FUTURE SRJ
FUTURE STUDIES RESEARCH JOURNAL: TRENDS AND STRATEGIES

PROFUTURO: FUTURE STUDIES PROGRAM
Scientific editor: James Terence Coulter Wright
Avaliação: Doublé Blind Review by SEER/OJS
Revisão: Grammatical, normative and of layout

THE EXPANSION OF DISTANCE LEARNING (DL) IN BRAZILIAN HIGHER EDUCATION: TRENDS FOR THE BEGINNING OF THE NEXT DECADE

Leandro José Morilhas
PhD candidate, Postgraduate Business Administration Program
USP - Universidade de São Paulo (University of São Paulo), Brazil
ljmorilhas@ig.com.br

ABSTRACT

In this article, the expansion of distance learning (DL) in Brazil's Higher Education is analyzed with a view to addressing the following research query: How many schools, in Brazil, will offer undergraduate studies in the DL mode over the next five years? To this effect, bibliographical data was researched and historical series of variables were compiled – number of schools, of courses and of enrolled students, among other elements – to generate comparative graphs between the *in loco* (classroom) and the distance modes. Thus, the evolution of both types during the period studied is presented. Furthermore, a simple linear regression was used to correlate the variables 'number of institutions' and 'time', in order to extrapolate growth trends for the 2007-2011 period. Results point to a sharp expansion of DL, in all studied variables, and indicate that this may increase even further in the future. It also became evident that the growth of distance learning will have to overcome certain challenges, including better access to computers and to the Internet and the development of qualified personnel and of specific software to deal with it.

Key words: Distance learning. Distance education. Extrapolation of trends and linear regression. Future studies.

FUTURE SRJ
FUTURE STUDIES RESEARCH JOURNAL: TRENDS AND STRATEGIES

PROFUTURO: FUTURE STUDIES PROGRAM
Scientific editor: James Terence Coulter Wright
Avaliação: Doublé Blind Review by SEER/OJS
Revisão: Grammatical, normative and of layout

A EXPANSÃO DA EDUCAÇÃO A DISTÂNCIA (EAD) NO ENSINO SUPERIOR BRASILEIRO: TENDÊNCIAS PARA O INÍCIO DA PRÓXIMA DÉCADA

RESUMO

Neste artigo, analisa-se a expansão da Educação a Distância (EAD) no Ensino Superior Brasileiro com o objetivo de responder a seguinte questão de pesquisa: Qual o número de escolas que ofertará graduação na modalidade Educação a Distância (EAD), no Brasil, nos próximos cinco anos? Para tanto, levantou-se dados bibliográficos e criou-se séries históricas de variáveis - número de escolas, de cursos, de alunos matriculados, entre outros - que geraram gráficos comparativos entre as modalidades presencial e a distância. Dessa forma, apresenta-se a evolução de ambas as modalidades ao longo do período estudado. Além disso, utilizou-se a regressão linear simples para correlacionar as variáveis "número de instituições" e "tempo", visando extrapolar as tendências de crescimento no período compreendido entre 2007 e 2011. Os resultados demonstram uma acelerada expansão da EAD, em todas as variáveis estudadas, indicando que esta pode aumentar ainda mais nos próximos anos. Também se constatou que a expansão do ensino a distância precisará superar alguns desafios como, por exemplo, o aumento do acesso a computadores e Internet, e o desenvolvimento de mão de obra qualificada e *softwares* específicos.

Palavras-chave: Ensino a Distância. Extrapolação de tendências e regressão linear. Estudos do Futuro.

1 INTRODUCTION

The so-called New Economy – defined by Hayes (2002) as a combination of globalization, high technology, knowledge and information as the main assets and productive resources of any company – has led to profound changes in corporations and in the people that are active in them. These changes, of a scientific, technological and social nature, also influence job relations.

Corporations are seeking increasingly qualified personnel. This has led the job market to demand permanent education or continuous training. Some people, however, have to overcome certain barriers. How is it possible to find the time for working and studying? How does one gain access to courses that are geographically far away? How does one pay for higher education (undergraduate, postgraduate, MBA, etc.)?

A possible solution for such questions is so-called distance learning or DL, a learning mode that transforms the traditional teacher-student relationship by using several resources, both technological and non-technological. Aretio (1994, p.39) defines DL as:

> A bi-directional system that replaces the personal interaction between teacher and student by the joint systematic set of different instrumental resources and by the support of an Associated Center or complex, which provides all the conditions necessary for students to learn independently, with the actual participation of highly qualified tutors.

In view of this new reality, some higher education institutions (HEIs) have been investing in DL technologies and in the divulging of these learning techniques. Concerning HEIs' investments, Martins (2008, p. 358) states that "higher education institutions are increasing significantly the number of distance courses, using all advertising resources to divulge the information about them on TV programs and through internet networks."

Porto and Regnier (2003, p. 33) corroborate the words of Martins (2008), stating that the creation of virtual universities that offer distance learning and of consortiums involved with DL, classroom education, and services linked to higher education (consulting services, research development projects, etc.), are trends that have been growing globally.

Although investments are being made to disseminate DL, certain issues still need to be addressed, such as mistrust and disbelief in its possible results as compared to the results of traditional education. Palhares (2005) lists other problems DL faces:

- ✓ Lack of knowledge on the part of lawmakers, education professionals and those who resort to DL;
- ✓ Lack of discipline to pursue the learning activities at a constant pace;
- ✓ Scarcity or non-availability of technological or financial resources;
- ✓ Prejudice; DL is treated by the *Lei de Diretrizes e Bases da Educação*, i.e., Brazil's education law, as a resource to solve temporary or emergency situations;
- ✓ Incipient legislation; and
- ✓ Acceptance of the business mode.

A new job relations configuration has surfaced in this tug-of-war for and against DL. In this new context, which dictates the continuous training of professionals, arrangements encompass more work flexibility, active employees who, in specific cases, work from home (the so-called teleworkers), and new technologies that are created and developed each day.

An understanding of this configuration is fundamental for the preparation of strategies and the creation of new businesses. This is why the following research question should be answered: How many learning institutions in Brazil will offer distance learning (DL) undergraduate courses in the next five years?

To answer this question, this paper's estimates are restricted to the 2007 to 2011 period, since official data on DL only goes up to the year 2006. This study is justified by the fact that DL is a business opportunity; more specifically, it offers opportunities in the field of undergraduate courses, specialization courses and corporate education, among others. In addition, given that most of the DL studies are qualitative, we have decided to focus on the growth trends of DL in a quantitative manner.

We believe that predicting the number of learning institutions that will offer DL undergraduate courses in the next five years may help educational institutions and educators to identify the size of the market to be explored, the

competitors entering this market, the students who might glimpse a possible supply of distance courses, and the companies that may take advantage of the availability of skilled labor.

