Kelluwen[1], strategies to develop communicational skills using Web 2.0 tools

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Abstract

In the diagnosis of the chilean educational system is evident the need of generate initiatives promoting the equity and quality of the current educative provision. In the other hand, it is observed the increasingly use of information and communication technologies (ICT) and particularly the use the Web 2.0 within the chilean society, specially within the young generation. However, this process has not been accompanied with relevant and massive develop of educational ICT based solutions matching the technology context.

This paper presents a the theorethical foundations and methodologies involved in a project which main goal is to promote and evaluate ICT based practices and strategies that allow significant learning in students of schools under poverty in southern Chile (regions: Los Ríos, Los Lagos, Aysen). The project proposes to develop Collaborative Didactial Designs supported by Web 2.0 tools within middle and high school levels2 in both Languaje and Social Sciences subjects.

The strategy for research and development is based on a spiral cycle with three phases: a) exploratory, b) analytical development, c) scaling and quality. Each of these phases is composed by four stages: i) analysis and planning, ii) development, iii) testing and remediation, iv) validation and conclusions.

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Keywords: ICT in education, communication skills, curricular integration

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[1] Form mapudungun language, mean to learn (to do) collaboratively (with others)
[2] (TN) Students from 12 to 18 years old in the 7th to 12th level of the chilean K-12 educational system.

1. THEORETICAL AND REFERENCE

1.1. Overview of the research in ICT for educational contexts

The studies and publications regarding the relation between education and ICT have been increasing from the nineties. This academic production is close related with the educational reforms that emphasize the integration of ICT to improve the national education systems (Delors, 1996; UNESCO, 1998; Subrahmanyam, 2001; Cole, 2004). We can found studies from the seventies related to the isolated integration of New Technologies (stand alone computers, television, redio and video) and after that, a second group of research about ICT as a whole, integrating the communication and multimedia convergence (Area, 1996; Dawson, Ch. & Rakes, G. 2003).

In the field of research of applied ICT in schools, we found studies that see the **impacts** of ICT and studies that talk about the different **types of use**. About the studies of the impact, the last decade has been fruitful in research and publications. In most of the cases it is sensed the mean to promote students learning through the process of teaching innovation, focusing the discussion about how to define (or measure) these impacts (Prain and Hand, 2003) . It also has become a preferred topic to examine the impact of ICT on learning and not just on efficiency but on effectiveness (Hannafin, 1996; Ward, 2003; Bork, 2004).

Despite the amount of related research, it is still impossible to generalize in a position to defend the impact of ICT as a significant contribution to learning (Wartella 2000; Reparaz, Sobrino and Mir 2000; Scheffler and Logan 1999, Meier 2005; Staples and Pugach 2005). According to Cole (2004) the folowing arguments must be consider: the computers are not designed to achieve educational goals; standardized tests do not consider to grade computer skills; the technology is evolving so rapidly and almost unpredictable contrasting with schools and teaching processes which evolve at a slow pace, settling a gap between teaching strategies with technology v / s IT skills of students; the pedagogical emphasis related to the use of computers has changed from the use of educational software to integration of resources, highlighting the virtualization process of teaching and digital convergence.

If there is an obvious is that the advent of computers to educational institutions poses a challenge for educational use (Meier 2005, Lloyd and McRobbie 2005). From this statement, there are research that approach the phenomenon of how computers are being incorporated in school activities. This line of research seeks to associate a curricula perspective with the intent (ideology) that the teacher defines the educational activities him/herself (Arancibia, 2001).

There are studies that describe the kind of practices that accompanies the use of ICT and two trends can be recognized, one associated with innovation or transformation of the practices, and another associated with the maintenance of traditional practices.This presents classifications that move around innovative uses / transformers and traditional / reproductive (Knezek and Christensen, 2002). The definitions of these practices can be expressed following Drenoyianni and Selwod (1998) either as instrumental use, where ICTs are seen as tools used to perform a specific product (a document in Word or a Powerpoint presentation to complete a job research), or a practice oriented to constructive use (ICT are used for students to create tools or to search information by themselves.) The first assumes a transmisionist (reproduces the same practices) model where ICT are used by the teacher and the student replacing blackboard or textbook, while the second is an interactionist model, that ICTs appear more like virtual platform that helps students to learn (Mumtaz, 2000).

Another line in this group of studies focuses on inquiring about the integration of ICT in curriculum projects and in different subjects, either as laboratories and ICT corners in the classroom, as well as transversely. This leads to identify various models of ICT integration in schools and subjects (Scheffler and Logan 1999; Meier, 2005; Staples and Pugach 2005). Studies also concerned about the development of specific computational resources and the relationship established between the medium / user and the validation of these materials (Niederhauser and Stoddart, 2001). Finally, there are studies that explore the relationship between ICT and learning concerning the search of connections between cognitive structures

(representations, beliefs or conceptions) in both the teachers and students (Niederhauser and Stoddart, 2001, Ruthven, Hennessy and Brindley, 2004; Lefebvre , Deaudelin and Loiselle 2006).

1.2. Information Society in Chile

It is agreed the fact that Chile is presented as an advanced country in terms of digital inclusion in the Latin American region.Thus, Chile is positioned with a certain legitimacy to lead a research and development for our sub continent. For example, states according to a recent study by the consulting business of EVERIS and the Center for Latin American Studies at the University of Navarra (2007) "[Chile] is the country with the highest degree of progress in the Information Society in Latin America According to the results of the Information Society Indicator (ISI). " The ISI in whole Latin America is set to 4, 44 points, one of the highest values obtained to date, with an annual growth of 1.3%, the lowest in the last four years. Meanwhile, Chile had 5.87 points becoming the country that received the highest rating. About the other countries participating in the study, Argentina scored 4.80 points, followed by Mexico with 4.60. Colombia scored 4.35 and as in the previous quarter, Brazil was in last place with 4.22[3].

ISI indicator considers two basic components to measure the progress of the Information Society, the evolution of the use of Information Technology and Communications (ICT) and development of key aspects of the environment of the Information Society (ESI), such as economics, infrastructure, society and the advancement of the institutions.

