

## RESEARCH

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# COMPARATIVE ANALYSIS OF PUBLIC POLICIES IN EDUCATIONAL TECHNOLOGY

## *Análisis comparativo de las políticas públicas en tecnología educativa*

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### ABSTRACT

Learning from technology is no longer relevant, but learning from technology and achieving such an ambitious goal is not a product of chance, but an important behind-the-scenes planning work that begins with the conception of what in reality one wishes to foster, Develop and produce in the field of educational technology from the Government, in a healthy pact with society, the country's blessing and its citizens, so designing clear and visionary public policies, specifically in this area, can boost economic, social, political and cultural development of the nation, and even of the Region. The use of Information and Communication Technologies in Education has become a public policy worldwide. Most of the countries of the world, to a greater or lesser extent, have designed actions, concrete activities in order to make citizens learn since an early age with technology, making this important process come with a great deal of motivation that transmit to the student the taste for learning, the taste for knowledge. In this article, public policies on educational technology are presented and analyzed in countries such as Finland, South Korea, Colombia, Chile, Mexico and Venezuela.

### KEYWORDS

Public policies, educational technology, education

### RESUMEN

Aprender de la tecnología ya no es lo relevante, sino aprender con la tecnología, y lograr tan ambiciosa meta no es producto del azar, sino de un importante trabajo de planificación tras bastidores que comienza con la concepción de lo que en la realidad se desea fomentar, desarrollar y producir en tema de tecnología educativa desde el Gobierno, en un sano pacto con la sociedad, a beneficio del país y sus ciudadanos, por lo que diseñar políticas públicas claras y visionarias, específicamente en esta área,

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puede impulsar el desarrollo económico, social, político y cultural de la nación, e incluso de la Región. El uso de Tecnologías de Información y Comunicación en Educación se ha convertido en una política pública a nivel mundial. La mayoría de los países del mundo, en mayor o menor medida, han diseñado acciones, actividades concretas con el fin de hacer que desde tempranas edades los ciudadanos aprendan con la tecnología, haciendo que este importante proceso venga acompañado de un gran dosis de motivación que le imprima, al estudiante, el gusto por aprender, el gusto por el conocimiento. En este artículo se exponen y analizan las políticas públicas en tecnología educativa de países como Finlandia, Corea del Sur, Colombia, Chile, México y Venezuela.

#### **PALABRAS CLAVE**

Políticas públicas - tecnología educativa - educación

#### **ANALISES COMPARATIVA DAS POLÍTICAS PÚBLICAS EM TECNOLOGIA EDUCATIVA**

#### **RESUMO**

Aprender da tecnologia não é o relevante, e sim aprender com a tecnologia, e conseguir tão ambiciosa meta já não é uma questão de sorte, mas de um importante trabalho de planificação, que começa com a concepção do que realmente deseja fomentar, desenvolver e produzir em relação à tecnologia educativa desde o Governo, em um saudável pacto com a sociedade, ao benefício do país e seus cidadãos, pelo que desenhar políticas públicas claras e visionárias, especificamente nesta área, pode impulsionar o desenvolvimento econômico, social, político e cultural da nação, e incluso da Região. O uso das tecnologias de informação e comunicação em Educação se converteu em uma política pública a nível mundial. A maioria dos países do mundo, em maior ou menor escala, desenharam ações, atividades concretas com a finalidade de fazer desde cedo que os cidadãos aprendam com a tecnologia, fazendo que este importante processo venha acompanhado de uma grande doses de motivação que imprima ao estudante o gosto pelo conhecimento. Neste artigo se expõe e analisa as políticas públicas em tecnologia educativa de países como a Finlândia, Coréia do Sul, Colômbia, Chile, México e Venezuela.

#### **PALAVRAS CHAVE**

Políticas Públicas – Tecnologia Educativa - Educação

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## 1. INTRODUCTION

The development of new information and communication technologies, also called ICTs, is one of the key factors in understanding and explaining the economic, social, political and cultural transformations of recent years.

In the field of pedagogy, education has had the need to complement and reform the teaching-learning process with information and communication tools, in order to offer innovative and quality education that mainly provides students with optimization and development of their skills and abilities, improvements in their academic performance and adequate training to face the competitive professional world successfully.