The definitions of DL are detailed below, in order to provide a better understanding of this issue. To this end, we explain the legislation that pertains to undergraduate courses, the strengths and weaknesses of distance learning vs. a classroom education, and the leading techniques for the prospecting of the future and the extrapolation of trends.

2 BIBLIOGRAPHICAL REVIEW

2.1 DEFINITION OF DL – DISTANCE LEARNING AND RELATED LEGISLATION FOR UNDERGRADUATE COURSES

According to Decree 5622, of December 19, 2005, distance learning is a mode of education whereby the didactic and pedagogical mediation of the teaching and learning processes occurs by means of information technology and communication techniques, with students and teachers conducting educational activities in different places or at different times.

In Brazil, the legal bases for DL were first established through the enactment of the *Lei de Diretrizes e Bases da Educação/LDB,* the Brazilian education law no. 9394/96, regulated by Decree no. 5622 of December 20, 2005, which revoked Decree no. 2494 of February 10, 1998 and Decree no. 2561 of April 27, 1998, with normalization defined by Ministerial Ordinance no. 4361/04, which revoked Ministerial Ordinance no. 301 of April 7, 1998.

Article 80 of the education law refers to DL and to the role of government as follows: "the public authorities shall encourage the development and the publicizing of distance learning programs for all levels and modes of education and continued education." The subsequent legal texts refer to the regulation and norms of DL in some points, specifying issues such as quality and evaluation, as described below.

- ✓ Distance learning and distance courses, within the scope of higher education, shall comply with national course quality standards.

- ✓ The Institutional Development Plan shall be based on the curriculum guidelines, the quality standards of national courses, the integration of distance learning, and the pedagogical project of the higher education courses being offered.
- ✓ In the federal education system, the distance learning courses shall be subject to previous verification and evaluation conducted by experts appointed by the Ministry of Education and Culture/MEC.
- ✓ The authorization and validation of distance courses and programs of the higher education mode shall be limited to five years, and may be extended after favorable evaluation; such validation of distance undergraduate and sequential courses shall require prior evaluation by MEC.
- ✓ The evaluations shall comply with defined procedures, criteria and quality indicators.
- ✓ The diplomas for higher education courses under the distance learning mode issued by foreign institutions, even when such courses are held in cooperation with institutions based in Brazil, shall be revalidated by Brazilian public universities to have legal effect.
- ✓ The evaluation of a student's academic performance for the purposes of promotion, certification, or obtainment of a diploma shall be conducted, at some point in time, by means of examinations taken in a classroom.
- ✓ The results of institutional evaluations and verifications conducted for the purposes of authorization or validation shall be announced by the MEC.

As DL progressed, Decree no. 5622/05 was approved. This decree refers to the adoption of a continuous process (since 2003) with the participation and collaboration of secretaries and entities of the MEC, of the Conselho Nacional de Educação/CNE (the National Board of Education), of the Conselhos Estaduais de Educação/CEE (State Boards of Education) as well as of Learning Institutions, Associations involved in DL and society at large.

In addition to these laws and the Federal Constitution, the other decrees and ordinances governing DL for higher education are as follows:

- ✓ Decree no. 2494/98, which regulates Article 80 of the LDB education law.
- ✓ Decree no. 2561/98, which re-words articles 11 and 12 of Decree no. 2494/98, which regulates the LDB.
- ✓ Ministerial Ordinance no. 301/98, which regulates the accreditation and the offerings of DL undergraduate courses.
- ✓ Ministerial Ordinance no. 4059/04, which contemplates the use, by higher education institutions, of DL methods in as much as 20% of the curriculum and revokes ordinance no. 2253/01, which contemplated this issue.
- ✓ Ministerial Ordinance no. 873/06, which authorizes, on an experimental basis, Federal Higher Education Institutions to offer DL higher education courses.

2.2 ADVANTAGES AND DISADVANTAGES OF DL VS. CLASSROOM LEARNING

Palhares (2005) states that the chief advantage of distance learning – as compared to classroom education - is that it is democratic learning. In his opinion, all those who seek to gain knowledge through DL can achieve results, as DL offers quality education for those who need it, without the constraints of space, time or any other condition.

Still according to Palhares (2005), efficiency is another advantage that often goes unnoticed. To move ahead in terms of education, the DL student must understand the concepts presented to him. Aids such as merely memorizing the information are insufficient for a DL student to advance within a progressive process of acquiring knowledge and competency. Indeed, failure to understand this is one of the key factors leading to the growth of drop-out rate.

Ventura (2006) refers to the collective construction of knowledge and the students' more active role as DL advantages. According to the author, a study conducted at Simon Fraser University in Vancouver, Canada, indicated that

approximately 75% of the messages in virtual classrooms are written by the students. In classroom education, on the other hand, 80% of the time is taken up by the teacher who is doing the talking and writing.

Fontana and Mendes (2008) corroborate these ideas of Palhares (2005), stating that DL is flexible in terms of time and provides students with autonomy to study. In addition, according to the authors, DL reduces costs and its scope is broader than that of classroom education, as it facilitates access to learning and minimizes interference in the work routine.

Fontana and Mendes (2008) supported their argument with research conducted by the Associação Brasileira de Educação a Distância/ABRAEAD (the Brazilian Association of Distance Learning) in 2008, according to which, as shown in Chart 1, the main advantage of DL is time flexibility, as mentioned by most of the respondents (94.4%). Speed, scope and reach, and cost reduction were also mentioned by over 80% of the interviewees, more specifically, by 86.10%; 83.30% and 80.60%, respectively. Other attributes respondents frequently mentioned were easier access for the student (77.80%), flexibility in terms of space (69.40%), and interfering less with work (55.60%).

