VIRTUAL EDUCATION IN THE UNIVERSITIES: CONTRIBUTIONS OF COLLABORATIVE LEARNING

Patricia Lupion Torres[1]
Pontifical Catholic University of Paraná - PUCPR – Brazil
Investigation Group PRAPETEC
patorres@terra.com.br

Lilia Maria Marques Siqueira[2]
Pontifical Catholic University of Paraná –PUCPR – Brazil
Investigation Group PRAPETEC
lilia.siqueira@pucpr.br

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ABSTRACT

This study presents as core hypothesis the fact that the University, given its structure and availability of the scientific and technological resources, as being a privileged place for the creation and testing of methodological proposals for distance education. The current paper aims to present collaborative learning as one of these methodological proposals, and the transformations in the students and professors roles, when applied in virtual environments. To achieve this study, a bibliographic research was performed, which gathered information on the evolution of technological resources, data from virtual universities in the world and in Brazil, survey of the Distance Learning structured models in operation in Brazil, in accordance to Vianney and Torres (2010), Rama (2009), Silvio (2000). A brief bibliographic revision was also performed about the collaborative learning concepts and its applications over the virtual university context, according to Moran (2006), Torres (2004), Siqueira (2003), and Borba (2008); and interactivity concepts according to Silva (2006). As a conclusion, it is suggested to use the collaborative learning assumptions: interactivity, peers exchanging and the flexibility of roles in the relationships and communication, as aspects to be considered in the pedagogical achievement of Virtual University.

Key words: *Journal of Latin American Education History, online learning, collaborative learning, virtual university.*

EDUCACIÓN VIRTUAL EN UNIVERSIDADES: LAS CONTRIBUCIONES DE APRENDIZAJE COLABORATIVO

RESUMEN

Este estudio tiene como el centro de hipótesis el hecho de que la Universidad, por su estructura y la disponibilidad de los recursos científicos y tecnológicos, es un lugar privilegiado para la

[1] Doctor in Media and Knowledge by UFSC and Professor of the Post-Graduation Program in Education – PPGE – Master and Doctorate- PUCPR. Leader of the Research Group PRAPETEC – Teaching Practice in Teaching and Learning with Educational Technologies.

[2] Doctor in Education by PUCPR and Coordinator of Distance Teaching PUCPR, researcher of the Research Group PRAPETEC – Teaching Practice in Teaching and Learning with Educational Technologies.

creación y experimentación de propuestas metodológicas para la educación a distancia. Este trabajo tiene como objetivo presentar un aprendizaje colaborativo como una de estas propuestas metodológicas y los cambios en los roles de los estudiantes y profesores, cuando se aplica a entornos virtuales. Para lograr este estudio, se realizó una búsqueda bibliográfica, que reunió información sobre la evolución de los recursos tecnológicos, los datos de las universidades de todo el mundo virtual y en Brasil, un estudio de los modelos de EAD estructurado y funcionando en Brasil, como Vianney y Torres (2010), Rama (2009), Silvio (2000). También se realizó una breve revisión bibliográfica sobre los conceptos de aprendizaje colaborativo y su aplicación en el contexto de la universidad virtual, de acuerdo con Moran (2006), Torres (2004), Siqueira (2003) y Borba (2008), y los conceptos de interactividad según Silva (2006). En conclusión, le sugerimos que utilice los supuestos del aprendizaje colaborativo, la interactividad, el intercambio entre pares, y la flexibilidad de los roles de las comunicaciones y relaciones, como aspectos a considerar en la implementación de la Universidad Virtual pedagógica.

Palabras clave: *Revista Historia de la Educación Latinoamericana, aprendizaje en línea, aprendizaje colaborativo, la universidad virtual.*

EDUCAÇÃO VIRTUAL NAS UNIVERSIDADES: AS CONTRIBUIÇÕES DA APRENDIZAGEM COLABORATIVA

RESUMO

Este estudo apresenta como hipótese central o fato de que a Universidade, dada a sua estrutura e a disponibilidade de recursos científicos e tecnológicos, é um lugar privilegiado para a criação e experimentação de propostas metodológicas para educação a distância. O presente artigo tem por objetivo apresentar a aprendizagem colaborativa como uma dessas propostas metodológicas, e as transformações nos papéis de alunos e de professores, quando aplicada em ambientes virtuais. Para a concretização deste estudo, realizou-se uma pesquisa bibliográfica, que reuniu informações sobre a evolução dos recursos tecnológicos, dados das universidades virtuais no mundo e no Brasil, levantamento dos modelos de EAD estruturados e em funcionamento no Brasil, conforme Vianney e Torres (2010), Rama (2009), Silvio (2000). Realizou-se também uma breve revisão bibliográfica acerca dos conceitos de aprendizagem colaborativa e suas aplicações no contexto da universidade virtual, segundo Moran (2006), Siqueira (2003), Torres (2004) e Borba (2008); e conceitos de interatividade segundo Silva (2006). Como conclusão, sugere-se utilizar os pressupostos da aprendizagem colaborativa, a interatividade, a troca entre pares, e a flexibilização dos papéis nas comunicações e nas relações, como aspectos a considerar na concretização pedagógica da Universidade Virtual.

Palavras-chave: *Revista História da Educação Latino-americana, ensino online, aprendizagem colaborativa, universidade virtual.*

INTRODUCTION

With the emergence of a new globalized and technology-dependent society the demand for continuous training increases and touches on the need to search for new educational models, able to respond to requests for professional training.

Education in this new century unfolds in a society where knowledge is the main source of wealth, production and power. In this knowledge society, there is according to

Davies (2002)[3] a future prognostic of an open, flexible and part-time learning, capable of answering both to the needs of economy, and to the individuals, with a curriculum based on competences and useful knowledge, acquired at any time or place. For this author an open society, calls for an educational system equally opened.

Seeking to meet these emerging demands, universities are increasingly incorporating new technologies in the situations of teaching and learning. The speed with which technology is developed and it is fitted into our lives is a feature of today's world. Universities have greatly benefited of the possibilities offered by information and communication technologies (TIC) and the educational processes influence and are influenced by technological evolution. Technological development is intertwined with the pedagogical innovations, interfering in educational models and instructional processes, promoting a virtualization and even a hybridization of educational spaces. Virtual education today is a consolidated modality which is available to assist the continued improvement, so much required now-a-days, democratizing the access to training to a greater number of people.

1. Virtual Education or Online Education

The opportunities of access to information have been augmented by the use of new communication technologies and by the use of the computer. Millions of people are connected to the Internet, forming networks of information.