The United Nations Educational, Scientific and Cultural Organization, UNESCO (1995-2011) states that:

Information and communication technologies (ICTs) can contribute to universal access to education, equality in education, the exercise of education, quality learning and the professional development of teachers, as well as management and more efficient administration of the educational system.

The state must undoubtedly provide the opportunity for each of its members, regardless of their social status or level of study, to have access to a quality teaching-learning process in accordance with the demands of today's society.

It is essential that each public or private school be equipped with didactic and multimedia resources, educational software, platforms, virtual libraries, and that its teachers are trained, motivated and have mastery of the different multimedia resources to present the contents through the use of the technology (recordings, transparencies, readings, problem solving, research, educational games, etc.), who have the ability to search the information in the network, to adapt it to the general interests of their students, and to adjust the curriculum to the needs of their group, regardless of the level of education they teach. That is, each teacher must have access to adequate training and opportunities for constant professional development and must be motivated to learn and apply (UNESCO, 1995-2011)

In the same vein, UNESCO (1995-2011) explains that the objective of ICTs is:

Help create new open learning environments and foster the transformation of a teacher-centered environment into a student-centered environment; That is, an environment in which teachers cease to be the main source of information and the main transmitters of knowledge to become collaborators and co-students, and in which students stop receiving information in a passive way to participate actively in their own learning process. (S / p)

On the other hand, Castañón (2006) adds that:

This reality directly affects the relationship between the teacher and the student. The role of the teacher has been transformed, to leave behind an expository function, characterized by master classes to a creative teacher who suggests searches and explorations. This new role entails accompanying the student through procedures in which new learning is built together, this way the teacher

in the knowledge society is profiled as a pedagogical agent expert in learning (p.1)

## **2. OBJETIVO**

### **2.1 Public policies in educational technology.**

The use of technology generates an important change, the student moves from a passive attitude in front of the lectures of his teachers to a constant activity where he becomes the protagonist of his own learning, while the teacher then devotes his efforts to generate innovative educational strategies that stimulate research, improve communication and optimize the time of attention, generating that students spend more time to work and encourage motivation to learn more.

Public policies are important and fundamental for the development of knowledge growth among the population, especially among those from the most disadvantaged economic strata, in which it delimits the areas of the problem, in education, the study of development and an adequate diversity of ethnic and cultural traits.

The results of a country's public policies may emerge from partnerships, cooperation or forums, such as the Asia-Pacific Economic Cooperation Forum (APEC), which was created in 1989 to join efforts for a common cause, economic growth and development of citizens. To achieve its objectives, the forum works to reduce trade barriers (promote free trade) among member countries, encourage efficient economies, increase exports and establish cooperative relations. The 21 member economies of APEC are Australia, Brunei Darussalam, Canada, Chile, China, Hong Kong, Indonesia, Japan, Korea, Malaysia, Mexico, New Zealand, Papua New Guinea, Peru, Philippines, Russia, Singapore; Chinese Taipei, Thailand, the United States and Vietnam. The organization of APEC makes it possible to see the themes by sectors like commerce, tourism, and one of them is education. The meeting of the ministers of these portfolios is held every four years and it defines the policies to be followed and proposed to be implemented in a similar period. The recommendations are presented to leaders or heads of government at the summits they hold.

In turn, the great powers of APEC have partnered in the Consortium for Cooperation in Cyber Education (ACEC) established in June 2001 to promote the use of technological tools in education. With the support of APEC Education Foundation, this group works to reduce the digital divide and improve the exchange of information and knowledge on issues of the educational sector in the region. To this end, they make use of web portals, encourage the creation of teacher communities and build the human capacities of educators.

In response to the above, it is decided to carry out a study to know and analyze public policies on educational technology in countries such as Finland, South Korea, Colombia, Chile, Mexico and Venezuela.

## **3. METODOLOG**

Comparative analysis of public policies in educational technology in the countries of: Colombia, Venezuela, Mexico, Finland, South Korea and Chile.

This piece of research is of a Non-Experimental design. According to Hernández, Fernández Collado and Baptista (2006), research is considered to be this type when "studies are carried out without the deliberate manipulation of variables and where only phenomena are observed in their natural environment and then analyzed" (p.105) .