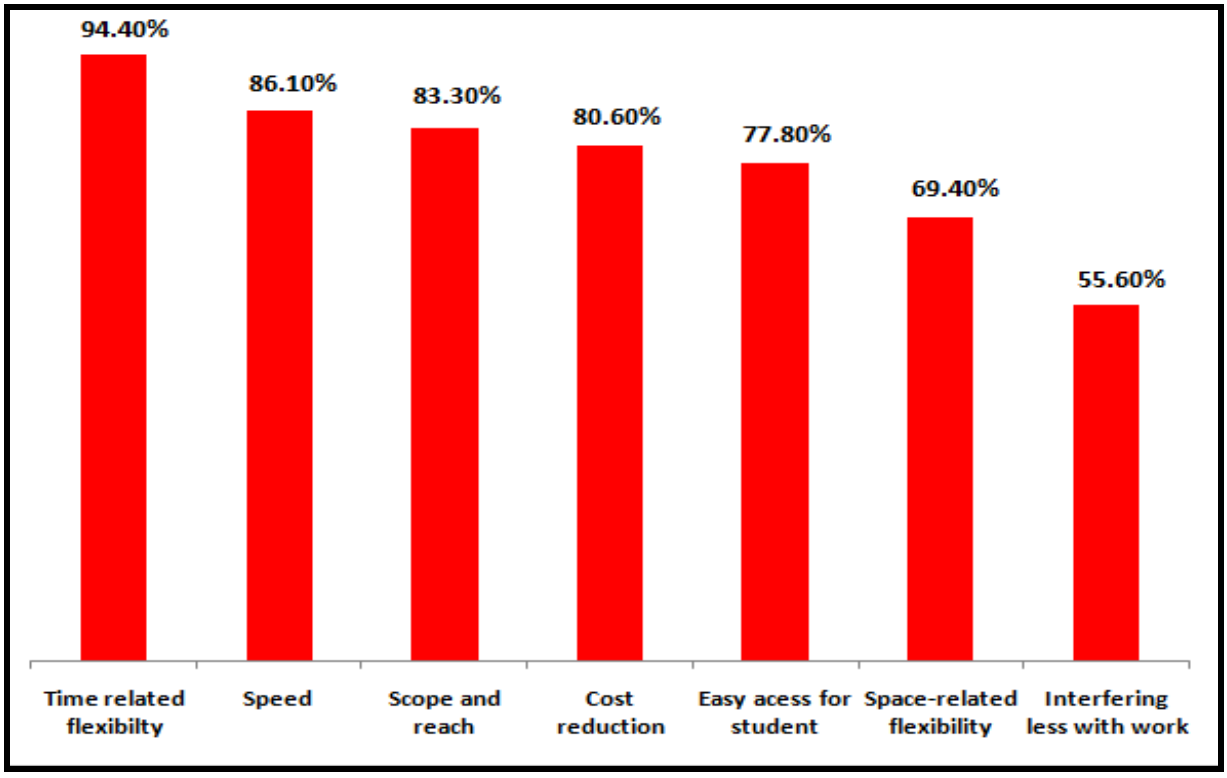

Chart 1: Main advantages of DL vs. classroom education

Source: ABRAEAD Report (Fontana & Mendes, 2008).

The disadvantages are related to the challenges to be overcome by DL, which needs to consolidate its regulatory status; expand its evaluation process, viewed by some people as superficial; and build a nationwide cooperation network. In addition, it is necessary to create a culture of recognition of DL as a quality mode of learning, able to deal with all levels of education and not merely with the elementary levels. Finally, it is necessary to establish the convergence of DL and classroom education.

2.3 PROSPECTING THE FUTURE: EXTRAPOLATION OF TRENDS

When it comes to prospecting the future, one can say that prospecting is an exercise of future possibilities that takes into account the alliances, oppositions and strategies of the players of a given sector, thus constituting an important network for innovation and development (Canongia et al, 2001).

In relation to predicting the future, Phahalad and Hamel (1995) stated:

> Predicting the future of this sector needs to be based on a detailed perception of trends related to life styles, technology, demographics and geopolitics; it also needs to be based on imagination and on prognostics. To create the future, a company first needs to develop a powerful visual and verbal representation of the possibilities of this future. As Walt Disney used to say, it is necessary to have imagination and engineering. Disney imagined an experimental city of the future where horse ranches would be in ruins. This dream became the EPCOT Center, one of the main travel destinations for tourists from all over the world.

In view of the current changes, it has become increasingly important to prospect trends related to the demand for goods and services. In the new economy, being thoroughly acquainted with consumers' real preferences and their social and economic needs is the basis for any prospective research study (Canongia et al, 2001).

Vallario et al (1997) state that, according to the literature, there are several methodologies that can be used to obtain a vision of the future. The following stand out among them: the Delphi methodology; the construction of scenarios; morphological modeling and analysis; environmental monitoring; and trend extrapolation. A brief description of each methodology follows.

- ✓ **Delphi Methodology:** this methodology structures the opinions of experts by means of successive rounds of questions on "what will the future be like?"; the objective is to achieve a consensus and to prioritize issues. The method's weakness is the difficulty of comparing and approximating the various points of view raised by the experts. In Massoud's opinion (n.d.), the Delphi methodology is intuitive, interactive, and requires bringing together a group of experts able to answer a series of questions related to a specific field of knowledge. The first phase of this methodology entails analyzing data and presenting a summary of the results to the members of the group who, after being so informed, respond to the same questionnaire again. The interactions are reiterated until a near or total consensus is achieved.

- ✓ **Scenarios:** Schwartz (1996) states that scenarios are plausible futures that consider several key variables. They can be prepared by means of brainstorming, based on the opinions and ideas of experts, or by using the computer, to parameterize the key variables and their changes in the course of time. The ideas of Schwartz (1996) corroborate the ideas of Godet (1987), in whose opinion the scenarios technique forms part of the field of studies about plausible possibilities. This methodology is also defined as a technique to predict trends and possible future situations. The purpose of the scenario creation technique is to present a significant image of possible futures in different time horizons and to ensure a favorable positioning.

- ✓ **Modeling and morphological analysis:** in the opinion of Rostaing (1998, after Canongia et al, 2001), the modeling and morphological analysis methodology involves the use of analytical techniques for the development of future scenarios. Thus, any techniques that use equations and list variables to estimate what the equations could be in the future are applicable. The advantage of this method is the ease with which experts systematize and visualize the relationship between the key variables in the course of time. The disadvantage is the inability to reflect all the complexities and contingencies of the real world.

- ✓ **Environmental Monitoring:** according to Porter and Detampel (1995), monitoring entails looking, observing, checking, and keeping up-to-date on the development of a defined area. Thus, the monitoring exercise can help identify the variables for trend analysis and for the construction of alternative scenarios and establish how much attention should be given to technological and social/economic changes. Monitoring – used as a systematic methodology for anticipation – examines current data in four stages: data gathering, filtering, evaluation and mapping. In the opinion of Vallario et al (1997), monitoring limits itself to formal information sources, which lessens its ability to capture weak signals or paradigm changes.

- ✓ **Trend Extrapolation:** this method is based on the assumption that current patterns will not change; in other words, it does not project paradigm-related changes. The method makes qualitative or quantitative extrapolations based on information collected in the past. Trend extrapolation can be considered as a subset of modeling, which includes dynamic systems, regression analysis, and S curves, among others. This method has two weaknesses; failing to correlate the variables involved and basing itself on the principle that patterns do not change in the course of time.

To address the research-related issue proposed in this paper, we resorted to the following reports: *Censo da Educação Superior 2006* (Higher Education Census) conducted by the *Instituto Nacional de Pesquisas Educacionais* (National Institute of Education Research) of the Ministry of Education and Culture [*INEP/MEC*], 2007); *Sinopse Estatística do Ensino Superior da Graduação dos Anos 2000 a 2006/INEP* 2006 (Statistical Synopsis of Undergraduate Higher Education, 2000 – 2006); and *Anuário Brasileiro Estatístico de Educação Aberta e à Distância 2005*/*ABRAEAD 2005* (2005 Brazilian Statistical Yearbook on Open and Distance Learning). We adopted the trend extrapolation technique. Further details will be provided in the next chapter on research methods and techniques.

