Good practices in developing “on line” lessons: Indispensable elements for a systematized design
Bonnes pratiques du développement de cours en ligne : les éléments indispensables d'une conception systématisée
Buenas prácticas para desarrollar clases en línea: elementos indispensables para un diseño sistemático

Giancarlo De Agostini
Good practices in developing “on line” lessons: Indispensable elements for a systematized design1

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“Perhaps what is happening in our society is not so much that there are children unable to learn but more environments unable to teach than what we think. The computer changes this situation, enabling us to reach children with different cognitive and pedagogical styles.”
Nicholas Negroponte (1995)

“Information technologies, along with the ability to use and adapt to them, are the critical factors in generating and accessing wealth, power and knowledge in our era.”
Manuel Castells (2000)

“We will only evolve as social and integral beings, learning through community knowledge networks.”2
Giancarlo De Agostini (2005)

Abstract. This article describes the construction of a lesson or course for the internet, emphasizing the characteristics in viable activities that need to be implemented for the course to be effective and complete: the Beginning stage, the Development stage and finally the End stage. We also consider different pedagogical techniques and their implications in preparing a course that will be delivered online, exclusively through the internet. At the beginning of the article, we discuss some successful regional projects.

Keywords. Online learning, digital, interactive learning, lessons, techniques, technology.

1 Foreword
This practical essay is based on a systematic on-site work for over ten years of dealing with online students, teachers and their results, not only in university environments but also in high school settings, mainly in Ecuador and the Andean Region. Previous to these experiences, the strategies and techniques were successfully proven for twenty years in a regular face-to-face university setting; this initial work done at “Universidad Simón Bolívar”, Caracas (1975-1995), was first described in a written document and technologically transferred to ITALSIEL (an Italian nationwide educational state company), Rome (1981)3, and later documented in another written work4 with improvements. This is neither a dissertation nor a research paper; it is the description of proven “good practices in designing online lessons” based on the design experience of a totally online high school5 project with initial support from UNESCO.

2 Background
As educators we keep repeating past mistakes; since the seventies we have been acquiring technology, both in schools

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1 Originally written in Spanish.
2 De Agostini S., Giancarlo (2005). Design of Graduate programs in virtual higher education, specialization and a masters level, in virtual educational systems. Universidad Andina Simón Bolívar (UASB). Quito, Ecuador.
and in universities, sold to us by vendors of all types as almost a miracle cure to solve educational problems, without realizing that up to now we have not solved many of the serious learning and educational problems and keep repeating them: most of our students lack the abilities of comprehension, problem solving, analysis, synthesis, evaluation, and synergy (work group), and some cannot even read (they are functional literates: experts only in repetition, copying and writing their names).

We as teachers (of course, there are always exceptions) acquire the technology but we do not innovate educationally, and even worse we do not train our teachers and students to take advantage of it intelligently; as St. Agustín (from Hipona) said: “To err is human; to keep erring is diabolical.” Until when then do we continue expecting technology vendors to solve our educational problems? This is not only true in Ecuador and the Region, but also worldwide.

After forming teachers online (nearly 200) in several universities in Ecuador, Venezuela and Colombia, I found that they continued having difficulties in preparing and designing well-formed participatory courses, including interactivity and cooperative activities, all online, and not only information attached to a webpage. I also ran an online survey to nearly 200 university professors, and as a global result of it, the conclusion was the necessity of serious graduate programs in online Pedagogy and Andragogy. This was basically the incentive to write this article, including several proven tips on the subject.

During this decade in Hispanic America, various educational initiatives have been carried out in incorporating recent technology, specifically offering computers with Internet access to every student and teacher. Much financial help has been allocated to all the projects described below, but the majority of teachers were not prepared to meet the challenge; the result: several of the projects disappeared or lost momentum.

Some experiences and projects are described below:

**In Ecuador**, there is a private project initiative developed since 2004 with initial support from UNESCO and winner of several international prizes in Stockholm and Kuwait, winning the GDN first prize; the Virtual Ibero American High School (http://cv1.edu.ec), created by the UVIA Foundation (fuvia.org) and De Agostini, offers the six complete years of high school online, entirely on the Internet, with full scholarships to students with educational vulnerability who have access throughout the country to Info Centers (availability of computers and WEB connection) with free access to all these resources.

The UVIA Foundation (http://fuvia.org) also focuses, among other activities, on “e-learning” to train professors of various universities, and online teachers from high schools, in and out of the country. On several occasions, FUVIA also conducted distance Internet online training to instructors, to education professionals from the Ministry of Education and Culture (MEC) and from ICAM (Municipal Training Institute, by its Spanish call letters).

Why was the project conducted? The World Bank report about Latin America mentions that “Latinamerica and the Caribbean suffer the world highest schooling desertion and repeating rates. Half the children that start the first year of grade school, never finish fourth grade. Every year, 29% of grade school students repeat the year and 42% of the first grade are repeaters. These low academic results are the main factor associated with the probability to belong to the poorest 20% sector of the population.”

In Ecuador, it is of vital importance to develop high quality educational processes that focus on the improvement of life conditions in the popular sectors, realizing that every year of formal education better prepares the students for a job market. Nonetheless, in our country “... between 35% (Quito) to 50% (Guayaquil) (being about 30 points higher in rural areas) of high school students from the Andean, Coast and Amazon country’s regions, left schooling for economic reasons.” It is estimated “... that the 62% of the population lives with less than 28 USA daily.”