In relation to the above, phenomena will be observed in their natural environment and then analyzed. That is, documentary information will be addressed in order to analyze public policies in different countries.

The same way, the Non-Experimental Design will be done in a transectional way, since data collection will be done in just one moment. According to Hurtado (2010), research is of a transectional type when "the purpose is to describe the event that occurs or is observed at a unique moment of the present, using the collection of data from living or direct sources in their natural environment" (p .422).

### **Kind of research**

The research work aims to know in a descriptive way the characteristics of the public policies of different countries in the area of educational technology, through content analysis. The main function of descriptive research, according to Hernández, Fernández and Baptista (2010, p.60), "is to collect or measure information by means of an independent or joint way on some concepts or variables to which they refer to say how it is and how the phenomenon manifests itself." The information was taken in its real state, as it was taken at the time of its collection, for which no hypothesis was verified.

### **Population and sample**

- The choice of countries to be analyzed was addressed as follows:
- Venezuela: it is the country of interest from which this piece of research starts.
- Colombia: one of the countries in Latin America that has made most progress in the Pisa Report.
- Mexico: it has recently allocated a large amount of resources for educational technology.
- Finland: because it is the best-evaluated country in the Pisa Report.
- South Korea: the country that in fewest years has drastically improved its results in the Pisa Report.
- Chile: is the most advanced country in Latin America in educational technology and in the Pisa Report for the region.

### **Variables and data analysis**

Due to content analysis, this piece of research has no variables but elements for the categorization of information. These are: general proposal, legal bases, teacher training, infrastructure and curriculum. Data analysis is qualitative.

## 4. RESULTS

### *Finland*

**General Proposal:** Education is fundamentally guided by a constructivist conception of knowledge, where students can search, transform and use information in their daily lives. On the other hand, active participation and cooperative work are encouraged. The provision of primary schooling is provided by the 450 municipalities in which the country is divided, which have a duty to organize education for all children of school age residing in their territory or to ensure that they receive instruction.

High schooling is intended primarily for young people aged 16 to 19 years. Due to the different options for students, there are no fixed itineraries or groups per class at high school.

If, after elementary school, the adolescent does not want to go to high school, he can choose the basic vocational training that offers a lot of school alternatives and specialties to choose from. This basic training can be acquired both at institutes and in work centers, through a learning contract. The offer comprises 75 basic professional qualifications, which are obtained in three years and grant the competence to continue higher education.

For higher education, there are universities and professional colleges. The 20 universities in Finland belong to the State, which contributes most of the funding, although for their operation they are very autonomous. The university network covers the whole country, as far as Lapland. University studies are within reach of all, since no tuition is charged. The 29 professional higher schools are characterized by their close relationship with the work environment.

All schools must have a plan to integrate ICTs in their schooling and demonstrate how they are implementing it. This initiative was undertaken to encourage teachers to expand their knowledge of ICTs and to start using some of their tools.

**Legal Foundation:** The law establishes that education is compulsory and free for all children from 7 to 16 years. This gratuity also includes all the necessary textbooks and utensils, besides a hot meal to the day. Public expenditure on education accounted for 6.2% of GNP in 1998 and 2002 (the average for OECD countries is 5.3%). In 2009, Finland enacted broadband Internet access as a right, the first country to adopt this measure

**Teacher Training:** Basic teachers are prepared to teach all subjects in the curriculum. For more than 5 years, they must be trained in language, mathematics, natural sciences, history, ethics, aesthetics, religion and technology, music and arts, children's literature and drama, physical education and crafts, in addition to acquiring knowledge of special education. After obtaining the educational title, the employer can offer the teacher continuous education, based on the use of new technologies in education and the specific educational problems of the locality.

The Finnish National Education Committee offers courses for further professional development and admits all annual applications to support and fund ICT projects in schools. The Finnish Ministry of Education has launched a program called OPE.FI to improve ICT competence among teachers and the teaching staff. In addition, the National Education Committee has developed didactic material to support the project, which is distributed free via the Internet to all participants.