3 RESEARCH METHODS AND TECHNIQUES

The main objective of this study is to predict the number of schools that will adopt distance learning for undergraduate courses in the next five years. Therefore, this is a descriptive study with quantitative variables and it resorts to the bibliographical research method. In relation to bibliographical research, Cervo and Bervian (1996, p. 48) state the following:

> Bibliographical research seeks to explain a problem based on references published in documents. This type of research can be conducted independently or as part of a descriptive or experimental research study. In both cases, the ultimate objective is to become acquainted with and to analyze existing cultural or scientific contributions of the past on a given topic, theme or issue.

Once the research topic and the proposed research issue were defined, the next step was to identify data about DL and higher education courses to compose the bibliography for review. To this end, theses and dissertations, as well as academic articles published in journals or presented at congresses, were consulted. We also consulted the laws governing this mode of learning.

A database with information on the classroom learning mode of higher education in Brazil was created (Table 1); another database was created with information on the DL mode (Table 2). Both Tables were prepared based on the reports of the *Censo da Educação Superior 2006 (INEP/MEC, 2007)*, of the *Sinopse Estatística do Ensino Superior da Graduação dos Anos 2000 a 2006 (INEP, 2006),* and of the *Anuário Brasileiro Estatístico de Educação Aberta e a Distância 2005 (ABRAEAD, 2005).*

Table 1: Classroom education in Brazil from 2000 to 2006

CENSUS YEAR	NO. OF INSTITUTIONS	NR. OF COURSES	NO. OF PLACES	CANDIDATES FOR ENROLLMENT	ENROLLMENTS	ENTRIES	GRADUATES
2000	1,180	10,585	1,216,287	4,039,910	2,694,245	897,557	352,305
2001	1,391	12,155	1,408,492	4,260,261	3,030,754	1,036,690	395,988
2002	1,637	14,399	1,773,087	4,984,409	3,479,913	1,205,140	466,260
2003	1,859	16,453	2,002,773	4,900,023	3,887,771	1,262,954	528,223
2004	2,013	18,644	2,320,421	5,053,992	4,163,733	1,303,110	626,617
2005	2,165	20,407	2,435,987	5,060,956	4,453,156	1,678,088	717,858
2006	2,270	22,101	2,629,598	5,181,699	4,676,646	1,448,509	736,829

Source: prepared by the author, based on *Censo da Educação Superior 2006 (INEP/MEC, 2007)*, *Sinopse Estatística do Ensino Superior da Graduação dos Anos 2000 a 2006*

(INEP, 2006), and *Anuário Brasileiro Estatístico de Educação Aberta e a Distância 2005 (ABRAEAD, 2005).*

Table 2: Distance learning in Brazil from 2000 to 2006

CENSUS YEAR	NO. OF INSTITUTIONS	NR. OF COURSES	NUMBER OF PLACES	CANDIDATES FOR ENROLLMENT	ENROLLMENTS	ENTRIES	GRADUATES
2000	8	10	6,430	8,002	1,682	5,287	0
2001	10	16	6,586	13,967	5,359	6,618	131
2002	25	46	24,389	29,702	40,714	20,685	1,712
2003	38	52	244,025	21,873	49,911	14,233	4,005
2004	47	107	n.a.	50,706	59,611	n.a.	6,746
2005	73	189	n.a.	233,626	114,642	n.a.	12,626
2006	77	349	n.a.	430,229	207,206	n.a.	25,804

Source: prepared by the author, based on *Censo da Educação Superior 2006 (INEP/MEC, 2007)*, *Sinopse Estatística do Ensino Superior da Graduação dos Anos 2000 a 2006 (INEP, 2006),* and *Anuário Brasileiro Estatístico de Educação Aberta e a Distância 2005 (ABRAEAD, 2005).*

Comment: it was not possible to obtain data on the number of DL places offered from 2004 to 2006, or on the number of students enrolled during this period.

Both databases cover the 2000 to 2006 period and include the following variables: number of institutions that adopt one of the given modes exclusively, for each year; number of courses; number of places; number of applicants; number of enrolled students; entries; and graduates.

Comparative charts between the two modes were generated based on the historical series of each variable, in order to show the evolution of classroom learning and DL during the period mentioned, as well as the importance of DL in relation to classroom learning.

The simple linear regression model was then applied to correlate the variables 'number of institutions' and 'time,' in order to extrapolate the growth trends for the next five years, more specifically, from 2007 to 2011.

4 DATA ANALYSIS

This topic provides an overview of DL in Brazil, comparing its growth with that of classroom learning in the last few years and also includes an analysis of DL growth prospects from 2007 to 2011.

4.1 OVERVIEW OF DL HIGHER EDUCATION IN BRAZIL

It is appropriate to make two comments on the number of institutions. The first concerns the numerical superiority of traditional courses, i.e., those held in classrooms. In 2000, classroom courses were offered at 1,180 institutions, whereas DL was offered by 7, just 0.59% of the total number of courses of the two modes offered that year. In 2006, the last year to have been analyzed, this percentage came to 3.28% (Chart 2). The second comment concerns the evolution of both modes. DL leads in this respect. Whereas classroom learning institutions roughly doubled in the period in question, the number of institutions offering DL increased about 1,000%

