BRAZILIAN RESEARCH ON DISTANCE LEARNING, 1999-2003: A State-of-the Art Study

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Abstract: The purpose of this study was to "map" the production of scholarly works in the field of distance learning (DL) in Brazil, using as the corpus of analysis the masters and doctoral theses successfully defended in the country's graduate programs, as well as articles published in specialized scholarly journals. The corpus covered 847 titles, which were analyzed within the categories of general subject, coverage and year of appearance in the primary literature.

Keywords: Distance learning, Online Education, Virtual Education, Research, State-of-the-Art, Brazil.

I – Objectives and Delimitations of the Study

The objective of the study was to identify and analyze the themes emerging from research on Distance Learning (DL) in Brazil in the period 1999-2003. We concentrated our attention on the scholarly production represented by 847 works, seeking to construct a panoramic view of the national research effort, and organizing this primary literature so as determine tendencies, overlaping situations, gaps and challenges for further investigation.

Any analysis of the state-of-the-art of research in DL must constantly maintain in the background an understanding of the nature of theory and practice in the field, a vast, complex phenomenon which maintains numerous interfaces with related fields of educational endeavors. The multi-faceted nature of the phenomenon is reflected in the fields of knowledge which generate scholarly work in DL, such that the theses and articles which were the object of study here were brought forth from areas as different as Production Engineering, Mathematics and Statistics, Pedagogy, Communications, and others, each one with its particular paradigm and special

contribution to be made for comprehending DL. This dispersion of the literature is also compounded by the fact that, thoughout the world, research in DL is carried out not only in traditional academic institutions of higher learning, but as well in private companies, foundations, cultural organizations and by independent investigators.

Nevertheless, to orient our collection of the corpus of the literature which would permit us to identify a "state-of-the-art," we used the following criteria for inclusion of works:

- be the result of systematic investigation based on quantitative measurement or some qualitative study supported by clearly-expressed criteria;
- demonstrate originality in its aims and in its conclusions.

Hence, the corpus included principally the theses successfully defended in the *stricto sensu* (requiring a traditional dissertative study) graduate study programs in Education and other areas of knowledge, in the period 1999-2003, and the scholarly articles published in the same period in two of the principal journals of the field. Due to the incomplete coverage by official sources of theses produced in the country, we believe that a number of works may have escaped our attention, but that surely will be included in a future continuation of this study.

The significance of this type of study is that it fills a gap of infomation at the *meta* level, showing how large number of researchers in a unique, populous country, are conducting their work. Its results should be useful to graduate advisors in universities within Brazil and elsewhere, helping them to suggest topics for research to their advisees, and planning new developments in graduate programs concentrating on DL as a practice; it could also be helpful to other researchers and librarians as a guide to already-existing literature; it may well be an important strategic tool for local regional, national, regional and international agencies which support research or DL projects, as it furnishes indicators of tendencies and lacunas; and finally, it may serve as an stimulus to editors of learned journals who, seeing the lacunas of work in the area, can organize special issues of their publications, incentivating new research.

II – Methodology

A – Data Collection

The first stage of research consisted of locating the scholarly production related to DL, especially for the period 1999-2003, which was expected to reflect the increasing maturity of the Internet as a factor of growth in DL, and which in turn facilitated access to the studies themselves. Various sources were used to obtain references to the appropriate theses among the 33,000 graduate theses defended each year in Brazil: the *Banco Digital de Teses e Dissertações Eletrônicas do Instituto Brasileiro de Informação em Ciência e Tecnologia (IBICT), and Biblioteca Virtual de Educação a Distância do Prossiga* (CNPq – Conselho Nacional de Desenvolvimento Científico e Tecnológico). But due to the incompleteness of these sources, we were forced to consult the virtual libraries of the academic institutions themselves: *Saber* and *Dedalus* of the University of São Paulo; *Lumen* of the Pontifical Catholic University of São Paulo; *Banco de Teses* of the University of Brasília; *Biblioteca Digital* of the Federal University of Rio Grande do Sul; *Banco de Teses e Dissertações* of the Federal University of Santa Catarina; *Banco Minerva* of the Federal University of Rio de Janeiro; and the *Biblioteca Digital* of the State University of Campinas, São Paulo.[1] The scholarly articles were located in the data base of ABED – the Brazilian Association for Distance Education, whose records yield the papers approved in the international congresses and national seminars organized by that Association, as well as the articles published in its new online journal, RBAAD-Brazilian Review of Open and Distance Learning; and also pertinent papers contained in the Annals of the National Congresses of ANPED – National Association Graduate Studies and Research in Education.

