issue of contents.”

In Brazil and Mexico, a widespread connection of the national school system is already being achieved. In the state of Tabasco, in coordination with the e-Mexico system, CLARA is working on a project to start a network with national coverage that will connect all elementary schools, hospitals and health centers across the country.

According to Carlos Casasús, President of CLARA and Director of the University Corporation for the Development of Internet2 (CUDI), which leads the project, this effort is based on the installation of private state networks that will use the infrastructure already in operation in universities and state governments. The objective is to cover each state with WiMax cells that allow, at very low costs, an integral connectivity for hospitals, schools, research centers, government offices and digital community centers. After Tabasco, another five states and the rest of the country are expected to come online.

Since March 2008, CLARA has continued to work without the significant financial assistance of Europe’s ALICE (Latin America Connected with Europe) project, which Utreras assures has been difficult, but it has managed to maintain itself with the help of partners from member countries and the extraordinary support of Brazil. He adds that various coincidences, including good negotiations and savings, helped reduce the costs of the network and keep its maintenance in equilibrium.

“What this year with slim resources has not allowed us to do this is to grow,” says Utreras. “There is still a substantial lack of infrastructure within and between countries.” Under a second phase of the ALICE project, now in advanced negotiations with the European Commission, RedCLARA aims to connect all countries in the region 



# Digital inclusion for social inclusion: Plan Ceibal in Uruguayan schools

Ana Rivoir

Uruguay's Government Agency for Management of IT, Knowledge and the Information Society (AGESIC) and Ana Laura Martínez - Plan Ceibal

The Educational Connectivity: Basic Information for Online Learning Plan (Ceibal) <http://www.ceibal.edu.uy>, is the top priority for Uruguay's Digital Inclusion Agenda 2008-2010 ([www.agesic.gub.uy](http://www.agesic.gub.uy)), which focuses on development and social inclusion.

The innovative plan is a pioneer on a global scale in the provision of a laptop computer for each child and teacher in Uruguay's public schools. The initiative, based on the One Laptop per Child (OLPC) project from the Massachusetts Institute of Technology (MIT), began in May 2007, with the implementation of a pilot project in the rural Uruguayan town of Villa Cardal. Pending evaluation, the project was generalized by Presidential Decree in October 2007.

To date, 113,000 computers have been given to teachers and children in 900 rural towns in the Uruguayan interior. The plan is to complete rural distribution in 2008 and begin providing laptops in the capital and the Metropolitan area in 2009. A total of 340,000 children and educators will benefit directly from the plan.



In addition to the provision of computers, the plan includes training, support, evaluation and follow-up activities, and it promotes the elaboration of educational proposals and the production of content through public primary schools. This will not only lead to innovation in educational processes but the creation of a social base for significant and equitable digital inclusion.

The laptops are specifically designed for the use of children, from their hardware (small, resistant to blows, etc.) to their software (with educational content and ends, an interface specially conceived for children, etc.). Students can connect with one another using a network called "mesh" and connect to the Internet from home using the extension of a signal that is broadcast from their educational centre (creating a network in which the computer acts as a "bridge" to others).

Given that the laptop is available in homes and the community outside of school hours, its potential social impact is multiplied, reaching more than a million indirect potential beneficiaries. This maximizes access to sources of knowledge and information and its impact is even greater among lower socio-economic levels and those who live further away.


## Political support

One of the virtues of the Ceibal Plan is that it was created as a policy for social inclusion and was backed by those at the highest political level. It is administered by a political commission made up of a delegate from: the Presidency of the Republic – its chair; the National Administration of Public Education, the Council for Primary Education, the Ministry of Education and Culture, the Technological Laboratory of Uruguay, the National Administration of Telecommunications, the National Agency of Research and Innovation, and AGESIC.

This commission is tasked with determining the pace, conditions and contents needed to comply with the Plan. One hundred percent of its financing stems from the National Budget, with all purchases made through open international bidding. The machines purchased in the first phase each cost \$200 US dollars.

There are additional existing initiatives beyond the Ceibal Plan, from other state policies, organizations, civil society, and universities that aim to stimulate diverse uses, as well as the sensitization and circulation of information among new users. One of the most interesting initiatives is the Support Network for the Ceibal Plan (RapCEIBAL), which has mobilized 500 volunteers and contributed to the efficiency, fluidity and appropriation of the plan by teachers and the general population (<http://rapCEIBAL.blogspot.com/>).

