STRATEGIC APPROACHES ON THE USE OF

TICS IN EDUCATION IN LATIN AMERICA AND THE CARIBBEAN

UNESCO
United Nations
Educational, Scientific and
Cultural Organization

Santiago Office
Regional Bureau of Education for
Latin America and the Caribbean

STRATEGIC APPROACHES ON THE USE OF

TICS

IN EDUCATION IN

LATIN AMERICA AND THE CARIBBEAN

United Nations
Educational, Scientific and
Cultural Organization

Santiago Office
Regional Bureau of Education for
Latin America and the Caribbean

Published in 2013 by the Regional Bureau of Education for Latin America and the Caribbean (OREALC/UNESCO) Santiago

ISBN

Original title: *Enfoques estratégicos sobre las TICs en educación en ALC: Medición de aprendizaje y nuevas prácticas educativas*

Developed with the participation of Mr. Eugenio Severin.

Printed by Acción Digital

Printed in Chile

IND

INDEX

Communication
Culture
Innovation
Creation
Science
Teaching
Learning
Creation
Culture
Communication
Culture
Communication
Teaching
Innovation

EXECU
SUMM

EXECUTIVE SUMMARY

Since the beginning of the century, universal access to a quality education as an essential human right has faced a paradigmatic change. The development of ICTs (Information and Communication Technologies) in the last few years is demanding that the educational system updates its practices and contents to match the new information society.

First, updating constitutes a teaching challenge. To incorporate ICTs in the classroom and the school curriculum, there needs to be a modification in the initial teachers' education and services, and public policies have to guarantee a consistent implementation of reforms to have an affect the education systems integrally, including access to a quality technological infrastructure (hardware, software and accessibility to information and communication services). Likewise, ICTs also offer the potential benefit of improving the school's management, which implies the training of management and administrative staff in the use these new technologies.

The experience of adding technologies to the education systems in Latin America and the Caribbean during the last twenty years has showed little improvement in the quality of education. This is partly explained by the policy of incorporating new technologies by "importing" and launching them in the schools devices, cables and computer programmes without a clear previous approach of the objectives to be attained and the appropriate strategies to reach those objectives. Only then, can it be determined which technologies will be better to back the achievements pursued. In the end, technologies represent a marginal benefit to education practices becoming means occupying relatively the same significance before investment. Lack of evidence showing the effect of technologies on education also relates to the limitation of evaluation systems of quality have, basically restricted to standardisation test that assess some issues.

Two concepts are especially significant to implement a new education paradigm for the Latin American and Caribbean schools: the renewal of education practices and the strategies related

to learning evaluation. The development of both concepts represents challenges, while they offer alternatives to backup the implementation of these changes.

This document presents ideas to design a new education paradigm that focuses its task on students' learning and development of their full potential so that everybody has the skills to participate and contribute to more fair, democratic and integrated societies.

Learning
Communic
Information
Cultur
Creation
Education
Culture
Education
Education
Information

CONTE

CONTEXT

The use of Information and Communication Technologies (ICTs) grew widely in the last years of the 20th century and early in the 21st century, shaping what has been called the "Society of Knowledge" or the "Society of Information". In practice, there is no sphere of human life that has not received the impact of this type of development: health, financing, job markets, communication, governments, industrial productivity, etc. As in no other period in history, knowledge has had a quick and explosive growth with practically instantaneous distribution. The world has become smaller and interconnected in which, for better or worse, good and bad pieces of news reach their destiny quicker: science findings, new drugs and solutions, discoveries and innovation, but also economic crises, infections, new weapons and control tools.

A vast presence of ICT's constitute a chance and a challenge, imposing the pressing task of finding an orientation and use that enables achieving more democratic and inclusive societies, strengthening collaboration, creativity and fairer distribution of scientific knowledge, as well as a contribution to universal access of good quality and equitable education. "The rapid advance of these technologies offers unprecedented opportunities to achieve higher standards of development. ICTs have the capacity to reduce most of the common obstacles, especially time and distance, making it possible, for the first time in history, to use the potential these technologies have to benefit millions around the world" (World Summit on Information Society, 2003).

Latin America and the Caribbean, as a region, has been avant-garde in the last decades, and has had the fastest growth rates in the incorporation of technologies and connectivity (**IDB**, 2012). However, the region's development still fails to guarantee universal and equitable access. To date, connecting this huge investment and progress to achieve a more extended and more just development has proven difficult, and in the case of education systems, it has not yet developed a relationship with improved learning results.

The Members States of the United Nations Educational, Scientific and Cultural Organization, UNESCO, have mandated the organization

to address key issues, including the tensions and opportunities in public polices to use ICTs' potential advantages in favour of education and development. On this matter, the Regional Bureau for Education in Latin America and the Caribbean OREALC/UNESCO Santiago has defined two primary fields of development: a) New education practices, and b) Learning evaluation. The purpose is to use these technologies to contribute to a comprehensive improvement of education systems to favour the Education for All goals.

The document elaborates both subjects and is part of a continuum of insights carried out across the region and worldwide. Direct background can be found in ICTs Competency Framework for Teachers, UNESCO 2011, results to the Regional Meeting Preparatory to the United Nations conference held in Buenos Aires, Argentina (May, 2011) that published the document "Quality of Education in the Digital Era: an opportunity of cooperation for UNESCO in Latin America and the Caribbean"; the international seminar "Information and Communication Technologies (ICTs) Impact on Education" held in Brazil (April, 2010). This seminar recognised that the digital revolution is irreversible and that governments should be encouraged to propose policies to consistently insert ICTs in the curricula. We have also added other international organisations' insights (World Bank, IDB, OECD) and real experience coming from governments of the region to implement programmes and initiatives to apply ICTs to education.


Science
Education
Communication
Innovation
Culture
Teaching
Learning
Creation
Information
Innovation
Information
Teaching
Science
Learning
Innovation

ICTS IN EDU

ICTs IN EDUCATION

For many years, education has been considered the unique link that articulates cultural integration, social mobility and production implementation. Despite efforts carried out for the last decades, education systems in Latin America still face significant structural deficiencies that represent an obstacle to broaden the distribution of quality of education in the region. Nearly 50% of the Latin American population between 5 to 19 years, which ECLAC estimated to be more than 150 million in 2005, does not participate in the formal education systems with a formation that prevents their full integration to the modern economy, even with the risk of leaving them as the population that belongs to the segment living below the poverty line (ECLAC).

The increasing criticism to the education models and contents that are integral parts of the current curricula adds to those structural deficiencies. Substantially, models and current curricula were designed to meet requirements of a society which is profoundly different from the society of knowledge. The quickening pace of changes in contemporary societies puts into question what should be taught and how learning occurs.