Retrieval of the titles was done through the search terms "distance education" (*educação à distância*), "teaching at a distance" (*ensino à distância*), "learning at a distance" (*aprendizagem à distância*), "education on-line" (*educação on-line*), "teaching on-line" (*ensino online*), "learning on-line" (*aprendizagem on-line*), "virtual education" (*educação virtual*), "virtual teaching" (*ensino virtual*), "virtual learning" (*aprendizagem virtual*), carried out in the search engines of these data bases.

All works which fell into the "generations" of DL were included, namely, correspondence courses, tele-education (synchronous), multi-media models, and flexible learning (asynchronous, through the Internet). In all cases, the minimum information required for inclusion was: complete title, name of author ou authors, institutional identification, key-words, abstract and year of defense ou publication. In some 4 to 5 % of works found, it was impossible to discover the year of production, and these items were not included.

B – Treatment of the Data

Once the pertinent works were identified, a digital record was established for each (32 doctoral dissertations, 459 masters theses and 356 journal articles) in a data base specially-prepared to manage this bibliographic information.[2] The data base was structured so as to offer a visually-friendly form for each register containing rather complex information, as the following figure shows:

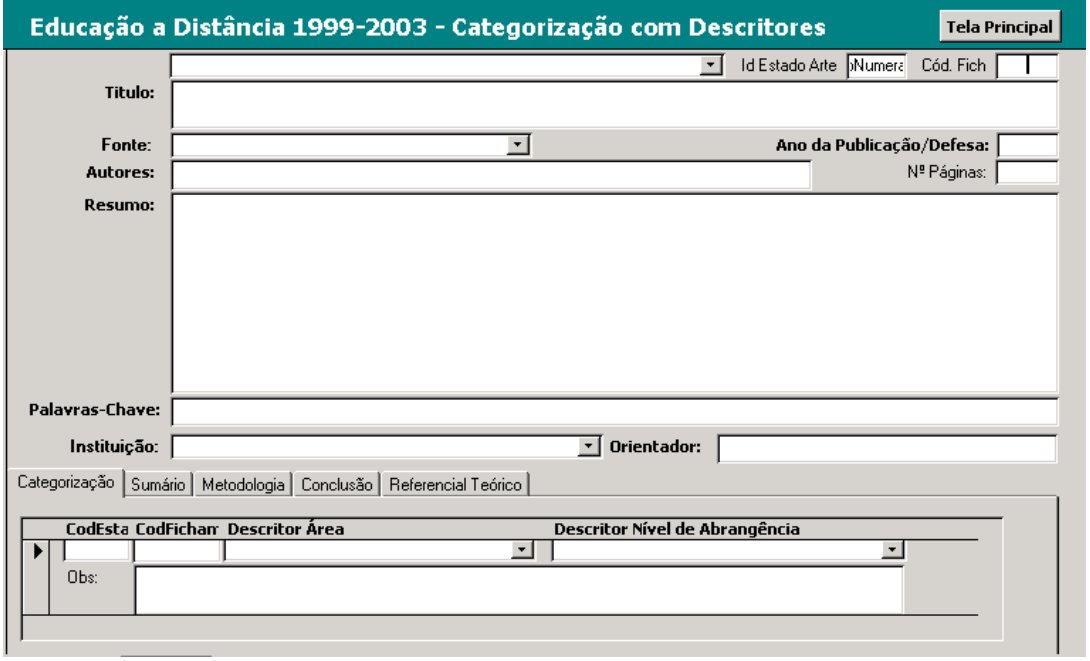

Figure 1 – Example of the principal screen of the data base management system

Initially, the dissertations, theses and articles were indexed together with the bibliographic references, the key-words and the abstracts indicative of the contents. Later on, the research staff filled out additional forms with analytical data, including a classification by categories and range of coverage.

Once this stage had been reached, with the forms for indexing and classification filled out, statistics as to categories, coverage, instituitional origem and year of defense/publication were generated, preparing the data for interpretation by the staff. To facilitate analysis, seven grand categories were established:[4]

- **Philosophy, Policies and Strategies**: general principles, strategies, politics and goals of distance education, general and local history of DL;
- **Content and Skills**: cultural school content, out-of-school, values, attitudes, basic intellectual and technical skills;
- **Pedagogies and Technologies**: doctrines, principles and methods of distance education aided by information and communication technologies;
- **Support and Services**: physical and virtual infra-structure, help network and DL projects;
- **Management and Logistics**: articulation of human, material and financial resources for carrying-out DL projects;

- **Research and Evaluation**: qualitative and quantitative descriptions of student performance, of the internal didactic situation created by the institution and by agents of the teaching-learning process;
- **Quality Assurance and Certification**: evaluation of teaching quality and of the results of the education given by external and central authorities, the certification of competencies, of proficiency and professional qualification.