Following the same study we can assert that Chile is presented with a high potential to lead not only the technological infrastructure but also research and development on the Information Society in the Region. On the one hand, in terms of ICT growth, Chile has the highest level of penetration of computers, Internet and servers. Only is overcomed by Argentina regarding to mobile phone penetration. About the development of ESI, Chile scored a 6.31, also the highest score of the group of countries, and recorded a growth of 3.2% compared to the second quarter of 2006. Divisions Economic, Social and Infrastructure presented year increases in their rates of development, while the Institutional division decline.

Also in 2007 was presented the paper Information Society in CHILE 2004 / 2007 Present and Prospects (Telefónica CTC – Chile Foundation), which clearly identifies the demands and requirements that Chile needs to advance in the building of a society with more opportunities for everyone and where ICTs are essential. In what concerns us in this project we can extract from the above recommendations that it is urgently needed in Chile a comprehensive initiative that offers concrete opportunities to leverage successful experiences in the areas of education integrating ICT, and going beyond the technical learning reaching transversal skills.

1.3. Social-communicative skills int the chilean educational curricula

It now seems essential to develop communication skills in school education, such as reading comprehension. Skills that enable individuals as members of networks, to meet the commitments of interaction, and consider the basic rules of courtesy and professionalism for the teaching and learning in addition to the understanding of the different signs, meanings and codes existing in the different social contexts. It is appropriate to acknowledge that the skills are expressed in levels interpretive, argumentative and propositional (Niño, 2003). From the perspective of Freinet (2002), we can establish that there are three levels involved in order to achieve social-communicative skills: reading comprehension, free text production and developing of critical thinking.

From the 70's, the studies focused on the cognitive processes involved in reading comprehension have been interesting and numerous and, therefore, there are instructional models consistent with these processes proposed, such as, for instance, the work of Baumann (1990), Cairney, (1992), Carriedo, Alonso Tapia (1994), Mateos (1991), Sánchez (1995), Solé

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[3] Source: Chiletech, 12/11/2007 (www.cyc.cl)

(1993), Quintero (1995.1998), and Hernández (1999). However, although our knowledge of the reading process has increased, little change occurred in the teaching of comprehension.

The reading is still taught like a simple process of information transfer, throwing away the knowledge that the reader can be an active entity to the text developing skills and planning specific strategies, which may facilitate and improve understanding of texts. Students are asked to read and understand the text, but they are not taught about what to do and how to understand better (Hernandez and Quintero, 2001). Then, the results of reading is evaluated, but it is not the suitability of the mental processes student followed. In an updated look (Coll, 2006) believes that hypertext and the Web come to develop new skills in relation to reading comprehension.

Proficient readers do not read blindly, they do so with a purpose, they draw a plan and set a goal or objective. This goal, coupled with the nature of what they read define how to read. With different goals and in different situations we can read in different ways. Of course, reading has an universal goal: to understand what an author says about a particular topic. When we read, we transcribe words into meanings and in general, we read to understand what is meant by the authors. Also our reading is influenced by the purpose for which we read and the nature of the text itself. For example, if we read just for personal pleasure, it might not matter if you do not fully understand the text. We can simply enjoy the ideas that the text creates in us. This is fine as long as we remain aware that we do not understand the text in depth.

Reading comprehension is a form of intellectual work and intellectual work requires the willingness to persevere in the task when difficulties appear. But perhaps, even more importantly, the intellectual work required to fully understand what this type of work involves and the students often lack of this kind of metacognition.

To overcome unproductive reading levels, we must encourage a constructive process in which careful reading means to extract and internalize the meanings implied in a text in a consistently way. We can also recognize at least five levels of reading. The reflexive reader do not always use them all, but choose between them according to the purpose of reading: paraphrase, explain, analyze, evaluate and represent.

Moreover, although there is no unanimity on what critical thinking is, we can say that it is a way of responsible thinking related with the ability to make good judgments. It is a way to organize ideas by who is genuinely interested in gaining knowledge and seeking truth and not simply resulting victorious when arguing. According to explicit consensus on the Delphi Report, critical thinking is an intellectual process that, with determination and self-regulation, look to get a reasonable judgment. It is characterized by: 1) be the product of an effort of interpretation, analysis, evaluation and inference of the evidence, and 2) can be explained or justified by evidence regarding considerations, conceptual and contextual criteria, in which it is based. In short, critical thinking is self-directed, self-disciplined, self-regulating and self-corrected. Requires rigorous standards of excellence and conscious mastery of its use. Involves effective communication, skills for problem solving and commitment to overcome the natural human selfishness. It takes then a series of skills and personal dispositions to think critically. But more importantly, according to the Delphi Report, a general willingness is needed for think critically and the report gives more value to this aspect than the higher order thinking skills.

Alliende and Condemarin (1993) raised numerous strategies and tools to work reading comprehension in school. From them, we can adapt tools for assessing the didactical design effectiveness. Also Condemarín and Chadwick (1998) provides several options for assessing creative writing. Moreover, according to (Freinet, 2002), Cárcamo and Godoi (2001) opt for school media strategies as a vehicle for developing reading and writing skills and critical appraisal of the environment. These authors will be the basis for the work of assessing the effects of educational innovation that the Kelluwen's didactical designs produced.

1.4. Social Constructivist Theories

As indicated by Coll et al (1996), constructivism is an explanatory framework, rather than a uniform theory, basically based on the idea that knowledge (or reality) is built by subject, in accordance with their specific cognitive and prior knowledge.To understand this approach, and its results at different currents, the term "cognitive" refers to intellectual activities that occur inside the subject mind, such as perception, interpretation and thought. In summary, the central idea is that knowledge and learning are largely the result of a dynamic in which the contributions of the subject itself play a role in the act of learning. From these considerations, the learning is never the result of a direct reading of reality. Instead, It is the interpretation by the learner in which several variables come into play. "For all constructivist conception, all knowledge and all understanding is always the construction and interpretation of the living subject "(Von Glasersfeld, 1988:21).