Current times present large technological transformations which lead to a deeper change in human relationships. Access and generation of knowledge have turned into drivers of growth. New ways of connectivity are at the core of change processes in the economic, political, and cultural spheres, contexts that have created the term "globalization". People get involved in new ways of participation, social control and activism using social networks.[1] These transformations have led to enriched democracies, framing a new world order where the cybercitizen appears with greater power than ever compared to the traditional citizen. Digital technology is now present in all the activity areas collaborating with the workplace, family and educational changes, among others.

The new generations have an intense experience of the omnipresence of digital technologies, to the point that they may even modify their cognitive skills. In fact, it deals with young people

1 There is evidence that ICTs were crucial to the 2011 recent events in Middle East and Northern Africa. Likewise, the role played by the large students' mobilizations "la revolución de los pingüinos" in Chile, 2006 is well documented.

born in the internet, where digital technologies have become the mediators to the majority of their experiences. When using these technologies, they are developing distinctive skills, for instance, out of school they have the elements to obtain a great deal of information; they make quick decisions and are used to have instantaneous response to their actions; they have an amazing capacity to process information in parallel; they are learners that rely heavily on multimedia, and probably their learning process is different (OECD-CERI, 2006). Schools have the must to innovate educational methods if they want to appeal and inspire the youth new generation.

Are current educational models useful to motivate students' interest in learning? Are current school systems providing the necessary formation to cope with these changes or they have only become passive receivers of changes effect? Are the schools "capitalizing" the abilities and skills of these new learners and how?

Thus, school systems are facing the unavoidable and non-transferable need to transform and evolve from an education useful for an industrial society to another that must be ready to excel in the society of knowledge. Female and male students should be prepared to perform at jobs that currently do not exist and they also have to learn how to constantly renew a major part of their knowledge and skills. Additionally, this new order urges them to have new competences consistent to this context, i.e. abilities to administrate information, communications, problems resolution, along with skills to develop critic thinking, creativity, innovation, independence, collaboration, team work, among others. (21st Century Skills, 2002).

This transformation, however, is complex; schools, traditionally oriented to preserve and transmit customs, knowledge, skills and values already existing, which are implemented through activities and at a pace that do not match with the willingness and features of new students who are used: to have quick access to digitalized instead of printed information; to enjoy in-motion and musical images along with the text; to

idence that ICTs were crucial
1 recent events in Middle East
ern Africa. Likewise, the role
the large students' mobilisa-
evolución de los pingüinos" in
06 is well documented.

feel comfortable while they carry out simultaneously multiple tasks; and to acquire knowledge by processing discontinued and nonlinear information.

The key to have a thorough understanding of ICTs is to abandon the idea of it as simple tools, but to build on the representation of new conversations, aesthetic, stories, related links, and modalities to build identities and perspectives that again define the world. Remaining out and excluded from the access and use of ICTs has at least the aftermath of losing new ways of being and living in the world, and the rest of the humanity loses these contributions as well. In this century, the knowledge to use these technologies constitutes an indispensable requirement. (OECD, 2011). Students should become owners of these tools to make possible their active participation in the society with the opportunity to access to the labour market. Currently, many countries consider the access to technology and connectivity as a right related to a fundamental asset.

For most of the Latin American and Caribbean youth, school still constitutes the main space for them to have access to knowledge, values, socialization tools along with computers and the Internet. This gives a reason to consider it an especial space where governmental policies should focus their efforts on guaranteeing students meaningful, adequate and quality learning.

Under this context, the "digital literacy" concept was developed describing the basic capacities of ICTs everybody should manage to be or live inserted in the world. At the same time these tools provide, by extension, a platform from which it is possible to develop new skills and competences, by means of the options and innovation ICTs offer and enable to achieve. To the classical abilities that include literacy, writing and numeracy female and male students have to include the skills appropriate to feel comfortable in a fine collaborating, communicative, and problems resolving environment that also manages critic thinking, creativity and productivity. Both digital literacy and responsible citizenship are implicit (Voogt et al., 2011)

It is a must th
tion, where su
provided, evolv
The culture(s)
open-minded
school architec
ent modalities
knowledge dis
horizontal relat
teach? How ca
a variety of soc
teaching metho
as a dynamic c
Morave, 2011).

In this opportun
core role. They c
and male studer
are aware that t
ing achievement
intrinsic aptitude

Teachers are learn
opment starting
Using this reason
constitute more th
and/or informatics
think about how w
teachers learn and

When these thougl
America and the Ca
within a region chara
dee
digi
also
nec
pert

2 Hattie (2003) Teachers make a difference. What is the research evidence? Available in: http://www.acer.edu.au/documents/RC2003_Hattie_Teachers-MakeADifference.pdf

It is a must that schools conceived as a formal space of education, where subjects, classrooms and space / time learning is provided, evolve to become more permeable and dynamic spaces. The culture(s) involved in the society of knowledge demand an open-minded behaviour to rethink education. Revision of the school architecture, its learning space (which can grant different modalities of virtual methods) and the power included in knowledge distribution. How can the school space offer more horizontal relationships among those who learn and those who teach? How can our educational systems provide openness to a variety of social actors? How can we enrich our learning and teaching methods from a collaborative environment that serves as a dynamic of social construction of knowledge? (Cobo & Morave, 2011).

In this opportunity of cultural change, teachers represent the core role. They constitute the engines that accompany female and male students in the process of learning how to learn. We are aware that teachers account for a 30% variance in learning achievement,[2] which is the highest variance factor after intrinsic aptitude.

Teachers are learning managers that build possibilities of development starting from every girl, boy and youth's particularity. Using this reasoning, a conversation about education and ICTs constitute more than talking about equipment, computers, devices and/or informatics programmes, it represents the opportunity to think about how we are defining education and how youth and teachers learn and teach.

When these thoughts/actions are delivered in a region as Latin America and the Caribbean, it is necessary to recognize its value within a region characterized by its profound inequality. In our region, deeper gaps continue to be analogical and the new digital uses are generating new inequalities, but also new chances. This concept leads to make the necessary efforts to find effective, efficient and pertinent solutions that should be brought fruition.

2 Hattie (2003) Teachers make a difference. What is the research evidence? Available in: http://www.acer.edu.au/documents/RC2003_Hattie_Teachers-MakeADifference.pdf

As the Education for All Global Monitoring Report (2010) states, "inequalities, stigmatization, and discriminations arising from income status, gender inequalities, the ethnic conditions, language, address and disabilities lag behind the advances towards an Education for All" (UNESCO, 2010). This verified statement should be carefully treated when using ICTs in education to avoid contributing to increasing gaps that, on the contrary, should be eliminated.