This was only possible due to certain events, among which we relate some in a brief chronology presented below[4]:

Table 1 – Evolution of Some Technological Resources

CHRONOLOGY	EVENTSS
1642	Blaise Pascal is credited with building the first "calculating machine".
1671	Gottfried Wilhelm von Leibniz invented a "computer" that was built in 1694. It could add and, by means of successive additions and changes it could also multiply.
1820	Charles Xavier Thomas developed the first mechanical calculator which could add, subtract, multiply, and divide.
1822	Charles Babbage, a professor of mathematics began to design and built a small demonstration model of a "difference machine", an automatic mechanical calculating machine.
1823	With funding from the British government, Babbage, started building a machine of complete difference.
1833	Babbage began the building of the "analytical machine" that could today be called an automatic mechanical digital computer controlled by a program.
1854	George Boole publishes papers which will be the logical basis of the calculations of future computers.
1870	(approximately) Lord Kelvin creates the analog machine to predict tides, which will give origin to the first analogical computers.
1890	Herman Hollerith and James Powers developed devices which could automatically read a the information on punched cards.
1901	It was transmitted from England to Canada, by Guglielmo Marconi, the first sign of wireless telegraphy.
1924	IBM Foundation, which manufactures card punchers.
1941	Konrad Zuse completes the Z3 electromagnetic computer.
1943	The Colossus is completed, in London, the first specific digital computer to break codes.
1944	Howard Hathaway Aiken, his team and IBM's complete the Aiken machine, called Harvard Mark I, the Marl I, electromechanical computer that works with relays.
1946	The ENIAC is revealed to the public - Electrical Numerical Integrator And Calculator the first fully electronic and digital computer developed in partnership by Moore School from Pennsylvania and by the Ballistic Research Laboratory of the U.S. Army.
1947	The first generation of modern programmed electronic computers that use random access memory (RAM).
1949	It is completed, at the University of Cambridge, the Edsac, first digital computer that stores the program itself.
1951	The first commercially available computer, the Univac-I, is launched.
1951	Edvac is completed, the electronic computer of discreet variable.
1952	The Institute of Advanced Studies at Princeton University concludes its computer.
1953	IBM makes its first digital computer.
1957	The first step is given towards "friendly" systems with the emergence of Fortran, language that facilitated computer programming.
1959	First machine that became known as minicomputer – PDP.
1950-59	In the 1950s it is created in the United States the Advanced Research Projects Agency – ARPA, to develop high technology for the armed forces.

[3] David Davies, "Hacia una sociedad que aprende", in *Organizaciones que aprenden y formación virtual*, Eds. R Teare, D Davies y E. Sandelands (Barcelona: EDIUOC, 2002),1.

[4] Table presented by P.L Torres, in her thesis de titular based on several authors (2003).

1960	Cobol is developed, the first oriented language for commercial programming.
1961-68	Standards are defined for a Packed Switched network, a web of switched packets.
1962	The project of a large communication network and group work is presented in the United States.
1969	The Unix system is developed at Bell Laboratories, which originated the language of C programming.
1969	ARPANET was created, responsible for developing the network that became the Internet.
1970	The first connection between UCLA in California and BBN in Massachusetts was made, with a link of 56 Kbps.
1971	Intel 4004, the first microprocessor commercially available.
1971-80	Several companies develop and present their personal computers.
1971	Ray Tomlinson, BBN employee, invents the e-mail, for internal communication of the institution.
1972	Ray Tomlinson, changes the e-mail program, so it can be used by all from ARPANET. He decides to use the @ symbol to define in which server should the recipient be found.
1973	First European servers are connected to ARPANET. Connections are made with the University College of London (England) and the Norsar (Norway).
1974	The network's development begins, with the TC/IP protocol that allows the interconnection of different networks, machines and operational systems.
1974	BBN launches the first private data service, the TELNET, a commercial version of ARPANET.
1979	The first Discussion Groups (Newsgroups) are created using UUCP, USENET rises.
1981	Launching of IBM-PC, the first personal computer sold successfully.
1983	The division of ARPANET happens in: ARPANET and MILNET (Military network). Of the existing 113 nodes in the network, 68 were for the administration of the military.
1984	With the creation of JUNET (Japan Unix Network), which uses UUCP to be connected to the network, Japan joins the network.
1986	NSFNET is created - National Science Foundation, which receives the mission to transform ARPANET into the Internet.
1987	With the opening for commercial ends the network begins to grow.
1989	The first e-mail tests outside the academic environment are made, among commercial enterprises.
1989	Other countries are connected to the Internet, among them Australia, Germany, Israel, Japan, Mexico, New Zealand, Puerto Rico and the United Kingdom.
1990	ARPANET is closed, but the military network still remains, under the administration of MILNET.
1990	New countries are connected to the network; they are: Brazil, Argentina, Chile, Austria, Belgium, Greece, Ireland, Spain, Switzerland, India and Korea.
1991	Paul Lindner and Mark P. McCahill, from Minnesota University, develop GOPHER, the first search engine for the Internet.
1991	Creation of the World Wide Web.

As it can be seen in the table above, at various moments the technological development is intertwined with educational processes, interfering in them. Likewise, after the amplification of the educational use of communication and information technologies, distance learning has undergone a substantial change becoming virtual distance learning or simply virtual education. The idea of a virtual university is new, having emerged in the 1980s with the creation, in 1983, of the University of the World (UW) and the establishment of its headquarters in California. The University longed to use the EARN-BITNET[5] network, but this web was not strong, open and flexible enough, being surpassed by the Internet. This University was never actually implanted and around 1991 the possible members that constituted no longer met[6].

Tim Berners-Lee, between 1989 and 1991, developed at the Particle Physics Laboratory in Geneva, a European protocol called World Wide Web, a crucial fact to the advancement of virtual education. In the beginning only a few researchers in the world used the Web, until in 1993, the University of Illinois released for use, free, Mosaic, a user friendly Web display.

At the same period there were more than 15 projects with similar purposes as to the University of the World UW, among which stands out the Global University System (http://www.solar.rtd.utk.edu/GLOSAS/global_University/) created in 1991, in New York, which remains in operation up to now, more like a cooperation space between universities and students than as an undergraduate and graduate[7] institution. The virtual university is a result from information age, being, a system based on computer, telephone and Internet

[5]Academic Network predecessor of the Internet, which grouped 3500 universities and investigation centers from approximately 50 countries around the world. Jose Silvio, *La virtualizacion de la universidad* (Caracas: IESALC, 2000), 307-310.

[6] Silvio, *"La virtualizacion",* 307-310.

[7] Silvio, *"La virtualizacion",*311.

equipment. It conglomerates an electronic space and it has endless possibilities interaction[8].

The communication features incorporated by the new generations have also greatly changed the way students study. The university community is made up of users of new media in their daily lives. Many students are "digital natives, a term coined by Marc Prensky[9] in 2001, which refers to those born after 1980, who use digital media and media convergence daily in the context of family and education. These students also participate in several virtual relationship networks. They are people who are more used to these means and as a consequence they developed new ways of relating with the contents to be seized by them. The sum of these factors has generated greater interaction and collaboration in the students' papers. Elsewhere, Prensky (2012)[10], notes that the major challenge for teachers will be to prepare students, who were already born in the XXI century, to be citizens and professionals who speak less and think more. It also emphasizes that it is necessary to think long term, and this planning should overcome the school organization, advancing to update the educational legislation.