Following a social constructivist perspective, technologies (as cultural tools) are used in a structured context in which there is/are an apprentice/es and teacher/s in an inter-subjective context (Zone of Proximal Development) who interact in a process of cultural transmission, which involves "significant learning" or "bureaucratic / banking" learning, as the case, and the form in which computing is inserted within the curricula (Crook 1998). This socio-constructivist "considers that the construction of knowledge occurs through the interplay of three elements: the student, the content to be learned and the teacher" (Badia, Barberà, Coll and Rochera 2005:2). The teacher's role in this approach is to help in the construction of meaning from the information contained in school activities, and also is who supplies or suggests the use of resources, tools or material that guide the learning activity (Parcerisa, 1996).

For a Coll (2005) sociocultural constructivism is based primarily on the contributions of Vygotsky and is oriented to understand the learning as a product of the interaction between people and objects. In constructivism a close partnership is raised between teaching, learning and cognitive development. When social interactions enable learning, they allow the psychological development of individuals. Psychologists working in terms of socio constructivism tend to use the concepts of learning and development identically. Vygotsky suggests that learning and development, to be eminently social and collaborative activities, can not be taught, as they depend on the student building their own understanding of reality in their minds. In his explanation, he resorts to the concept of "zone of proximal development" (ZPD) to configure the space or area in which the design of appropriate situations for the learner are provided allowing him/her to achieve optimal learning. This way of understanding the construction of knowledge implies that learning should occur in meaningful contexts, preferably those in which that knowledge will be applied through the processes of social mediation of signs and especially the language. Following this, Crook (1996:53) states that "the mediation carried out by these kinds of tools defines the problems that are included in the field of cognitive psychology. By these signs (especially linguistic) we can regulate the behavior of others. We also can get to perform voluntary control over our own basic psychological processes, developing the activities of memory, attention and thought. "

Psychoeducational research on the relationship between learning and ICT is abundant in the last ten years and has been essentially based on the definition or explanation of how ICTs affect students performance, how the learning environments that include ICT are organized, and strongly in the last year, there is a huge interest related mainly to e-learning, virtual environments, learning objects, online and distance education and computer-mediated collaborative work. ICT tools are seen as mediators in the process of learning (Crook, 1998; Duart and Bloom, 2000; Snyder, 2004).

Until now, it is possible to identify two areas of inquiry. The one which covers learning using ICT, and the other focused on learning about ICT. Regarding learning using ICT we can distinguish two study groups: those who talk about this relationship from a pedagogical perspective oriented towards the creation of didactical models that support student learning and, the other group, consisting of psychoeducational studies aimed at identifying changes in students' cognitive processes when working with ICT (Gros, 2000).

1.5. Virtual Learning Environments

UNESCO (1998) in its Global Education report notes that virtual learning environments are a whole new way of Educational Technology and offers a complex set of opportunities and work at educational institutions worldwide. A virtual learning environment is defined as an interactive computer program of an educational nature which integrate communication, that means it is associated with new technologies. While the technologies are still developing, new forms of work and interaction between users are created. The educational use of these new forms is reflected in cutting-edge projects that create innovative learning environments and new learning experiences. These networks or electronic networks made up of people with common interests, open up possibilities for teaching and learning where people involved are identified in terms of their own aims which motivate their involvement.

a) Web 2.0 or Social Web

These days it is not enough to the users to go to the great database Internet is to "read" information, but they want to be players in this virtual world. Example of that are Second Life, Haboo Hotel, Facebook, Flickr, Twitter, PicassaWeb, listing only a thin pie of the constantly growing environment of web platformas and tools. I all of these tools, the user takes an active rol of publishing information in different forms.

The term Web 2.0 refers to a new conception of the Internet.According to O'Reilly (2005), following the bursting of the dot-com buble, a set of principles and trends emerge as important and they mark a turning point in how the Web is used and understood. In the center of the phenomenon is the original vision of the Web, where content is generated by the users and where the value of services and tools increases as more users contribute to them.

Moreover, the Web is a repository of information, but a network of services and applications under constant update. The trend is to provide applications and services available online. O'Reilly (2008) discusses the notion of cloud computing (cloud means the Web) and covers all those applications that are available on the Internet and which don't need to be downloaded and installed on the PC. Is the case of Google services like GMail, Google Analytics and GoogleApps. Another important aspect in shaping the Web platform is the service-oriented architecture (SaaS) and the trend towards simplicity of interconnection. All of these contribute to facilitate the creation of new services and applications using the existing ones.

Web 2.0 allows two-way relationship by harnessing the collective intelligence, where users provide the content. This allows the growth of services where collaboration and participation are the main pillars. The underlying principle is "users add value" and this is possible when applications and services that capture the information generated by users are able to use it to improve themselves.This phenomenon is illustrated quite well in Wikipedia and Amazon. In Wikipedia, content is contributed and edited on an ongoing basis throughout the community, which also has mechanisms to review and correct. At Amazon, items for sale are discussed and rated by the users and this information is exploited to make better recommendations or improve classification and searching.

Technological advance has allowed the emergence of a number of connectivity-enabled devices such as PDAs and smart phones. Applications and Web 2.0 services are developed to be compatible and usable on devices with different technological capabilities. Web also has a strong tendency to enrich the user experience. Due to the principle that users create value, Web applications and services are continuously improving the user experience and thereby attract and maintain a growing community. Within the ICT tools that can support processes of learning and blended classroom, we can found the platforms for management or administration of Web-based learning, known as LMS (Learning Management System). The LMS functionality integrates synchronous and asynchronous communication tools allowing the community to manage both educational products and the learning process itself. Currently there are many LMS with commercial purpose licenses such as EduCursos and WebCT, and non-commercial purpose license, such as Dokeos (www.dokeos.com) or Moodle (www.moodle.org).

The social nature of Web 2.0 has a direct relationship with constructivist and connectionist theories of learning and increasingly, the Web 2.0 tools like blogs, wikis, microblogging, social bookmarking, etc., are used in education. Some examples can be found in Alexander (2006) and Gewerc (2007). The potential for interaction and collaboration are useful from the point of view of achieving learning, but also the social interaction information is useful to evaluate teaching strategies and research on learning. Applications in these areas are described by Ullrich (2008). An important factor in the relatioship between Web 2.0 and education is that students used to show interest and motivation in the use of Web 2.0 technology. Few developments have been accepted so quickly by students of all ages and interests, as were the Web 2.0 tools (see Hardy, 2008 and Tancer, 2007).

