

CHAPTER 10

DISTANCE LEARNING IN THE K-12 ENVIRONMENT

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10.1 Introduction

Much is being described about the use of Distance Learning strategies in undergraduate and graduate courses in Brazil. But a lot is happening in the K-12 level as well, and should be addressed. That is the purpose of this chapter.

There have been many successful experiences of virtual schools reported in the USA ranging from state-wide initiatives, such as the case of Florida Virtual School (<http://www.flvs.net/>), to individual courses developed within a school to extend the learning experience to those students who want to participate in more courses and can't fit them into their schedules. California, Nebraska, New Jersey, Hawaii, Utah, Washington, and Oregon – among other states – also offer online classes.¹ Home schooling has become a common practice, and students can access quality online courses.

That is not the case in Brazil. We do not have state-wide initiatives to develop virtual schools, and distance learning policies are just recently beginning to be developed for undergraduate and graduate courses. Public educational initiatives are created at the federal level, and policies for distance learning in the K-12 level have not yet been developed.

Private schools have been investing in cutting-edge educational research and equipment to prepare their students to become well-adjusted professionals and citizens of the 21st century. This includes investing in distance learning components to enhance their courses and give their students more opportunities to collaborate globally through partnerships with other schools and institutions. This chapter will show different examples of how one private middle and high school that services high income families is incorporating distance learning practices to gradually create an educational model more geared towards 21st century skills.

¹ Education World: Virtual High Schools: The High Schools of the Future: http://www.education-world.com/a_curr/curr119.shtml (Accessed on July 14, 2006).

10.2 Background

Colégio Bandeirantes is a private school located in the city of São Paulo. The school has a population of 2700 students and 150 teachers, 20 coordinators and 4 directors, not to mention the support staff. It works with grades 5 to 12 (the equivalent of middle and high school in the USA). There are 42 high school classes, with an average of 45 to 48 students per class. The lower grades have less students per class. 5th grade classes have an average of 25 to 30 students, 6th grade classes have an average of 30 to 35 students, 7th grades have 35 to 40 students, and 8th grades have an average of 40 to 45 students per class.

In High School all students must take around 12 courses per year, with emphasis in Mathematics and Languages, and the courses are divided by area (Biological Sciences, Humanities and Exact Sciences). The course load and projects vary according to the chosen area. A strong focus in the high school is the preparation for the university entrance exam, the “vestibular”.

The use of educational technology in the school has expanded with rigor and seriousness through diverse approaches since 1973, when the first machines were installed. Today the school has a network of more than 250 last generation computers, both desktops and wireless laptops, which include two full size computer labs (that accommodate up to 50 students) and 12 smaller labs for classes divided in two, and has an Internet provider that allows the distribution of educational content at high speed. As of mid 2006, all classrooms have one computer, and 70% have projectors, 15 of them with an electronic white board. By the end of 2007, all classrooms will have a computer and projector, sound system and DVD or VHS player, as well as an electronic white board.

The school also invests and maintains a team of highly prepared professionals who coordinate the educational processes and the development and management of its systems.

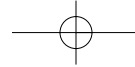
The Department of Educational Net Activities (Atividades Net Educacionais – ANE) makes the educational use of technology available, develops research and applications of academic projects and educational applications. The department is also responsible for managing the multimedia rooms and computer labs, professional development of teachers and staff and assists the whole community: parents, students, teachers, and staff.

The systems department develops and manages all the processes of school management, including a communications system of data via computer that allows access to personal information of each student, facilitating the communication between parents, teachers, and all who participate in the educational process at the school.

In summary, the school has been investing in the use of technology since the late 70's – both in the purchase of equipment and in the professional development of staff to make the best use of the equipment. They have also invested in developing a specialized staff, with master's and doctorates in the United States, to do research in the area of educational technology and best practices. As a consequence, many projects have been integrated into the curriculum using the different technologies, both stand-alone and connected, face to face and distance learning.

10.3 Description of the Projects

According to Darling-Hammond (2000), no single instructional strategy has been found to be unvaryingly successful; instead, teachers who are able to skillfully use a broad



repertoire of approaches are typically the most successful. Good teachers capitalize on the strengths of the distance education environment to employ different teaching methods (Gordon, 2000).

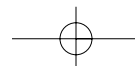
It is only by understanding the full potential and the best use of online collaboration that practitioners can truly benefit from this technology and incorporate it with maximized added value into their own practices.