The second cause for desertion is the lack of interest: “… in the three Ecuadorian Regions it was registered that between 18% and 30% of children and adolescents never did enter school because of lack of interest in learning; in their own words ‘the majority of educational centers do not have motivating pedagogical teaching methods’.”

If to this we add “… the teachers’ authoritarianism and psychological abuse towards the students in our rural and urban schools”, then, it is easy to understand why, because of the poor intellectual country’s condition, many of our youngsters try to migrate to more developed countries, where they will study, work and progress.

In detail, the Ecuadorian students between 6 and 12 years old are in number approximately 1,639,528 and only 66.8% complete their Grade School studies. When the statistical High School numbers are observed, the figure changes: from a student population of 1,556,383 between 12 and 18 years of age only 22% completes his education, leaving the educational system, to 1,213,978 of young Ecuadorians. These alarming data confirm what was said by the World Bank in relation to the levels of poverty in Latin America and Ecuador.

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8 Allison Rossett, (2011). Professor, San Diego State University, keynote on “e-Learning: So much talk, so little action” at 27th Annual Conference on Distance Teaching & Learning, U. Wisconsin  
Several good questions were raised for this particular project, already evaluated by the Interamerican Development Bank14, since the project received some funding from this international banking institution: What were the barriers/problems? How were they overcome? What were the benefits and impacts? What was the transferability and replication? How it be improved? All these questions, their answers and a complete description of this educational Ecuadorian project were considered in an article in FACTS Reports (De Agostini, 2010)15. We wanted the project to obtain first-quality academic results with a large number of motivated youngsters towards their studies, and then extend the project to a larger number of the population; not an easy task for a private institution and offering complete scholarships to all students. The main problem treated in detail in the present article, is the one related to the pedagogical aspect, in the preparation of online lessons.

Other projects in Ecuador:

Maestros.com (2005) is an initiative by Ecuador’s Ministry of Education to train government teachers on computer use, by giving $400 to each of 10,000 teachers, based on merit, created with the principal objective of training teachers in the educational use and application of information technology in their teaching practice, by generating classroom projects that integrate the use of ITC (Information and Communication Technologies) as a tool to improve teaching and student learning.

Edufuturo (2004), with the support from the Madrid Community, provides information and didactic resources to city schools in the Pichincha Province of Ecuador, to contribute towards educational and cultural development. This project involves creating an interactive educational multimedia system that consists of an exclusive informative web site and software, adapted to the country’s situation. In addition, the Pichincha Provincial Government provided schools with computers and Internet connection, to guarantee access to the internet.

The Navegar Project, “We Teach with the Internet”, is a project developed since 2000 by the National Educator Union (UNE, by its Spanish call letters) in Ecuador, which offers two training courses of 30 hours each to school teachers, on computer management, the use of Word and Excel, and internet access and its uses.

The Chasquinet Foundation of Ecuador has ongoing operational training centers that carry out the “Chasquie-ducando” program, offering digital technology training for social change. Its work is directed principally at impoverished sectors, communities and neighborhoods, nonprofit organizations, and individuals committed to the integral development of communities. Among other courses and seminars offered are: Computer Technology for Early Ages, Educational Technology, Pedagogy Support using the ICT (Information and Communication Technologies) for the Process of Educational Learning for Children Younger than 12 Years Old, Computer Didactics in the Era of New Information and Communication Technologies, Teacher Training for Elementary Education, Preparation and Management of Projects with Emphasis on ICT, etc.

The project, Education and Innovation in the Santa Elena Peninsula, Ecuador (IEMPSE, by its Spanish call letters) that the ESPOL University has carried out since 2002 in twenty schools within the fourteen communities of the Peninsula, to which they have contributed with computer rooms, Micro Mundos (Micro Worlds) software programs and Mind Storm Lego Kits. In each school they have trained teachers to develop educational projects for the students with the abovementioned materials. To date, 7,980 boys and girls in the area have benefited.

Other projects in the rest of the Region:

Between 2003 and 2006, Valarino (2003) and Cemborain (2006) developed two Web platforms in Venezuela to support university professors and students. The first, “ThesisCentre” (tesiscenter.com), serves to support courses in developing research or long-term projects and distance professor education training; the second, “Intercontact” (intercontacto.com), or the researchers’ Web, helps researchers contact each other, obtain information and publish articles, news and events regarding the process of developing academic research. Both systems are interconnected and have no costs for registered participants.

The CEIBAL Plan of Uruguay, currently having very good results, will have distributed almost a million “net-books” to its students; it seeks to promote digital inclusion with the purpose of narrowing the digital gap among the citizens of Uruguay, in order to maximize greater and better access to education and culture, with regards to other countries.

There is now a similar Plan in Argentina, the Equality Connect Program, which by the end of this year they will have delivered two million “Net Books”.

Similarly, starting in 2011, Panama’s Ministry of Education (MEDUCA, by its Spanish call letters) initiative will use Edubuntu as an operating system with computer equipment distributed to schools across the country.