There are also teaching practices while they are studying education at the university. The group of advanced students should attend a session where they will give a lesson while they are supervised by a professor of the university that evaluates them in all aspects: aptitude, knowledge of the subject, among others.

**Infrastructure:** Each classroom is equipped with a DVD player, a TV set, a projector and computers. WILMA, in Finland, "consists of a computer program whereby teachers are in contact with the parents of the students, and together they follow their weekly steps.

One of the most important advances in technological infrastructure applied to education is UNIVERSITY OF INNOVATION, proposed in 2009 and launched in 2010. This was an initiative of the Finnish Minister of Education, which proposed to create an institution in which three of the most prestigious faculties in technology, business administration and fine arts merged. The University of Aalto, as it is called, would not be governed by the state but by a private foundation with state participation. This initiative sought to revitalize the creative capacity in the Finns and, for that reason, the University of Technology (one of the merged ones) took center stage in the project.

**Curriculum:** every 5 years, the curriculum is discussed and modified by the teachers of a locality, based on state guidelines. This implies that all teachers define their needs and participate in the generation of their plans and programs, through a democratic process involving pupils and parents at local municipal level. In Finland, there is less than 1% of school failure since they have the premise of "Never stay behind". This means that any child who has some academic difficulty will be referred to a special support program, such as leveling, where they will receive the same program as the rest of their peers but they will receive it individually or in a classroom with few students (Max 5) . In all schools, there is a psychologist, a social worker and, in some sections, a permanent and an auxiliary teacher.

### *South Korea*

**General Proposal:** Education focuses on training students and adults for the information society. It is based on equality of opportunity and enthusiasm for quality education. The government's purpose is a competitive education system that adapts to the new times. Korea's future commitment is based on the training of competent, creative and autonomous people able to process new knowledge and information effectively, which is indispensable in the 21<sup>st</sup>-century knowledge society.

South Korea has one of the most technologically advanced educational systems in the world, with a long history of public policy aimed at constantly improving education, one of the most precious assets in Korean society.

**Legal foundation:** from 1996 to 2000: Regulatory and legal reform to integrate ICTs in the educational system. The National Education Act of Korea in 1965 recognizes the need for an educational reform that includes the philosophical foundations of education. In the 1990s, the government promulgated, among others, the special act for technological and scientific innovation and implemented the national advanced project (1992), the creative research initiative (1997), the science innovation law (1997) and the Plan for technological and scientific innovation (1997-2002). In March 1999, the Vision 2025 Committee was organized to formulate a long-term plan for scientific and technological development.

The Ministry of Education and Human Resources Development oversees the adoption of ICTs, a process that has taken place in three phases. During the first, the infrastructure was improved to facilitate its adoption; in the second, it was sought to integrate them into teaching and learning methods; and in the third, which has been ongoing since 2006, e-learning (through EDUNET or National Center for Teaching / Online Learning) is to be realized, so that all people can study whenever and wherever they want. (Ministry of National Education of the Republic of Colombia, s / f).

**Teacher Training:** The teacher who has been teaching for 3 years is obliged to take a regular training course, the government supports the expenses. More than twice a year, teachers must teach in public to know the quality of teaching Through EDUNET, teachers can collaborate with other teachers of different backgrounds and establish cooperative work forms as well as exchange materials and educational resources. In 2003, 80% of teachers participated in this service (González, 2011) Permanent training is fostered.

**Infrastructure:** The development of ICT infrastructure in Korea begins with the "Comprehensive Plan for Education" in 1997, which seeks to build the basic infrastructure for ICTs in education so that all teachers in elementary and secondary schools with computer networks have a personal computer to use in their activities within the classroom. The classrooms are equipped with "digital textbooks" that are executed through tablets, a PC with touchscreen, so it can be read, heard and manipulated, working and writing directly on them, as if they were a notebook, using the keyboard and a special pen.

**Curriculum:** reforming education with the aim of introducing ICTs into the curriculum has been a constant since the 80s. ICTs in the curriculum is applied as a strategy to integrate the population into the knowledge society.

Beginning in 1995, a Presidential Committee launched a reform that encourages students to learn according to their skills, talents and abilities. It is limited to equipping students with the so-called 3R: foreign language, interpersonal skills and literacy in information technologies.