These categories are used by the ICDE-International Council for Open And Distance Learning to classify the themes of sessions in its World Conferences on Open and Distance Learning. To a certain extent, the categories reflect the process involved in DL: a general definition of principles and strategies, selection of content and skills, choice of educational methods and techniques, organization of the support infrastructure, implantation management, evaluation and certification. We refined somewhat the domains of the categories by extracting definitions from the *Thesaurus Brasileiro de Educação* (Brazilian Thesaurus of Education) in relation to the first two hundred titles found.

- **Corporate Education**: training, professional development and updating in the environment of companies, public, private and non-governmental organizations;
- **Education of Young Adults**: initiatives directed at benefitting young adults with little schooling and educational programs geared specifically to young people and adults;
- **Special education**: programs directed at the education of persons with physical or mental disabilities ;
- **Infant Education**: educational programs for children from 0 to 10 years of age;
- **Primary Level Schooling**: programs of basic, oligatory schooling;
- **Secondary Level Schooling**: post-primary level schooling, with a view towards deepening basic learning, preparation for work and educating the fully-rounded citizen; it includes programas of vocational-technical training;
- **Higher Education**: programs of undergraduate studies and graduate studies (with and without theses);

- **Education in Social Movements**: programs related to education for the environment, syndicates, movements of those without land, re-education of prisoners, etc.;
- **Teacher Training**: governmental and private initiatives to augment the degree of schooling of teachers or to prepare them for distance education or for the use of information and communication technologies in the classroom;
- **Multi-Faceted Applications**: research applicable to all or more than just one area of coverage.[4]

III – Results

A – Overall View of the Data

We observed significant productivity among the masters-degree programs (459 theses, or 54% of the total of works found) and in the papers presented in scholarly meetings (356 papers, or 42% of the total), but the field appears to be very modest in producing advanced studies at the doctoral level (32 works, corresponding to only 4% of the total). Ninety percent of the papers (321 in absolute numbers) were contributions to the international and national meetings organized in the period by ABED-the Brazilian Distance Learning Association. Ten percent of the articles (35) were prepared for the annual meetings of ANPED-the Association for Graduate Studies and Research in Education, in particular for the Group in Communication and Education. With regard to the theses, it was possible to analyze the contributions of the principal institutions, state by state and by region in the country, revealing the noteworthy case of the high productivity of the State of Santa Catarina, in the south of the country, especially the Federal University of Santa Catarina, where there was a fortuitous union of circumstances (forward-looking leadership and able management, strong financial support from State and Federal governments and the realization of a large number of DL projects for internal and external partners) all of which resulted in the generation of an extraordinary number of papers and theses.[5]

Table 1 – Theses and Dissertationss on Distance Learning (1999-2003) by Region, State and Institution

Region	Titles	%	State	Titles	%	Institution	Titles	%
South	381	77,60	SC	368	74,95	Federal University of Santa Catarina (UFSC)	368	74,95
			RS	13	2,65	Federal University of Rio Grande do Sul (UFRGS)	13	2,65
Southeast	82	16,70	SP	69	14,05	University of São Paulo (USP)	29	5,91
						Pontifical Catholic University of São Paulo (PUC-SP)	19	3,87
						State University of Campinas (Unicamp)	11	2,24
						Federal University of São Carlos (UFSCar)	10	2,04
			RJ	13	2,65	Federal University of Rio de Janeiro (UFRJ)	13	2,65
Center-West	28	5,70	DF	28	5,70	University of Brasília (UnB)	28	5,70
Totals	**491**	**100,00**	**Totals**	**491**	**100,00**	**Totals**	**491**	**100,00**