It is observed that technology offers means which facilitate the cooperation process, be it educational, be it field work, since besides the relationship between subjects it is added the possibility of cooperation between them and software entities (the agents), transformed into enabling elements of the communication and learning process in large virtual communities[11]. Table 2 presents some data from the Virtual Education in universities round the world, based in Silvio (2000) [12] with the update of the information gathered from the sites from selected institutions.

Table 2 – Virtual Universities

UNIVERSITY	COUNTRY	DESCRIPTION
UNIVERSIDAD NACIONAL DE EDUCACIÓN A DISTANCIA	Spain	UNED has a wide offer in distance higher education (27 undergraduate, 53 master degrees, 44 doctorate programs), as well as continuing education courses with over 600 certification courses. (http://portal.uned.es)
UNIVERSITAT OBERTA DE CATALUNYA - UOC	Spain	Inaugurated in 1995, it is a university that was already born with the distance learning proposal. It presents a learning method based on four principles: flexibility, customization, interactivity and cooperation. (http://www.uoc.edu)
EUROPACE	Assorted	Europace is a nonprofit association, formed by Higher Education Institutions, NGOS and Business Institutions. Its main objective is the development of e-learning network, virtual mobility, internationalization of higher education, for the creation and sharing of knowledge, and learning throughout life.

8 Arnaldo Niskier, *Educação à distância: a tecnologia da esperança* (São Paulo: Loyola, 2000), 63.

9 Marc Prensky, "Digital Natives, Digital Immigrants", *On the Horizon*, Vol. 9 No. 5, (2001):1-6.

10 Prensky highlights: "This requires complete integration between teaching and skills such as critical thinking, problem solving, programming language, the same way that today we integrate reading and writing." Prensky, *"Digital Natives"*, 3.

11 P. C Cunha Filho et al., *distance education in Brazil in the Internet era – Virtus Project and the Construction of Virtual Environments of Cooperative Study* (São Paulo: Anhembi Morumbi, 2000),63.

12 Silvio, *"La virtualizacion",* 315-366.

		(http://www.europace.org)
AFRICAN VIRTUAL UNIVERSITY - AVU	Assorted	UVA offers three types of courses: online, mixed, face-to-face. The online courses are 100% delivered via the web, through AVU virtual classrooms. The mixed courses are part face-to-face, and they are modalities designed for courses which require a practical part. The complete face-to-face courses are taught through partner institutions. (http://www.avu.org/)
UNIVERSITY OF SOUTH AFRICA - UNISA	South Africa	UNISA is a distance learning institution which emerged, officially, in January 2004 through a merger between the University of South Africa, Technikon Southern Africa and Vista University Distance Education Campus (Vudec). (http://www.unisa.ac.za/)
UNIVERSIDAD TEC VIRTUAL DEL SISTEMA TECNOLÓGICO DE MONTERREY	Mexico	Created in 1996, the virtual university operates via telecommunication technologies and electronic networks. It has collaborative centers, where teachers and students develop projects, case studies, simulations and they discuss the course content. It is present in 22 countries in America, plus Spain and Portugal. (http://www.ruv.itesm.mx/)
UNIVERSIDAD LATINOAMERICANA	México	The University started its activities in 1976. In August 2008 it joined Apollo Global, an international group that has prestigious colleges among its members. In 2011, it launched the flexible ULA concept, offering courses with a mixed programming, being a small part face-to-face and most of it in a virtual environment. This program is titled as Undergraduates and Masters for Executives. (http://www.ula.edu.mx/)
ANADOLU UNIVERSITY – AU	Turkey	University in operation since 1982, which was born as a distance learning institution. Its performance was through traditional media. Today, it offers 12 under-graduate and 46 graduate courses with a distance learning system consisting of books, television programs, academic counseling, e-learning and video conference. (http://www.anadolu.edu.tr)
INDIRA GHANDI NATIONAL OPEN UNIVERSITY - IGNOU	Índia	It was created by the Indian Parliament in 1985 and it started to act in 1987. With the launch of EDUSAT (a satellite dedicated only to education) on September 20, 2004, and the creation of the Inter-University Consortium, the University began a new era of technology for the country's education. Today, it is recognized as a world leader in distance education, with awards of excellence by the Commonwealth of Learning (COL), in Canada. On January, 2010, it was listed in 12th in the webometric ranking of Indian universities, based on the caliber of its Internet presence. (http://www.ignou.ac.in/)
UNIVERSITAS TERBUKA -UT	Thailand	It was created by a presidential decree on September, 1984. UT works through distance learning, with the use of print communication media (modules) and virtual (audio, videos, Internet, radio and television). There are four colleges and a post-graduation program which offers more than 30 courses with different levels of coverage. (http://www.ut.ac.id/)
OPEN LEARNING AGENCY	Australia	Private company that brings together 20 important universities and other school around Australia. Over 170 online qualifications are offered. (http://www.open.edu.au/)
DEAKIN UNIVERSITY DE AUSTRALIA	Australia	It offers several courses in off-campus study. In this model, the students who study off campus, through distance education, receive the same orientation as campus students. They receive the well completed study methods, including interactive models such as online conference. (http://www.deakin.edu.au/)
OPEN POLYTECHNIC	New Zealand	Open Polytechnic is owned by the New Zealand government. It offers distance courses to the entire country and also internationally. There is industry involvement in the development of most courses. There are more than 100 qualifications 1200