Any teacher focused on online teaching and learning processes (e-Learning), both in delivering courses or in creating them, must never forget to review an important series of elements that must exist in an online course, almost obligatorily, if they do not want their assignment to become merely an instrumental16 or parasitic activity17. We must train instructors to develop independent, thoughtful students who know how to learn; technology offers many opportunities and alternatives, but we only use it, I repeat,

16 Instrumental: activity performed merely for instructing in the operation of a resource or instrument (example: instructing on operating a word processor)
17 Parasitical: activity performed only to pass the time without any intent to learn (example: using the Internet to play “Pac man”)
for instrumental or parasitic activities, and in that way we continue investing and wasting our institutions’ budgets. We have repeated these errors since the 1970s with the implementation of technologies, and the diabolical aspect is that we continue committing the same mistakes: we are fascinated with the technology, but it seems difficult for us to innovate pedagogically and andragogically.

Technological innovation and its applications always advance in giant steps (look at Google) offering us the opportunity of a true information society, which in the future will allow an age of knowledge, if we know how to use intelligently the entire existing communication infrastructure that is surely only the framework.

What generates information and knowledge is what flows with intelligence through that communication infrastructure of networks and the capabilities we have to use and process; “I think they (Google) are ‘keying in’ the type of applications that are missing in order to intelligently process the major volume of content we have available through the Internet that has already become unmanageable on a human scale” (Goldstein 2009). We cannot forget to analyze and study with caution any technology, remembering the trilogy: data, information, knowledge and avoiding the fascination of the media.

Since our most important problem to be solved at the moment is the pedagogical one, we will deal with it in the rest of the paper. Teachers are definitely not prepared to handle online participatory lessons, thus the FUVIA’s project also implemented a chain of courses related to online well teaching practices delivered every three months to all of its teachers. The online courses to form teachers online, covers mainly the material described below in this article.

3 Introduction

Below we describe in simple language, techniques in lesson development to create or use an online course. However, it is necessary not to forget that these are not sufficient (magically) on their own; they must crystalize through the use of technological resources (see Appendix) and these in turn have to be used intelligently to generate an effective communication, efficient cooperation and honest co-evaluation, remembering that there exist various evaluation stages. We can use current e-learning systems at no cost to produce virtual events (online), allowing us to adapt changes rapidly and almost instantaneous optimization of contents, styles and profiles. The professor or instructor needs some minimal navigation competencies (knowledge put to practice) and exposure to online teaching-learning processes to clearly position himself in each one of the aspects to be treated in this essay; a teacher who has never at least completed an online essay; a teacher who has never at least completed an online course as participant, will understand but will not clearly internalize each of the descriptions that follow because he/she is “missing having lived the experience”; learning through others’ contributions, from errors, their expertise, others knowledge, shared cooperation, and common purposes and goals, is extremely important.

We will describe the BEFORE stage or course preparation, the FIRST week stage or initial course module which is definitive for successful start, subsequently the rest of the lesson activities that may be divided in weeks or modules with specific duration and finally the LAST week stage or end module. Basically, we describe the system in simple stages: START, DEVELOPMENT and END of an online lesson.

We will carry out this description based on our 7+ years experience in creating hundreds of courses, our online active lecturing including improvements and upgrades, and our university and college-level online teacher training experience and consulting; we also include our experience in creating since 2004 the first completely developed online high school with to date 2000 students with full grants, with a projected 4000 students with scholarships by the end of the year, who are academically vulnerable and educationally at-risk living barely on a subsistence economy in the Region.

The significance of these last key terms (academically vulnerable, educationally at-risk, subsistence economy) means, in practice, offering to this profile of students the opportunity to study the last six years of elementary and high school with the most updated computer and communication technology and pedagogically sound multimedia contents, in order to reduce the digital gap, besides offering valuable formal studies to those otherwise excluded: population sectors that have traditionally been underserved by the traditional educational system for reasons of location, work, age, disability, financial incapacity, gender, discrimination, as well as those separated from the national educational network due to migration.

There is an increasingly growing number of young women and men forced to abandon regular education due to their departure from their original country due to migration and faced with hostile environments where they are left without the right to claim their education from the State, nor are able to obtain it of their own accord, for fear of deportation or imprisonment.

4 Literature review

Cavanaugh, Barbour and Clark13 (2009) have made a complete research on the literature related to on line teaching-learning about K-12 virtual schools and similar experiences that appeared since mid 90’s. Their work describes the different types of virtual schools divided into categories of “operators”, benefits offered and challenges; the authors concluded that there were two periods of development according to research findings: one previous to the millennium dedicated to the effectiveness of virtual schooling by comparing it to traditional schooling and issues surrounding student readiness for and retention in virtual schooling with emphasis in categorizing virtual schooling. After 2000 instead the literature found has focused on the best practices for online teaching strategies, but with lack of systematic research on the theme.

The authors suggest for the near future that there has to be more research into best practices of virtual school teaching strategies, particularly asynchronous teaching, identification

of characteristics for success; another challenging theme is interaction development; and a fourth aspect to study is the one of quality in the learning experience.

With respect to the topic on effective learning outcomes there has been done much work on the theme concluding that there is no significant difference between regular education and distance learning (including online) as shown in the work compiled by Thomas L. Russell (1999), No Significant Difference Phenomenon from North Carolina State University, revising 355 research papers over a span of seventy years from 1928 up to 1998. In relation to this, there are similar results in many other works up to the present:

1 Cavanaugh’s (2001) meta-analysis looked at the range of distance technology used at the K–12 level. The results indicated that achievement between distance and classroom programs could be considered equivalent. “The online programs showed higher effect sizes than the audio/videoconferencing programs”.

2 The Shachar and Neumann (2003) synthesis found a significant positive effect for K-adult distance education programs, noting that, “in two thirds of the cases, students taking courses by distance education outperformed their student counterparts enrolled in traditionally instructed courses”.