B – Interpretation by Year of Publication

We observed a very positive rate of growth beginning in 1999 (62 titles, or 7.32% of the total), with production growing in each subsequent year (62 titles, or 15.23% of the total in 2000; 160 titles, or 18.89% of the total in 2001), and practically doubling in growth in 2002 (288 titles, or 34% of the total). The reduction of productivity in 2003 (208 titles, or 24.56% of the total) could be in part a consequence of the so-called "explosion of the bubble," the 2000-2001 phenomenon when the overheated NASDAQ investment market collapsed, weakening belief in the possibilities of companies, government and society in dot.com ventures and in the revolutionary power of technology in general. Another cause might have been the re-structuring of the highly productive Graduate Program in Production Engineering at the Federal University of Santa Catarina, due to the criticism, by an evaluating committee sent by the Ministry of Education, of the program having too many students per advisor. Nevertheless, the annual "distribution"of the titles among theses, dissertations and scholarly journal articles shows reasonable coherency, with the exception of 2001, when the number of articles was rather low in relation to the annual average of articles (71.20%) and in relation to the number of theses and dissertations successfully defended.

Table 2 – Titles in Distance Learning by Year of Publication

Year of publication	Dissertations	%	Articles	%	Totals	%

	and Theses					
1999	31	6,31%	31	8,71%	62	7,32%
2000	54	11,00%	75	21,07%	129	15,23%
2001	147	29,94%	13	3,65%	160	18,89%
2002	158	32,18%	130	36,52%	288	34,00%
2003	101	20,57%	107	30,06%	208	24,56%
TOTAL	**491**	**100%**	**356**	**100%**	**847**	**100,00%**

C – Interpretation by Category and by Coverage

As explained earlier, a qualitative analysis of the total grouping of theses and journal articles treating DL would depend upon the definition of the categories and of the types of coverage appearing in the works found. Table 3 represents the confrontation of the two different classifications, and offers a more detailed view of that which Brazilian researchers of the period in question were looking at when they investigated DL.

Table 3 – Titles on Distance Learning (1999 - 2003) by Category and Coverage of Subject

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Categoria	Titles	%	Continuing Education	Corporate Education	Education of Youth	Special Education	Infant Education	Education Sociai Movements	Primary Schooling	Secondary Schooling	Higher Education	Teacher Training	Multi-Application
Titles	**847**	**100,0%**	**47**	**46**	**14**	**26**	**8**	**9**	**37**	**35**	**174**	**111**	**340**
%			**5,5%**	**5,4%**	**1,7%**	**3,1%**	**0,9%**	**1,1%**	**4,4%**	**4,1%**	**20,5%**	**13,1%**	**40,1%**
Philosophy, Policies and Strategies	**146**	**17,2%**	**8**	**6**	**5**	**2**	**1**	**4**	**3**	**4**	**17**	**36**	**60**
(%) in relation to total			**0,9%**	**0,7%**	**0,6%**	**0,2%**	**0,1%**	**0,5%**	**0,4%**	**0,5%**	**2,0%**	**4,3%**	**7,1%**
(%) in relation to coverage			5,5%	4,1%	3,4%	1,4%	0,7%	2,7%	2,1%	2,7%	11,6%	24,7%	41,1%
(%) in relation to categories			17,0%	13,0%	35,7%	7,7%	12,5%	44,4%	8,1%	11,4%	9,8%	32,4%	17,6%
Content and Skills	**70**	**8,3%**	**6**	**1**	**0**	**4**	**2**	**3**	**11**	**9**	**9**	**4**	**21**
(%) in relation to total			**0,7%**	**0,1%**	**0,0%**	**0,5%**	**0,2%**	**0,4%**	**1,3%**	**1,1%**	**1,1%**	**0,5%**	**2,5%**
(%) in relation to coverage			8,6%	1,4%	0,0%	5,7%	2,9%	4,3%	15,7%	12,9%	12,9%	5,7%	30,0%
(%) in relation to categories			12,8%	2,2%	0,0%	15,4%	25,0%	33,3%	29,7%	25,7%	5,2%	3,6%	6,2%
Pedagogy and Technologies	**298**	**35,2%**	**12**	**9**	**5**	**14**	**4**	**2**	**19**	**9**	**67**	**44**	**113**
(%) in relation to total			**1,4%**	**1,1%**	**0,6%**	**1,7%**	**0,5%**	**0,2%**	**2,2%**	**1,1%**	**7,9%**	**5,2%**	**13,3%**
(%) in relation to coverage			4,0%	3,0%	1,7%	4,7%	1,3%	0,7%	6,4%	3,0%	22,5%	14,8%	37,9%
(%) in relation to categories			25,5%	19,6%	35,7%	53,8%	50,0%	22,2%	51,4%	25,7%	38,5%	39,6%	33,2%
Support and Services	**132**	**15,6%**	**9**	**8**	**0**	**3**	**1**	**0**	**2**	**4**	**22**	**7**	**76**
(%) in relation to total			**1,1%**	**0,9%**	**0,0%**	**0,4%**	**0,1%**	**0,0%**	**0,2%**	**0,5%**	**2,6%**	**0,8%**	**9,0%**
(%) in relation to coverage			6,8%	6,1%	0,0%	2,3%	0,8%	0,0%	1,5%	3,0%	16,7%	5,3%	57,6%
(%) in relation to categories			19,1%	17,4%	0,0%	11,5%	12,5%	0,0%	5,4%	11,4%	12,6%	6,3%	22,4%
Management and Logistics	**118**	**13,9%**	**11**	**15**	**2**	**2**	**0**	**0**	**1**	**7**	**45**	**13**	**22**
(%) in relation to total			**1,3%**	**1,8%**	**0,2%**	**0,2%**	**0,0%**	**0,0%**	**0,1%**	**0,8%**	**5,3%**	**1,5%**	**2,6%**
(%) in relation to coverage			9,3%	12,7%	1,7%	1,7%	0,0%	0,0%	0,8%	5,9%	38,1%	11,0%	18,6%
(%) in relation to categories			23,4%	32,6%	14,3%	7,7%	0,0%	0,0%	2,7%	20,0%	25,9%	11,7%	6,5%
Research and Evaluation	**69**	**8,1%**	**1**	**4**	**2**	**1**	**0**	**0**	**1**	**2**	**13**	**3**	**42**
(%) in relation to total			**0,1%**	**0,5%**	**0,2%**	**0,1%**	**0,0%**	**0,0%**	**0,1%**	**0,2%**	**1,5%**	**0,4%**	**5,0%**
(%) in relation to coverage			1,4%	5,8%	2,9%	1,4%	0,0%	0,0%	1,4%	2,9%	18,8%	4,3%	60,9%
(%) in relation to categories			2,1%	8,7%	14,3%	3,8%	0,0%	0,0%	2,7%	5,7%	7,5%	2,7%	12,4%
Quality Assurance and Certification	**14**	**1,7%**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**4**	**6**
(%) in relation to total			**0,0%**	**0,4%**	**0,0%**	**0,0%**	**0,0%**	**0,0%**	**0,0%**	**0,0%**	**0,1%**	**0,5%**	**0,7%**
(%) in relation to coverage			0,0%	1,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,3%	1,3%	2,0%
(%) in relation to categories			0,0%	6,5%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,6%	3,6%	1,8%