To reach this objective, OREALC/UNESCO Santiago takes the leadership and poses questions and lines of action necessary to look at the objectives with a view into the future. Likewise, it has committed to collaborate with those less favoured in the use and knowledge of these objectives articulating them with those who work using ICTs. This constant choice to favour inclusion behaviour and commitment to ensure universal quality education must be particularly careful: with girls, boys and youth living in rural areas, and marginal neighbourhoods; with any type of disability or minority, native peoples, because these especial chàracteristics and needs do not vanish with the use of ICTs.

The choice to strengthen learning by using ICTs is consistent with OREALC/UNESCO Santiago's current task in the region and matches one of objectives of the Educational Regional Project for Latina America and the Caribbean EPT/PRELAC.

How ICTs benefit the implementation of relevant and efficient **new educational practices** become the first focus. The practices should favour teachers' leadership to produce educational changes. This strong interest means to assume ICTs are complex, and from the acknowledgement of the multiple factors influencing teachers' performance, understand the teaching field, and in this interrelationship to recognize how it influences students' performance *to recognize, multiply and give power to those* learning experiences ICTs make possible, enable or improve the traditional teaching practices.

The second important focus is **learning evaluation**. ICTs offer a set of innovative chances to follow up students' learning, teachers'

performance, schools, and educational systems. For the first time in history, it is possible to have knowledge sources that support teaching and governmental policies decisions, starting from actual evidence. National and International tests focused on learning progress evaluation may be greatly enriched, not only by implementing different lower-cost application methods, at more frequent intervals, but also by means of other powerful tools of results analyses and, therefore support learning management and also new evaluation areas including competencies for the 21st century, citizenship competencies and knowledge that embrace a broader range of disciplines.

Countries have made strong efforts to add ICTs tools to the educational processes. Only as a sign, the most known are Costa Rica and Chile's efforts started in the '90 decade through The Fundación Omar Dengo (foundation) "Plan de Informática Educativa", and the "Enlaces Programme, respectively. Lately, "Plan Ceibal" in Uruguay, the "Conectar Igualdad" programme in Argentina, the "Una Laptop por alumno" project in Peru; the "Colombia Aprende" initiative, the "Habilidades Digitales para Todos" of the Mexican government, among other significant national and subnational initiatives.

Obviously, our countries' endeavours have involved substantial economic investments most of which have yielded strong impacts reducing the digital gap, ensuring numberless students' and families' access to ICTs, otherwise excluded. ICTs access has also shown increasing performance of cognitive and non-cognitive skills, however, short to prove a meaningful and massive impact on the learning quality results anticipated.

To achieve quality learning, debates on ICT should go beyond the availability and connectivity issue progressing towards uses and impact on learning. Basic digital literacy not only improves students' learning process, but it also offers wider opportunities in the labour market and citizenship autonomy. If access and education do not help to develop innovating uses and new learning experiences results will still be poor. New polices should not only be responsible for equipment purchase but training, education, innovative educational resources investments and a systemic

link to governmental policies. This new perspective will help to change education practices that may impact on learning quality

In this context, we think that new governmental policies should comprehensively analyse the issues considering all the actors interest, obviously including students.

he will help to
learning quality

policies should
g all the actors


Communication
Learning
Education
Information
Innovation
Creation
Culture
Teaching
Science
Information
Education
WHY
QUEST
FROM
EDUC
ALL A

WHY ICTs?
QUESTIONS FROM THE EDUCATION FOR ALL APPROACH

During the Regional Education Project for Latin America and the Caribbean, the OREALC/UNESCO Santiago Bureau released the document *Quality Education for All: a human rights affair*. The document constitutes our region's contribution to the vision to the quality of education concept which acknowledges that education has public interest and it is a fundamental human right.

Education as a human right is involved in everybody's capacity to materialize the rest of their human rights and, therefore, nobody should be excluded. Education as a human right means that school access is the base on which comprehensive development and life-long learning rests. This means that education should have quality, universal access and should extend through one's lifetime. One perspective on education rights lies on its free of charge, compulsive, non-discriminatory and full participation conditions (UNESCO, 2007).

From OREAL/UNESCO Santiago's perspective, quality education as a universal and fundamental right must fulfill the following conditions: importance, relevance, equitability, effectiveness and efficiency.

Importance asks and responds to two factors: what it deals with and what is its purpose. Quality of education means stimulation of the abilities to intervene in the different planes of human life, capacity to face the current society's challenges and to develop a life project where others are involved. The four pillars of the report "La Educación encierra un Tesoro" (Delors, 1996) ("Educations encloses a treasure") oriented to the 21st century learning, i.e. learning: how to know, how to do, how to become and live together. These are the essential definitions of the fundamental and most significant aspects of learning.

Relevance attempts to give a meaningful direction to different walks of life and cultures, which also present different skills and interests, for them to be able to become an embodiment of the world's, local culture contents. This engagement will help them to mature, developing their autonomy and self-identity. To

enable relevance, education should be flexible and appropriate to the students' needs and characteristics and to every social and cultural environment. This requires moving from an education that works in a homogenous environment to an education within diversity taking advantage of such diversity as a chance to enrich teaching and learning processes while personal and social development improve.

Quality and equity. Both are compatible and indissoluble. Quality education delivers the resources and help suitable for each person to have equal conditions to take advantage of the educational chances that materialize her/his right to education. It is compulsory for education systems to guarantee equity in three spheres: access, process and results. The region's progress to better equity means to increase inclusive schools that receive the communities' girls, boys and youth transforming their culture and practices to respond to everyone's learning needs. Fairer and democratic societies are based on the development of inclusive schools.

Effectiveness and Efficiency are main conditions to quality education for all and should be the core concern of public action. It is a must to clearly assess effectiveness to materialize quality education for all, including efficiency of the governmental work, respecting the citizens' right to proper recognition and compensation for their actual efforts.

Some questions related to ICTs.

a) How ICTs can contribute to an appropriate education that considers learning: how to know, to become, to do and live together?

Learning to know: ICTs as means of information, access to knowledge, revision (evaluation and selection) of a variety of sources; as a possibility to know how globalization works in the world and as a tool to build (collective) new knowledge.

Learning how to become: the ethical use of ICTs, ICTs a means helping people to express them with loyalty to their true being with chance for leadership and participation, stressing respect and education for peace as basic guidelines to relationships.

Learning to do: it deals with ICTs mechanisms to problem resolution. ICTs use as a production tool i.e. (original audiovisual presentations among others); ICTs contribution to innovation.