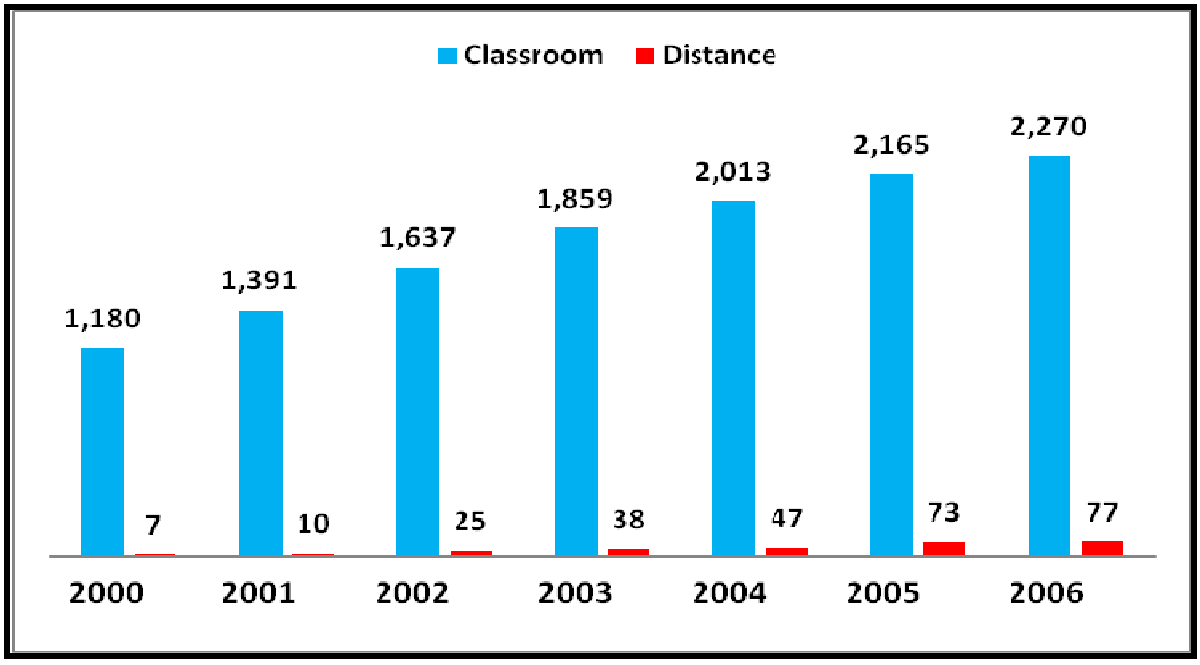

Chart 2: Number of Institutions

Source: prepared by the author, based on *Censo da Educação Superior 2006 (INEP/MEC, 2007)*, *Sinopse Estatística do Ensino Superior da Graduação dos Anos 2000 a 2006 (INEP, 2006),* and *Anuário Brasileiro Estatístico de Educação Aberta e a Distância 2005 (ABRAEAD, 2005).*

The same holds true for the other variables. Both modes grew, but DL increased faster. Whereas the number of classroom courses essentially doubled, rising from 10,585 in 2000 to 22,101 in 2006 (108.80%) the number of DL courses increased from 10 to 349 (3,390.00%) in the same period. This data is specified in Chart 3.

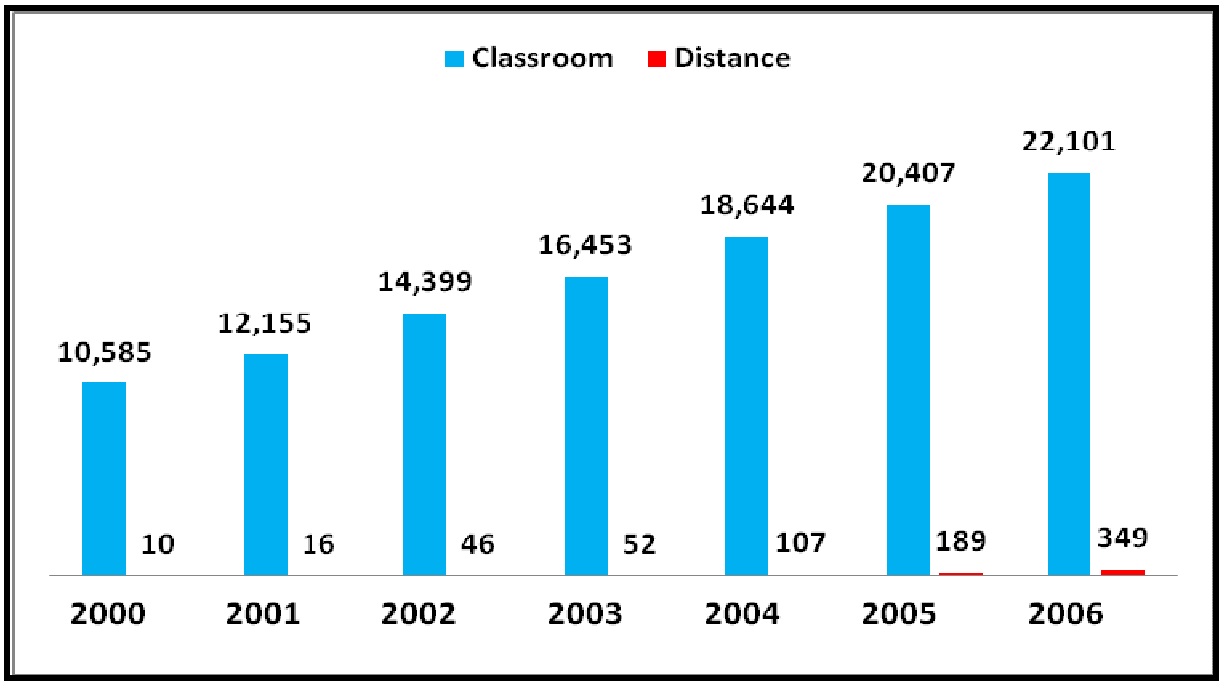

Chart 3: Number of Courses

Source: prepared by the author, based on *Censo da Educação Superior 2006 (INEP/MEC, 2007)*, *Sinopse Estatística do Ensino Superior da Graduação dos Anos 2000 a 2006 (INEP, 2006),* and *Anuário Brasileiro Estatístico de Educação Aberta e a Distância 2005 (ABRAEAD, 2005).*

Concerning the number of places and of enrolled students, it was not possible to obtain data for 2004, 2005 and 2006, as mentioned above. However, from 2000 to 2003, the number of places in classroom courses rose by 116.2%, whereas the number of places in DL increased by 3,695.10%, which illustrates the growth of this mode.

On the other hand, the demand for DL responded at a much slower pace. The number of people who chose to enroll in a DL higher education course grew by 12,219.02%, whereas classroom education grew by 73.58% in the same period.

Concerning registration for the Brazilian college entrance exams (Chart 4), the number of students applying for classroom education went up from 4,039,910 in 2000 to 5,181,699 in 2006, which corresponds to a 28.26% increase. The growth of DL in percentage figures in the same period corresponded to 5,276.52%. In absolute numbers, however, DL went up from 8,002 applicants in 2002 (equivalent to 0.20% of the classroom figure) to 430,229 in 2006 (equivalent to 7.67% of the classroom figure).

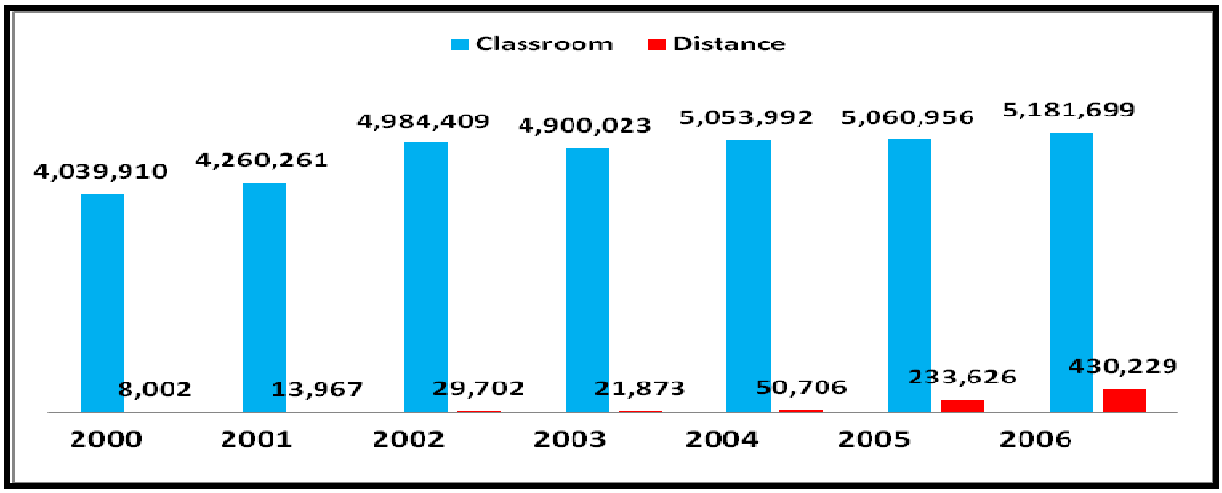

Chart 4: Number of Enrolled Candidates

Source: prepared by the author, based on *Censo da Educação Superior 2006 (INEP/MEC, 2007)*, *Sinopse Estatística do Ensino Superior da Graduação dos Anos 2000 a 2006 (INEP, 2006),* and *Anuário Brasileiro Estatístico de Educação Aberta e a Distância 2005 (ABRAEAD, 2005).*