		courses at various levels. (http://www.openpolytechnic.ac.nz/)
edX	USA	edX is a non-profit company founded by Harvard University and by the Massachusetts Institute of Technology with the aim of offering online courses/studies. Along with the offer of online courses, the institutions will use edX to research how students learn and how technology can transform learning. (https://www.edx.org/)
Jones Internacional University - JIU	USA	Created in 1995, it has its administrative sectors in Englewood, Colorado, USA. It is a completely virtual university, private, a non-profit organization, which aims to "make more accessible and sustainable the interactive learning for motivated adult worldwide, delivering contents electronically". JIU offers various programs which provide tools and essential strategies to start or advance in the career. The development of the students, their academic and personal needs are at the center of politics, learning platforms and services from the institution. http://www.jiu.edu/
Western Governors University - WGU	USA	It was created in 1995, by an association of 19 states from the western United States and it has its administrative sectors in Utah. It is a network, with autonomous functioning, supported by over 20 major companies and foundations which believe in the WGU's commitment to produce highly competent graduates. It consists of 46 higher education institutions, including community universities and colleges. Western Governors University is an online university driven by the mission of expanding the access to higher education through online programs on. WGU is a national university, serving more than 30.000 students from all the 50 American states. (www.wgu.edu/wgu/index.html).
University of Phoenix Online - UP	USA	Founded in 1989, it is part of the University of Phoenix territorial, although the virtual extension is autonomous. Your students can take courses fully virtual and face-to-face/virtual combined courses. It serves students from 21 countries, plus the U.S. This year, the University celebrates its 20th year of online teaching, with students from all the continents in the world. University of Phoenix uses the power from digital technologies to help students to develop skills and competences demanded in the labor market. (online.uophx.edu/Default.asp).
California Virtual Campus - CVC	USA	California is one of the western states that is not integrated to WGU, opting to also create by a government initiative, California Virtual Campus – CVC, is a consortium of 111 institutions comprising 67 Community Colleges, 18 colleges and universities independent from the State, 19 California State University Campus and 7 University of California Campus. Its function is to mediate the students' access to programs from the institutions that make up the consortium. California Virtual Campus has a partnership with MyEdu to provide information about courses and class schedules from all the institutions that make up the CVC, besides helping to manage the chronogram, to balance the workload, and to compare the prices of textbooks. It has over 19.000 courses and 1.100 graduate courses offered in their 170 accredited institutions of higher education. (www.cvc.edu).
New York Institute of Technology - NYIT	USA	It is a virtual extension of a territorial university. Through a virtual campus courses are totally offered online and partially online courses. Support activities are developed for classroom teaching. New York Institute of Technology (NYIT) was founded in 1955 by a team of visionaries who wanted to break new ground in higher education. They believed that there could be a balance

		between professional training and liberal arts education. Currently, NYIT operates globally bringing infusion technology and professional education, for students in various continents. NYIT is accredited by the Middle States Commission on Higher Education. Middle States Commission on Higher Education, is an institutional accredited agency recognized by U.S. Secretary of Education and the Council for Higher Education Accreditation. (www.nyit.edu).
New Jersey Institute of Technology - NJIT	USA	It is also a virtual extension of a territorial university, which was detached for developing a multi-synchronous communication system. NJIT offers an online education with global reach. The material can be accessed via the Internet, CDROM and DVD, making learning easier. (www.njit.edu/dl).
National Technological University - NTU	USA	It acts as an intermediary to facilitate access to students to the 48 affiliated institutions. It uses related technologies, such as: teaching by videoconferencing via satellite and learning via the WEB (www.ntu.edu). Laureate Education bought the institution and from 2011 NTU is no longer accepting new students only meeting the students' needs already enrolled.
Walden University	USA	Since 1970, it offers distance education. Currently, this comprehensive online university, accredited by the Commission of Higher Education and member of the North Central Association, offers master's and doctoral degrees in education, psychology, health, management and human services. *(www.waldenuniversity.com)*
Nova Southeastern University - NSU	USA	The University of the state of Florida develops some distance programs. Distance Learning students have access to support services such as electronic library, the Internet and computer software. (http://itde.nova.edu/itde/newindex.html).
Tele Université du Quebec - TELUQ	Canada	It is the first university totally on distance, in Quebec. Since its creation in 1972 it expanded its product range which now includes more than 400 courses and 75 programs in every level of learning. It registers to date more than a million of students. (www.teluq.uquebec.ca/webteluq/index.html)
Athabasca University	Canada	University with extensive experience in distance learning education, in the early 2000s, it went through a transition process to virtualization, started with a project called Virtual Teaching and Learning – VITAL. The "Centre for Athabasca University's Master of Education in Distance Education (MEd)" is one of the oldest programs in distance education. It offers more than 750 courses in a wide range of subjects. The courses are designed for distance study, online, or in a classroom so that students can continue their education, without scarifying the career, the personal and family commitments. Thus, the proposal from the University helps students to overcome the barriers of space and time. The course fees include all textbooks and materials, so that the students knows the investment from the start. (www.athabascau.ca/).
British Columbia Open University University	Canada	It is part of the Open Learning Agency (www.ola.bc.ca/) from Canada. It expanded the campus of UBC worldwide, to offer more than 120 courses and online. (www.ola.bc.ca/bcou).
Open University - OU	United Kingdom	One of the most traditional universities of distance education, since its beginning has sought to progressively incorporate new technologies, maintaining the pedagogical coherence. The "Open Learning" system used is for the student to study wherever he wants. It is possible to read, watch and listen to the material provided, in addition to still have the support of a tutor. The students can interact with each other through UO system of

		online conference, tutorials and groups of informal studies. (www.open.ac.uk).
Centre National d' Enseignement á Distance - CNED	France	It is considered an institution of higher education, even though works with all levels of education. In 1997 it creates an electronic campus, accessible by telephone, television and telematics network. It is an institution of a public nature, under the supervision of the Ministries of Education and Higher Education and Research. (www.cned.fr).
Federation Interuniversitaire d'Enseignement a Distance	France	Composed by 16 universities, from 14 European countries, this network was created in 1987. It offers to its members e-mail services, virtual library and updated training of its programs. It is not necessary to live close to school, although there can be face-to-face moments to consolidate and review contents. (www.telesup.univ~mrs.fr/TELESUP/LaFIED).
Conservatoire Nacional d ' Arts et Métiers - CNAM	France	It is an nstitution of Education and Research, whose mission is the continuing education and training for work. Teaching is structured based on integrated media, including the Internet (web.cnam.fr/).
NETwork per l' Universita Ovunque - NETTUNO	Italy	It is a non-profit organization promoted by the Ministry of Education, University and Research. The network use telematics, audio and videoconferencing via satellite, public television, video and the Internet. (http://www.consorzionettuno.it/nettuno/brochure/eng.htm)
Fern Universität	Germany	Traditional university of distance education, since its beginning it has sought to incorporate the very latest in technology integrating new pedagogical models: Long Distance Learning. It offers several courses in different areas. (http://www.fernuni-hagen.de/).

As it can be seen in Table 2, virtual education has been structured from the nineties and it is consolidated in the large universities of the world. The virtual university is mainly characterized by the use of interactive technologies - such as the Internet and video conferencing - and it prioritizes the communication process.

2. Brief excerpts about the virtual university in Brazil

The expansion of enrollment, the entry of new local suppliers, the increase of government regulation, institutional differentiation, marketing, internationalization and virtualization, are features of the metamorphosis that occurs in Latin America and the Caribbean in distance higher education systems[13].

In this scenario, Brazil presents itself as the country that achieved the highest growth in the region. This stems from the changing dynamics of the Brazilian educational legislation and the investment of some universities face it, in the 1990s developed applied research on the use of information and communication technologies and the deployment of distance learning courses.

13 Claudio Rama, *La encrucijada de las tendencias de la educación superior en América Latina* (Santo Domingo: UNICARIBE, 2009), 26.
P. L. Torres y Claudio Rama, "Algunas de las características dominantes de la educación a distancia en América Latina y el Caribe", in *La educación superior a distancia en América Latina y el Caribe: realidades y tendências*, eds. Patrícia Lupion Torres y Claudio Rama (Palhoça: Editora da Unisul, 2010), 9-16.

