Teachers' education and training using distance learning: The IESDE's case study

Antonella Carvalho de Oliveira (CEFET-PR/PG) antonellams@hotmail.com
Antonio Carlos de Francisco, Ph.D. (PPGEP-CEFET-PR/PG) acfrancisco@pg.cefetpr.br
Viviane Carvalho Bejarano (CEFET – PR/PG) vivbe@hotmail.com
Luiz Alberto Pilatti, Ph.D. (PPGEP-CEFET-PR/PG) luiz.pilatti@terra.com.br

Abstract
The IESDE BRASIL S/A – Inteligência Educacional e Sistemas de Ensino (IESDE) is an educational institution credentialed by the Ministry of Education and Culture (MEC – Ministério da Educação e Cultura) to offer distance learning courses in the Brazilian territory. Today, the IESDE offers three teachers' education courses using distance learning: (I) Teacher Education – High School Level; (II) Teacher Education – Higher Education Level, and (III) Educational Development Courses – Continued Education. This study analyzes the Communication and Information Technologies (CITs) and teaching practices utilized in the distance learning courses for the education of teachers offered at the IESDE. The method utilized for this research was inductive. The research is qualified as applied, qualitative, exploratory and as a case study. The instrument for data collection was documental research. The method utilized to make inferences was the analysis of manuals and documents utilized by the IESDE's distance learning courses.
Key words: Distance learning, Teachers' education, Communication and information technologies.

1. Introduction

The Brazilian "Lei de Diretrizes e Bases" is a chapter of the law that establishes guidelines and parameters for the national education. Its 87th article instituted the "Education Decade" as the period between 1997 and 2007, which according to paragraph 4º would ensure that "by the end of the Education Decade, only teachers with college education or on-the-job training will be admitted". Third Paragraph dictates that each city, state and country as a whole should "administer programs for the training and education of all practicing teachers, utilizing also distance learning educational resources ".

The publication of this law generated an urgent necessity to qualify a large number of teachers who currently do not have the required education, which translated in the demand and consequent offer of teacher education courses in the distance learning modality.

The IESDE BRASIL S/A – Inteligência Educacional e Sistemas de Ensino, was created in 1999, in the city of Curitiba, and is a credentialed institution to offer Distance Learning in the national territory, under the terms of deliberation 002/01 of the State Board of Education (CEE - Conselho Estadual de Educação) and according to opinion 249/01 - CEE. The institution offers education, training, and specialization courses to teachers and other professionals in the area of education.

Today, the IESDE offers three teachers' education courses using distance learning: (I) Teacher Education – High School Level; (II) Teacher Education – Higher Education Level, and (III) Educational Development Courses – Continued Education. The goal of this study is to analyze the Communication and Information Technologies (CITs) and educational

practices utilized in the education and specialization of teachers in the distance learning courses offered at the IESDE.

The method utilized for this research was inductive. The research is qualified as applied, qualitative, exploratory and as a case study. The instrument for data collection was documental research. The method utilized to make inferences was the analysis of manuals and documents utilized by the IESDE's distance learning courses.

2 . Educational practices in distance learning

Educational practices have an important impact in the process of distance learning, since they make possible the transmission of non-linear knowledge produced by this teaching modality.

It is important to make some considerations related to educational practices in distance learning:

1. A distance learning program is preferably planned, developed and evaluated by a multi-discipline group. Given the necessity to understand the technologies involved, added to the educational practices, rarely can one professional develop a quality distance learning program working alone;
2. The role of the teacher is that of a mediator in teaching-learning processes, since the instructor is responsible for the transmission of educational material using the CITs described in the program combined with his/her educational practices;
3. Students are separated from the locus of instruction (the classroom), and therefore perceive distance learning as a different learning experience. For the students with no little or no knowledge of the CITs, an introductory course to familiarize the student with the technology to be used is highly recommended.
4. The choice of technologies to be used in distance learning programs should be guided by: (I) Teaching practices adopted; (II) Teachers' training in distance learning; (III) Educational level of the program; and (IV) follow-up and evaluation of the educational process.