Learning to live together: ICTs is a means: to better communications, to ethical use of ICTs, to social networks, to collective endeavours, to team productions, room for social participation citizenship performance, others. The aspect is essential to broaden peace culture, namely, ICTs in education should promote interchange and interaction along with increasing awareness and value of cultural diversity from a human rights approach.

b) How to releva

- An exclusiv vironments v tions. There of educatior

- Contents o but support people with

- ICTs repre ing method

c) How

From the a it is possib equity whi

Equity in access edu possible it

• Availabi most eler the whole radios, bu telephone tions to p

b) How to generate ICTs contribution to relevant educational proposals.

- An exclusive response is not available when it deals with environments wide opened to diversity and under unequal conditions. There must be multiple solutions to students' wide range of educational needs.

- Contents of ICTs can provide a range of answers to be considered but supports and different devices (i.e. computers suitable for people with disabilities) should also be part of solutions.

- ICTs represent a useful tool to diversify teaching and learning methods.

c) How ICTs can benefit equity?

From the approach of education as a right (Tomasevski, 2004), it is possible to state that three spheres are demanding further equity which can be provided by technology:

Equity in access: peoples' right to the same opportunities to access education at any level, with no distinction. To make this possible it is necessary to consider:

• Availability: sufficient distribution across the country. ICTs most elemental access conception should be availability for the whole country's educational centres (computer, TV sets, radios, but also connectivity and internet, TV cable or digital TV, telephones and mobiles. This would represent the least conditions to provide equity.

• Accessibility: availability shall also mean access:
- *To Physical Accessibility:* disposal of all the barriers impeding access, for example fair distances, elimination of architectonic barriers, others.
- *To Curricular Accessibility:* some students require support or especial helps to cope with curricular demands, participation and learning. Some examples are learning of the mother language, equipment and software suitable for persons with disabilities, others.
- *To Economic Accessibility:* elimination of the costs related to a part of ICT access.

Equity of resources and quality of education processes

• To achieve equivalent learning results a treatment that recognizes uniqueness to provide human, educational, and financial, materials and technological resources according to peoples and groups' needs should be available. Then pertinence would be the link to make this possible.

• ICTs contribution does not constitute a unique path, but the generation of multiple options to respond to a diversity of contexts and students.

Equity in learning results

• Regardless of their origin, female and male students must achieve equivalent learning results. Origin inequalities must not reproduce to limit future options.

• Universal access and appropriation of knowledge. Education systems have the responsibility to help all students to develop their special competences that will enable them to participate in society and develop their life projects. This may become a central contribution of ICTs.

a) Do e
effecti
What
condi
furthe

The evalu
technolo
and cost
educatio
cally bec
of these
when the

- Explicit
will help
of impact

- Gradual i
ogy to buil
with all th

- Impact a
and results
or massive
evidence a

- Evaluatio
consider no
practices be
compared t

d) Do education systems provide an effective and efficient use of ICTs? What kind of use and under which conditions investments in ICT are further effective and efficient?

The evaluation of programme implementation processes to use technology in education and most of all their relative impact and cost-effective results are essential to optimize ICTs use in education. The sole access to technology does not automatically become into better learning results and the consideration of these factors makes necessary to determine what, how and when they represent a benefit.

- Explicit and clear learning objectives of each intervention will help to align prospects and to better understand the type of impact wanted.

- Gradual impact helps to comprehend the process using technology to build educational models and strategies within a context with all the actors' participation and tested against facts.

- Impact and process indicators for each programme, follow-up and results evaluation to ensure that future scaling in universal or massive public politics are grounded on real knowledge of evidence and not pursuing current styles or perceptions.

- Evaluations should be developed in relative terms that will consider not only the role of technology investment to set new practices benefiting learning, but also the cost-effective factors compared to other potential investments.


Education
Communication
Culture
Lea
arning
Culture
Info
Innovation
Innova
Creation
Teaching
Creation
Science
Learning
ommunication
Culture
nnovation
novation
Teaching
eachin
ovation
eation
Communicat
earning
nmunication
ICTs
AND
EDUC
PRAC

ICTs AND NEW EDUCATION PRACTICES

Education systems are aimed at developing paradigmatic changes with respect to their current setting and the role of ICTs is to facilitate and speed up this process. The education new paradigm for the 21st century requires a school where processes development is new, further flexible, personalised and present in all aspects to put into practice students' competences.

The efforts to implement this new paradigm aimed at updating the meaning of education and how it develops and linking them with the needs of the 21st century society that considers each student's interests, needs, tastes and skills.

This paradigm is grounded on the concept that every member of the educational community is a learner. Knowledge now is not unique and consolidated from teachers, owners of knowledge and teaching process, who address students as passive receivers. The paradigm presents a community that searches, selects, develops and transmits knowledge in a context similar to a team work that materializes the concept of learning communities.

Learning communities have the role to generate the conditions and communications to train each member to learn how to learn developing the skills useful to cope with their challenges.

The communities' role is carried out respecting each member, her/his characteristics, paces and learning styles. In this type of community every person acknowledges the trajectory of her/his path and learning process.

Three conditions are necessary to develop this paradigm with success:

a) Focus on students. This new paradigm considers each student's characteristics, interests, conditions, expectations and potential at the centre so the environment turns into a space of development and integration. This context shall abandon the "horde" or cohort treatment common in today's schools, for us to advance towards a personalized treatment, without abandoning the substantial progress in education extension.

b) Alignment to the society of knowledge requirements. The paradigm should be closely linked to the needs of the environment enabling students to creatively cooperate to generate, communicate and develop knowledge to support inclusive, sharing and equitable societies.

c) Entire system consistency and development. Implementation shall run with a clear internal consistency so every process, member and results will reflect the paradigm. Changes should be consistent, not partial or local and immerse in an education system which is opened and committed to the new setting, not an exception in the system, but a fresh standard.

Based on these conditions, the paradigm has a scaled implementation to develop a collaborative learning process that sets, from a range of projects and initiatives, principles, strategies, elements and procedures that will enable its structure, replication and steps to become a public policy.

These changes attempt to approach the schools focus from an education aimed only at improving academic results to one where every member is the centre and the educational task is understood as company and cooperation among learners. It deals with a process characterized by its "standard quality" to one of "high standards of quality"; where evaluation systems do not mean to apply contents and structured curriculum but as the way to acquire meaningful information to achieve everyone's goal. The information communicated shall be crystal clear and it will also play the role of creating links and shape the communities and families' support to the project.

Teachers will be the leaders of the paradigm based on the implementation of fresh educational practices. OREALC/UNESCO Santiago, on its 2001 document "Background and Criteria to Develop Teaching Policies in Latin America and the Caribbean", defines some aspects of the teachers' characteristics in the region: poor quality of programmes for the teachers' initial training; lack of professional development and promotion of

teachers' task; unimportant, disarticulated educational models and curricula and lack of interest in schools reality and cooperative learning methods. ICTs will necessarily become an integral part of the solutions.