Today, the Korean education system consists of six years of elementary education, six years of high school education and two to five years of higher education, divided into technical institutes and universities. The objectives and guidelines set out in the ICT program for Basic Education emphasize:

1.- Development of high quality educational content to establish and promote ICTs based on the teaching and learning systems;



- 2.-Innovation and distribution of teacher training programs and school practices;
- 3.-Continuous improvement of technology infrastructure and information systems to meet the challenges of a knowledge-based society;
- 4.- Addressing the projects to analyze the results of the introduction of ICTs.

In Higher Education, they emphasize the following:

- 1.-Construction of an appropriate environment for the use of ICTs;
- 2.- Generation of methods of education through ICTs, which take advantage of the characteristic of ubiquity;
- 3.- Use of ICTs for an efficient academic interaction to maintain an adequate infrastructure, an organization in accordance with the needs and a continuous production of contents. (Ministry of National Education of the Republic of Colombia, s / f).

### *Colombia*

**General Proposal:** to promote sustainable models of educational innovation, based on the use by appropriation of ICTs in learning environments for pedagogical renewal of the educational system of the people in the country.

**Legal Foundation:** There are two legal instruments: Law 29 as of 1990 of Science and Technology and Law 1286 as of 2009 of Science and Technology and Innovation.

Law 29 as of 1990, among other articles, states: 1) "It is the responsibility of the State to promote and guide scientific and technological advancement and, therefore, it is obliged to incorporate science and technology into development plans and programs for economic and social development of the country and to formulate science and technology plans for both the medium and the long term." 2)" State action in this area will be aimed at creating favorable conditions for the generation of national scientific knowledge and technology; to stimulate the innovative capacity of the productive sector; to guide the selective import of technology applicable to domestic production; to strengthen support services for scientific research and technological development; to organize a national system of scientific and technological information; to consolidate the respective institutional system and, in general, to give incentives to creativity, taking advantage of their productions in improving the life and culture of the people. "

Law 1286, promulgated in 2009, establishes, among others: 1) "Strengthen a culture based on the generation, appropriation and dissemination of knowledge and scientific research, technological development, innovation and lifelong learning."

**Teacher Training:** teachers have continuous training that allows them to carry out constructivist practices with ICTs, ie the design and use of enriched learning environments with ICTs. The steps that an educator is likely to follow in his / her professional development as an integrator of ICTs in the curriculum of Colombia are: preintegration (professional productivity), directed instruction, basic integration, media integration, advanced integration, expert integration and continuous training.

**Infrastructure:** One of the tools used by Colombia for the use of ICTs is Edutekala which provides hundreds of training and information content that help them to enrich their learning environments with the use of ICTs. In addition, it designs and

implements interactive online spaces with useful and valuable resources for teachers (Classroom Project Manager, Collaborative Project Planner, Interactive Curriculum and web 2.0). (Eduteka.org, 2008)

**Curriculum:** The Rector of ICESI University (Cali, Colombia), describes a model of integration of Information and Communication Technologies (ICTs) into the school curriculum, proposed by Eduteka educational portal. The model is based on a gradual process involving variables related to four factors:

- Technological resources themselves, hardware and connectivity
- The pedagogical philosophy and technological proficiency of educators
- Availability and correct use of appropriate digital content
- The support offered by the educational institution (administrative, pedagogical and technical) (Piedrahita, 2003)

### *Venezuela*

**General Proposal:** Since 1999, the formulation of public policies that promote the Technological Sovereignty of the Venezuelan State, as well as the democratization and social appropriation of information technologies, have been considered strategically. The Canaima program is a fundamental pillar in the construction of the new revolutionary, inclusive and democratic educational model, an important factor in the achievement of technological independence. The educational content, applications and functions are fully developed in Free Software.

**Legal Foundation:** In article 108, the Constitution of the Republic establishes that "The State shall guarantee public services of radio, television and networks of libraries and computer science, in order to allow universal access to information. Schools must incorporate the knowledge and application of new technologies, their innovations, according to the requirements established by law" and to meet the growing demand that exists in the country.