In this scenario, Brazil presents itself as the country that achieved the highest growth in the region[14]. This dynamics stems from the changes of the Brazilian educational legislation[15] and the investment from some face-to-face universities which, in the 1990s developed applied research on the use of information and communication technologies and the implementation of distance learning courses. This action generated a spiral movement that reached at first research groups in public universities to, then, promote the entry of private institutions in the segment of distance learning[16].

The growth of distance higher education in Brazil has been exponential. Since its birth in 1995 at Federal University of Mato Grosso, until the year of 2010, it is observed the growth of this type of education in higher education institutions, as noted in the following table:

Table 1 - Enrollment growth in distance under-graduate courses[17]

Enrollment growth in distance under-graduate courses					
Year	**DLE Courses**	**DLE Student**	**Face-to-face student**	**Under-graduate total**	**DLE Participation in total enrollments**
1995	01	352	1.759.351	1.759.703	0,02%
2000	10	1.682	2.692.563	2.694.245	0,06%
2001	16	5.359	3.025.395	3.030.754	0,17%
2002	46	40.714	3.479.913	3.520.627	1,15%
2003	52	49.911	3.887.022	3.936.933	1,26%
2004	107	59.611	4.163.733	4.223.344	1,41%
2005	189	114.642	4.453.156	4.567.798	2,57%
2006	349	207.206	4.676.646	4.883.852	4,24%
2007	408	369.766	4.880.381	5.250.147	7,04%
2008	647	727.961	5.080.056	5.808.017	12,53%
2009	844	838.125	5.115.896	5.954.021	14,10%
2010	930	930.179	5.449.120	6.379.299	14,60%

14 Delving in studies by Vianney, Silva and Torres, for IESALC/UNESCO: João Vianney, Elizabeth Silva y Patrícia Torres, *A Universidade Virtual do Brasil* (Caracas: UNESCO/Unisul, 2003); João Vianney, P. L**.** Torres, y Elizabeth Farias, "La Educación Superior a Distância en Brasil", in: *La Educación Superior Virtual en América Latina y el Caribe*, Ed. Coleción Biblioteca de la Educación Superior (México: Asociación nacional de Universidades e Instituciones de Educación Superior, 2004), 119-153; João Vianney, P. L. Torres y Elizabeth Farias, "O Ensino Superior à Distância no Brasil" in: *A educação Superior Virtual na América latina e no Caribe* Ed. Patrícia Lupion Torres y João Vianney (Curitiba: Editora Champagnat, 2005),139-179.

15 Delving in studies about legislation, by Vianney and Torres: João Vianney y P. L. Torres, "Marcos reglamentarios de la educación a distancia en la enseñanza superior brasileña" in: El *Marco Regulatorio de la Educación Superior a Distancia en América Latina y el Caribe,* Ed. Marta Mena, Claudio Rama, Ángel Facundo (Colômbia: UNAD, 2008), 109-152; P. L Torres y João Vianney, "La calidad de la educacion a distancia y sus mecanismos de aseguramiento en Brasil" in: *El aseguramiento de la calidad de la educacion virtual,* Ed. Claudio Rama y Julio Dominguez Granda. (Peru: Gráfica Real, 2011), 119-143.

16 João Vianney y Patricia Torres, "La educación a distância en Brasil", in: *La educación superior a distância: miradas diversas desde Iberoamérica,* Eds. Claudio Rama y Jose Pardo (Santo Domingo: Virtualeduca – Inteved, 2010), 15-44.

17 Data from research presented by professor Dilvo Ristoff, in 2007 and updated by: P. L Torres y João Vianney, "Um olhar sobre os números da educação a distância no ensino superior brasileiro", in: *Políticas de Formação do Professor: caminhos e perspectivas,* Eds. Romilda Teodora Ens y Marilda Aparecida Behrens (Curitiba: Champagnat, 2011), 229-257.

The Virtual University in Brazil is born in 1996, at the Federal University of Santa Catarina, in post-graduate distance courses, with the intensive use of videoconferencing and the Internet, respectively, both with support of printed material.

In these 17 years, the higher education institutions in Brazil which proposed to act in distance learning had to constitute an instrumental domain for the pedagogical use of several technologies, as shown in the table below:

Table 3 - Technologies used by the Brazilian Higher Education Institutions in Distance Learning from 1994 to 2010[18]

Technologies used by the Brazilian Higher Education Institutions (HEI) in Distance Learning from 1994 to 2010		
Meio		**Developed used stratregy**
1	TV via satellite	Production and transmission of live tele classroom, with simultaneous reception and coverage for the entire national territory.
2	Video classes	Production of pre-formatted classes, for playback in broadcast system on national network or for playback in tele classrooms.
3	Printed	Development of a conceptual approach and implementation of the same for the development and publication of contents and learning activities for specific textbooks to use on distance learning.
4	Video conferencing	Creation of educational logical use for bi and multi directional systems of interaction for audio and video, integrating multiple spaces connected live, to conduct classes, lectures and interactive sessions for theses defenses, dissertations and monographs.
5	Telephony	Use of conventional telephony systems for providing various care to students, such as secretary, monitoring, tutorial, administrative and pedagogical support.
6	Internet	Development of autonomous systems for use as virtual learning environments, creating methodological approaches to online or offline teaching and learning, web conferences and others, with the application of tools created or acquired.
7	Mobile phone	Until the beginning of 2010 the Brazilian studies for educational and applied use to distance learning of the mobile phone resources and of other mobile devices were still in the embryonic stage.

The technological choice and the teaching Project of the Brazilian higher education Institutions resulted in five distinct models of distance higher education in Brazil. All of them were organized from 1995 to 2010, both in public universities and confessional, private or community universities, as shown in the table below:

Table 4 - Models of structured Distance Learning operating in Brazil (1994 – 2008)[19]

Structured Distance Learning models operating in Brazil (1994 – 2008)			
	Model	**Description**	**Institutions**
1	**Tele-education via satellite**	Generation and transmission of tele-classes with reception in franchises or tele-classes. Support of face-to-face and online tutoring to	FTC; UNOPAR; UNIDERP; COC; UNIP; UNINTER; CESUMAR;