3 Ungerleider and Burns (2003) restricted their analysis to networked and online distance education programs at the secondary level and the postsecondary level. No significant difference was reported for student achievement, and a small positive effect size was found for satisfaction in classroom courses.

4 The meta-analysis of 232 studies of online and video-based learning in K–12 and postsecondary students by Bernard (200), resulted in a small positive effect size for achievement in online learning, although online learners had lower retention rates.

5 The single meta-analysis that focused solely on the K–12 online learning delivery systems in use in today’s virtual schools was run by Cavanaugh, Gillan, Kromrey, Hess, and Blomeyer (2004). This synthesis found once more that achievement in online and classroom programs was approximately equivalent under similar parameters.

And so many other studies such as Mickey Shachar and Yoram Neumann (2003) in their study “Differences Between Traditional and Distance Education Academic Performances: A Meta-Analytic Approach” published in The International Review of Research in Open and Distance Learning, Vol. 4, No 2, where it was shown that “including data from over 15,000 participating students and provided effect sizes, clearly demonstrated that in two thirds of the cases, students taking courses by distance education, outperformed their student counterparts enrolled in traditionally instructed courses”.

Another success story is the Colorado Online Learning (COL) Final Evaluation Report, 2002-2005; this project nurtured rural schools in the state of Colorado with hundreds of online supplemental courses, with a student success rate of 100% in several schools. The results were highly satisfactory. Its goal was: “COL seeks to use educational technology to improve educational outcomes, and increase equality of education opportunity, across a wide variety of educational needs and a broad range of student populations”.

Nonetheless, I believe that another necessary theme, usually left aside, is that of quality teacher online training, where the themes treated should be, as a minimum: course design, teacher professional formation, administrative and student services, updated technological resources, among others. This issue has been pointed out by Michael Barbour and Morris Cooze (2007) as published in the Journal of Applied Educational Technology, Volume 4, Number 1, Spring/Summer 2007, with the paper “Learning Styles: A Focus upon E-Learning Practices and their Implications for Successful Instructional Design” and also in Barbour’s work (2007) on “Principles of Effective Web-based Content for Secondary School Students: Teacher and Developer Perceptions” as published in the Journal of Distance Education, Revue de l’éducation à distance, spring/printemps 2007, vol. 21, no. 3, 93-114.

A university that is doing an extremely excellent job on the subject of teacher formation is the University of Wisconsin, Madison, with his program “Professional Development Certificate in Distance Education” delivered totally online, emphasizing good online design practices, through the School of Education, Graduate Program in Continuing and Vocational Education.

I strongly believe that the issue of training online instructors is of extreme importance to foster the emergence of new quality online teachers and innovative pedagogy, and in this sense, one of the objectives of this paper is to raise consciousness of its importance besides giving some brief clues and tips on developing good online lesson design, but not to substitute several professional courses on the subject.

5 Methodology

This paper emerges from years of experience besides the excellent results obtained thus far and, the study and analysis of other experiences as mention earlier; the success of an online course design is due to several factors: (1) clear course structure, (2) student centered, (3) gradual knowledge feed, (4) context oriented, (5) multi source evaluation, and (6) cooperative work. Some of these aspects are found in “How People Learn” (HPL) Framework (Bransford, Brown, and Cocking, 1999)”.

Briefly, the Clear Course Structure factor is to apply the considerations described below in our system; the second factor Student Centred refers to the situation where all course resources should be designed and directed towards the students; with respect to the third characteristic all knowledge resources have to be presented gradually and with a richness

<sup>19</sup> De Agostini S., Giancarlo (2005). Graduate programs’ Design in virtual higher education at master’s level, in virtual educational course delivered systems. Universidad Andina Simón Bolívar. (UASB). Quito, Ecuador.
of multimedia content when possible, including databases and links among others; the Context Oriented factor simply means that the information and learning-teaching resources should be designed around and including the student’s experiences and environment (community); the Multi Source Evaluation fifth factor means that the students have to be assessed through a myriad of evaluation activities, such as: individual and collaborative participation, group work, personal homework, discussions, projects, exams, among others; and the last very important factor, Cooperative Work, should be wisely evaluated since through its richness and wise teacher guidance all participants will exponentially increase their knowledge.

6 System

A course begins with a brief prototype system, later followed by successive development stages (other prototypes); a perfect course is never expected in the first attempt. This development strategy of educational modules is derived from computer sciences back in the 80s, labeled as “prototyping” building or development of modules through increasingly complex prototypes which are assessed until the one desired by the customer is reached, in our case: what is necessary for the student, indeed our final client.

Our system or black box, in general, has Inputs, Development stages and its respective Output results, with a self-assessment or Feedback component for subsequent updates. We graphically simplify it with the following image:

Simply, the Inputs are normally our actors (students, professors, designers, etc.) which produce multimedia content for the full lesson process (Start, Development and End stages) with participative and informative activities such as materials, forums, tasks, glossaries, blogs, wikis, among others, conducted during all weeks or modules of the course including the initial module; mainly during the first module the students become familiar with the course and their classmates.

Some of these activities are kept active for constant review, advisement and student work throughout the rest of the activities and weeks or modules of the course. The responses are the Outputs of all this activity, along with the Feedback with various evaluations and assessments used to update the entire system. The system basically has three periods: before the course starts, during its performance and after its development.