In the legal framework, Venezuela is based specifically on our Constitution of 1999, where it establishes in articles 108, 109 and 110, that the Venezuelan State will guarantee and allocate sufficient resources for the information service through information and media services of communication in favor of knowledge and the right to access information.

Accordingly, one of the objectives pursued by the state under decree 825 and in accordance with article 110 of that constitution are: to include the use of the Internet in the social and economic progress of the country, in the generation of knowledge, in the increase in efficiency business, the quality of public, economic, social, cultural and political services of the Republic.

**Teacher Training:** teacher training in this area can be contacted in Decree 825 of the Bolivarian Republic of Venezuela where priority is given to electronic formats and then to teacher training. The fundamental objective of education would be to enable the student to be able to build his own learning from his previous knowledge and from the experiences of information and knowledge that would be the information internalized by the learner. Therefore, the availability of information does not guarantee the acquisition of knowledge, it is necessary that the student is supported and guided by the teacher at all times; this way, he will be able to learn and thus be

able to access information, To be a critical person, to highlight the fundamental ideas, and to have a vision of it, and finally it can be added that teacher training is carried out in three moments: one of Initiation, another one of deepening and a third moment of transformation.

**Curriculum:** According to what is facilitated by the Venezuelan MPPE in its ICTs as innovation in the Venezuelan educational system, it was found: use of ICTs in the classroom, use of educational portals, National Educational Portal: <http://www.portaleducativo.edu.ve/> and portal Renadit: <http://renadit.me.gob.ve/>

## *Chile*

**General Proposal:** one of the first policies that underpin Chile's general ICT proposal has its anchor in the idea of turning the nation into a bridge between Asia and Latin America, taking advantage of its geographical location. For this, it was necessary to design a "good infrastructure of internet networks and to promote the development of new products."

The main driver of the use of ICTs in education was the Enlaces project created in 1992 by the Ministry of Education of that time. Everything started with the specific objective of improving the quality and equity of education in the country. At the beginning of its management, links developed software called "the square" in order to facilitate the use of the computer by students and teachers. Through the metaphor of a plaza as a meeting place for a community, informatics and telecommunications are introduced in educational establishments. The resort has four environments: the cultural center, the post office, the kiosk and the museum. The first three are oriented towards communications, while the fourth one provides a series of pedagogical tools to support the teaching work (Enlaces.cl, s / f)

**Legal Foundation:** The introduction of ICTs in Chilean Education began systematically in 1994, when the Enlaces Program became one of the central components of the MECE-Media Program of the Ministry of Education. ENLACES was created by the Ministry of Education in 1992, with the aim of establishing a national educational network among all the schools and subsidized schools of the country and incorporate the new information and communication technologies to education. In 2005, the Ministry of Education created the Education and Technology Center of Chile, the new institutions of Enlaces. The goal is for the Center to become a reference and articulator of public policies linked to educational computing and also to play an active role in digital literacy of citizens.

**Teacher Training:** it is applied at two levels: multiplier, it is a specialist in training teachers in the use of computer science in the classroom and classroom teachers, in charge of carrying out institutional projects linked to the introduction of technologies in the school space.

The Teacher Training Plan is classified into four:

- **Basic Plan:** it seeks the development of minimum knowledge, skills and attitudes required for a teacher to use ICTs in their professional practice. The courses in this plan are associated with basic knowledge and management of

productivity tools, for example, using a word processor, a spreadsheet, surfing the internet, etc.

- **Common Plan:** it aims at the development of ICT skills common to all occupational profiles of the school system, allowing an adaptation of ICTs to their usual professional practices, for example: to incorporate ICTs in the development of educational processes, to use ICTs to issue documents that support Administrative tasks, etc.
- **Differentiated Plan:** it focuses on the development of the ICT competences of each position or profile, this plan seeks the appropriation of ICTs, since there is a domain of resources. For example, the integration of English language teaching software into pedagogical practices for English teachers.
- **Specialized Plan:** it focuses on the development of proficiencies associated to themes that express high levels of specialization and innovation in the uses of ICTs for professional work. For example, integration of mobile devices into teaching and learning processes. (Enlaces.cl, s / f).