Taking advantage of the services already available on the web specially of those that allow customization, arise mashup (Mashup - Wikipedia), a form of hybrid Web applications and services that combine information from various Web sources. Zhang (2008) presents an experience using a Web 2.0-based mashup in an university context. Mashups are attractive alternatives at the level of personalization and usability for complex and multidimensional contexts such as education. (See Eisenstadt, 2007).

b) Semantic Web

The Semantic Web is an extension of the current Web in which information has a well-defined meaning. It is based on the idea that if the site contains well-defined data and connected you can use them more effectively in applications considered discovery tasks, automation, integration and reusability (see Berners-Lee, 2002). In this context, the well-defined meaning of information in a given subject is obtained through the development of a domain ontology. An ontology is a set of basic terms and relations within the vocabulary of an area, as well as rules for combining terms and relations to define extensions to the vocabulary (Neches et al (1991)). Other definitions of this concept highlights the importance of shared and consensual development of a specific domain ontology. In this approach, Studer et al (1998) defines an ontology as a formal and explicit specification of a shared conceptualization. After development of the ontology of domain, information can be organized with a semantic structure using markup languages (eg. RDF) and this structure allows the perform of various tasks for information extraction and integration, such as contextualized searches.

Among the semantic approach in education, we found the work of Brusilovsky et al (2008a and b) who have developed several platforms to support college students learning computer science, for example in the field of databases, Brusilovsky et al (2008a) and programming, Hsiao et al (2008).

Another notable aspect is the convergence between the Social Web and Semantic Web. Although presented as a dispute because the high levels of consensus required on the construction of an ontology and the consequent decrease in the amplitude of the network involved, there are several developments that bring together the Semantic Web technologies and Web 2.0 services. An example of this are Semantic Wikis (OntoWiki, Auer et al, 2006) and Semantic Blogs, Cayzer (2004).

Moreover, Rheingold (2002) notes that there is a kind of new social movements with their own characteristics and strongly supported by mobile technologies: smart mobs. According to the author, the virtual community is an ecosystem of subcultures and spontaneously formed groups. Under this idea, a new type of network is spreading in cyber space in which everyone can access it using phone, computer or other mobile devices. In the same vein Surowiecki (2004) cultivated the idea that the sum of collective decisions of many people is more accurate than the individual decisions by a single member of this group and called it the Wisdom of Crowds. From a predominantly technical analysis, O'Reilly (2005) argues that new developments in Internet (Web 2.0 in particular) have their greatest potential in facilitating the formation of a network of collaboration among individuals.

1.6. Educational contexts and changing times

Given the above it is impossible that educational institutions are impervious to these changes, moreover, it is here where the discussion on the delay or advance in some societies has mainly focused. However, Education has experienced a process of conceptualization not only from a structural poit of view, but also of meanings, which is expressed to some extent a lack of education tending of Teaching and the loss of leadership of Teacher in the pedagogical practice (cf. Gardner, 1993, Sexton and Perez 1995, Morin 2002, Pigem 1991, Motta, 1989-1999).

Paradigmatic social transformations imply a new way of knowing, therefore new ways to learn. Social constructivism within education is gaining fans over traditional rote learning (Gardner, 1998; Monereo, 1994, Torres, 1994; Morin, 2002). Consequently, in the new era, the formal education view as an institution has lost its exclusive role in the teaching-learning process. The computer and Internet at home, let people have the information at home, thus providing information is no longer hegemonic role of the school (cf: Delacôte, 1997).

a) Social Gap and Digital Gap

The offline person of tomorrow is like the illiterate person today, since the main point of inequality are expressed in access, use and control of digital media, expressed today in the so-called digital convergence. Digital convergence means that information, whatever its nature, can be encoded using a binary system, which allows processing of data from different sources with the same equipment and the same rules. This technological choice is crucial since the school media as cultural artifacts are democratizing or scavengers, for equality or inequality (Arancibia, 2007).

It is a fact that we are witnessing a shift in the global economy. In this sense, the media, not only are dedicated to spread, but produce and shape content following the structures of production imported from other sectors and taking possession as pioneers in these changes. The information society will only be installed completely when the communication revolution achieve its purposes of territorial coverage, and social policy.

For example, Table 1 shows the evolution of ICT access in Chile. Increase can be seen in the richest decile while the it is minimal in the poorest decile. Table 2 shows that the main place of Internet access for the poorest quintile is the school. This is a key issue because it is there where the use of ICT can be learned in a comprehensive way.

Table 1. Access to ICT in home from CASEN surveys 2000 – 2003

	Casen 2000		Casen 2003		Percentage increase	
	10% poorest	10% richest	10% poorest	10% richest	10% poorest	10% richest
Access to computer	1.2 %	52.8 %	3.8 %	60.7%	2.6	7.9
Access to Internet	0.5 %	34.6 %	1.4 %	47.1 %	0.9	12.5

Source: PNUD 2006

Table 2. Population under 21 years old who access the Internet according to place of access and quintile of income.

Quintil of Income						
Place of access	I	II	III	IV	V	Total
Home	1.3	2.7	7.7	22.1	54.1	12.1
School	28.3	33.4	35.6	32.9	20.6	30.7
Other place	1.4	3.0	3.8	4.1	3.5	3.6
Has access but doesn't use it	4.2	4.3	3.2	2.7	2.1	2.9
Doesn't access	64.8	56.6	49.7	38.2	19.7	50.7

Source: PNUD 2006

In this line our project clearly addresses the issue of digital gap by focusing on educational institutions which are under poverty in the southern Chile. One of our aim is to develop a transfer model teaching teachers to work for ICT and not only with them.

b) Students generational profile

The integration of technologies in schools clearly marks the reality of access to computers and Internet in Chile. This is how the groups who have access to ICTs are between ages who participate in the primary and secondary educational systems.The study of the National Youth Institute (2002) clearly indicates that the largest amount of users of computers and Internet in Chile are located between ages 6 and 18. Also an interesting contribution is made by the latest study of the United Nations Program for Development (UNDP, 2006). It notes that the age group between 14 and 17 years old are the Chileans who feel more integrated into world of information technology and communications.