18 Vianney, João; Torres, Patrícia Lupion. La educación a distância en Brasil. In: Rama, C. e Pardo, J. La educación superior a distância: miradas diversas desde iberoamérica. Santo Domingo: Intered, 2010.
19 Vianney y Lupion, "La Educación a distância", 26-27

		students, with delivery of printed or digital textbooks (CD) or on-line, via the Internet.	Estácio; UNIMEP; UNISA, METODISTA; CESUMAR; UNITINS-EADCom.
2	**Support of face-to-face poles (blended)**	Support to students in places with support infrastructure for face-to-face classes and tutorial, and support services such as library, computer lab. Use of support printed materials, or of digital media contents (CD or on-line).	UFMT; UnB; UFAL; UFPB, UDESC; UFPR; UFSC; UFSM; UFOP; UDESC; and the other institutions linked to the Open University Program of Brazil, from the Ministry of Education.
3	**Virtual University**	Intensive use of digital communication technologies for the relationship of tutors with students, and these among themselves. Digital libraries and sending to students printed or digital textbooks. Tutors remotely meet students from the central unit of the institution. The support places for students are only used for doing the tests.	Catholic Universities of PR; MG; DF and RS; UNISUL; FGV; AIEC; UFSC; UNIFESP; UNIS; NewtonPaiva; UFSCar, UNIVERSO; UnB; UFF; UNIFESP; UFPE; ANHEMBI; Claretiano, IESB.
4	**Video-education**	Support for students in video-classrooms with equipment to playback the pre-recorded classes, printed textbook as support for video classes. Tutoring face-to-face and on-line.	ULBRA; Univ. Castelo Branco; UNIASSELVI; IESDE.
5	**Central Unit**	System where the central unit of the institution receives regular visits from the students for face-to-face activities of laboratory practices. Tutoring is done remotely during the offer period of the conceptual based disciplines.	Federal University of Lavras. Some HEI use this model, such as UnB and UNISUL, to perform steps with the use of laboratory in certain programs.

It is worth to note that in the several models presented the identified difficulties are not found in the technological issue, or still of infrastructure, but rather, in the adequacy of teachers and students who need to be trained, since it is not enough to know to "use the computer" and "access the Internet", it is needed to maintain the motivation of the academic community and especially to adapt to a new system that works with another paradigm. This paradigm shift in higher education, involves the exchange of one form of teacher-student interaction in predetermined time and place for a more flexible method that allows students to choose according to their convenience, how, when and where, wants to learn. This change also requires, a teacher and student training that furthers the linear vision and start to have more integrating, interactive and collaborative characteristics.

3. Collaboration and interactivity as innovative perspectives for a virtual university

The online education is defined by Harasim[20] as a new field, a new dominium that contains elements of classroom education and of distance education, although differing in some aspects from these modalities in some aspects. In classroom education, for the collaboration to be effective, the interactions between many are facilitated by face-to-face meetings, but dependent on time and place. Already on distance education, there is the interaction from one to many, or from one to another one, and it is independent of

[20] L. Harasim, "On-Line Education: A New Domain", in: Mindweave: Communication, Computers and Distance instruction, eds. Robin Mason y Anthony Kaye (Oxford: Pergamon Press, 1989), 1-2.

time and place, but it is hampered the interaction from many to many. *Online* learning meets the independence of the place, combined to the possibility of collaborative interaction from many to many. The *online* learning that uses the collaboration, presents more than an active and interactive learning: it presents indices of communication more equitable than the participation rates observed in face-to-face interactions.

The structure of *online* learning at the University can save initially strong influence of classroom teaching. It is common for a new teaching strategy in higher education, not to be well regarded by other teachers, or even students. Fellow teachers attempt to label it as "cheapening education" or "facilitate" approval, while students also complain saying "prefer class", "the teacher has to teach, and not asking for group work". Likewise, teaching and learning are tied to a space that is the school, and more specifically the classroom. Moran (2006)[21] defines the weight of the classroom as one of the serious difficulties in the acceptance of online education.

Internet access as a complement to school obligations marks the first step in the transition from the exclusive classroom model for both teachers and students, bringing online activities in the context of classroom education, merging the proposals, allowing design interventions in hybrid form, mixed. It is then to use this familiarity with the media in the direction of educational purposes. Kenski[22] (2003) warns of the need for the training of teachers who want to work in *online* education.

Moran (2006)[23] complements stating that in online education, the teacher's roles multiply, are different, and they complement themselves, requiring a great capacity of adaptation and creativity upon new situations, proposals and activities.
The adaptation from face to face to virtual, delegating to the media space the time of access to the content by the students, in a way that most suits them, supervising the chronogram through asynchronous contacts and periodically returning to the classroom, can be one of the many ways of combining the advantages of the classroom teaching with online teaching. However, these adaptations require proper teacher's preparation, as the absence of a good planning involves not only the course (or discipline) online, but also motivation and credibility of the student (and the institution) on the online education as a methodological conception. This methodological transition happens worldwide this first decade of the XXI century, having as main characteristic the expansion of the teacher's role, described by Moran[24] (2006).

The new professional assignment of the teacher will be similar and at the same time different, in the sense that will consider the knowledge acquired throughout the training,

21 José Manuel Moran, "Contribuições para uma pedagogia da educação online", en: *Educação Online*, Eds. Marco Silva (São Paulo: Edições Loyola, 2006), 46.

22 Vani Kenski, alerts that: "It is not possible to think that mere knowledge of the way to support the use (turn on the television or the video or to know to use the computer and to surf the Internet) already qualify the teacher to use the support in a pedagogically efficient way in educational activities." , 5. Vani Kenski, "Aprendizagem mediada pela tecnologia", *Revista diálogo educacional* Vol: 4, N° 10, (2003): 47-56.

23 Moran, "Contribuições para uma pedagogia", 43.

24 Moran defines as: "a role that suits with some moments from conventional teacher – sometimes it is important to give a beautiful lecture – with a much more prominent role of research manager, stimulating the search, the result coordinator. It is an animation role and coordination much more flexible and constant, which requires a lot of attention, sensitivity, intuition (radar on) and technological dominium. Each course, each teacher Will do this in a similar way and at the same time different." Moran, "Contribuições para uma pedagogia", 46.

the teaching experience, the nature of knowledge to be structured in the new methodological conception, the familiarity with the media and the composition of their students groups, as emphasized by Borba[25]. Silva (2012) tells his experience in creating and mediating an online course[26]. It expands the concept of providing not only to provide, but also to offer multiple information, give multiple pathways and encourage students to contribute with new information and better routes. Once again, steps in the upgrading of teacher's training to act on online or hybrid proposals, avoiding a mere transposition of the classroom model to the digital, without considering the potential of the interface and the demand from the students.

In Virtual Education is the communication and the interactivity that determine the pedagogical differential, which for many is still not clear, as revealed by Azevedo[27] (2002).

The term interactivity is presented by Silva (2006)[28] when he describes in detail the transition of society that passes from the logic of distribution to the logic of communication. In the logic of distribution, the educational model assumed predominantly the transmission format of the contents, being the teacher the transmitter and the student an uncritical receptor, an empty recipient. The banking education, countered by Freire (2006)[29], assumed a student Who only listens, decorates, repeats, as quoted by Behrens (2005) [30], who does not question, nor is oriented to produce or apply knowledge.