We consider our course to be a simple system composed of Start, Development and End modules; the initial section should draw the student’s attention, interest in learning, motivate the participant to desire to study the contents and place him in the area or field of his previous experiences, inside or outside the classroom, connecting him to his field of expertise and life.

In the development phase we will introduce the material gradually, ensuring ourselves that the lessons are grasped by the student as evidenced through the assimilation of content from various activities: tasks, forum discussions, elucidation in debates, project development, preferably in groups, team activities where knowledge is shared and generated, among others.

Lastly, in the final module the students’ and teachers’ course achievements are evaluated: the students carry out analysis and summary activities, integrating these results into reality, applications are extrapolated, and evaluations and self-assessments are performed.

There are many ICT WEB2 type tools that exist for this purpose such as interactive glossaries, blogs, wikis, and other more common ones, already implemented within the online Platform used to design the online teaching-learning process (see Appendix).

6.1 BEFORE the lesson start Stage

To prepare for the start of the course we must ensure that the online course manager system or educational platform is functioning without problems, has easy navigability, contains a good deal of WEB2 tools, enough in order to design our content with interactivity and ensure ourselves of how to

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20 Simple autopoietical system’s design lesson representation.
create, edit, change sequences and use the different resources
to develop participative and interesting activities. In order to
enrich the courses with multimedia activities it is also neces-
sary to ensure that the Platform suitably supports any multi-
media designed resource. It is important to know the platform
with all its advantages in order to have the capability to moti-
vate the students daily and generate knowledge individually
and in teams. We do not support internet courses in which the
only student activity is to download documents to read and
subsequently fill out a “test” sheet. Online courses must be
highly interactive among all the players, using the technology
optimally; undoubtedly, this type of collaborative activities
require more time from the students and professors than a
good live course.

With respect to the course maintenance, it is indispensable
to ensure that all links to readings, resources, forums, surveys,
videos, and assessments work well, and that multimedia con-
tent have updated titles, and all annotations and bibliography
are written in a professional manner (we recommend the APA
system) including notes, news, labels, links, dates, database,
videos, explanatory figures, among others.

Remember to update links whose addresses have changed,
delete those that no longer exist and update links with out-
dated information, bearing in mind that there is nothing worse
than a vacant link since it projects the image of an “obsolete”
site, even if it is not. With regard to all technical aspects: do
not forget to update your equipment with a good antivirus and
request technical support whenever needed in any Platform
management aspect.

6.2 Beginning of the lesson Stage

It is necessary that professors present themselves with a
photograph or video at the beginning of the course, describ-
ing their experiences and briefly present the course con-
tsents. Using different resources, the course objectives and
its content should also be presented. Through forums
describe the course utility, permit questions and responses
motivating the student to be familiar with and master its
contents. Do not forget to send a welcome email along with
using appropriately “netiquette” rules and other norms
when using the platform. Encourage your students to share
experiences and communicate among themselves, mainly in
a “coffee break” forum.

Let us not forget to introduce in this initial module one or
more “ice breaker” forums or “let’s have a coffee” or “chat”
(any name works) in which the participants such as students
and professors communicate informally and casually, discuss
their weekend activities or some current event or the contents
of the course. Jokes or personal anecdotes may also be pub-
lished for the participant to start adapting to the platform. It is
also convenient to offer as a resource to download the user
manual, including help contacts.

Normally, the platform maintains all the students’ profile
information; otherwise a spreadsheet is prepared with the stu-
dents’ information to deliver them. Know your students and
open the course a week before so that the students become
familiar with the platform and course in order to reduce anxi-
ety. Keep in contact with your students, especially those who
do not appear frequently or hand in tasks late. Make them feel
you are always there, available to them, maintaining daily
communication; do not let more than 24 hours pass to re-
pond to them, answer questions or correct activities, task
evaluations. Students and teachers alike must enter into the
platform every day.

Monitor the discussions and debates daily to support, get
clarification or reinforce ideas or concepts, and intervene
promptly to avoid pointless or negative discussions before
they get carried away. Delete disrespectful publications and
contact the individual who published them and make them
aware of their error and possible improvement.

Remember to include a visible calendar inside the platform
with all activities and delivery dates, especially when work-
ing in group projects. Publish announcements clearly and
open and close activities promptly. Publish the conditions of
the course in detail with regard to homework deadlines, num-
ber of publications in the forums and their quality; demand-
ing insight of their publications, critical thinking, analysis
and summary, as applicable.

Forum or chat type resources are also indispensable for
questions directed to the professor and activate synchronous
office hours (chat or videoconferencing) for all students,
visibly announcing them. Our student, distant but without
distances, must feel empathetically linked to a community of
colleagues who have a desire to learn and share, to create a
community for knowledge. If possible, occasionally call your
students to let them know you are there for them. As a pro-
fessor, report any personal absences or critical and important
activities through visible announcements or notices.

It is also useful to incorporate a Diary type resource in this
initial stage for personal teacher-student communication in
order to have a direct and personal asynchronous communi-
cation with the student, giving him/her personalized feedback
and consequently a better and more precise evaluation. It is
also constructive to describe the course policy on participa-
tion, number of publications, late assignments, honesty,
among other desired characteristics.

Usually, all these informative and participatory activities
are presented during the course first week or initial module,
thus all students are able to get acquainted with each other
and the lesson, and have rules straight clear. As mention
earlier, it is necessary to maintain open several of these ac-
tivities for constant revision during the rest of course weeks
or modules (see Fig. 2, below).