Table 3. Feeling inside or outside the ICT world.

	People of ages 14-17	People aged above 18
Feel inside ICT world	84%	49%
Feel outside ICT world	15%	50%

Source: PNUD, 2005

In addition, the results of Godoy (2006) and Carcamo (2008) also shows that teenagers mainly use the Internet to chat over instant messaging and search for information for school assignments. His interests are also designed to meet new people through messaging and searching for information on artists and fans through Google or other tools. Therefore is not a surprise that Chile has had the greatest increase in amount of Facebook users in the second quarter of 2008, according to statistics released in several national media, they increased by 142%.

Cárcamo (2008) found that non-school applications have a highly dynamic and variable as the new offerings debuted on the Internet. This presents us with a permanent change of tools (Castells, 2007 and others). Perhaps each new application is installed on some of the aforementioned communication models and we can argue that downloading music and videos has the same informational meaning. The software applications on the Internet with a massive use -until now- can be clasiffied into two main groups matching two of the categories of human drives which Pieron (1982) identifies: the exploratory care drive and the communication and human solidarity drive.

Chart 1: Different types of activities performed by internet users clasiffied by age. Axis Y shows the average of hours in one week. Axis X shos different activities, from left to right: email, discusion groups (forums) and chats, entertainment, information search for learning activities, other information search, transactions.

Godoy (2006) in his study called WIP-Chile also accounts for the evolution of dialogic tools over the informational ones. Dialogic interaction can also be related with the statements made by Etcheverría (1994) where social relations in the network contribute to the construction of identity in the virtual world. Or as is raised by Toledo and Combs (2002), the relationship with technology enables people to reinvent themselves, create sociality and forms of knowledge: that is creating "ways of doing and being in the world." Also, García Canclini (2007) realizes the attraction generated by the Internet to create new identities.

1.7. ICTs in the Chilean school system (last decade)

The Chilean government has proposed to create the "electronic government" at the heart of its modernization process. According to the Digital Agenda (2004), that year all the government services had online sites allowing to make 170 different online transactions. Indeed, Chile is ranked No. 5 in the worldwide ranking of E-Government (only after Taiwan, South Korea, Canada and USA). This indicator is the greatest achievement of the Digital Agenda in our country. As an example it is noted that the income statement and taxes is made online in Chile since then.

However, our project appreciates and incorporates both the resources and ICT capacity installed in the educational system, and aims to provide intensive and innovative use of ICT in schools under two principles grounded in public policy: is mainstreaming as determined in the Decree 220 which defines the core curriculum for the national high school system (1998), and digital inclusion, expressed in the newly developed digital agenda.

In Chile, a major government project is the "Red Enlaces".The initiative, since its inception in 1991 until now in 2009 - has achieved significant coverage rates of access to computers.Thus, for Primary Education the project reaches 94% of boys and girls in school. In the case of Secondary Education (Education) the coverage is up to 87%.Given this fact, educational researchers agree emphasize the importance and need to incorporate adequate technology in schools and colleges. "It is a wake up call to school to take appropriate steps to

prepare all students in the management of technology and virtual media, considering this as a feature of time that must be addressed in a timely manner to avoid marginalization "(Beasley, 2003, p. 49).
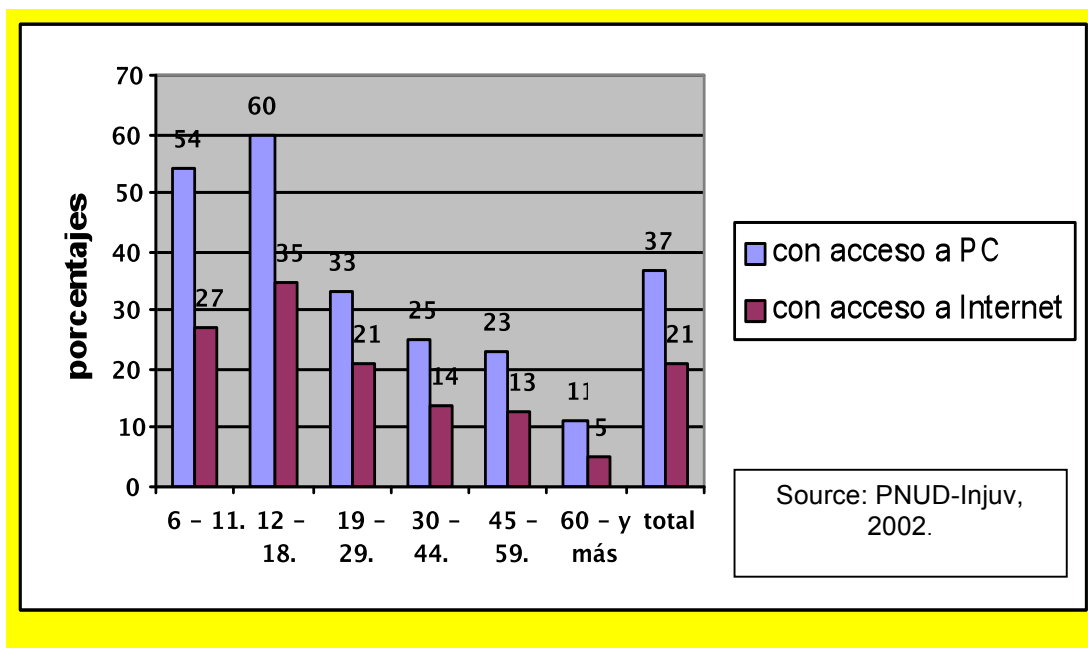
**Chart 2: Percentages of access to computers and Internet (axis Y) per age groups (axis X).**

For educators, the questions today are related to what to teach with technology support. The issues raised do not necessarily refer to the development of technical skills, but rather fundamental humanistic profiles for living and for social participation, and also, the development of a more active role as a student (Beasley, 2003).