Silva and Santos (2011) [31] complement that even in an educational model where the teacher remains as transmitter/advisor/manager the new interactive technologies allow the user to be the author of his own organization.

The importance of interaction among students and teacher and among students is also remembered by Palloff & Pratt (2003)[32]. These authors report that the research they

25 Silva describes the creation and mediation of an online course as: "the exercise of overcoming a problem that stuck the classroom learning and now also undermine online learning: transmission pedagogy" Marco Silva, *Sala de Aula interativa* (Rio de Janeiro: Quarter ,2006), 53.

26Wilson Azevedo in his book: Current panorama of distance education in Brazil mentions that: "the origin of this difficulty resides in a limited vision of what is the Internet and what are the new computer and communication technologies. Predominant is the aspect "information" about the "communication" in the perception of many. It is seen a lot of more possibilities of distribution and organization of information that the possibilities of computer- mediated communication, especially for collective interaction".

27 Silva, *"Sala de Aula",* 188-194.

28 Paulo Freire, *Pedagogia da Autonomia: saberes necessários à prática educativa* (Rio de Janeiro: Paz e Terra, 2006), 47-49.

29 Behrens y A. O Marilda, *paradigma emergente e a prática pedagógica* (Curitiba: Champagnat, 2005), 43.

30 Silva says that: "each one can see, hear, read, write, reread, send, receive and modify message contents understood as spaces of intervention, negotiation and unfinished. Each one no longer experimenting the disjunction of the issuance/reception, but the co-authorship" Silva, *"Sala de Aula",* 14.

31 Palloff & Pratt commented that: "no matter the model used, to participate of an online course, the virtual student needs to understand that the interaction is expected. To participate in an online course is not an experience of reading only" Rena M. Palloff y Keith Pratt, *The virtual student: a profile and guide to working with online learners* (San Francisco: Jossey-Bass, 2003), 69.

32 In this regard, Palloff & Pratt alert that: "The teacher should have three priorities in an online course: to promote and develop a sense of community, keeping students engaged with the course and with each

developed, some colleagues feel betrayed by the students who do not enter their comments or contributions, think they are profiteers from the ideas of others, besides feeling dissatisfied with the impoverishment of their learning. Later, Palloff & Pratt (2003) confirm that an important step to increase retention is to guarantee greater interactivity, and therefore, the professor should set the example that will be followed by the students[33] .

It is highlighted the importance of using the coexistence among students to be able to attain the educational purposes, through collaboration. Collaboration means group activities that intend a common goal which is achieved in the regularity of the exchange, in working together, in the constant coordination[34]. *Online* education is based, therefore, in two main assumptions: on the one hand, from rejection of authoritarianism, to the pedagogical management with hierarchical, unilateral motivation. On the other hand, it is achieved socialization not only through learning, but mainly in learning. These two purposes are organized by an instrument that equates communication with these characteristics: it is a direct, continuous, constructive communication.

Also in teacher training, online collaboration can be applied as a mutual support among its members, according to experience reported by Borba (2008)[35] with a group of teachers in the area of mathematics.

For students, collaboration seeks the facilitating elements which are responsible for the spread of popular culture between the students, as researched by Thousand (2001)[36], from academic, university culture, and seeks to take advantage of the students' interaction, so that the educational goals can be reached. In this model, the student determines when and where to develop his learning process.

In the last decade, there were dozens of registered experiences of applying collaborative activities, in the classroom and computer-mediated, developed at PUCPR. Emphasis can be given to applied research for a semester with students from Electric Engineering Course, as described by Siqueira (2003)[37]. The students would come to the classroom for,

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other (interactivity), and to encourage students to provide continuity, in order to retain the community building process." Palloff y Pratt, "*The virtual student*", 79.

33 Patrícia L. Torres, *Laboratório On Line de Aprendizagem. Uma Proposta Crítica de Aprendizagem Colaborativa para a Educação* (Florianópolis: Tese de doutorado PPGEP da UFSC, 2002), 42.

34 Borba says that: "members of a collaborative group of players to take on roles become actors who produce knowledge that they learn and also teach. They are not limited to mere information providers of information and materials. They are different voices, positioning and shared experiences that can contribute for the improvement of the teaching practice. Collaboration among teachers demands synergy from the group so that the production of knowledge, walk alongside the personal and professional development of their members." Marcelo Borba y Jussara Araujo, *Pesquisa qualitativa em Educação Matemática* (Belo Horizonte: Autêntica, 2006), 31.

35Siqueira y Lilia Maria Marques, *A metodologia de aprendizagem colaborativa no Programa de Aprendizagem de Eletricidade no Curso de Engenharia Elétrica* (Curitiba: Dissertação de Mestrado: Pontifícia Universidade Católica do Paraná, 2003) 36-39.

36 Thousand presents forms experienced by students in the resolution of conflicts generated by different cultural baggage, and he concludes that the communication is more appropriate, avoiding confrontation, maintaining respect and seeking understanding in the collaborative activities. Jacqueline S. Thousand, Richard Villa y Ann Nevin, *Creativity and Collaborative Learning* (Baltimore: Paul Brookes, 2001), 279.

37 Lilia Siqueira y Paulo Roberto Alcântara, "Modificando a atuação docente utilizando a colaboração" *Revista Diálogo Educacional* Vol: 4 N°8 (2003): 57-69.

in groups, find solutions to real problems of the profession, such as to prepare a draft of a heated floor. In a second intervention, the students attended contents available in virtual environment and accessed online, with previous concepts, and in the classroom performed practical activities. In a third stage, divided in groups, they conducted research in databases, about course contents and they submitted their research to the validation of other teams. The communication between all students in this activity, were mediated 100% by the virtual environment of the University, allowing them the experience of *online* collaborative learning.

To conduct this research, Siqueira (2003) developed preliminary study prospecting the characteristics of each learning space within the University (classrooms, computer laboratories, projection room, experiment laboratories, library) and the collaborative activities that would be applied[38]. Another relevant research was reported by Valaski[39], (2004), who, in his Master's dissertation, formatted and applied in collaboration with the students from Industrial Design course, at PUCPR, with the collaborative creation of a web page with concepts related to the reality of the profession. The conclusive reports of such reports point to new roles performed by the students and by the teachers, in the collaborative proposal.