**Infrastructure:** it consisted of the habilitation of a computer lab that varies from 9 to 12 pieces of equipment. In the case of high schools, according to enrollment, the pieces of equipment are last generation and have multimedia and communication skills and are connected to a network among schools.

Schools have been provided with a Computational Mobile Lab, which includes one netbook per child and one for the teacher. Each one is equipped with software created by ENLACES. It includes a mobile container that allows transfer of netbooks to the classrooms, storage, security, battery charging equipment, and communication among computers through a wireless local network (Enlaces.cl, s / f).

**Curriculum:** at the beginning of the 90's, the Enlaces Network began, which provides virtual spaces for collaboration and shares digital content to support cross-curriculum.

From the SIMCE-TIC skills test (test that aims to determine the level of development of ICT skills for learning that students of the Chilean school system have reached), the educational objectives of ENLACES can be known, including: First skill group: web tools, file explorer, use of recycle bin, use of antivirus programs, word processor, presentation creator and spreadsheet.

Second group of skills: it refers to higher order cognitive abilities grouped in three dimensions: Information, Communication and Ethics and social impact (Enlaces.cl, s / f).

## *Mexico*

**General Proposal:** expand coverage and improve the quality of schooling; contribute to greater equity through the provision of distance education programs and services; support training and upgrading programs, and promote a culture of education.

Within this context, there are several programs, within them there is a project called Enciclomediael which consists of digitizing the contents of Free Text books and linking them to various audiovisual and interactive resources in order to stimulate the teaching-learning process.

**Legal Foundation:** The Enciclomedia program is coordinated by the Ministry of Public Education of Mexico, which facilitates the work done by various instances and enriches the educational collection organized by Enciclomedia, making it closer to the children and teachers of this country, based on Article 3 of the Constitution of Mexico.

**Teacher Training:** for the Enciclomedia program, there is a Teacher's Site designed for teachers to find different resources that allow them to adapt to this educational program and to optimize their use in the classroom, as well as an instrument to support their daily work.

**Infrastructure:** they designed a use model based on the equipment of four computers, a server, a printer, Edusat reception equipment, a collection of reference CDs and a telephone line to connect to the internet.

The Enciclomedia program is installed in the central memory (hard disk) of the computer by means of CDs included in the equipment that is granted to public elementary education classrooms. It does not require an Internet connection, since the Network is an additional resource for searching, but not an indispensable requirement.

**Curriculum:** The Encyclopedia model integrates the elements of the pedagogical intervention present in the educational practice of the Mexican public schools, that is to say: the program and curriculum of elementary education as a framework and guide to teach students; The free textbooks as supports of the learning contents and their didactic treatment according to the approaches of the subjects; the participation of the teacher as a group coordinator and mediator of learning; the students as recipients of the pedagogical intervention and subjects of their own learning; evaluation as part of the learning process, the classroom space and its characteristics, as well as its space and time conditions; And other projects, programs and materials that the Ministry of Public Education has designed to contribute to the teaching and learning processes.

## 5. CONCLUSIONS

Education is the basis of progress in any country, especially in developing countries. At present, the teaching - learning process and the use of technology are closely linked. Together they are able to provide innovative, effective and lasting education, in order to achieve adequate training and on a par with the social, cultural and technological changes that arise with the course of time.

It is essential that Venezuelan education uses the necessary resources to create public policies that really allow the incorporation of new technological advances in the process of training its students in public or private institutions, without distinction, acquiring the necessary technological infrastructure, collaborating in the endowment of equipment (new or used machines in good condition, digital slates, video beam, software and educational platforms), creating new didactic methodologies that enrich the lectures of the teacher and provide students with more information, organization and planning in their activities, and on all constitute a motivating element for students, as the men and women of tomorrow are being forged. ICTs

have become one of the basic pillars of society and today it is necessary to provide citizens with an education that takes this reality into account.

On the other hand, each teacher in his classroom, with these resources in his hands, must master each of these multimedia tools in order to guide, educate and guide his students in learning in an interactive environment.

It should be noted that the incorporation of technology alone is not a guarantee of meaningful learning and its use does not replace the work of the teacher, but rather complements it. We must consider ICTs as alternative means that enriches and supports the teaching task; ICTs should not be taken as the best or only means of getting our students to learn.

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