Focusing on the instructor's figure, Wolcott (1995) recommends consideration of two fundamental aspects in distance learning:

1. Teaching-learning context –The physical and temporal separation are mediated by the CITs, giving the teaching-learning processes a totally new configuration. The teacher, to act effectively, needs to be able to work with the available resources and adapt them to his/her orientation methods;
2. Teaching practices – According to Wolcott (1995), "what constitutes effective instruction varies with the context". Teaching professionals need to exercise special care not to apply classical teaching methods to distance learning, remembering the need to explore alternative strategies, appropriate to distance learning. Teaching methods should, in general, reduce the interpersonal distance, promoting integration and guaranteeing learning.

To carefully plan and organize the teaching practices to be implemented is a central activity in the elaboration of a program in distance learning, and one most necessary to the success of the investment.

3. Communication and Information Technologies (CITs)

CITs are interactive technologies that came to facilitate the communication and transference of information between physically and/or temporally distant locations. This interaction can be synchronous (simultaneous occurrence) or asynchronous (occurrence at different times). The

following CITs are usually utilized in distance learning: videoconference, Internet, virtual collaborative learning facility and educational media.

3.1. Videoconference

Videoconference can be classified as multicasting or broadcasting. In multicasting, the audiovisual signal is originated and transmitted simultaneously and in real time to all locations connected to the event, creating total interactivity and allowing dialog among participants. In broadcasting, the audiovisual signal is originated in one location and transmitted to all locations at the same time, without, however, allowing for any interactivity with the participants (SILVEIRA, 2002).
The available tools in videoconference allow the teacher to utilize several didactic resources, such as documental cameras, scanner, slide presentation, videotape presentation, PowerPoint presentation, software use, website use, and others.
Videoconferencing (an interactive audio-visual communication system) is a communication and information technology well disseminated and utilized in Distance Learning, since it allows the synchronous interaction among dispersed groups or individuals. The audio-visual transmission can be done using radio, satellite or telephone line. Since it allows for a two way interaction, it gives the teaching-learning process the capability of real time, interactive processes (SILVEIRA, 2002).
In Brazil, the best example of a Distance Learning method utilizing videoconferencing technology is the Laboratory of Distance Learning (Laboratório de Educação à Distância (LED), of the Universidade Federal de Santa Catarina (UFSC), in Florianópolis, considered today an international level institution in graduate Distance Learning programs.

3.2. Internet

Distance Learning methods using the Internet as a medium of instruction are utilized individually or combined with other CITs . According to Lucena e Fuks (2000), Internet use in Distance Learning can take many forms:
 − *E-mail* – lecture content and communication with instructor is done using e-mail. A group list address (*listserv*) can be created to facilitate the distribution of information to participants, and to allow discussions. Questions sent to the address list are automatically distributed to all those registered with the group;
 − *Downloading* (transference) – utilizing file transference protocols, students download files and texts from the internet. The students review the subject at home, usually alone or with asynchronous tutoring;
 − *Interactive Tutorials* – the tutorial is a instruction program that can involve reading, connecting to other sites, answering questions and testing. The student registers, receives a login address and password to access the course, and studies the content of the course according to his/her availability and interest;
 − *Internet Relay Chat* – is a synchronous, live communication conference facility. Since it is interactive, it is the closest in format to the classical teaching-learning methods that the internet can allow (LUCENA and FUKS, 2000).

The Internet use is a well disseminated option in distance learning. In this modality, courses are usually offered wholly via Internet and the predominant format of communication is asynchronous, without interactivity .

3.3. Virtual Collaborative Learning Facility

Virtual facilities allow for both synchronous and asynchronous interaction among teachers, tutors and students.

Varella (2002) defines a virtual facility as any internet based software that offer the structure to operate a virtual university. The facilities can be accessed by independent users, independently of geographical location, with a computer connected to the web. The software allows the maintenance of distance courses and the administration of functions involved, as creation of study groups, testing on-line, student follow-up, didactic material access (made available by instructor), and others.

Any virtual facility used in the teaching-learning process relies on the use of communication tools typical of the digital world, such as e-mail, chat rooms, FAQ (Frequently Asked Questions) boards, discussion groups and bulletin boards.

Virtual facilities' strength is based on the premise that students and teachers, even when separated spatially, can have real time interaction. Also called collaborative web, since they are cooperative facilities. The advantage is the synchronous interaction between students and teacher(s).

3.4. Educational media

Educational media are the methods used in distance learning that consist in the use of any printed or digital media that will facilitate the learning process (letters, brochures, books, CD-ROM, audiotape, videotape, etc), usually sent to the student via regular mail (MARTINS, 1991).

