Development prospects for distance higher education in Brazil - new technologies for the construction and dissemination of education

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Abstract

This article discusses the development prospects for distance higher education in Brazil. To this end, it recognizes the rapid growth during the last ten years. Consideration has been given to the legal aspects that require changes and improvements to guidelines to achieve high quality education for the masses. The databases that have been used are; The Higher Education Census 2013, Challenges and Prospects of the Brazilian Higher Education for the Next Decade - 2011/2020 (book), and The Technological Outlook for the Brazilian Universities (document). The analysis of information from these resources cover the different approaches, assessment of key trends and emerging technologies that should be adopted by the distance education university over the next five years. It concludes with the importance of the new information and communication technological tools that are available for the construction and dissemination of education.

Key Words: e-learning, distance education, emerging technologies, higher education.

1. Introduction

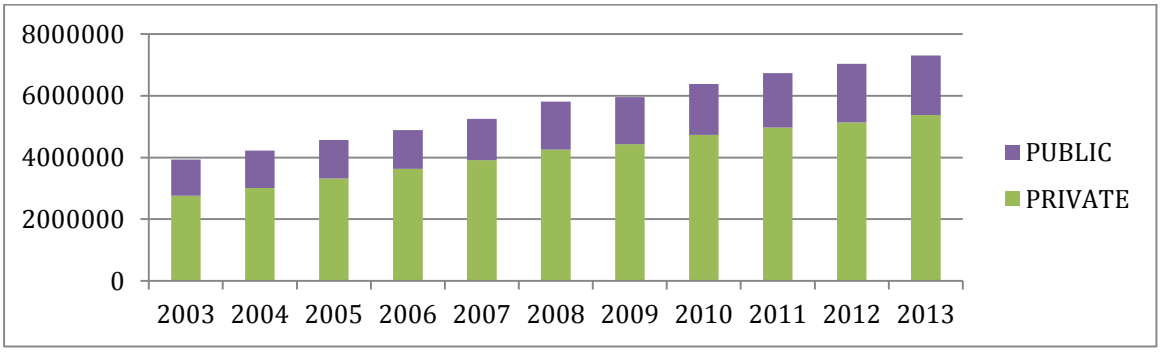
Historically, Brazil's distance education programs were unsuccessful due to the vast number of students failing to complete the courses they had enrolled for. We are currently living in a time of educational transition, where the distance learning concept needs to be evaluated from a new perspective to reach more potential learners and ensure course completion and thus gain more credibility. In this scenario we have evaluated the changes in specific laws, and highlighted questions about infrastructure and support needs by educational institutions. The importance of new information and communication technologies which use new physical configurations and technological infrastructures coupled with adequate and sufficient human resources offering higher distance education, which exceeds the teaching method of transferring information through classroom teaching.

To manage distance education, a media support plan is required, which has to include the choice of appropriate technological resources for the specific requirements of each course, and one which considers the social, cultural, technological, educational and economic variables. In other words, it is necessary that each course's variables are evaluated, so that the choice of media used is appropriate for the profile of each student, bearing in mind the pedagogical process, the proposed learning objectives and taking cognisance of time required to measure its success.

2. Expansion of Distance Education in Brazil

One major factor that has contributed to the expansion of distance education in Brazil over the last ten years has been the opening of higher education to the private sector. According to Sampaio (2011) this fact is related, among other issues, to the process of transformation since the end of the twentieth century, when the Brazilian Constitution of 1988 and the Law of Guidelines and Bases of 1996 were drafted in order to meet the critical demand for higher education, allowing private institutions to become universities, thereby, giving them more authority [1].

Graph 1 - Evolution of Enrollment of Undergraduate Higher Education, by Administrative Category - Brazil, 2003-2013



Source: INEP / MEC. Higher Education Census, 2013.

From analysis of data provided by the Higher Education Census 2013 [2], prepared by the Ministry of Education (MEC) and the Institute of Educational Studies Teixeira (INEP), which represents data between 2003 to 2013, and with the participation of private institutions through enrollment, it can be seen that in 2003, 30% of students (1,176,174) were enrolled in public institutions, while 70% (2,760,759) were in private institutions compared to 2013 where 26% (1,932,527) were enrolled in public institutions and 74% (5,373,450) were in private institutions. The data also highlights the increase in total enrollment in higher education which was 3,369,044 over this 10 year period, 2003 had 3,936,933 registrations versus 7,305,977 in 2013, which represents an increase of 85%, as indicated in graph 1. Thus, over this 10 year period there was a significant increase in enrollment in higher education, due to the increase in private distance education universities.