Also we want to note that having technology does not guarantee the proper and automatic modernization of the curriculum. There are a lot of cases where computer labs are closed or limited to conducting only a basic ICT use workshop. The situation in Chile was very disappointing in in the achieve significant impacts on levels of integration of technology into the curriculum. Moreover, Enlaces in some cases had to face a kind of technophobia by the educators. On the other hand, excessive optimism about the technological wizardry is just as dangerous if we are not aware of the fact that technology is only a support. Authors such as Reparaz (2001) proposes a balanced relationship between pedagogy and technology.

With the installation of technology in society and from this kind of reflection based on practical experiences of interaction with technology in the classroom, the current discussion leads to the definition of new roles in school. New roles that are not other things that general definitions for the proper use of technology in school (Bandura, 1999).

In Chile, the use of educational resources in the classroom is far from educational purposes only. Research made by Enlaces (2005) as shown in the graph below, indicate that the use of computers in the classroom points mainly to motivations such as music and games.

From the chart below, we can distinguish differences in the use of technology related to different socio-economic segments. Thus, the study of Enlaces (2005b) indicates that students from paid colleges show a greater inclination to use technology for entertainment, games and music listening. While in subsidized school students express an inclination to work and study.
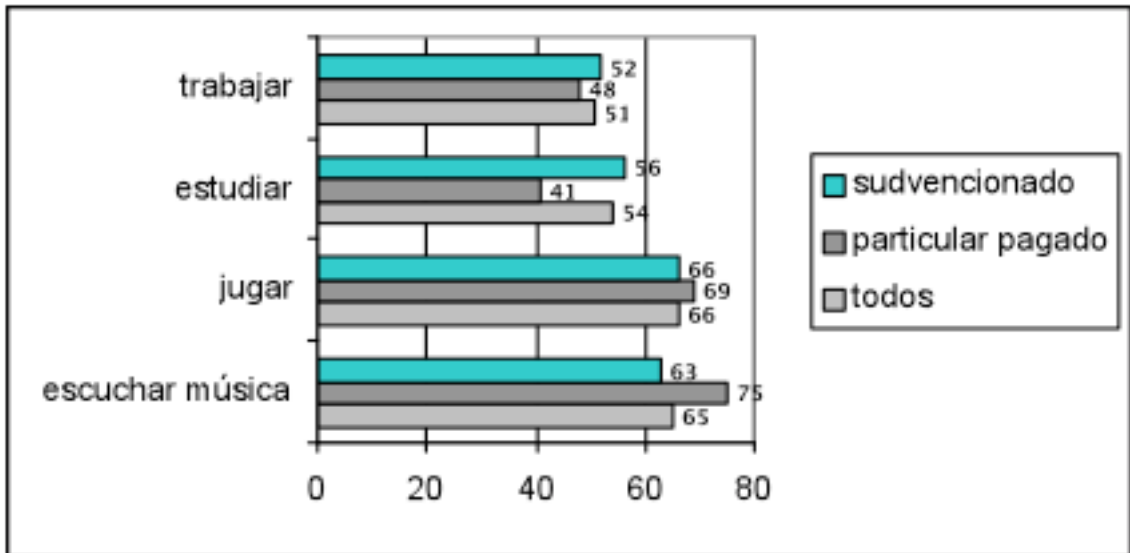
Chart 3: Comparison between different use of ICT in different socio-economic segments. Axis Y shows four type of use, from top to bottom, work, study, play/entertainment, listen to music. For each type of use, three bars are compared: students from government subsidize schools, private and paid schools, overall.

2. RESEARCH AND DEVELOPMENT METHODOLOGIES

Next, we will describe the methodology of research and development, considering that the research findings generate feedback at each stage of development.

2.1. Research methodology

The main hypothesis of the project states that "the implementation of collaborative didactical designs based on Web 2.0 resources will significantly enhance the socio-communicative skills in students from 7 th to 10th grade in schools under poverty of the southern Chile. The success of these strategies will be directly linked to he increase of reading comprehension, free text production and the development of critical thinking. We will work in the context of learning units of the subsectors of Spanish Language and History and Social Sciences. "

When we point out that the implementation of collaborative didactical designs based on Web 2.0 resources will significantly improve the socio-communicative skills we project on a time horizon that has its stages of incubation in this project but which requires a long-term perspective. Also, this mean that to be properly investigated the strategy requires a longitudinal and quasi-experimental design that includes quantitative and qualitative tools. The time series designs can be characterized as research plans that allow the study of the causes and effects over time, based on a chronological series of observations of a variable (Fidalgo, 2001 , P.370). A research design that includes evaluating the entire Kelluwen process and is scalable in time should consider the following specific activities:

- Pre and post test evaluation on each pilot implementing a didactical design taking into acount the educational levels and cultural backgrounds through a quasi-experimental design with appropriate instrument that measures social and communicative skills in reading comprehension, creative writing and critical thinking. A percentage assessment rate will be develop which plot the learning achievement in communication skills mentioned. The indicator will be develop based on PISA, TIMSS and SIMCE instruments and proposals made by Condemarín and Chadwick (1993) and Alliende and Condemarin (1998).
- Also, a qualitative methodology will be applied for the assessment of the impact and effectiveness of innovation taking into account information from the analysis of the history of students, course group, institutional features, interviews and discussion groups and will measure the improvements due to the implementation of the strategies proposed by Kelluwen.
- Two longitudinal studies will allow tracking and comparison of global teaching strategies mediated by ICT during the three years of the project. They will look for educational levels, and for differences in school contexts.