Also there are individual, group and collaborative reading
and interactive activities, where participants publish their
contributions but also offer constructive criticism on the
works of others. The instructor should always guide participa-
tion, so that in addition to stimulating cooperative learning,
he/she generates greater empathy among students, encourag-
ing group strength.

For a good START some pedagogical considerations are
necessary. Remember that the first minutes of a computer
lesson or any educational experience greatly affects its final
results, due to the impact that influences the student’s
perception at this initial point. What a person perceives is
determined to a large degree by the initial impression the
presentation makes.
This is a reality; it is known that first impressions are very important. Consequently, the initial opening experience of a teaching-learning process is critical for its success. It must be valuable, impressionable, interesting, and captivating.

We will now make considerations in preparing for the initial perception from two principal points of view: the psychological and the communicational aspects.

6.2.1 Psychological aspect:

The psychological climate is important throughout the lesson, but is especially important at its initial stage. To prepare the student’s perception it is indispensable to strive for a positive psychological climate of trust and security. The affective relationship of acceptance or rejection among the students and the lesson is a factor that shapes the man-machine-lesson interaction environment. A carefully prepared interaction is necessary because we are involving the intelligent use of an inanimate element, the computer designed lesson, to breathe “life” into the virtual class.

Achieving a good affective student-lesson relationship is made easier when the designer and the on-line teacher knows the needs and values of the students as well as his profile, and uses this knowledge to develop his students’ interest and curiosity. The first contact of a lecture must motivate the student to pay attention and participate in the experience he is going to live.

During the beginning of the computer on-line lesson, the designer has several resources that may help his students acquire an active, affective and curious attitude. Among the lessons’ resources are:

- Have a positive attitude (lesson and teacher) toward the students and project that attitude, registering it in the lesson content.
- Clearly and promptly list the lesson’s learning objectives.
- Fuel interest in the planned teaching, showing your accessibility through the lesson, avoiding paternalistic attitudes.
- Capture and guide the student’s attention.
- Study the student’s interaction to identify those actions or omissions that could be interpreted negatively.
- Never revert to psychological aggression or sarcasm.

A good psychological climate prepares the student to (1) receive the message, (2) process that message, and (3) prepare his own constructive response, individually or in a group. These are three of the steps that form part of an effective communication process.

6.2.2 Communicational aspect:

Once a good psychological climate is created, the student is open and ready to participate in the following communication process.

Communication is possible in the measure in which those communicating have a common purpose, same premises and similar experiences. Preparing for communication is produced by approaching the student’s field of experience (his/her previous experiences) and attempting to foster in him/her a collaborative positive attitude towards the learning objective.
The student’s field of experience is reached when the participant is motivated to learn by initially identifying an area he/she is familiar with, and start from there. Among the resources the professor might use to make this identification are:

1. Mentioning current events of common knowledge.
2. Describing a real or hypothetical situation.
3. Comparing the situation or new material with some experience familiar to the students.
4. Presenting a problem that students may relate to.
5. Present material that provokes doubt, questioning, requires more information or that the content must be completed.
6. Create or request a summary or reference to previous events when the lesson is part of a sequence.
7. Allow the student to refer to other written and multimedia material, such as slide show presentations, posters, films, among others.

### 6.3 Course development stage

This is the most complex part of our system: our online course. Before starting the design, the lesson designer must be sure he knows the instrumental part of the online course Platform (course generating system) resources to decide which of these, he/she will use securely and justifiably. Later he may pass on to the Planning stage. We emphasize that the “creator” of an online course is usually not an individual but an inter-disciplinary Team of individuals: content experts, pedagogical and multimedia designers, programmers, Web administrators, among others.

All activity, from the construction of a house to that of a course, must be planned with precision; it is an engineering and system’s process, where all the steps to attain a complete and successful course, from the general to the specific, are described and documented in detail, where every action is thought thoroughly and duly justified. All these activities must be fully planned to generate the student’s success toward his/her own learning. We may ask ourselves the following basic questions: What do I want him/her to learn? What message do I want to convey? How can I verify that the student is learning? Am I satisfied with my facilitation in the virtual event I just executed? Are my students satisfied as well?—among other things.

Since course lessons are not always planned or updated, it is normal therefore to find the following types of lessons:

1. Lessons planned in the past with continued use, but without updating.
2. Improvised lessons, without any type of planning.
3. Lessons that only emphasize the content, disregarding the process.
4. Lessons where learning is not verified and therefore the designers (teachers) are not aware of the merit of the methods used.
5. Designers of lessons that are planned, but do not know if the problems found in the teaching-learning process are due to faulty planning or inability to execute them or to problems at the evaluation stages.
6. Designers who occasionally manage to make students feel highly motivated during lessons, without being prepared to keep their attention during the rest of the learning-teaching process.

In the majority of cases there is disconnection between the desired goal, what is achieved, what is done to attain it, and how the achievement is evaluated (the actual student learning).

The professor-designer of online lessons or course who wishes to teach must initially ask himself or herself the following questions when planning the lesson:

**What will be taught?**

**What will be done to achieve the goals?**

**How will I know if the goals were accomplished?**

Thus, while planning the online lesson the teacher must always have certain “consistent” methodological techniques to incorporate into his lesson; some are:

1. Start and End of a Lesson,
2. Development of Concepts,
3. Use of Examples,
4. Formulation of Questions,
5. Processing of Responses,
6. Problems Resolution,
7. Preparation of Material, among others.