The enrollment and graduates variables followed the same trend as the other variables: the number of students enrolled in classroom education increased from 2,694,245 in 2000 to 4,676,646 in 2006, corresponding to a growth of 73.58%. However, the number of students enrolled in DL increased from 1,682 to 207,206 in the same period, reflecting growth of 12,219.02%, nearly 123 times higher than the progress figures concerning students enrolled in classroom education (Chart 5).

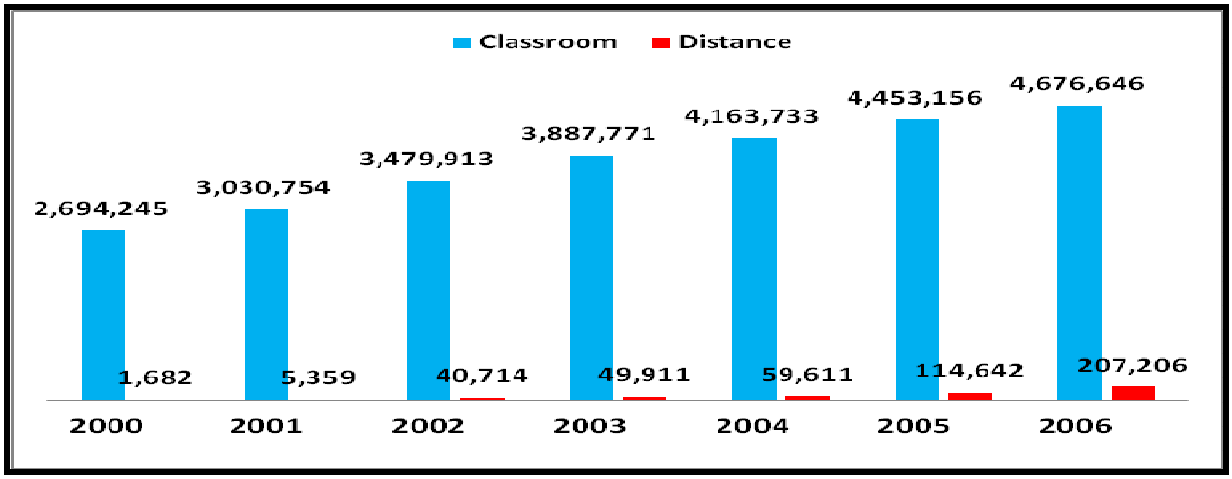

Chart 5: Enrollments

Source: prepared by the author, based on *Censo da Educação Superior 2006 (INEP/MEC, 2007)*, *Sinopse Estatística do Ensino Superior da Graduação dos Anos 2000 a 2006 (INEP, 2006),* and *Anuário Brasileiro Estatístico de Educação Aberta e a Distância 2005 (ABRAEAD, 2005).*

Concerning graduates, 736,829 students graduated from classroom education and 25,804 students concluded their DL studies in 2006. Thus, considering that there were no DL graduates in 2000, the number of students graduating from DL went up from 131 students in 2001 to 25,804 students in 2006, corresponding to growth of 19,597.71%, whereas the number of graduates from traditional courses went up by 109.15% (Chart 6).

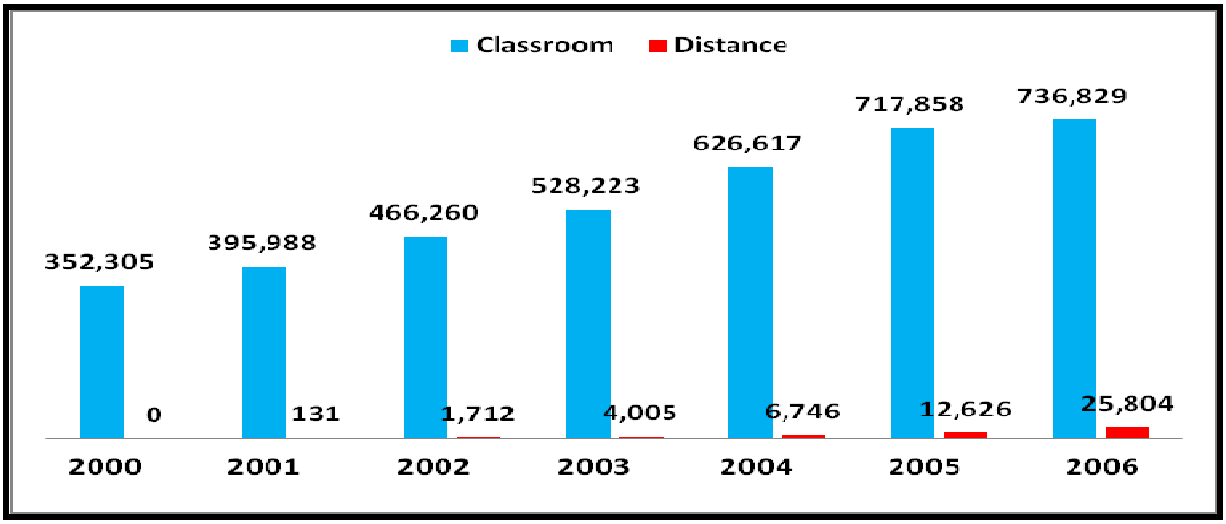

Chart 6: Graduates

Source: prepared by the author, based on *Censo da Educação Superior 2006 (INEP/MEC, 2007)*, *Sinopse Estatística do Ensino Superior da Graduação dos Anos 2000 a 2006 (INEP, 2006),* and *Anuário Brasileiro Estatístico de Educação Aberta e a Distância 2005 (ABRAEAD, 2005).*

4.2 GROWTH PROSPECTS

DL growth prospects in Brazil, as item 4.1 above indicates, are encouraging. The number of institutions offering this mode of education rose by 1,099% from 2000 to 2006. Concerning the next five years, the following indexes were calculated, on the basis of the historical series and on Anderson, Sweeney and Williams (2003):

- ✓ **Test F:** determines whether the equation really explains something about the dependent variable. It tests regression meaning and the hypothesis that there is a linear relationship between the variables. The value of this index was 0.0000580903276828925 or 5.81 E – 05 for the historical series concerning the number of DL institutions in Brazil from 2000 to 2006.