Gordon (in Patterson, 2001) gives five recommendations for teachers considering a move to the distance education: a) be prepared for the workload due to the number of individual typed or spoken conversations with students rather than lectures; b) keep an eye on involvement to make up for the lack of eye contact; c) direct, rather than take over, class discussions; d) integrate technology into lessons; and e) take a cue from other cultures to find new ways of involving students and challenging them to examine and solve problems. It is a common misconception that teaching online will be less work for the teacher. There are limitations to this mediated environment that must be overcome by adopting other strategies. Examples of successful distance learning projects have taken such measures to ensure the student does not feel isolated. Some of the projects that show promising results are the Willoway Cyberschool in Pennsylvania, which used a software called Active Worlds to create a virtual environment where students could interact with each other and with specialists in a 3D world (Patterson, 2001). The advantage of this virtual world over videoconferencing is that students can see all those who are connected at the same time, and are not limited to seeing only four colleagues as is the case with videoconferencing. The important aspect of this project was that the curriculum was project-based, requiring active involvement of the students – more evidence supporting the constructivist approach to sustain distance learning. Another example of distance learning still in an experimental stage is Virginia Tech University's tele-immersion environment, which they call the CAVE (CAVE Automated Virtual Environment) (Patterson, 2001). The greatest advantage of such an environment is that students can receive lessons from experts in universities and industries. Repeatedly this networking with experts is pointed out as one of the most desirable advantages of integrating distance learning technologies into education.

While these two last examples seem far fetched and out of reach due to the fact that not all schools can have access to rich budgets or university experts, other projects such as HorizonLive² use common technology to enable their students and teachers to interact over distances. Using common tools such as a web browser, a common desktop computer using any operating system, and an internet connection with speeds as low as 28.8, students have access to streaming video, audio, and shared desktop capabilities. This technology is not only being used to provide true distance education, but also to augment real classroom learning. This is closer to the model Colégio Bandeirantes wants to replicate, as most of the teachers should have access to distance learning techniques and technologies without having to wait for high budgets to be approved. The idea is to use what is available now.

Other projects such as Cyber Village Academy (Patterson, 2001) use hybrid technologies, alternating between distance learning and bricks-and-mortar schools to reach their 210 students. Again, the main point found by these project developers is that no matter

2 A complete description of HorizonLive can be found at <http://www.horizonlive.com/>.



which technology they choose, for it to work, it has to rely on good teachers and parents. **It is the people behind the technology that will make it work.**

This becomes very clear when Frankola (2000) points out in her article the main reasons for high dropout rates in distance learning: 1) students don't have enough time; 2) lack of management oversight; 3) lack of motivation; 4) problems with technology; 5) lack of student support; 6) individual learning preferences; 7) poorly designed courses; and 8) sub-standard/inexperienced instructors. It is the people designing, managing, instructing and taking the courses that will make distance learning and telecollaboration work (Harris, 2000). A few instructional strategies provided to online teachers can help make the course successful (Reed and Woodruff, 1995): a) set expectations; b) engage students with variety and interaction; c) reduce distractions; and d) encourage dialog. These authors provide a complete tutorial on how to plan a successful lesson using videoconferencing technologies.

By looking at the results of these pioneer distance learning projects, the distance learning activities at Colégio Bandeirantes can be shaped with an approach that will avoid the errors already pointed out by these other projects, and design activities and materials that will guide the teachers and students as to how to make the best use of the online resources provided for them.

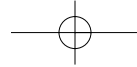
For distance learning we use several tools, such as an open-source LMS (Learning Management System) called Teleduc (developed by Unicamp, the University of Campinas in São Paulo, Brazil: <http://hera.nied.unicamp.br/teleduc/>), a locally developed web portal and online interactive activities (learning objects developed in Flash and Java based authoring tools), a partnership with Universities (both national and international), and WebQuests (<http://webquest.org>). Some pedagogical uses are listed below.

10.3.1 Distance Learning in the Language Class

7th grade Portuguese teachers (2) use Teleduc to work with all their students (approximately 280) to organize a newspaper article. They use the LMS to give students access to instructions and models, evaluation criteria, collaboration tools such as email, chat, discussion forums and portfolios. The teachers divide the project into manageable stages, with intermediate products that students have to hand in throughout the semester. For this orientation they use the agenda tool of the LMS, telling students weekly what is due. Students are organized into 8 to 9 groups of 4 or 5 students per class and receive feedback from peers and from their teachers. As they develop the different products that will culminate in the newspaper article, complete with interviews, graphs and photographs, they share their work through portfolios, both individually and as a group. The portfolio tool allows peers and teachers to comment on what they have posted and helps them perfect their work until it is ready to be published. They use different tools such as Word, Excel and Publisher. For group meetings, students use the chat tool. The LMS generates reports which allow teachers to accompany what each student is doing in the environment, how many times they logged in, which pages they visited, with whom they interacted, and so forth. **Duration:** one quarter (9 weeks).