Since the first set of results for the plan, it is already possible to note that Ceibal has significantly reduced the digital divide in many of its dimensions – primarily in connectivity, access and use. In the educational sphere, its impact is multidimensional: pedagogical, organizational, didactic, communicational, positive for the teacher-student relationship, etc. It confirms the centrality of the teacher's role in stimulating students to use technology for educational ends. They end up using the laptops almost immediately, a factor that changes their relationship with teachers, given that students are frequently faster in learning to use computers. Moreover, household relations are also touched by the Ceibal Plan, given that the laptops are used by other members of the family.

It is worth noting that all of the objectives and achievements of the Ceibal Plan contribute to Uruguay's fulfillment of several of the goals of the eLAC2010 Regional Action Plan. Goal 3, to "Connect 70% of public educational institutions to the Internet, preferably via broadband connections, or triple the current number," will be met and exceeded. By 2009, Ceibal will have connected 100% of public schools, while the Educational Connectivity Plan will connect all centers for secondary education. It will equally ensure that, by the time they complete school, 90% of students will have used computers for educational purposes for at least 100 hours (eLAC2010 goal 4). Finally, the plan will also meet goal 5, which consists of training 70% of teachers in the use of ICTs 



# Educational accompaniment: Computers for Education in Colombia



“It is not enough to give someone a fish; we must teach them how to fish.” With this reasoning in mind, the Colombian programme Computers for Education has spent seven years working to help bridge the digital divide, while promoting the use of ICT in every corner of the country.

Providing educational accompaniment to teachers and professors has been one of the central pillars of the programme, which has reached more than 3 million children in

9,000 educational centres, benefited 115,000 teachers and reused more than 2 million tones of electronic waste.

To the extent that the computers reach educational centres they not only meet the expectations of youth and children who are eager to learn, but they also generate new possibilities for educators to develop learning strategies and put their creativity, talent and knowledge to work in the development of trends in the possibilities for ICT in the educational context. As a result, teachers have become true protagonists who are introducing dynamic change in Colombian society through their invaluable contribution to training youth and children.

The socialization of such experiences in Colombia directly targets the first and second priorities established in the San Salvador Commitment, thereby meeting goals 4, 5 and 6 to create capacities in education, and goal 12 in infrastructure and access, as well as goals 82 and 83 in policy instruments and strategies.

## Rural experiences: educational model for Colombia

This was demonstrated at the recent Congress on Educational Information Technology, of the Colombian node of the Ibero-American Educational IT Network (RIBIE), which took place in the coastal city of Barranquilla. Two hundred educators from various educational institutions across Colombia, who have benefited from the accompaniment strategy the Computers for Education programme offers to teachers in the most remote areas of the country, shared their experiences and new projects proposals, which they created with their own ICT skills.

Eighteen projects were pre-selected at a national level. The achievements of the educators derived from the strategy lead by Computers for Education reflect the spirit of the programme, which is not limited to providing refurbished computers to public institutions in Colombia, but which provides an additional training function and follow-up with educators for more than a year, with the support of the Universities of: Antioquia, Bucaramanga, Cauca, Distrital, Santander Industrial, and National Pedagogical.

Colombian media covered the event and announced the winners. First place went to the Kwesx Uma Kive Institute for Intercultural Teaching, Principal Centre for Basic Education Nasa Wes'X Kiwe, with the project

*I am Language and the essence of my people is woven through me.* This initiative from the Nasa community, put together on the sidewalks of Granadillo Street, in the Caldono Municipality, positions the computer as a means of preserving memory and cultural identity through its use and dissemination in their own language. In this way, reading and writing become social acts of exchanging knowledge, constructing thoughts, and opportunities for cultural recognition.

Luz Eneida Tumbo, one of the authors of *I am Language and the essence of my people is woven through me*, told local media: “It’s about providing education from our own context, so as to strengthen our language. ... So we took on the task of gathering and rallying our elders around this preservation so that by means of traditional stories we could recuperate the interest of children and youth in this sense. The attraction around this increased with the implementation of the school’s computer equipment.”