The secondary hypothesis No1 states "The educational software and traditional computer resources mediated by ICT are preferably based on transmissionist psycho-educational paradigms (Arancibia, 2001). They involve a strong role of the teacher, which does not encourage innovation in teaching and they only reproduce the same practices with new technologies. Creating didactical designs that incorporate Web 2.0 services, will enable the development of innovative teaching experiences supported by collaborative interactions among students, teacher-student and teacher-teacher, classroom-classroom and school-school. These dialogic interactions will be the point from where the insertion of ICT in curriculum will produce the development of socio-communicative skills. "

We propose to address this hypothesis starting with descriptive or diagnostic research. These studies are the starting point of the spiral of research (in accordance with the methodology of development), as they will arise the diagnostic data about educational practices using ICTin different educational contexts and will allow to categorize and compare this information in both quantitative and qualitative dimensions. "Sometimes the researcher is interested in studying certain phenomena as occur naturally, without making any modifications in the environment. In these cases, the researcher's interest is focused on understanding what

the child or adult spontaneously do, how is his/her behavior, which characterize it and what features may be taking place". (Sarria and Brioso, 2001, p.438 .)

Specific activities that will allow this research are:

- ✓ Areas for exploration in the network of schools that are part of the Kelluwen project.
- ✓ Characterization of ICT-mediated teaching strategies for the development of socio-communicative skills, looking at educational levels, didactical issues, cultural context and different educational subjects.

The secondary hypothesis No. 2 states that "the incorporation of ICT into school learning processes produces a motivational effect on students and this is the fundamental starting point to begin any meaningful learning process (Cabero 1991, Area 1996, Cole 2004). However for guarantee that this innovation will take lasting effects, it must be installed in a global model of an ICT curriculum. Instructional designs proposing the use of Web 2.0 services that are close to the students will generates highly positive motivational effects to achieve the proposed curricular learning. "

We intend to address this hypothesis using a mixed methodology (quantitative and qualitative) for the development of a quasi-experimental and descriptive research. In terms of our development model, pilot test will be installed in controlled environments, taht is schools as laboratories. Specific activities that will allow this research are:

- Comparison of the communicative nature underlying the ICT-mediated learning strategies according to educational level.
- Comparison of the nature of communication underlying ICT-mediated learning strategies according to cultural contexts.

The secondary hypothesis No. 3 states that "the degree of reception of the ICT-mediated learning strategies is directly related to socio-cultural appropriation of them (Cole, 2004, Arancibia, 2004, Carcamo, 2008). The flexibility and adaptability of didactical design to the realities and the variety of Web 2.0 services will significantly improve learning, through the contextualized use of such designs by the educational community. "

We intend to address this hypothesis using a mixed methodology (quantitative and qualitative) for the development of a quasi-experimental and descriptive research. Thus, the quasi-experimental commitment is related to the proper value of different cultural backgrounds in education, as the daily life of a rural versus urban conditions is an important factor to consider. "But it is precisely the lack of equality in a position which requires quasi-experimental research. There are constraints of all kinds, from ethics to economic to institutional, which are often impractical in the random assignment of subjects to experimental conditions (Fidalgo, 2001, p.365). Specific activities that will allow this research are:

- Comparison of motivation or degree of interest shown by students against the development of ICT-mediated learning strategies according to educational level.
- Comparison of motivation or degree of interest shown by students against the development of ICT-mediated learning strategies according to cultural contexts.

3. PROJECT GOALS
a) Main goal

The development of socio-communicative skills throught collaborative didactical designs mediated by Web 2.0 services: to promote and evaluate ICT based practices and strategies that allow significant learning in students of schools under poverty in southern Chile (regions: Los Ríos, Los Lagos, Aysen). To this end, we build collaborative didactical designs supported by a virtual learning environment which integrates Web 2.0 tools which will be pilot in middle and high school levels in both Languaje and Social Sciences subjects.

b) Specific goals

To build, test and validate collaborative didactical designs by Web 2.0 tools for the development of socio-communicative skills in students between 7 th and 10th grade on the subjects of Spanish Language and History and Social Sciences.

To build, test and validate a virtual learning environment that integrates Web 2.0 tools, social networking features and which is based on a semantic approach (ontologies) aimed to support the implementation of didactical designs in different educational and cultural contexts.

To transfer the educational experiences that proved to be effective to other schools of the southern Chile, through a regional scaling plan expanding Kelluwen as a social and educational community.

3.1. Statistical procedures and validity of results

For the results of the quasi-experimental processes that allow the validation of pilots, we will make statistical procedures comparing means of independent groups and paired groups, as the case, between pre-test and post-test (ANOVA techniques). Also linear regression analysis, and multilevel models are considered, among others. For the qualitative results from focus groups and interviews we will apply discourse analysis tools (ACD) supported by technologies for the treatment of qualitative data (Atlas-TI).

For internal and external validity of the results the criteria of Campbell and Stanley (1996) will be used.
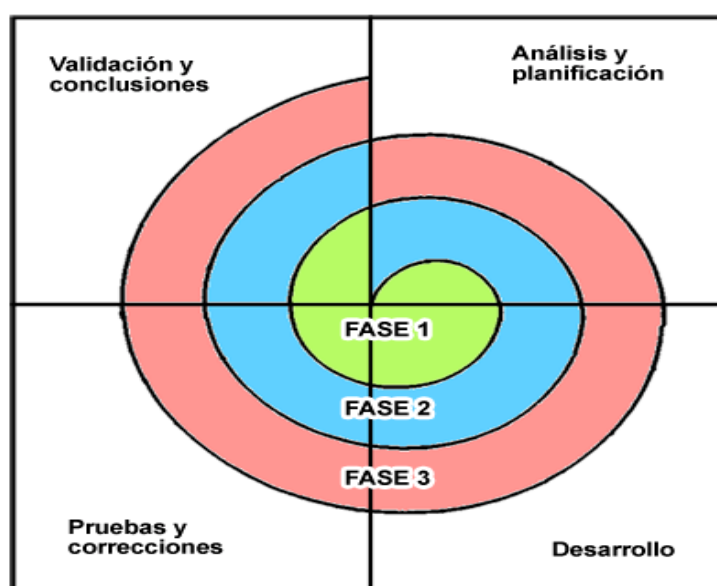
3.2. Development methodology

Figure 1: overall methodology for the project

To develop the project, we have defined a methodology based on software engineering life cicle called spiral or cyclical (Jacobson 1998). According to this model, all tasks of educational research, pedagogical development, technological development (software), testing (pilot), analysis and conclusions are executed in each phase and each phase is the starting point for planning the next.