The techniques to prepare online computer lessons are applied to stimulate the courses and generate their planning and consequently prepare the analysis of its execution-evaluation for the benefit of the students and course efficiency in the assignment’s online activities. These techniques are not covered in this publication; leaving them for another time, along with suggestions for their implementation through the different resources incorporated to the majority of online course generating systems.

### 6.3.1 Planning

This crucial activity in preparing an online course includes the following steps:

1. Choosing the learning to be achieved.
2. Determining a straightforward and measurable action by which the student will demonstrate he has successfully learned (achieved the learning objectives).
3. Selecting activities that the student through the lesson will carry out to achieve the learning goals (by the student).
4. Choosing the necessary principal ideas or content to achieve the learning.
6 Adequate planning shall be characterized by the functionality of activities, the content and the evaluation, in order to appropriately achieve the proposed goals. When planning an online computer lesson, remember as in any task, that practice makes it nearly perfect. It is necessary that you carry out this Lesson Planning activity whenever you need to prepare a computer learning online module; you may perfect it with each new opportunity and keep in mind that with practice you will develop better planned lessons.

6.3.2 Execution

This stage is the start-up of the prepared plan. It includes motivation for learning, its development process, and an adequate closing stage of the online lesson, ensuring that the learning event is an integrated process.

During the execution, the teacher uses methodological techniques and technology tools he deems necessary for the student to "learn to learn", essentially through students' question formulation techniques and response processes.

6.3.3 Assessment

This is a continuous process by which the teacher-author confirms the student’s learning with verifiable elements, accompanying him through it, step-by-step.

Therefore, it is advisable that the teacher who wishes to ensure that his/her students acquire any type of knowledge must ask himself:

- What do I want to achieve?
- What is my purpose? Why?
- How will I achieve what I want?
- How will I know if it was achieved?

Thus, remember:

Simply, for a good start at the initial development stage of your plan, begin with the following four points.

1 Knowledge I will bestow to the student by means of the computer lesson,
2 Clear Learning Objective(s) (what the student will do to demonstrate he/she has acquired that knowledge),
3 Necessary Principal Ideas to achieve this learning,
4 Learning Activities:
   4.1 What the student will do to learn.
   4.2 What the lesson will entail to guide the learning process.
   4.3 What will be the evidence of student’s knowledge acquisition.
5 (Minds to work).

The development of an online course is filled considerably with individual, participative and group well planned educational activities. Forums are essential for encouraging group work. Promote projects in small groups, stimulate participation of all and allow observation or co-evaluation to other groups; this resource is very valuable to engender participation and collaboration of team work, including debates. With practice you will learn to use the “forum” for numerous participative activities. It is a useful resource: remember it.

In forums, you may respond individually, but if the responses are very similar you may resume by giving a response that satisfies everyone; also ask for summary and consensus. Do not delay your participation or responses for more than 24 hours. Exemplify, whenever possible, the different participations for the different types of forums, offering an open and respectful response.

Always monitor forums and other group works, but moreover be a critical observer; give each student the opportunity to publish his/her opinions, analysis, evaluations, considerations, and oversee that they all participate positively and, intervene only if necessary and justifiable; give them the opportunity to learn constructively, by trial and error too. We take for granted that all the content and resources found in the course are valuable, were prepared and reviewed by you, and will guide the students through knowledge acquisition steps, set by you for the course.

In all forums where you consider to participate, use the question and answer technique effectively if you deem that the subject being dealt with is advancing too slowly or if it is necessary for the students to get a deeper comprehension. Always keep statistics of your students’ participation, especially in forums. Always demand of them a bit more insight and always be clear with your instructions; remember these are long-distance activities.

6.4 Course end

Everyone has the tendency to complete ideas and to form “logical” related concepts. Learning is facilitated with the organization of experiences when they are related to each other. Every process must have a beginning and an end, with a close developed relationship between the two.

Learning is a process, or more precisely, a series of processes that have a beginning and an end. During the development of a learning endeavor, several different processes are employed that can be broken down and analyzed in phases, each one carrying out different type of activities. Said process may occur in sequence but two or more may also occur simultaneously (Gagne 1987).

The last phase will be treated in this section, that is, the closing or end of a learning event or lesson. However, the end is related to the beginning, since it is where the objectives set during the teaching-learning process are to be achieved; therefore, the end is an evaluation process of the goals proposed at the beginning of the lesson and of the relevant contents developed related to the subject in question.

During the “closing” phase it is important to give the learner adequate feedback in order for him/her to know if
his/her performance was correct or needs improvement; for example, the students may be asked questions regarding the comprehension of the material and the interest it provoked, or if they have received adequate feedback during their instruction, and whether they considered suitable the examples and exercises offered.

Another important aspect of this final section is that the lesson, whenever possible, should guide the student to develop his own conclusions, after the teaching-learning process, in relation to the objectives set during the initial phase of the lesson, through reports or summaries of the principal ideas, or making relationships between the ideas and examining possible practical applications to the knowledge acquired. The lesson prepared by the teacher-author may have complementary exercises so that it is ideally the student who arrives at the conclusion.

After performing all the aforementioned activities, the teacher must relate the subject matter to the next lesson’s content, generating an expectation in the student of what he/she will learn next, in order to inspire constructive motivation for the next class.