In distance learning, it is critical that the material be prepared by multi-disciplinary teams, incorporating learning techniques that will adapt to self-directed learning (MARTINS, 1991). The center of the teaching-learning process is the student, that follows step-by-step instructions given with the didactic material, without necessarily having any interaction with the instructor(s).

It is also essential to seek to offer an intellectually broad variety of materials to the students, facilitating access to alternative views and offering additional material that can guide critical and analytical thinking.

4. Distance learning at the IESDE

The IESDE created the Rede IESDE (IESDE Web) with the purpose of extending the methodology of distance learning to the entire Brazilian territory, with hubs of operation in every state, from where the center administers the distance learning programs and guarantees a standardized method of education.

The distance learning programs for the education and training of teachers offered at the IESDE are modular, and follow two phases: (I) Semi-distance learning phase, e; (II) Distance learning phase.

The semi-distance learning phase takes place in TV-rooms. Students watch video-lectures, receive orientation and tips from instructors, and ask questions. Also part of this phase are certain evaluative processes and group activities with invited guests and responsible teachers.

In the distance learning phase, students develop understanding of the subjects using self-instructional material (printed media), given sequentially by the IESDE.

The physical structure of the program offers: (I) TV-rooms (II) Videoconference system; (III) Help-line available to instructors and students using: 0 800 number, e-mail, fax and/or correspondence and ; (IV) computerized system of access to academic information.

The learning-administrative structure is responsible for the program's implementation, operating guidelines, and course administration, as well as for directing and evaluating all proposed actions.

At the end of the program, students with minimum required attendance levels and proven acquired knowledge receive certificates of completion, recognized by the Ministry of Education and Culture (MEC).

5. IESDE's Communication and Information Technologies

As previously discussed, CITs are interactive technologies that facilitate communication and transference of information between people at different locations. The CITs utilized in the distance learning programs at the IESDE are the following:

5.1. Television

The IESDE uses television as the principal medium in the distance learning programs offered, considering that "television is the medium of greatest penetration in Brazil and an appropriate way of delivering culture and knowledge to a large number of people" (Opinion 293/01 - CEE).

The structure for production of taped lectures involves a technical team, image production equipment, graphic computers, editing personnel, and image transmission and distribution equipment.

The instructor works with a TV Production specialist the details of a lecture to be videotaped. The production usually involves interviews, case reports, conferences, movies, written material, and any other appropriate material. The lecture is video-taped with the help of a screen director. The tape is then edited to incorporate the material collected, and if necessary computer graphics and final art techniques are used.

The schedule of TV room meetings is chosen by the students.

5.2. Videoconference

The videoconference system used by the IESDE is the *multicasting*. As seen previously, *multicasting* enables audiovisual transmission in real time to all locations connected to the event. The major advantage of this system is the interactivity, allowing dialogue between teacher(s) and students.

The videoconferences take place bi-monthly with the objective of complementing the lectures, and use curricular and extracurricular material.

5.3. Educational Media

The educational media used at the IESDE is printed, and often production is overseen by the instructor of each subject. The logistics of printed material follow these principals:

1. The purchase of learning material is centralized at the IESDE. This ensures the quality as well as the mass distribution and standardization of the printed material .
2. The material is classified according to their source and/or production method:
   a) Books purchased from publishers specialized in the production of didactic material;
   b) Books written by authors hired by the IESDE, who retain copyright control and is responsible for graphic production;
   c) VHS tapes or CD-ROM, taped with lectures from different subjects.

3. Each operating hub (state offices) sends to the IESDE with a minimum of 40 day notice, a list of needed material, which is then included in a purchasing/production plan and transport schedule. (Opinion 249/01 - CEE).

The printed media is specifically developed/purchased for the courses, and offer the theoretical foundation and complement to the lectures.

6. Tutoring Method at the IESDE

The tutor is a key element at the IESDE, since his/her task is to provide student follow-up during the educational process.

Tutor qualifications required by the IESDE, besides completion of a training course offered by the institution, in decreasing order of preference (Opinion 249/01 - CEE) :

- Degree in Education with masters or doctoral degree;
- Bachelor's degree w/ certificate of education and a masters or doctoral degree;
- Degree in Education and specialization;
- Bachelor's degree w/ certificate of education and specialization;
- Bachelor's degree w/ certificate of education;
- Bachelor's degree.