“Access to technologies - which until very recently was a privilege for few in our country - is now an option at the service of educational centres and institutions in the most distant corners of the country. Cauca could



not miss out on being a part of this revolution, and although it did so slowly, with the help of private and state programmes it managed to enter the new technological era. It is this very challenge which rural schools in the Department have had to confront, a challenge that has allowed them to design and implement novel strategies

in the educational sphere – strategies that have managed to bring their communities closer to new teaching and learning processes, and position themselves at a national level, as the best teaching experiences.”<sup>1</sup>

In this way, Computers for Education, a programme developed by Colombia’s Ministry of Communications, not only complies with its responsibilities to protect the environment and meet the needs of its children for access, use and appropriation of ICTs, but it introduces the new techniques, methodologies and procedures required by these technologies, as fundamental tools in the process of learning, research, the acquisition of knowledge and information, and the integration of ICT in school contexts 🌍

<sup>1</sup> Article: “Rural experiences: an educational model for Colombia”, Periódico El Liberal – Cauca, 4 August, 2008.







# Clase21: bringing ICT to Chilean and Peruvian classrooms


The Clase21 alliance between Barrick, Intel and the Cisneros Foundation aims to create digital learning spaces in schools in the Alto del Carmen sector of Chile’s Atacama region, and the Department of Huaraz in Peru, joining their efforts so that students, professors and the educational community can have access to these vital information tools.

This educational cooperation agreement combines valuable technologies, methods and content in one programme to promote the quality education that is required in the 21<sup>st</sup> century for developing countries.

Clase21 brings together the experience and work its three partners are developing in the educational field. Intel, a world leader in the development of technological innovation, will contribute the equipment and methods to create the so-called 1:1 digital learning environments, as part of its Intel World Ahead Program. The Cisneros Foundation, a non-profit institution dedicated to developing initiatives for improving the quality of

life in Latin America, will add its Updating Teachers in Education (AME) programme. Barrick, a leading gold-producing company, will contribute the resources and knowledge acquired in the educational support plans it is implementing in the countries of the region where it is currently operating projects: Chile, Peru, Argentina and the Dominican Republic.

Moreover, in Chile, Clase21 will be applied with the help of Eduinnova, of the Catholic University of Chile, which will run the support and training activities for teachers and students, who have already taken part in the AME programme previously implemented in the same areas.

In this way, this project contributes to the eLAC objectives, by meeting education goals 3, 4, 5 and 6, which refer to connectivity for establishments, professors and students, the integration of ICT in schools, and the professional development of educators, digital curricula and contents and methodologies for their classes 



# UNESCO’s OpenTraining Platform empowers educators

Just a year and a half old, UNESCO’s Open Training Platform (OTP) web portal [www.opentrainingplatform.org](http://www.opentrainingplatform.org) includes 2682 learning resources in hundreds of categories shared by 2200 members from 770 development stakeholders worldwide.


Advocating open content in non-formal education, the OTP aims to empower trainers or/and trainees with free resources, offering them a structured collaborative space to share their training but also to promote and value the “open” training materials, which are freely and openly accessible for trainers and self-learners to use and re-use for non-commercial purposes such as teaching, learning and research.

The Communication and Information Sector of UNESCO has been developing this open training platform available online, to build capacities of: local people and specialized communities (educators, policy-makers, journalists, librarians, etc.) through ICT-enhanced training.

It offers a central access point to non-formal education resources and training which may be relevant to them according to their needs, knowledge, language and culture, with special emphasis on people from developing countries. This is at the service of end users (through community centers, IT kiosks, equipped libraries, etc.) but also helps trainers in their guiding and facilitating role to make people actively

participate in knowledge societies and economies where the future lies in their ability to be active opportunity-seekers.

At present, the OTP regroups partners from all UN agencies (FAO, ILO/ITC, ITU, UNESCO, UNITAR, UNU, UNV, WHO and UNEP), worldwide development practitioners and agencies, as well as regional and local NGOs and CBOs. Telecentre.org recently joined the UNESCO-powered hub to free and open learning for development. Both Telecentre.org and OTP are the Flagship Partnership Initiatives of the United Nations Global Alliance for ICT and Development (GAID). An evaluation of the OTP conducted last May proved that the Platform is largely used, highly rated and adds additional value to the shared training material. The respondents showed most interest for “Computer Science and Information Management,” “Environment” and “Education” areas.

In addition to the “Training-on-demand” function already available, other new services will be developed shortly, such as the Francophone version, the customization option for any interested communities or networks and an enhanced search engine system. These concomitant efforts aim to even better serve local people’s learning needs and to reinforce the active participation of development stakeholders. As such, the OTP initiative fulfills eLAC2010 goals 5, 6 and 9, for the creation of capabilities, applications and content 



# RELPE: connecting and improving the region's education portals

Although it aims to fulfill almost all of the education-related goals of eLAC2010, when it comes to the creation of applications and content in particular, the Latin American Network of Educational Portals (RELPE) is a clear leader for the region. Created as an initiative of the region's education ministers in August 2004, at a time when few Latin American countries had national educational web portals, 20 countries are now members of this network.