With relation to the Categories, we can offer the following observations:

- The research category which most stood out is that of **Pedagogy and Technologies** (35.18% of the total), focused principally on **Multi-Faceted Applications**, **Higher Education** and **Teacher Training** (which together represent 75.2% of the titles). It is possible to observe here a strong intention of approximation between two complementary areas in on-line DL: researchers experienced in technology acquiring the theoretical background necessary to make pedagogical decisions, and researchers from the field of education seeking to incorporate the fundamentals of computer science to their investigations. It is perhaps worthy of note that, in the classification process, we included in the category **Pedagogy and Technologies** those works which emphasized the relation between technological tools and learning. The creation of new software, the study of physical support networks and all other research directed at technological development in its strictest sense were classified as **Support and Services**.
- It is possible to note, in second ranking order, the high concentration of research in the area of **Philosophy**, **Policies and Strategies** (17.2%), which indicates strong interest in "thinking about" DL in the present context or in a historical framework, and examining possible wider implications of politics and policies. Also salient are the concentrations of interest in **Multi-Faceted Applications** and **Teacher Training** (together reaching 65.8%), indicating a tendency more towards theory than towards the different levels or contexts of applications. One could also note here a distinction between the categories of **Management and Logistics**, which includes the analytical investigation of administrative policies, and the results of projects already terminated or still in progress, and that of **Philosophy**, **Policies and Strategies**, which tended to deal more with questions of justifications for projects and policies.