The training of tutors is the responsibility of an "Educational and Administrative Group". This team is responsible for giving technical aid throughout the program, encompassing planning, implementation and execution of the program's requirements. This technical assistance includes: (I) planning of activities ; (II) editing and grading of students' work; (III) suggesting subjects of study and/or activities and problem solving strategies to improve students' grades, specially to those students with specific difficulties in certain areas of study.

Tutors participate in the lectures, and in the semi-distance learning phase. Tutors' attributions are:

- Coordinate collective activities of students under their orientation;
- Resolve or guide students questions and concerns;
- Suggest and work with competent team any supplementary material to ensure students' greatest learning opportunities;
- Measure and evaluate progress, including editing and grading of students' work, verification and organization of complementary studies, in case of unsatisfactory performance;
- Register and send students' progress information to the IESDE;
- Elaborate monthly progress reports;
- Participate, as representative, in the evaluation processes related to the development of the program (Opinion 249/01 - CEE).

The tutor is, then, responsible for all learning aspects and follow-up of students participating in the distance learning programs offered by the IESDE.

The IESDE proposal is to offer a learning structure organized as a pyramid, with its base represented by students and tutors, a middle structure represented by teachers and instructors, and the vertex is formed by the administrative-educational coordination. The dynamics of this structure should be interactive and bi-directional, from base to the vertex and vice-versa, according to the necessities to be fulfilled and objectives to be pursued.

7. Conclusion

Distance learning filled a gap opened by a new law to solve a secular problem in Brazil: the education and training of teachers who do not currently have the minimum necessary skills

and knowledge required to teach.

The distance learning programs for education and training of teachers offered at the IESDE, use asynchronous (television and printed material) and synchronous (videoconference) technology. The adopted learning practices are centered in the figure of the tutor, who accompanies the learning process of the students.

Even tough CITs and learning practices are consistently adopted in distance learning, the proposed objectives are not always met. The shortcoming of distance learning is that CITs and learning practices have as an end the mediation of the teaching-learning process between geographically dispersed individuals, and a program for teachers' education and training should seek, besides overcoming the barrier of distance and time differences, the preservation of values, ethical and moral principles, which accentuate the human side of education. The possibility of integrating these values to distance learning programs depends not solely on the technical capability of those involved, but also in a commitment to educate teachers while preserving and enhancing the human aspects of education.

References

ALONSO, K. M. (2000) **- Licenciatura a distância e um programa institucional de formação de professores em exercício**. Cuiabá: NED/IE – UFMT.

BRASIL (1996). **Lei de Diretrizes e Bases da Educação Nacional**. Lei nº 9.394, December 20, 1996.Brasília, MEC.

IESDE. <http://www.iesde.com.br>. Access in April 10, 2004.

LABORATÓRIO DE EDUCAÇÃO À DISTÂNCIA (LED) da Universidade Federal de Santa Catarina (UFSC). <http://www.ufsc.br/paginas/subpaginas/lab.htm> Access April 15, 2004.

LUCENA, C.; FUKS, H. (2000). **Professores e aprendizes na Web: a educação na era da Internet**. Rio de Janeiro: Clube do Futuro.

MARTINS, O. B. (1991) - **A educação superior à distância e a democratização do saber**. Petrópolis: Vozes.

SILVEIRA, R. D. (2002). **Videoconferência: a educação sem distância**. Curitiba: Universidade Eletrônica do Brasil.

PARANÁ (2001). Deliberação 002/01. **Pedido de credenciamento da Instituição Educacional para a oferta de Educação à Distância**. Curitiba, CEE.

_____(2001). Parecer 249/01. **Pedido de credenciamento da Instituição Educacional para a oferta de Educação à Distância**. Curitiba, CEE.

_____(2001). Parecer 293/01. **Pedido de autorização de funcionamento do Ensino Médio – Educação de Jovens e Adultos, na modalidade à distância**. Curitiba, CEE.

VARELLA, P. G. (2002). **Aprendizagem colaborativa em ambientes virtuais de aprendizagem**: **a experiência inédita da PUCPR**. Revista Diálogo Educacional, Curitiba, v.3, n.6, p.11-27, Aug. 2002.

WOLCOTT, L. (1995) - **The Distance Teacher as Reflective Pratictioner: Educational Technology**. January-February, 39-43.

ZAMUDIO, J. A. (1997) - **Una Experiencia Puntual de Educación a Distancia**. Buenos Aires: Biblos, 141-143.