We have defined 3 phases for the project. Each phase is represented by a turn of the cycle through the four quadrants: a) analysis and planning, b) development, c) testing and remediation (pilot), d) validation and analysis of findings. As shown in Figure 1, each phase reach more impact than the previous one. The three phases are described below.

a) Phase 1: Approaching

The initial development involves building few didactical design and conduct a pilot of them within a first version of Virtual Learning Environment (EVA). Information gathered from these experience will define the development of control modules for the EVA and the incorporation of new tools. The data gathered also produces substantive improvements in didactical designs. The outputs of educational research will be recorded in an ontology.The objective of phase is to raise the initial experiences needed to lead product development taht match to the reality of the context

b) Phase 2: Analytical Development

Based on the information analyzed in Phase 1, we will launch the development of modules and tools for the EVA. Improved didactical design and software platform, including ontology, will be validated with a pilot. The objective of phase is to validate the products in heterogeneous learning environments (within the constext defined by the project.)

c) Phase 3: Dissemination and transfer

The products are tested and validated on a massive scale. A model for massive transfer is develop according to the nature of the project. The Web software development is focused on tuning and scaling issues to support the platform and services for massive use. The aim of phase 3 is to reach quality product versions.

3.3. Metodología de desarrollo de los diseños didácticos colaborativos.

The didactic design is seen as a plan from which the subject of knowledge, the learner, appropiates the object to be known. If we start with the importance that the student represent for the didactical design, the ultimate goal is to create successful learning activities that engage and motivate the learner. It is therefore appropriate to raise issues relating to a meaningful and collaborative learning.

Learning occurs through a process of internalization in which each student reconcile new knowledge to their prior knowledge structures (Piaget, 1969). This is why we should actively reconciling what she knows and believes with the new information in a culturally specific social context (Vygotsky, 2007).

Therefore, an instructional design plan must consider the cultural elements of the student's environment as well as potential referents that can be useful in the development of a broader social context. Here the teacher has a key role for conforming the Zone of Proximal Development (ZPD) needed to all social interested learning (Vygotsky, 2007).

Regarding methodology we will follow different approaches according to criteria related to the characteristics of each skill involved and the respective associated subjects, namely, reading comprehension, construction of argument and critical writing in both Language and Communication and History and Social Science. To achieve this the Kelluwen research team

will be strengthened with three classroom teachers from educational institutions that participate in the first pilot.

The collaborative approach is materialized in what we call Twin Class modality. The idea is to link course groups from different school who are working in the same didactical design, for the realization of peer review and other collaborative tasks within some of the learning activities. Each didactical design must consider such a kind of twin class activities in the global plan and take into account coordination and communication issues.

In the first year we will develop four didactical designs to be worked in Language and Communication and History and Social Sciences. These designs will address the reading comprehension skill for 7th and 8th schools level and critical judgment in 11th and 12th levels. In the second year, these designs will be improved and will be tested in different contexts. In both cases, pre and post tests and focus groups and interviews will be applied.

In the second year we will build six new didactical designs, which will be tested in a pilot involving 10 schools. At this time, all school levels involved in the project will participate. In these pilot experiences a similar research process as described in the preceding paragraph will be performed.

Summarizing, at the end of the project we will have ten didactical designs tested and validated in real schools (no new didactial designs will be developed at third year). This products will have strenght due to their continuos evolve using information from experience.
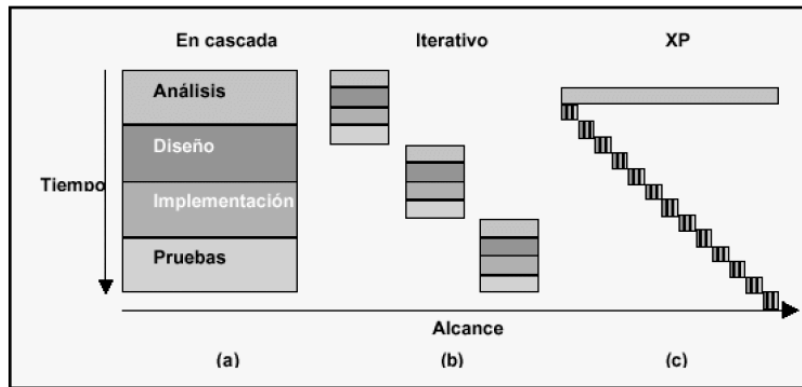

3.4. Software development methodology

The Virtual Learning Environment (EVA) to support the project educational experiences will be built according to an agile methodology for software development. We propose Extreme Programming (XP) for its flexibility and applicability in contexts where the requirements are not clear at the beginning and once identified, are very likely to change (Beck, 2000). The main advantage of the methodology is to allow the development to be driven by educational research and its conclusions and to adapt quickly to changing requirements that emerge as the project progresses.

Extreme Programming (XP) is a software engineering methodology from a group of methodologies so-called Agile Methodologies. XP emphasizes customer satisfaction and teamwork, so that developers, project managers and customers together form part of a unit dedicated to deliver quality software. This methodology is designed to deliver the software that the customer need when he need it.

XP improves a software project in four key areas: communication, simplicity, feedback and courage. XP programmers highly communicate with each other and with clients. The design is kept simple and clean as it could be. Development team get feedback by testing their software from the first day. They deliver the system to customers as soon as possible and implement changes as are suggested. With this foundation, XP programmers are able to respond to changing requirements and technology (XP URL 1).

Extreme Programming methodology proposed four stages of software development: Planning, Design, Development and Testing. The stages are implemented in small cycles, producing units or functional software modules in a short time called Spikes.

Figure 2: Comparison between short cycle stages in XP and other software develpment methodologies. a).Cascading software life cycle, b) Iterative software life cycle, c) XP

Extreme Programming methodology proposes that the generated code is collectively owned, that anyone can make changes to any part of the code at any time, subject to compliance with coding standards. Unit tests are run continuously and code pieces are integrate frequently to avoid the breakdown of the system.

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