RELPE has consolidated itself over the past few years as a space for exchange, discussion and collaboration between the technical teams of ministries and secretariats for education, who are tasked with leading projects or processes for integrating information and communications technologies (ICT) in educational systems.

The network is already recognized internationally as a success story for south-south cooperation and integration, and its management model is being studied and analyzed by other regional initiatives that value its progress. In May 2008, RELPE won the International Telefonica Foundation-OEI Prize, in recognition of its continuous work on the incorporation of new ICTs in the area of education.

The basic objective of the network is to promote the use of ICTs for the improvement of the quality and equity of teaching through the free use and exchange of digital educational contents posted on web portals. Its first challenge was to develop and implement a platform for content-sharing, whose value increases as do the portals that use it to offer and obtain content (it also includes the network effects of P2P solutions). Collaboration has allowed each national educational portal created since the network was formed to be born with instant access to hundreds of materials provided by the pre-existing portals. This experience will surely be repeated with the upcoming portals for Panama and Honduras.

So that the contents published on these portals may reach all students, RELPE is also developing a tool that allows selected contents from its website to be recreated, using various offline supports. This puts them at the service of educational communities that cannot access them by Internet.

In order to increase the availability of quality contents, the first experiences are underway in "localizing" international contents – that is, adapting the texts of original resources or curricula from other latitudes so that they may be used appropriately in our countries. The Project Skool América Latina, fruit of the strong commitment and collaboration between RELPE and Intel, resulted in the creation of four local versions of the online Skool platform, which aims to help teach students and teachers learn key scientific concepts.

The technical teams of the portals of Argentina, Chile, Peru and Colombia went about classifying and localizing (adapting to the regional context) 72 interactive educational contents in the areas of mathematics, biology, chemistry and physics for primary and middle-school education. At the moment, more than 130 contents are being processed, and should be published in the coming months. The experience is also being reproduced in Guatemala, with the localization of these same contents in native languages. This work provides didactic materials in languages suited to regional contexts, adapted to the curricular focus of each country, and suitable for different audiences. Moreover, it provides self-learning options for students and new alternatives for teachers to create classroom activities.




In this way, RELPE not only complies with eLAC goals 7 and 9, in the exchange and creation of content, but it contributes to goals 4 through 6, in the creation of capacities for students and professors. The network is also working on developing curricula and indicators on this theme, thus meeting goals 1 and 2 of the Regional Action Plan.

One of RELPE's most ambitious goals, in recent months, is the expansion of its Observatory. Initially, it was designed to monitor the behaviour of its portals and the quality of the

technological products they provide to the educational communities of their countries. Comparative measurements allow the portal's technicians to understand the maturity of each initiative and, by illustrating the strengths and weaknesses of different projects, they encourage horizontal training and assistance. As a result, in recent months professionals from Nicaragua visited their colleagues in Colombia and those from Panama are preparing a visit to the Dominican Republic, to name just two examples.

Since the second trimester of 2008, RELPE has been working to identify a new combination of indicators to add to those already used by the Observatory. These indicators are in line with the goals of eLAC2010 and are being developed along with international organizations such as the Statistical Conference of the Americas (SCA-ECLAC) and OSILAC, who are also helping to organize seminars and regional workshops on this issue so important to the definition of public policies related to ICT in educational systems.

Like any network, RELPE grows, matures and is strengthened to the extent that its members do so. Born as a means to share educational resources, this has become a learning network for all those involved and it is an example of regional integration .



# ICT news briefs

## Enlaces: Integrating ICT into Chilean education

With the goal of taking advantage of the world of opportunities provided by the use of new technologies in the educational sphere, the Government of Chile – through the Enlaces (Links) Programme of its Ministry of Education – is implementing the Technologies for Quality Education Plan. This effort aims to reduce the ratio of students per computer from 26 to fewer than 10, by the year 2010.

According to Enlaces Director Didier de Saint Pierre, “this plan marks the beginning of a new phase in Chile’s policy of integrating technology in the school system. One of the main challenges that requires a modification in the existing system is the need to look at the establishment as a whole, so as to identify how Information and Communications Technologies (ICTs) can contribute to improving the most relevant processes that have the greatest impact on pedagogical tasks.”