Collaboration has cooperation assumptions, as reported by Davidson (2001) [40] in his article Cooperation and Collaboration - an integrative perspective. Neil Davidson, in the quality of President of the International Association for the Study of Cooperation in Education (IASCE), put together possibilities of using the collaborative and cooperative learning and examined similarities and variations between them. The activities were developed by other teachers who reported how they established their action plan in the classroom, highlighting the common attributes and the ones that varied in each one of the approaches. As common attributes, Davidson listed: learning activity suitable for group work; definition of group size; cooperation behavior; interdependence (often referred as positive interdependence); record of individual progress; and responsibility. Among attributes that vary between cooperation and collaboration are: group procedure (heterogeneous, random, selected by the student, common interest); structure of interdependence (goals, tasks, work division, rewards); explicit teaching of the skills of collaboration, cooperation, interpersonal, relationship; reflection of the social, academic skills, or group dynamics; adjustment between construction of the class, team,

38Valaski reports that: "In order to help the student to build a sense of professional collaboration, essential to the activity of designer, sought to develop a methodology in which students value the learning process and position itself with seriously toward education and new challenges, seeking to link the proposed topics with their future professional activity, realizing the importance of geometry in relation to the construction of a suitable theoretical-conceptual and practical bound to the needs of the production market, combining creativity and competence in the development of projects for research and creation of web pages, one of the areas of professional of Visual Programming." Paulo Roberto Alcântara y Suzana Valaski, "Vivenciando a aprendizagem colaborativa em sala de aula: experiências no ensino superior", *Revista Diálogo Educacional* Vol. 4 N° 12 (2004): 169-188.

39 Davidson concludes his study by stating that: "it is useful for teachers to emphasize the five common attributes between the cooperative and collaborative approaches. The teachers can, then, carefully select from the approaches the additional attributes that fit their own instructional goals." Neil Davidson, "Cooperative and Collaborative Learning – An integrative Perspective" in: *Creativity and Collaborative learning: a practical guide to empowering students and teachers.* Editado por: Jacqueline S. Thousand, Richard A. Villa and Ann I. Nevin **(**Baltimore: Paul Brookes Publishing Co., 2001), 29.

40 Patricia Lupion Torres y Lola: "A collaborative Learning Approach Using Concept Maps" in: *Handbook of Research on Collaborative Learning Using Concept Mapping*, eds. Patricia Lupion Torres, Marriott, y Rita de Cássia Veiga (New York: Information Science Reference, 2009),1-12.

confidence or cooperation norms; group structure; attention to students' status by the teacher; group leadership; development of the teacher to act in a collaborative way.

In a collaborative learning mold the collective construction of knowledge happens through a constant exchange of information, view point, discussions and debates, the search for answers to questions and problem solving[41]. Virtually or in the classroom, the importance of using coexistence among students to be able to achieve educational purposes was also defined by Bruffee[42] for over 15 years, as a potentiating strategy of learning. Also Dillenbourg (1999) emphasized the expression "together" when he elaborated his definition of collaborative[43] learning, emphasizing the importance of interaction, corroborating Bruffee's thinking.

The exchange of roles and negotiation are fundamental in some models of collaborative activity, which makes Dillenbourg (2000)[44], Torres (2002)[45] and Marriott[46] (2004) to highlight the function of the students as "actors" in the process. Through debates and questionings, the "actors" work with the diversity among them, value freedom – by alternating between individual and collaborative work – and they experience responsibility – for their commitment with authorship, also reported in the research by Torres and Marriot in 2006[47] and 2007[48].
In a similar way, Roschelle (1995)[49] highlighted the difference in the students' attitude when they are solving problems using collaboration, which they propose a mutual engagement, a coordinated effort of solving the problem together, differently from the cooperation where each one is responsible for part of the solution.

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41 Bruffee says: "Although we have learned a lot from reading, we learn even more when we tell each other what we read. Each one of us begins to change and we find that the transformind power is the powerful influence of some related to others." K. Bruffee, *Collaborative Learning* (Baltimore: Johns Hopkins, 1999),9.

42 Dillenbourg states that: "The broadest (but unsatisfactory) definition of collaborative learning, is that this is a situation in which two or more people learn or try to learn something together". P. Dillenbourg, "¿What do you mean by collaborative learning?", em *Collaborative Learning: Cognitive and Computational Approaches*, eds. P. Dillenbourg (Oxford : Elsevier, 1999),1-19.

43 Pierre Dillenbourg, *Learning in the New Millennium: Building new education strategies for schools*. *Workshop on Virtual Learning Environments* **(**2000).

44 Patrícia L Torres, *Laboratório On Line de Aprendizagem. Uma Proposta Crítica de Aprendizagem Colaborativa para a Educação* (Florianópolis: Tese de doutorado PPGEP da UFSC, 2002), 1-198

45 Marriott, Rita de Cassia Veiga, *Do LOLA - Laboratório on-line de Aprendizagem ao LAPLI - Laboratório de Aprendizagem de línguas: uma proposta metodológica para o ensino semi-presencial em ambiente virtual.* (Curitiba: Dissertação de Mestrado do Programa de Pós-graduação em Educação da Pontifícia Universidade Católica do Paraná – PUCPR, 2004), 33-90

46 P. L. Torres, Marriot, "A Aprendizagem Colaborativa no Laboratório on line de Aprendizagem (LOLA)", in: *Práticas Pedagógicas e Tecnologias Digitais*, eds, Lynn Alves Edmea Santos (Rio de Janeiro: E-papers, 2006), 161-181.

47 P. L. Torres y Rita de Cassia Veiga Marriot, "The LOLA strategy and e-learning knowledge management" in: *Handbook of Research on Instructional Systems and Technology*, eds. Kidd Terry T. y Song Holim (New York: Information Science Reference, 2007), 653-669.

48 P. L. Torres y Rita de Cassia Veiga Marriot, "The LOLA strategy and e-learning knowledge management" in: *Handbook of Research on Instructional Systems and Technology*, eds. Kidd Terry T. y Song Holim (New York: Information Science Reference, 2007), 653-669.

49 J. Roschelle, y S.D. "Teasley, The construction of shared knowledge in collaborative problem solving" en: *Computer-Supported Collaboraive Learning* , eds. C.E. O´Malley (Berlin: Srpinger Verlag, 1995), 69-197.

For beyond the classroom, when this collaborative environment is established virtually, a learning network is established. Harasim (2005)[50] defines learning network as a possibility for educators to create efficient and collaborative learning environments, where teachers and students build, together, the understanding related to a particular concept.

CONSIDERATIONS

Online education, therefore, implies a pedagogical proposal characterized by: student's active participation in the learning process; learning mediation made by teachers and tutors; collective construction of knowledge, which emerges from peer exchange, from students' practical activities, of their reflections, their debates and questionings; interactivity between the various actors who act in the process; stimulation of the processes of expression and communication; flexibility of the roles in the process of communication and relationship to enable the collective construction of knowledge.

It is also through interaction and communication that becomes possible to overcome one of the major barriers of traditional distance education, the maintenance of student motivation. With the Internet, it is possible to overcome the sense of isolation, often experienced by distance learners. Through communication between the various members of a "virtual class", the student starts to experience a sense of belonging, of feeling part that only happens in function of communication. Thus, the interactivity modifies the nature and the quality of learning, being then fundamental to ensure a virtual education of quality.

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50 Linda Harasim, et. al., *Redes de aprendizagem: um guia para ensino e aprendizagem online* (São Paulo: SENAC, 2005), 29.

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