- In the category **Support and Services** (15.6% of all the titles), 57.6% were classified as covering **Multi-Faceted Applications**. A preponderance of titles in this area were directed at the study of audio-conferencing, video-conferencing, environments for virtual learning, mobile computational technologies, and tools for simulation, though in general they were not tied down to any specific application context.
- The works collected under **Management and Logistics** were fourth in the ranking, with 13.9% of the total, of which 38.1% focused on **Higher Education**. This was, in fact, the only category in which a specific application focus held more titles than that of **Multi-Faceted Applications** (18.6%). Most of the works were journal articles, theses and dissertations which described projects and initiatives in DL within **Higher Education** programs or courses. One can also note here attention given to **Corporate Education** (12.7%), **Teacher Training** (11.0%) and **Continuing Education** (9.3%).
- The category **Content and Skills**, although representing only 8.4% of all the works encountered, merits a more detailed analysis with regard to the fields of knowledge involved. Of the 70 titles found, 60% were concerned with the teaching of Portuguese language (including literacy) and Mathematics (with emphasis on Geometry and Statistics), followed by 14% for Foreign Languages (especially English and Spanish), 11% for Physics, Chemistry and Biology, 9% for Computer Science (including entry-level learning and programming logic), 3% for History and Geography, and 3% for Physical Education. In the case of the 30% grouped in **Multi-Faceted Applications**, it was possible to oberve interest in the developmentof general skills such as verbal expression, logical thinking and digital "fluency," as well as strong interest in **Secondary School Education** and **Higher Education** (each with 12.9%), revealing greater concern with the teaching of specific contents.
- **Research and Evaluation** followed, with 8.1% of all titles, a somewhat low indicator of interest, but which perhaps can be explained by the incipiency of on-line learning and the

newness of practical experience with it. Almost 61% of these titles suggested that dealt with **Multi-Faceted Applications**, revealing that most probably they were generalized discussions of the question of evaluation in DL.

- Truly disappointing was the indicator of 1.7% (merely 14 titles) in the category **Quality Assurance and Certification**, though we were not surprised by the distribution of the coverage: **Multi-Faceted Applications** had 6 titles, consistent with the line of generic studies identified in the prior categories; **Teacher Training**, with 4 titles, probably the result of Article 87 of the Brazilian Government's *Law of Policies and Directives of Education*, of 1996, which, concerned with the high number of "lay teachers" (primary school teachers who themselves never finished their own high school studies—in fact, some 16% of Brazil's 2.4 million schoolteachers do not possess the legally-required years of schooling, hence the great interest in DL projects to diminish this sorry state), establishes 2007 as the target for serious application of the laws regarding teacher preparation; **Corporate Education**, with 21.4%, understandably concerned with quality assurances and performance results.

With regard to **Coverage**, we can offer the following observations:

- As was mentioned above, we rather suspect a certain superficiality in the research works found by us, since in almost categories, with the exception of **Management and Logistics**, the coverage indicated is that of **Multi-Faceted Applications**: **Philosophy, Policies and Strategies** (41.1%), **Content and Skills** (30%), **Pedagogy and Technologies** (37.9%), **Support and Services** (57.6%), **Research and Evaluation** (60.9%), and **Quality Assurance and Certification** (42.9%). This could, of course, indicate a "pulverizing" of the thinking behind each research project, making quite difficult any serious deep investigation or reflection with regard to a specific action or areas, and thereby little chance for arriving at significant conclusions.

- **Higher Education** concentrated 20.5% of the titles, with emphasis on **Pedagogy and Technologies** (38.5%), and **Management and Logistics** (25.9%). It was possible to see among the titles, a tendency to re-think methodological questions of teaching provoked by the introduction of new technologies into undergraduate and graduate studies, an institutional movement responding to this new modality in education.
- It is interesting to note that 72% of the 111 titles in **Teacher Training** (which represent 13.1% of the total) are "situated" between the categories of **Pedagogy and Technologies** and **Philosophy, Policies and Strategies**, indicating an approach to problems which is more generalist and geared to the production of essays than to the experimental or quantatative, and perhaps distant from useful improvements in educational practices. The noteworthy appearance of **Quality Assurance and Certification** (28.6%) in this context has already been commented upon.
- Surprisingly, companies are encouraging research in **Corporate Education** (5.4%), more than was noted in **Education of Youth and Adults** (1.7%), **Special Education** (3.1%), **Infant Education** (0.9%), **Primary School Education** (4.4%), and **Secondary School Education** (4.1%). Not surprisingly, however, the focus of these investigations involved **Quality Assurance and Certification** (21%) and **Management and Logistics** (13%).[6]