10.3.2 Distance Learning in the History Class

An 8th grade History teacher uses Teleduc as a support for online review of the subject and for organizing group work. Usually this review is done face to face, where a



teacher will schedule an extra class and students can participate voluntarily to solve any doubts they may have before the tests. The school has 2 weeks of testing on all the subjects at the end of every quarter. In this case, this teacher had serious time constraints and could not schedule the face to face class, so she used the LMS to offer a two-hour chat session for students to ask questions. A total of sixty students participated at different times during the chat session. Some of the students who could not participate in the chat later printed it out to use as study material for the test. **Duration:** 2 hours.

10.3.3 Distance Learning in the Foreign Language Spanish Class

5th and 6th grade Spanish teachers (4) developed special online activities, in Flash, to reinforce vocabulary and fluency. Students (280) have secure access through login to several activities and games that they have to complete at home. They then have to print out a certificate to prove that they finished each activity correctly. The teachers then give them credit. These activities are integrated to the school management system and database, so the school has the logs to see who accessed the activities. **Duration:** all year.

10.3.4 Distance Learning in the Advanced Foreign Language English Class

A 10th grade English course teacher used the chat tool in Teleduc to record a debate with her students (60) on a polemic subject (such as guns control and abortion). She first used material (video) from a software called Decisions, Decisions online by Tom Snyder Productions (<http://www.tomsnyder.com/>) to help the students take a position in the debate, and then recorded their arguments through the chat tool. She printed out the chat and evaluated each student for his participation and level of argument, as well as his correct use of the English language. **Duration:** 4 class periods.

10.3.5 Distance Learning facilitating Global Collaborative Projects

The 10th grade Humanities classes, approximately 180 students, all participate in an international debate organized by the University of Maryland, called the ICONS project (<http://www.icons.umd.edu>). This project has been integrated into the curriculum and has become a requirement for students participating in the Humanities course. They practice collaborating, working in groups, doing research on current issues, designing proposals to solve global problems related to economical issues, the environment, terrorism, human rights and more, working in the English language and using diplomatic language for negotiating. All this is done in the online environment created by the University of Maryland especially for this project. Students register and login to debate with teams from all over the USA and Canada. This tool offers students a message center, guidelines through a resource center, a conference environment (synchronous messaging tool), and a place to send their proposals to be voted on. There is a team of 7 teachers involved in the organization of the project. The students are graded for participation. **Duration:** 1 semester.

10.3.6 WebQuests

6th, 7th and 8th grade teachers (6) are working with WebQuests (<http://webquest.sdsu.edu/>) to promote significant use of the web as well as collaboration and depth in the

study of the subject matter (History, Portuguese, English, Geography, Drug Education). Students have to transform the information they are researching, use their creativity, work together to build an argument and/or defend a position and learn to use rubrics as a self-evaluation tool as well as an evaluation by the teacher. All the guidelines (the WebQuest itself) are posted online, inside the closed section of the web site. The work is done mostly at a distance, and time is given in class only for the presentations of the results/products of the WebQuest. **Duration:** one quarter.

There are many other projects, but this is just to show a sample of the variety of tools and strategies within all the different grades. These are all curricular projects. There are also extra-curricular projects that are not graded, but make use of the distance learning tools mentioned. One example is the extra-class review in Mathematics, English and Portuguese. Some teachers are beginning to offer this extra-help online, to be able to accommodate more students. This service is offered with no extra charge.

All these projects are developed and supported with the help of the Educational Technology staff (3 coordinators and 4 support personnel). The role of the staff is to research and develop the tools, train the teachers, help the teachers develop the activity, schedule the rooms and resources for the teachers to use with their students, give the teachers support in the classroom during the activity and later print out reports and student work for the teachers to evaluate. The role of the educational technology staff is fundamental for the success of these projects and for the implementation of new projects, as teachers have very little time to work on these innovations on their own.

10.3.7 Central Point of the Innovation

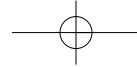
All the different strategies being adopted have as a focal point the extension of the learning activities at the school and at home. They also offer an opportunity for innovative pedagogical practices (Wilson, 1996, 1997, Sandholtz, J.H., Ringstaff, C. and Dwyer, D.C., 1997), such as collaboration (Johnson, D. W., Johnson, R.T., Holubec, E.J., 1993), self-evaluation, problem-based learning (Jonassen, D., Peck, K. and Wilson, B., 1999) and more. The students are learning to use the collaboration tools and virtual communities as a learning tool, having the opportunity to channel the tools they grew up familiar with for fun as tools that can bring them educational advantages as well. They are acquiring the abilities to work in a globalized society where learning will occur anytime, anywhere, especially with the development of more and more connected mobile learning devices.

For more information, you can visit the institutional description of some of the projects at www.colband.com.br and <http://teleduc.colband.com.br> (for a list of the online courses already available).

Student work is displayed in the protected part of the site, but there are some samples linked to the home page of the portal.

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