- ✓ **R²:** indicates the portion of the variability in the dependent variable that can be explained by the estimated multiple regression equation. The value of this index was 0.969 or approximately 97% for the historical series of the number of DL institutions in Brazil in the 2000 to 2006 period.
- ✓ **R:** The linear regression index indicates to what extent the dependent variable is influenced by the independent variable; in this case, the variables are, respectively, the number of courses that adopted the DL mode and time. The value of this index was 0.984378 or approximately 98.5% for the historical series of the number of DL institutions in Brazil from 2000 to 2006.

Regarding test F, when the value obtained is lower than 0.10, the variables have a linear relationship. As specified above, the value of test F for the aforementioned distribution was 0.0000580903276828925, causing one to infer that there is a linear relationship between the variables, i.e., there has been a statistically proven expansion of the DL mode at the undergraduate level in the last few years.

The other indexes: R^2 (coefficient of determination) and R (linear regression) show that the model is extremely adherent; in the first index, 97% of the variability of the dependent variable can be explained by the independent variable. In the second index, one can see the strong linear correlation: 98.5% of the influence of the time variable (independent) on the number of institutions variable (dependent).

In relation to the forecast for forthcoming years, as shown in Chart 7, the number of institutions offering undergraduate DL courses is expected to grow from 77 in 2006 to: 80 in 2007, 92 in 2008, 105 in 2009, 118 in 2010 and to 131 in 2011.

It is important to emphasize that, as stated by Porter (1991), the extrapolation of technology cannot ignore the effects of technology itself. Events such as political crises, economic recessions or natural disasters affect the reliability of the past as a guideline for prediction the future. Therefore, the values mentioned herein depend on the maintenance of the current conditions, in order for evolution to occur as predicted. A change in the scenarios related to laws, the economy and competition could change these figures upward or downward.

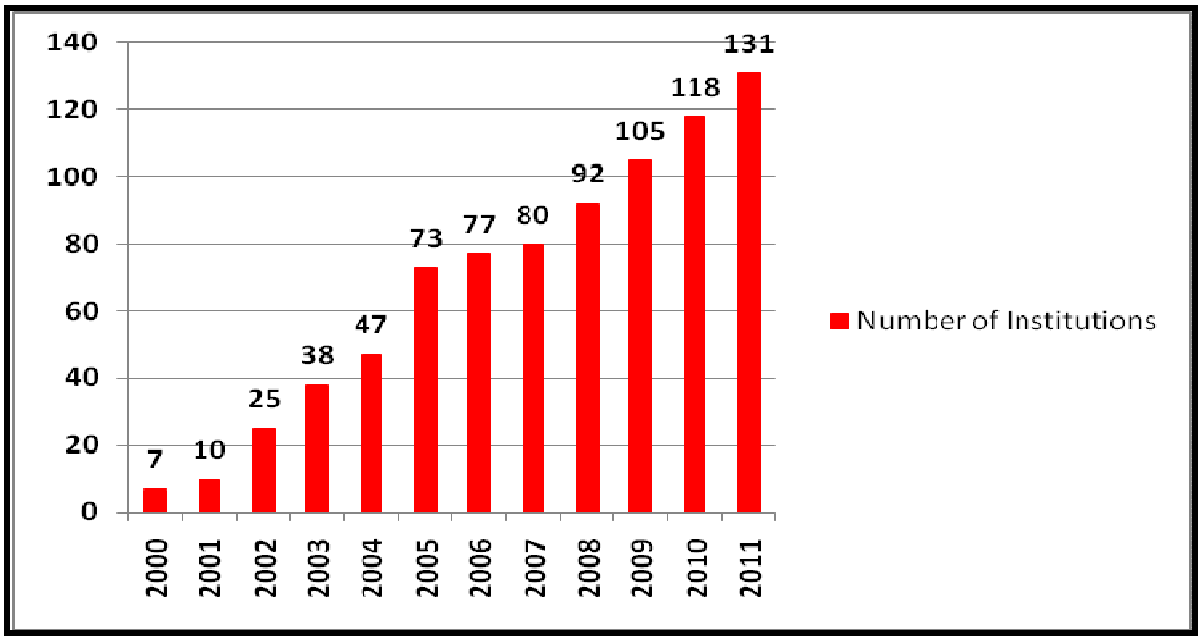

Chart 7: Number of institutions expected to adopt the DL mode for undergraduate courses: Forecast for the 2007 to 2011 period

Source: prepared by the author

5 FINAL COMMENTS

The expansion of distance learning (DL) within the context of higher education in Brazil and its trend for the beginning of the next decade are the main topics of this research study.

Statistical analyses were conducted to achieve the proposed objectives. The intention was to create a trend extrapolation of the number of accredited institutions that will offer DL higher education in Brazil, in order to answer the main question of the study: How many schools will offer undergraduate courses in the DL mode in Brazil in the next five years?

Provided that the current conditions are maintained, the number of schools that will adopt the DL mode should grow from 77 in 2006 to 131 in 2011. A major change in circumstances – as a result of laws, the economy or competition – could have an upward or downward impact on these figures.

In relation to the objectives of this study, we included the definition of DL, the related laws and the main aspects thereof, clarifying the regulations related to this learning mode, as well as the obligations that the institutions that plan to adopt this mode must comply with.

We also presented historical data and the trends for DL in the 2007 to 2011 period, as well as DL strengths and weaknesses as compared to classroom education. The strengths include time flexibility, scope and cost, whereas the weaknesses include cultural barriers and prejudice towards DL.

Therefore, the main conclusions on the researched topic are:

- ✓ The number of classroom courses is still much higher than the number of DL courses; however, all the analyzed variables show that DL has enjoyed stronger growth, as the number of institutions offering each of the modes indicates (DL grew by 1,000% vs. a 92.37% growth of classroom education from 2000 to 2006) and by the number of courses (DL: 3,390% vs. 108.80% for classroom education).
- ✓ In 2006, enrollment in DL was equal to 4.4% of the classroom enrollment, up from 0.06% in 2000.
- ✓ Still in 2006, 25,804 students graduated from DL courses, up from 131 in 2001.
- ✓ Although the number of institutions offering the classroom mode for undergraduate courses doubled from the year 2000 to 2006, the number of accredited institutions offering DL undergraduate courses increased 11 times in the same period.