IV – Principal Conclusions

Long seen as a palliative, a supplement for the education of adults with little or no schooling, distance learning is recent years has reached the status of a privileged solution for adults engaged in the marketplace, in the world of consumerism, and as citizens in a democratic society. The political, economic and social transformations of the last two decades, sometimes called the entry into the Knowledge Society, allied with the explosion

in all sectors of information and communications technologies, have contributed to the renewal of interest in distance learning in the most varied range of experiences, but especially that of adults who must maintain themselves in a continuous process of personal and professional development, preferably taking advantage of the convenience represented by learning *anytime* and *anywhere*, a possibility made a reality by the technological connections now available. Keeping this scenario in mind, the results of the present study reveal a large contingent of "new players" on the stage -- researchers who are approaching an "old" theme (distance education), dressed now in new "apparel" (on-line distance learning) – provoking a return to fundamentals on the part of those who do not yet possess a solid basic preparation in the field.

A rapid analysis of the key-words attributed by authors to their works revealed a certain degree of insecurity on their part, seen in the highly generic, over-reaching and repetitive terms used. Even in abstracts as brief as 250 words, we could sense the introductory character of the thinking, the need to "warm-up" the discussion before entering into the principal subject of the study, as if all investigations in the field of distance learning had to begin with a defense of its importance. In addition, remembering that we are discussing a body of scholarly literature which inevitably intersects with almost all of the social sciences (52.4% of the titles were classified within the categories **Pedagogy and Technologies** and **Philosophy, Policies and Strategies**), it should come as no surprise that most authors felt it necessary to establish, initially, what was to be understood by the basic concepts to be touched upon. Such clarification became even more urgent in the present moment of substantial social, economic and political changes, which in turn oblige us to re-think older concepts and paradigms (Filatro, 2004, Chapters 1 and 2), but, when all

is said and done, depicts a backdrop of research effort which is still incipent and somewhat shallow.

Consequently, as a rather recent area of study in the academic world, research in DL has revealed itself to be more a form of self-learning for those who wish to study and practice this educational approach. Considering the lack in Brazil of a broad range of offerings of undergraduate and graduate programs to prepare professionals in DL, the possibility of carrying out research on the subject for advanced degrees at least offers encouragement to enthusiastic begineers.

When we join several blocks of the categories and coverages already analyzed, we observe, with surprise, that only 13.7% of the total number of titles deal with non-formal education (continuing education, corporate education, education of youth and adults and education in social movements). If the explosion of DL accompanies the relocation of education within society, into a place more central and essential, then the research connected with it seem much too attached to systems of formal education, which was the subject of 29% of the titles distributed among **Primary School Education** (4.4%), **Secondary School Education** (4.1%), and **High Education** (20.5%). This last indicator does indeed cause concern, given the Brazilian Ministry of Education's ambivalence on the question of tertiary-level DL (Litto 2002).[7]

The indicator of research focused on **Teacher Training** (13.1%) likewise seems low if we consider the enormous problem of human resources that Brazilian education is currently facing (the Census of 2000 revealed that only 47.3% of the primary school teachers in the country have college degrees, and since then, many programs of distance learning for in-service teachers have begun throughout the country). **Special Education** also had a disappointing number of titles (3.1%), contrasting with the needs of the country,

which, according to the government's Census of 2002, has 24.6 million inhabitants with special needs (14.5%).

V – Recommendations and Challenges

The 847 works examined for this study revealed some clear patterns of development of the research community in DL in Brazil. A large part of the literature produced in the period serves to demonstrate the importance of DL in the present context of social and economic development in the country. Many researchers defended the implementation and regulation of DL, and as well investigated methodological and technological possibilities; they analyzed modernized organizational structures, and proposed new forms of developing contents and skills, but they still left much to be done. Considering how recent it is that DL began to make new conquests as an alternative and effective approach to education, gaining credibility in the minds of politicians and the society in general, it behooves us to incentivate future research which will offer subsidies to the formulation of public policies and the formation of educational agents specialized in DL, so as to find appropriate solutions for many of the most pressing problems afflicting education in Brazil: improving teacher qualification, especially at the primary, secondary and tertiary levels; reaching out to minorities and persons with special needs in the population; and making access to learning in remote geographic areas of this vast country more democratic and more convenient.

Finally, recognizing the present limits of the range of coverage of the works found by us, and which do not permit us to advance beyond the interpretations and conclusions already offered above, we intend to repeat this study, applying the same methodology to a larger group of research-producing institutions, and refining the system of knowledge management we developed, in order to probe more deeply into the qualitative analysis of the data, such that we can compare the incidence of key-words selected by authors; analyze questions of research methodologies used by authors;

examine and collate the bibliography used by authors; and furnish to readers more detailed classifications of the material found, especially with greater historical details.