The new paradigm modifies the current practices turning them into useful tools to be applied in the society of knowledge. From this perspective, we propose six practices that define the conditions any education new paradigm should consider:

1. Personalised education

Innovative teaching processes acknowledge each student's characteristics for them to develop their potential to the highest standards.

This means that the 21st century has to consider each student's life project as an essential and basic part of the school experience. Each student's interest, characteristics and motivation give shape to learning meaningful experiences.

Students at the core of the learning process become the leaders of the search, development and communication of knowledge. This means teachers should move to a new role as mediators and architects of unknown experiences. This experience renewal will back differentiation to other learning ways using activities and differentiated pace, all of which will fit with the students' needs.

Technologies enable students and teachers to have an accurate and differentiated register of each student's learning process generating an individual itinerary appropriate for teachers' fresh roles and information. Meanwhile, students may develop additional search and self-learning strategies.

2. Focu

The main ar
process an
better curr

Now, "Lear
memorizir
been repl
and comn

Currently
it's more
capacity
The use
back diff

3. Tir

The inr
and tir
time b
genera

Thus,
at sch

Techr
by m
diffe

2. Focus on learning results

The main and final objective of any project to renew the education process and methods is to improve learning results. This means better curricular contents and acquisition of a range of skills.

Now, "Learning" has new commitments. The days of obtaining and memorizing a set of pre-chosen contents are over; now they have been replaced by learning how to cooperatively create, manage and communicate knowledge.

Currently, access to knowledge lies in what technology offers, it's more effective and quick response to communication and its capacity to efficiently evaluate at a lower cost learning results. The use of technology is also a chance to assess knowledge, and back differentiated strategies based on results during the process.

3. Time and space extension

The innovative education process contributes to overcome space and time barriers to offer education experiences in any place and time both for each student and for them as a whole using the generation of social networks of knowledge.

Thus, extension of time and space supports complimentary work at school and self-learning that appears from individual interest.

Technology is a tool that offers universal educational experiences by means of available and accessible platforms reachable from different device, places and time.

4. New learning experiences

Innovation applied to education should lead to other learning experiences by incorporating new reasoning, strategies and resources. These renewed means will facilitate individual projects, and in-home cooperative team work between groups of the same interest.

Projects and personalised learning environments, namely, "blending experiences" cooperate to the addition of games, social networks, online platforms, videos and other digital resources of the market that are also accessible to even low income students.

Technologies cut the cost of production and distribution of quality of education resources offering further opportunities to incorporate innovative experiences that help to materialize students' expectations and experiences.

5. Cooperative development to strengthen new knowledge

Team work enrich discovering and development of new concepts. Joint work contributes to broaden perspectives and diversity enabling students to improve results and deepen their knowledge and beliefs.

Innovation should link learning experience to the lifetime of students' community, giving chance for life long, enduring learning. Technology improves communication networks along with family ties, with school, among students, and local organizations to achieve common objectives.

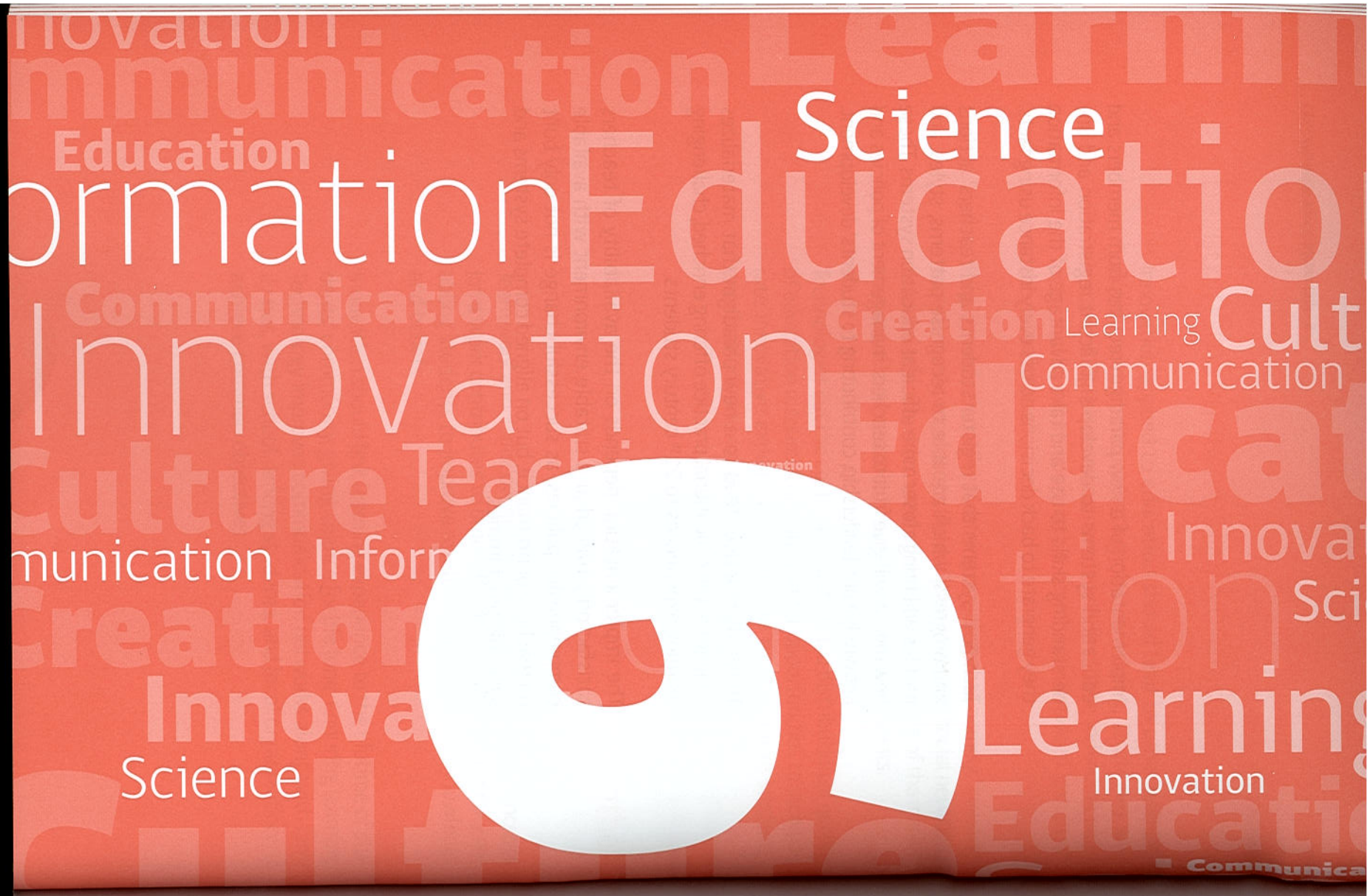
6. Knowledge management based on facts.