Other qualitative conclusions reached by other studies in this field that corroborate this study's conclusions are as follows:

- ✓ Although the expected 'explosion' of DL is yet to materialize fully, the upcoming years will probably bring novelties, with emphasis on corporate education and continued education; this will also have an impact on traditional higher education courses (Porto & Régnier, 2003, p. 25).
- ✓ Data from the *Anuário Brasileiro Estatístico de Educação Aberta e a Distância (ABRAEAD, 2007)* clearly shows that this education mode is here to stay and that the trend is that it will increase significantly in the next few years. Although the said yearbook acknowledges that its survey is not complete, this publication, published by Instituto Monitor

(SP) with the support of ABED - Associação Brasileira de Educação a Distância (Brazilian Distance Education Association) counted more than two million (2,279,070) Brazilians enrolled in DL courses in 2006.

Some challenges must still be overcome, such as access to computers and to the Internet, and the development of trained personnel and of specific software for this mode of education. Another challenge is to lessen the prejudice against DL. However, there is no doubt that distance learning, or DL for short, is here to stay and will enjoy strong growth going forward. This is highly desirable in a country of continental size, in which only a small segment of the population has access to higher education.

REFERENCES

Anderson, D; Sweeney, D & Williams, T. (2003). *Estatística aplicada à administração e economia.* São Paulo: Pioneira Thomson Learning.

Anuário Brasileiro Estatístico de Educação Aberta e a Distância. (2007).

Aretio, L. A. G. (1994). *Educação a distância hoy*. Madrid: Universidad Nacional de Educación a Distancia.

Blois, M. M. (2004, Jan./Jun.). A busca da qualidade na educação superior à distância no Brasil: situação atual e algumas reflexões. *Revista Iberoamericana de Educação a Distância.* 7 (1), 97-111.

Canongia, C. et al (2001, Jun.). Convergência da inteligência competitiva com construção de visão de futuro: proposta metodológica de sistema de informação estratégica (SIE). *Data Grama Zero – Revista de Ciência da Informação*, *2* (3).

Cervo, L. C. & Bervian P. A. (1996). *Metodologia Científica* (4th ed.). São Paulo: Makron Books.

Decreto n. 2.494 (1998, April 10). *Regulamenta o artigo 80 da Lei 9.394/96,* Brasília, DF, Presidência da República. [Decree n. 2494].

Decreto n. 2.561 (1998, April 27). *Altera a redação dos arts. 11 e 12 do Decreto n. 2.494, de 10 de fevereiro de 1998, que regulamenta o disposto no art. 80 da Lei n. 9.394, de 20 de dezembro de 1996*. Brasília, DF, Presidência da República. [Decree n. 2561]

Decreto n. 5.622. (2005, December 20). *Regulamenta o artigo 80 da Lei 9.394/96*. Brasília, DF, Presidência da República. [Decree no. 5622]

Fontana, K. & Mendes, M. A. (2008). Educação corporativa e educação à distância. In: *Congresso Internacional de Educação a Distância, 32*. Rio de Janeiro, RJ, Brazil.

Hayes, R. H. (2002, spring). Challenges posed to operations management by the "new economy". *Production and Operations Management, 11* (2), 21-32.

Instituto Nacional de Pesquisas Educacionais e Ministério da Educação e Cultura. (2007). *Censo da Educação Superior de 2006.* Retrieved in December 2008, from www.edudatabrasil.inep.gov.br.

Instituto Nacional de Pesquisas Educacionais. (2006). *Sinopse estatística do ensino superior da graduação dos anos 2000 a 2006* [technical summary]. Retrieved in December 2008, from www.edudatabrasil.inep.gov.br.

Landim, C. M. M. P. F. (1997). *Educação a distância: algumas considerações*. Rio de Janeiro: Universidade Federal do Rio de Janeiro.

Lei Federal n. 9.394 (1996, December 20). *Estabelece as Diretrizes e Bases da Educação Nacional*. Brasília, DF, *Diário Oficial da União*. [Federal Law no.9394].

Martins, L. R. R. (2006, March). Educação superior a distância no Brasil: uma construção consorciada e em rede. *Liinc em Revista*, 2 (1), 71-85.

Martins, O. B. (2008, May/Aug.). Os caminhos da educação a distância no Brasil. *Revista Diálogo Educacional*, *8* (24), 357-371.

Massoud, C. (n.d.) Prospecção de cenários: método Delphi. Retrieved in December 2008, from http://www.clovis.massaud.nom.br/prospec.htm.

Palhares, R. (2005). A educação a distância: uma ilustre e ainda desconhecida modalidade de educação. *Anuário Brasileiro Estatístico de Educação Aberta e a Distancia*. São Paulo: Instituto Monitor.

Pimentel, N. M. (1995). O ensino a Distância na formação de professores. In: M. L. Belloni & J. J. da Silva Filho (eds.). *Perspectiva: educação e comunicação*. Florianópolis: Universidade Federal de Santa Catarina.

Portaria Ministerial n. 301. (1998, April 7). *Regulamenta o credenciamento e a oferta de cursos de graduação a distância*. Brasília, DF, *Diário Oficial da União*. [Ministerial Ordinance no. 301].

Portaria Ministerial n. 4.059. (2004, December 10). *Trata sobre o uso, pelas Instituições de Ensino Superior, de métodos a distância em até 20% da grade curricular. Revoga a portaria 2.253/2.001, que tratava do tema*. Brasília, DF, *Diário Oficial da União*. [Ministerial Ordinance no. 4059].

Portaria Ministerial n. 4.361. (2004, December 29). *Trata dos processos de credenciamento e recredenciamento de instituições de educação superior (HEI).* Brasília, DF, *Diário Oficial da União*. [Ministerial Ordinance no. 4361].

Portaria Ministerial n. 873. (2004, December 10). *Autoriza em caráter experimental, as Instituições Federais de Ensino Superior para a oferta de cursos superiores a distância.* Brasília, DF, *Diário Oficial da Union*. [Ministerial Ordinance no. 873].

Porter, A. L. & Detampel, M. J. (1995, July). Technology opportunities analysis. *Technological Forecasting and Social Change*, *49* (3), 237-255.

Porter, Alan. (1991). *Forecasting and management of technology.* New York: Willey-Interscience.

Porto, C. & Régnier, K. (2003). O ensino superior no mundo e no Brasil: condicionantes, tendências e cenários para o horizonte 2003-2025 – uma abordagem exploratória. *Anais do Seminário de Administração* [CD ROM], 6, São Paulo: Faculdade de Economia e Administração da Universidade de São Paulo.

Prahalad, C. K. & Hamel, G. (1995). Competindo pelo futuro: estratégias inovadoras para obter o controle do seu setor e criar os mercados de amanhã. Rio de Janeiro: Campus.

Schwartz, P. (1996). *The art of the long view: paths to strategic insight for yourself and your company*. New York: Currency Doubleday.

Vallario, R. et al. (1997). *Foresighting around the world: a review of seven best-in-kind programs*. USA: Battelle Seattle Research Center.

Ventura, G. C. (2006). Educação a distância no Brasil e no Canadá: visões, paisagens e perspectivas. *Revista Interfaces Brasil/Canadá, Rio Grande*, *6* (6), 165-174.