Each student’s record may be subsequently developed in a more formal and detailed manner by means of an exam that assesses the learning of the various objectives.

Obviously, the results of the evaluation process provide a rich source of information for the course review process; then, it becomes possible to substitute portions of lessons that do not provide the desired learning; boring parts are improved to increase interest or deleted; exam review is possible along with other learning evaluation methods, and also include items of major content value and specifically the overall set of materials may be reviewed and modified instantly.

Seen as a whole, each issue or point treated in an online lesson can be broken up into three major stages: first, the situation is introduced, second the situation introduced is processed, and third, the initial situation is revisited to prepare a conclusion, showing the achievement of the proposed objectives.

This last stage constitutes “the end” or closing stage of the lesson.

More specifically, the end, which takes place in the final part of the lesson, has two distinguishing parts, VERIFICATION and CONCLUSION:

The Verification phase, carried out through the online computer lesson, must ascertain that the student has resolved his doubts and has attained knowledge. This may be conducted with the following activities, preferably to be completed by the student:

1. Listing the points discussed.
2. Indicating the relationship between the points discussed.
3. Stating some practical applications of the subject addressed.

The Conclusion of the subject addressed at the end of the learning module could be carried out in the following manner:

1. Acknowledging (by the student) the subject treated as the start of a new learning process.
2. Issuing a personal opinion about the subject treated.

Although these two activities could help the student arrive at his/her own and individual conclusion, these two phases may be carried out separately or simultaneously, but it is very important that they both be present in every lesson closing activity.

At this stage, after having carried out all the assignment activities, normally by the last week of activities, there are several evaluation resources to be implemented for the student, the teacher and the course, including the Platform assessment: surveys, questionnaires, tasks, forums, tests, among others. Certainty that the students’ acquisition of knowledge is confirmed by having evidence of what he/she has learned and mastered through analysis and synthesis activities. Remember at all times to include activities when needed, always justifying them andragogically.

The Teacher is also evaluated on his/her acting, whether he/she nurtured the students, if his/her explanations and descriptions were clear, if the material he/she uploaded was comprehensible and the time spent reasonable, if the presentations became gradually more difficult, in addition to evaluating the Platform’s usability and its navigability; all this information will allow the professor to qualitatively improve the course the next time it is held. Always publish student’s grades quickly and promptly; they also have invested a good number of hours in the course and deserve to know the results quickly.

A forum at the end is always useful for the students to describe their experience and to bid each other farewell. Finally, deliver to all students an individual evaluation of their qualitative participation, showing their positive aspects and those that need improvement, offering clear feedback of their work and performance. Remember, negative aspects do not exist. Anything may be improved.

Concluding, I would like to emphasize that it is not easy to teach an online course, it takes time and dedication, or more precisely devotion; and now I would like to offer a definition of “online learning” or e-learning:

A DISTANCE EDUCATION WITHOUT DISTANCES (with ICT support)

“ ICT (Information and Communication Technologies) supported virtual distance education or online learning (e-Learning) is a collaborative teaching-learning process among students and teachers, based on group and individual assignments, essentially through asynchronous motivating and participatory activities, technologically ICT mediated, with the support of interactive synchronous and asynchronous resources (WEB2) with active multimedia contents, in order to create an inclusive learning socio-critical community (social network), generating compromise and knowledge, constructively in diversity.”

De Agostini, Giancarlo (2005).
7 Discussion

Developing online lessons is not only a question of practice and efficient “up to date” technology use; of course, both are necessary; but mainly it is a question of an orderly and gradual development of the lesson, having all resources at the disposal of the students and consciously guiding them through all the learning process.

Most of the literature reviewed points towards the same benefits and good results showed through the final outcomes and assessments of the students after using high technology together with a systematized application of the factors as well as the strategies described in this essay.

Our results oriented to best practices during these seven years have been very positive with an approximate dropout average rate of 30%, reaching lately to 18%, for students in academic disadvantaged conditions and economic subsistence, working exclusively online on a six year period of high school studies.

8 Conclusions

Thomas L. Russell’s work on the “No Significant Difference Phenomenon (NSDP)” study of 355 research reports, the other documents reviewed and the practical work done at the CVI as described in this paper, provide evidence that few studies have registered that the intelligent employment of technology for purposes of providing distant or online instruction was found to be statistically significantly superior in terms of learning to other modes of instruction, including traditional.

Additionally, other forms or modes of instruction were not found to be statistically significantly superior to the use of technology, especially distance and online learning, in terms of learners’ success.

The importance of the studies revised by Russell “provides substantial evidence that technology does not denigrate instruction” in addition to a well organized lesson, applying appropriate pedagogical techniques and methods, and student motivation as was earlier described, being in accordance with Joy’s (2000) statement that “most researchers in the field fail to control for critical factors, such as pedagogical method, prior student knowledge, and teacher and student ability” which are of extreme importance.

Finally, we suggest that much more research should be done in the future on best practices to arrive at the description of a complete sound educational online model including, at least, the following three elements: Pedagogical, Methodological and Technological.

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APPENDIX
ON LINE LEARNING RESOURCES (usual)

FORUM, GLOSSARY, HOMEWORK, CHAT, LABEL, LESSON, BOOK, EVALUATION, QUESTIONNARY, CALENDAR, MULTIMEDIA, LINKS, DATA BASES, DIRECTORY, WEB MEETING, WIKI, GIFT, SCORM, LAMS, among other resources.