Implementation of a new paradigm requires from members and education systems to develop significant registration and understanding skills to use and take advantage of the information they generate to back decisions across every instance using facts.

Technical systems that register students and teachers' actions and progress, which are able to recognise patterns, styles, and profiles will bring closer more efficient education systems. These new means will give fruit to teachers' management of policies and knowledge and leadership, contributing to students' development.

These six practices lead to a new paradigm that materializes changes in the educational practice offering enriched, challenging learning experiences to 21st century students.

The implementation depends on the availability of teachers satisfactorily trained at a suitable environment with available comprehensive policies, as successful change is not only built on teachers' performance, but on aligned complete systems and systemic programmes.



ICTs AND EVAL

ICTs AND LEARNING EVALUATION

The second role ICTs have is results evaluation and correspondingly quality of learning.

Evaluation of learning results has become an issue for authorities around the world. Rankings, qualification of good or bad teachers or schools and even the country's progress in quality of education have warned authorities about the scope and limitations of the evaluation programmes.

Quality of Education evaluation has two types: a) evaluation of training or "evaluation of learning achievements" which attempts to report on the educative process findings and to support educational decisions-making based on actual progress; b) summative evaluations or "learning evaluation" attempts to show the final outcome and impact of the education process compared to expected standards of outcomes. To date, both types have been applied for different contexts and times. Formative evaluation is typical of school classrooms and is applied to small groups of students where it is possible to practice differentiation, while standardized assessments are applied to large number of students, usually chosen at random working with groups of control. (Cf. Kristen Blair and Daniel Schwartz, UNESCO, 2012).

In the assessment scope, the use of technology helps to shorten the difference between these two types, so, for example, it is possible to take advantage of technology to apply formative assessments to large number of students, extracting from them important data to develop differentiated educational strategies even to personalized education. Additionally, from the analysis we may increase our knowledge of the learning process and the factors influencing its growth and outcomes.

Beyond the technical conditions to build-up the evaluation instruments, it is obvious that the overall quality of a particular system, school or teacher cannot be judged based on results of standardized tests, which by definition and application, have restricted evaluation to some groups of specific contents and skills (usually numeracy, language, sometimes science). Therefore, standardized

tests cannot reflect the complexity of education results, far less regarding the environment in which results are produced.

Education assessment never constitutes and isolated opinion on the final process, otherwise it is basically an input. The role of assessment is to propose a feedback relative to the education advance to back with strong proofs the future decision making for the classroom, school or the educational system.

The reason behind evaluation is to learn not to reward or punish; it should lead to formative responsibility delivering data to feed the forthcoming decisions that favour quality.

A key requirement to evaluation systems is that they should provide suitable information to make decisions at all levels. How would it benefit to know a score or result if the corresponding analysis does not help to understand which are the efficient or inefficient processes and the areas that would be benefited from improvement? Then authorities, school board, teachers and families should be aware of the information relevant to results and useful to back decisions and responsibilities jointly taken to carry out changes.

The use of standardized tests in some subjects constitutes a powerful indicator arranging schools to decide where they should focus its time and resources. From the neuroscience perspective, these types of evaluation tests modify a very small portion of the left hemisphere of the brain, leaving aside other skills. If evaluation links with the needs of a society of knowledge, then a range of subjects and competences would present indications of consistency, and valuation of the talents diversity among students.

Considering that for a long time evaluation systems have been strongly limited, on the one hand, by the high costs normally associated to implementation, and on the other hand, by the actors and education systems' objection to the purpose assigned to education assessment then, is it possible for ICTs to overcome these unavoidable issues?

What should be evaluated?

Up until now, the processes to evaluate education progress until now have used standardized tests in language and numeracy, except for some countries' endeavours to extend evaluations to science and history. These restrictions have generated consensus that evaluations without considering other subjects bias the concept of quality, notwithstanding that without other tools these represent the best alternative.

Technology decreases the implementation of evaluation systems costs, and delivers other resources as additional questions or development of self-adaptive tests that increase difficulties according to students' performance and progress. Then, undoubtedly school systems would be benefited from the use of technology.

Comprehensive formation can be strengthen by enlarging themes incorporating other knowledge and skills as art, music, language, sports, philosophy, civil education, others.

Latest developments that add complexity as in the project "Assessment and Teaching of 21st Century Skills" (ATSC21S, 2010) incorporate skills of higher level, also known as Competences for the 21st Century: critic thinking, communication, creativity, planning and others.

Finally, evaluations considered as a feedback process delivers the fundamental task of using evaluation options to learn about students' progress not only in relation to a single and predefined curriculum, but also to their living conditions, personal characteristics and choices, goals and purposes. Evaluation alternatives could be the key to understand how the education system is aligned to become students' best support. Personalised education methods also face the challenge of assessing learning in the educational practices, not only concerning educational practices, but is should help to better understand students' behaviour and achievements. A significant support will come from algorithms that help students' profiling and "Big Data" to analyze and recommend strategies.

How to evaluate?

Current technologies make possible to implement different and complex evaluation tools that automatically fit to students' behaviour and proved results. Their complexity offer differentiated proposals, accurate and timely feedback, and support to teachers, school board and public officials of the education system.

Evaluation tools may work online or offline using non-synchronic connections enabling access to even remote areas or with low connectivity help. These tools can be adapted to a number of devices as laptops, computers, tablets, mobiles and others. They can be shared during learning activities, games, interactive applications to decrease stress and costs related to a formal "evaluation". Simultaneously, they inform students' progress without their awareness.

The lower costs that stem from the absence of printing devices and tools transportation expenses, along with mobilisation of test, correction and analysis personnel expenses give a chance for a more periodical and timely use. No explanation can support the lack of teachers and students access to quality learning evaluation tools several times a year. Learning evaluation should address specific progress of curricular subject-matter with immediate feedback. Using this procedure, teachers can use evaluation as supporting tools that simultaneously help to take educational decisions. In the current setting, opportunity affects even massive and complete learning evaluations, because results reach teachers only after several months when there is no chance to make corrections or reinforce students' learning, simply because many of them have already left school.

Success is conditioned to guaranteeing that evaluation task, as an educative resource, should be aimed at supporting feedback and educational decision-making at all levels, avoiding distortion linked to incentive and punishment systems that may seriously affect teachers and school, by altering the evaluation process meaning and potential.