“In this way, each educational provider will have the task of defining and implementing formal processes within their establishments, which will allow them to rely on a technical support system for the coordination of ICT in administrative and pedagogical areas, and leadership for the use of these new technological resources in an academic setting,” adds Saint Pierre.

The plan increases the existing computer equipment in the Chilean school system, while ensuring the appropriate pedagogical use of these resources. As such, it seeks to bridge the digital gap in the country while making its establishments more self-sufficient in technological matters.

## CARICOM to release new Action Plan

The Caribbean Community (CARICOM) Secretariat plans to convene meetings of the Sub-Committees of the Regional ICT Steering Committee in order to continue the development of the Draft ICT/IS Action Plan for the period 2008-2010. The meetings will be held in Barbados from 13-17 October 2008. It aims to accelerate CARICOM’s transformation into an active part of the Information Society.

To this end, sub-committees have each drafted a two-year action plan, in the following areas: capacity-development, access, connectivity and Internet governance, regional partnerships, legal & regulatory framework, business and trade, culture, disaster recovery and statistics. These will be part of the Regional Information Society Strategy, which will be presented for the approval of Caribbean Ministers responsible for ICT.

The draft Regional ICT-for-development (ICT4D) strategy sets a deadline of 2015 for full inclusion of the Community into the Information Society. Among the region’s ICT4D objectives are:

- maximizing the opportunities for all its citizens to benefit from the information economy/society;
- advancing the growth of infrastructure for the information economy;
- developing a legal and regulatory framework to facilitate electronic transactions;
- delivering the education and skills its citizens need to participate in the information society; and
- promoting the integrity and growth of Caribbean content and culture in the information economy.

## Nicaragua creates National Commission for ICT in education

Nicaragua’s Ministry of Education (Mined), in line with the Transformation of Primary and Middle-School Education plan, has created a series of 10 National Commissions made up of multi-sectoral representatives.

In this process, a National Commission for the elaboration of ICT Policy and Strategies in Primary and Intermediate Education was established, to orient decision-makers as to the strategic priorities of different technologies; as well as to optimize the resources that are devoted to projects and programmes for ICT in education.

Mined’s Division for Educational Technology points out that there are currently 570 public schools that have anywhere from 1 to 35 computers. This represents 5.67% of the total 10,052 public schools. All of the normal schools of the country have 20 computers with Internet access and a classroom with Televised Learning Resources, for which they receive the educational signal EDUSAT or Educación Satelital from México.

Prioritizing technological literacy, Mined has created a series of didactic digital materials, including a manual that allows teachers to learn how to use the computer and technological tools for the development of their classes.

“In Educational Technology Centres we have given teachers access to digital cameras, scanners, and Power Point programmes,” said Aracelly Blandón, coordinator of didactic digital materials. “The manual teaches them how to use these tools, which will allow them to be more motivated in developing their classes, while creating educational materials.”

Mined is requesting budgetary funds to allow them to provide such materials to all of Nicaragua’s teachers by next year, in order to guarantee complete digital literacy.

## UN Commission of Science and Technology for Development meets in Chile

To discuss capacity-building for ICT in education, among other themes, the representatives of 35 member countries of the United Nations Commission of Science and Technology for Development (CSTD) will gather for the 2008-2009 Panel at ECLAC headquarters, in Santiago, Chile, from 12 – 14 November, 2008.

The meeting will include presentations on financing for innovation, WSIS implementation at a regional level, and the role of ICT in addressing the food crisis. There will also be a discussion among Science and Technology Ministers from the region and a roundtable with the private sector on the state of innovation and research in ICT for development.

The panel will cover three main themes:

- Science, technology and engineering for innovation and capacity-building in education and research;
- Review of the implementation of the outcomes of the World Summit on the Information Society and follow-up at the regional and international levels;
- Development-oriented policies for a socio-economically inclusive information society that provides access to information and communication infrastructure in an enabling environment.

The findings of the panel of this Commission, which has been mandated to follow up on WSIS, will be presented at the twelfth session of the Commission in May 2009.



# Recent publications on ICT and education

## Digital Review 2007 of Latin America and the Caribbean: Progress and Challenges Policies for Development with ICT- Abridged document

ECLAC, UNDP, DIRSI, IDRC-ICA. LC/W.202

June 2008. 39 pp.

<http://www.cepal.org/cgi-bin/getProd.asp?xml=/publicaciones/xml/1/33551/P33551.xml&xsl=/socinfo/tpl-i/p9f.xsl&base=/socinfo/tpl-i/top-bottom.xsl>

This report provides an inventory of the national policies and strategies that aim to guide the 21 countries of Latin America and the Caribbean towards Information Societies. It includes a chapter on education, which aims to contribute to the understanding of the situations faced by these countries as this process matures.



and education, on macro-economic factors such as growth. It concludes that more should be done to encourage innovation.