VI – Notes

[1] Although the institutions which follow have been mentioned in the two principal virtual respositories of theses and dissertations, they do not make available through on-line access enough information about the contents of their theses to have been useful for this project: Salesian University Center (UNISAL), Regional University of of the Northwest of the State of Rio Grande do Sul (UNIJUR), Paulista State University (UNESP), Federal University of Ceará (UFC), Federal University of Paraná (UFPr), Catholic University of Brasília (UCB), State University of Rio de Janeiro (UNERJ), Catholic University of Campinas (PUCCAMP), Federal University of Pará (UFPa), Pontifical Catholic University of Rio de Janeiro (PUC-Rio), Federal University of Santa Maria (UFSM), State University of Ceará (UECE), Federal University of Lavras (UFLA), Federal University of Espirito Santo (UFES), University of the Vale do Paraíba (UNIVAP), Federal University of Bahia (UFBa), Federal Rural University of Pernambuco (UFRPe), Pontifical Catholic University of Rio Grande do Sul (PUC-RS), Federal University of São Paulo (UNIFESP).

[2] The data base management system Sigma ® works with the data base software Microsoft Access and SQL Server, and programming language Active Server Pages (ASP), using the Web Internet Information Server for publication of web pages.

[3] See www.icde.org and www.inep.gov.br .

[4] It should be noted here that, due to the incipient nature of much of the research in DL in Brazil at this time, those authors who do explain clearly the context in which their research was involved, had their works classified by us as covering many areas, hence the designation **Multi-Faceted Applications.**

[5] The numeric superiority of the Federal University of Santa Catarina as a producer of research in DL in the period is related to the significant investments made in the UFSC program by the government of that State in teacher training through DL, by private companies who wished to offer advanced training at the masters level to their employees, and by trade unions in various fields of endeavor—all choosing to use DL as the principal mode of delivery, whether through videoconferencing, the web, or both.

[6] It would be useful to compare this data with the distribution of members of ABED: 50% university professors and institutions; 30% corporate personnel and companies; 10% national-level vocational training institutions such as SENAI, SESI and SENAC; 5% teachers and schools; 5% NGO's, museums and libraries (2004 data).

[7] Data collected in 13 June 2004 by the Ministry of Education's Secretariat for Higher Education reveal that of 1,900 institutions of higher education operating at the present time in the country, only 29 institutions have been authorized to grant diplomas for undergraduate courses given through DL. 36 institutions have been authorized to award certificates to those completing DL courses at a level somewhere *between* a bachelor's and a master's degree ("lato sensu" is the term used in Brazil), and 4 institutions have been authorized by the Secretariat to give diplomas to those finishing DL "sequencial courses". At the same time, the Secretariat admits to there being a waiting list of over 4,000 requests for beginning DL courses at the university level and no perspective of having conditions to examine these requests for authorization within the near future. (See: www.mec.gov.br/sesu/educdist.shtm#institutions .

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Internet URL's

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- Data Base of Papers Presented in Annual Meetings of ABED (Brazilian Association for Distance Education): www.abed.org.br
- Data Bse of Theses, UnB - University of Brasília: www.teses.cpd.unb.br/
- Data Base of Theses, UFSC - Federal University of Santa Catarina: http://teses.eps.ufsc.br/tese.asp
- Data Base of Theses in Digital Form, IBICT - the Brazilian Institute for Information in Science & Technology: http://bdtd.ibict.br/bdtd/
- Data Base Minerva of the Federal University of Rio de Janeiro: www.minerva.ufrj.br/
- Digital Library of UFRGS - Federal University of Rio Grande do Sul: www.biblioteca.ufrgs.br/bibliotecadigital/
- Digital Library of UNICAMP – State University of Campinas: http://libdigi.unicamp.br/document/search.php
- Virtual Library of Distance Education of Prossiga – CNPq (National Council for Scientific & Technological Development): www.prossiga.br/edistancia/
- Dedalus USP – University of São Paulo: http://www.usp.br/sibi/

- IBGE (Brazilian Institute of Geography & Statistics): www.ibge.gov.br
- ICDE (International Council for Open and Distance Education): www.icde.org
- INEP (National Institute for Pedagogical Studies): www.inep.gov.br/pesquisa/thesaurus
- Lumen PUC-SP – Pontifical Catholic University of São Paulo: http://lumen.pucsp.br/

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