46 Increasing access to technology by educative systems opens wide perspectives to learning and quality assessment. Many of these opportunities are already on track and being tested. Examples are the Uruguayan learning evaluation system, the aforementioned ATC21 endeavour (also led in Latin America by the government of Costa Rica), and the preparatory work of OECD to apply forthcoming versions of the PISA test, and numberless still little efforts that have already shown their potential.

7
LIN
OF A

Culture Communication Learning Information

LINES OF ACTION

The evidence collected from the inclusion of technologies to the educative systems during the last 20 years indicates it has not improved quality of education. As mentioned before, the explanation comes from the "reasoning of importing" belief which means the introduction of devices, cables and computer programmes without having a profound understanding of educational objectives, which strategies are appropriate to succeed, to only afterwards make a decision of which technologies should be introduced to reach the objective. In the end, technologies used finally have a marginal significance to the education practices, occupying relatively the same significance that before investment. Additionally, the lack of evidence showing technologies effect on education relates to the limitations systems of quality evaluation themselves have, essentially restricted to standardized tests applied to some subjects.

The diagnostic of this document proposes a line of action that contributes to reach the objective of Quality Education for All:
1. Give weight to the implementation of new practices, aligned to students' interests, characteristics and requirements of the society of knowledge.

2. Contribute to achieve comprehensive and complex education evaluation systems that give support and feedback to educational decisions at all levels.

3. Transform technologies into critical tools, unavoidable and preferential for the implementation of new practices and evaluations tools.

Public Policies

The approach of public policies to education and ICTs should be comprehensive and consider the setting. Lines of action should enable youth's active and responsible participation to society of knowledge. To pursue these objectives, UNESCO will promote and support the implementation of public policies required to assume:

• Promotion of the concept that technology and Internet should be compulsory and students have the right to demand

it. States should assume guaranteed access to those students who lack resources.

• Guaranteeing teachers and families' access to basic formation and training to use digital technology for them to be able to contribute with students.

• Support to socially responsible initiatives that guarantee respect for the right of privacy and intimacy for all, specially minors, copyrights, care and promotion of local cultures, equipment recycling, others.

• Recognition and encouragement to have good education practices leading to technology use and favouring access to quality resources for schools and teachers. Strengthening of cooperation among peers, development of learning networks and communities that collaborate to increase respect for diversity and peace building.

• Empowerment of technologies' potential to strengthen quality of education for all, lifelong education, and development of talents related to the 21st century requirements. Management improvement of education systems to increase efficiency, and chances to increasingly involve education communities to relevant decision making.

Educational Practices

Acknowledgment to new education practices that estimate learning as fundamental, which makes efforts in aligning educational efforts to students' interests, characteristics, and environments as well as to requirements of the 21st Century.

UNESCO concern on education is to pursue technology initiatives:
• To sponsor new learning experiences focused on students using differentiated and personalised educational processes based on educational decisions that are backed on evidence.

• To encourage cooperation inside the classroom, education centres and among students and teachers across the region.

Empowerment of learning communities and education actions that broaden time and space to learning possibilities outside school.

• To valuate students' knowledge of ICTs to generate opportunities of mutual learning spaces.

• Under the application of ICTs, to promote culture of peace and respect for cultural diversity. This means to include ICTs themes to the school living together policies.

• To reinforce teachers' curriculums of initial training including use of ICTs that have educational purposes. This method is useful not only to strengthen the educational objective of ICTs, but also to create bridges of communication with students, generating a privileged environment to build up knowledge.

• To consolidate teachers' formation of service promoting personalized, continual and online formation systems that enrich the generational approach and gender perspective with respect to teachers' analysis to enable tailored training.

• To encourage the generation of interchange networks to consolidate the interchange of educational and curricular models within the region.

Enlargement of evaluation scope will help to envision a more complete and consistent meaning of quality of education. This position requires new and improved tools, but better than that, tools with the capacity to provide pertinent and timely information to back all the school members including families and educational authorities' decision making. The expected results should strength learning methods and individuals' commitment to quality of education.

Within this framework, UNESCO will favour the initiatives interested in technology use:

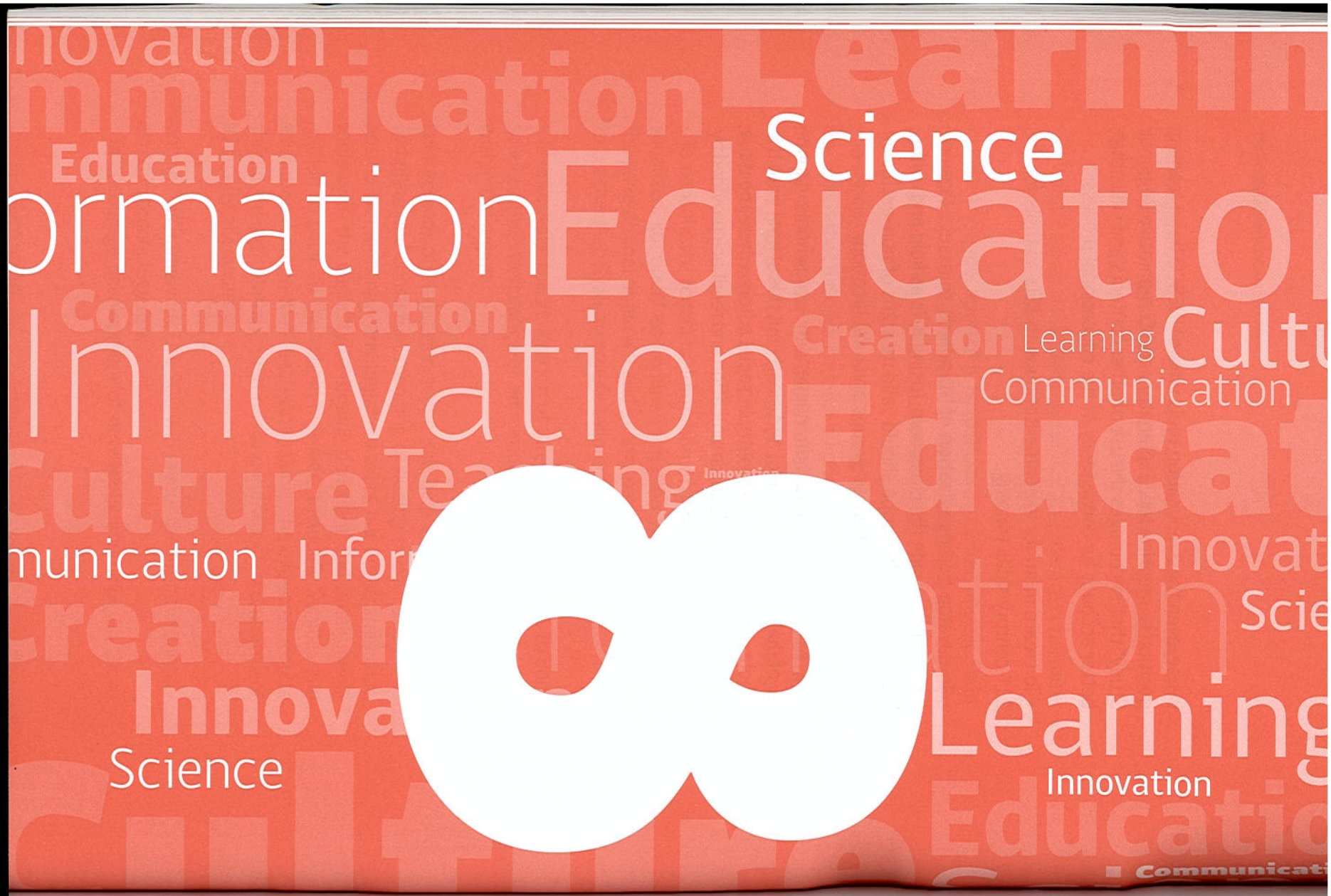
• To encourage development of new tools, improving all those