## 15 years integrating ICT into Chilean Education

Enlaces, Centro de Educación y Tecnología, Chilean Ministry of Education.

May 2008, 70 pp. (*Spanish only*)

[http://portal.enlaces.cl/tp\\_enlaces/portales/tpee371c23bs52/uploadImg/File/libro\\_enlaces.pdf](http://portal.enlaces.cl/tp_enlaces/portales/tpee371c23bs52/uploadImg/File/libro_enlaces.pdf)

The Enlaces Programme, of Chile's Ministry of Education, launched this book for National Educational Computing Day in August 2008. The book is a compilation of institutional history, tracking it over three stages: the origin of Enlaces; its Expansion, and Institutionalilty.



## Survey of ICT and Education in the Caribbean – Vol. 1

Edmond Gaible, InfoDev.

2008.

<http://www.infodev.org/en/Publication.356.html>

This survey offers a regional overview of the trends and challenges in the education sector in the Caribbean and the global trends in education and ICT of relevance to the Caribbean. It also details selected ICT initiatives in education in the Caribbean, as well as regional and national EMIS initiatives.



## Higher Education in Latin America and the Caribbean: ten years after the World Conference of 1998.

Carlos Tünnermann Bernheim, IESALC, UNESCO, and the Pontificia Universidad Javeriana (Colombia)

2008. 525 pp. (*Spanish only*)

[http://unesdoc.unesco.org/Ulis/cgi-bin/ulis.pl?catno=161618&set=48DOC129\\_0\\_447&database=ged&gp=0&mode=e&lin=1](http://unesdoc.unesco.org/Ulis/cgi-bin/ulis.pl?catno=161618&set=48DOC129_0_447&database=ged&gp=0&mode=e&lin=1)

The book analyzes advances in education system reform and the application of new technologies therein, among other issues, in post-secondary education throughout the region, over the decade since the 1998 World Conference on Education, in Paris.



## Pencil, Eraser and Keyboard: Information Technology in Education

LATIN, The Sangari Institute and the Brazilian Ministry of Education.

December 2007 (*Portuguese only*)

[http://www.rifla.net/index.php?option=com\\_docman&task=doc\\_download&gid=83](http://www.rifla.net/index.php?option=com_docman&task=doc_download&gid=83)

This study (described on page 5 of this newsletter) measures the gap in access to the digital world, with special emphasis on the educational field. Based on information on the current situation of ICT use in Brazil, Latin America and the rest of the world, the report considers that gaps exist not only between countries but also, and most importantly, within our societies, and they are attributed to spatial, racial and income differences.



## CEIBAL in XXI century society: a reference for parents and teachers

UNESCO

2008. 145 pp. (*Spanish only*)

[http://portal.unesco.org/ci/en/ev.php-URL\\_ID=27511&URL\\_DO=DO\\_TOPIC&URL\\_SECTION=201.html](http://portal.unesco.org/ci/en/ev.php-URL_ID=27511&URL_DO=DO_TOPIC&URL_SECTION=201.html)

This guidebook for parents and educators is published under a UNESCO-supported project, CEIBAL, which aims at providing all primary school pupils in Uruguay with a notebook to be used both at school and at home. With the intention to strengthen cooperation and the exchange of information between schools and families, the book teaches how to obtain benefits at home from the personal computer provided by the school.



## Knowledge and Innovation for Competitiveness in Brazil

Alberto Rodriguez, Carl Dahlman, Jamil Salmi Banco Mundial. June 2008. 268 pp.

[http://siteresources.worldbank.org/EDUCATION/Resources/278200-1215707816170/Knowledge\\_Innovation\\_Competitiveness\\_Brazil.pdf](http://siteresources.worldbank.org/EDUCATION/Resources/278200-1215707816170/Knowledge_Innovation_Competitiveness_Brazil.pdf)

This book analyzes micro-economic factors, such as the impact of ICT



## ICT for Education Magazine

Lima Publishing. Bi-monthly.

<http://www.ictforeducation.co.uk/>

ICT for Education is a bi-monthly magazine supporting primary, secondary and special needs schools in the way they implement and use new technologies.



The opinions expressed in this publication are the exclusive responsibility of the authors and may not coincide with those of the organizations concerned.

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