in use, even those education tools where UNESCO has a leading position to mention the "Explanatory and Comparative Regional Study" that encourages the use of other contents and skills that better account for consistency of the educational process.

• To create room for experimentation with ICTs as tools for the 21st century skills training.

• To develop homogenization of standards to assess learning inside and outside the classroom, (using ICTs as field and evaluation means). The scope should validate signs of non-exclusion due to gender, indigenous groups and rural location.

• To reinforce communication independence of schools, capacity of dialogue inside school and mostly outside school with the whole community and its multiple social actors, where the issue deals with knowledge, communication and feedback provided by learning assessments.


Science
Education
Innovation
Communication
Learning
Culture
Creation
Science
Innovation
Learning

Science

Innovation

Education

Communicati

REFERENCES

ATC21S (2010). Defining 21st century skills (White paper), preared by Marilyn Binkley, Ola Erstad, Joan Herman, Senta Raizen, Martin Ripley with Mike Rumble. January 2010.

Ben Youssef, A. (2008). The Impact of ICT on Student Performance in Higher Education: Direct Effects, Indirect Effects and Organisational Change. *Revista de Universidad y Sociedad de Conocimiento*, Vol. 5, Nr. 1, pp. 45- 56.

Banco Interamericano de Desarrollo, BID (2012). Construyendo puentes, Creando oportunidades: *La Banda Ancha como catalizador del desarrollo económico y social en los países de América Latina y el Caribe*. BID

Blair, Kristen and Schwartz, Daniel (2012). How tecnology can change assessment, UNESCO Institute for Information Technologies in Education, Policy Brief October 2012

Claro, M., Espejo, A., Jara, I. & Trucco, D. (2011). *Aporte del sistema educativo a la reducción de las brechas digitales: Una mirada desde las mediciones PISA*. Santiago: CEPAL.

Cobo Romaní, Cristóbal; Moravec, John W. (2011). Aprendizaje Invisible. Hacia una nueva ecología de la educación. Collecció Transmedia X.

Condie, R. & Munro, B. (2007). *The impact of ICT in schools – a landscape review*. Coventry: Becta.

Cristia, J.P., Ibarrarán, P., Cueto, S., Santiago, A. & Severín, E. (2012). *Technology and Child Development: Evidence from the One Laptop per Child Program*. IDB WORKING PAPER SERIES No. IDB-WP-304. Washington: IADB.

Delors, Jaques (1996). La Educación encierra un tesoro. Informe a la UNESCO de la Comisión Internacional sobre la Educación para el Siglo XXI. UNESCO.

Hattie, J. (2003). Teachers make a difference: What is the research evidence? Melbourne: Australian Council for Educational Research (ACER).

Hinostroza, J.E. & Labbé, C. (2011). *Policies and practices for the use of information and communications technologies (ICTs) in education in Latin America and the Caribbean*. Serie Políticas Sociales, Nr. 171. Santiago: CEPAL.

Instituto de Tecnologías Educativas (2010). *¿Están los Aprendices*

del Nuevo Milenio alcanzando el nivel requerido? Uso de la tecnología y resultados educativos en PISA. Unknown: ITE, Departamento de Proyectos Europeos.

ITL Research (2011). *INNOVATIVE TEACHING AND LEARNING RESEARCH: 2011 Findings and Implications*. Unknown: ITL Research.

ITU (2010). *World Telecommunication / ICT Development Report 2010. Monitoring the WSIS targets: A mid-term review*. Geneva: ITU.

Lugo, M.T. (2010). Las políticas TIC en la educación de América Latina. Tendencias y experiencias. *Revista Fuentes*, Vol. 10, pp. 52-68.

Ministerial Taskforce (2008). *Extending Opportunity: Final Report of the Minister's Taskforce on Home Access to Technology*. Coventry: Becta.

OCDE (2011). Informe Habilidades y competencias del siglo XXI para los aprendices del nuevo milenio en los países de la OCDE.

OREAL/UNESCO (2012). "Antecedentes y Criterios para la Elaboración de Políticas Docentes en América Latina y el Caribe".

Pedró, Francesc (2011). *"Tecnología y escuela: lo que funciona y por qué", XXVI Semana Monográfica de la Educación.*

Santiago, Ana et. al. (2010). *"Evaluación Experimental del Porgrama 'Una Laptop por Niño' en Perú".*

Schalk Quintanar, A.E. (2010). *El impacto de las TICs en educación.* Relatoría de la Conferencia Internacional de Brasilia, 26-29 abril 2010. Santiago: UNESCO Santiago / OREALC.

Severin, Eugenio & Capota, Christine (2011). "Modelos Uno a Uno en América Latina y el Caribe", Notas Técnicas #9, Banco Interamericano de Desarrollo - BID.

Conceptual e Indicadores", Notas Técnicas #11, Banco Interamericano de Desarrollo – BID.

Severin, Eugenio (2011b). "Competencias del Siglo XXI, cómo medirlas y enseñarlas", Aportes #9, Banco Interamericano de Desarrollo - BID.

Shawki, T. (2010). *The UNESCO ICT competence framework for teachers.* Presentation 8 July 2010 in Warsaw, Microsoft ELF.

Tomasevski, Katarina (2004). Indicadores del Derecho a la Educación. Revista IIDH, Vol. 40.

UNESCO (2007). Educación de Calidad para Todos, Un asunto de