Table 1 - Number of Institutions of Higher Education and Number of Undergraduate Admissions for Academic organization, Brazil - 2013

Academic Organisation	Institution		Undergraduate Enrollment	
	Total	%	Total	%
TOTAL	2.391	100	7.305.977	100
Universities	195	8,2	3.898.880	53,4
University Centres	140	5,9	1.154.863	15,8
Colleges	2.016	84,3	2.131.827	29,2
Federal Technology Institutions	40	1,7	120.047	1,6

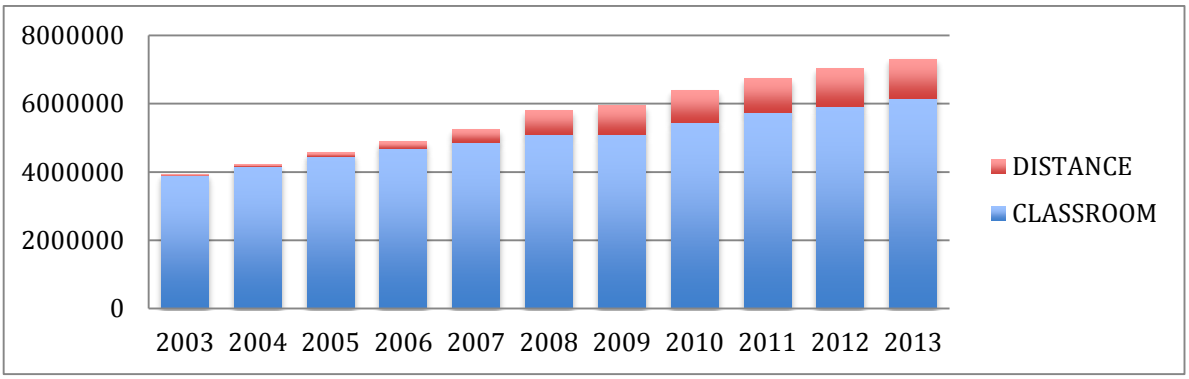
Source: INEP / MEC. Higher Education Census, 2013.

The Higher Education Census [2] corroborates Sampaio's assertion that allowing the transformation of private institutions to universities has contributed to their significant growth [1]. In 2013 of the 2,391 higher

educational institutions in Brazil, only 8.2% were universities and accommodated 53.4% of the students, followed by the colleges that held an 84.3% stake, but only accommodated 29.2% of the students. The university centers comprised of 15.8% of undergraduate enrollments, and federal technology institutions, 1.6% (Table 1).

For better understanding, we have used the categories as per_Art.12 of Decree 5773; accredited colleges, university centers or universities, depending on their respective academic competencies [3]. Initially, institutions are accredited as colleges, and then, depending on their academic compentecies they may request accreditation as a university or university center. If they meet the required standard of quality, as defined by the Ministry of Education (MEC), this will give them greater authority to create courses. Federal technology institutions are accredited by The Department of Vocational and Technological Education and offer professional courses at college level, in conjuction with professionals in the private sector.

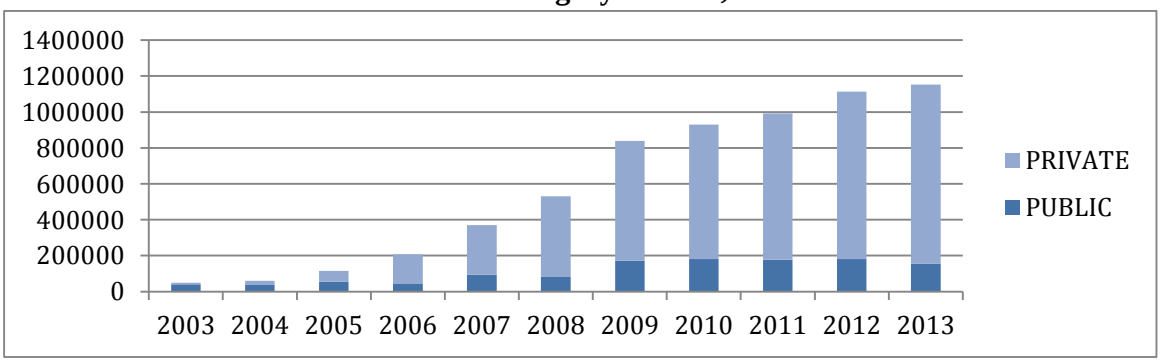
Graph 2 - Evolution of Higher Education of Undergraduate Enrollments, by Study Type - Brazil, 2003-2013



Source: INEP / MEC. Higher Education Census, 2013.

The analysis of the Higher Education Census 2013 [2], shows the tremendous growth of distance learning. In graph 2, in 2003, of the total number of students enrolled in higher education, 3,887,022 (98.8%) were in classroom courses and 49 911 (1.2%), in distance learning courses. In 2013, of the total enrolment, 6,152,405 (84.2%) were in classroom courses 1,153,572 (15.8%), in distance learning courses. This shows that the distance education has increased substantially by 1,103,661 (2.211%) students enrolled over the 10 year period. This equates to an average increase of about 40% per year however in reality the concentration of the increase has occurred over the more recent years.

Graph 3 - Evolution of Enrollment of Higher Undergraduate Distance Education, by Administrative category - Brazil, 2003-2013



Source: INEP / MEC. Higher Education Census, 2013.

In relation to distance learning, graph 3 shows a total of 49,911 registered students in 2003, 80% (39,804), of which were enrolled in public institutions while 20% (10,107) were in private institutions. In 2013, of the total students enrolled 1,153,572, of which 13% (154,553) were enrolled in public institutions and 87% (999,019), in private institutions.

Dominated mainly by private institutions, the provision for distance higher education is growing at a rapid pace. Sampaio [1] states that this is due to the advancement of new information and communication technologies, coupled with the private business sectors' involvement with financial assistance to students, which significantly reduces their monthly fees, thereby introducing new dynamics to Brazilian higher education. On the other hand, the control that universities have to increase the number of positions available on undergraduate courses does not address the challenges regarding the high dropout rates. In order to address this, the institutions need to take the necessary actions to invest in appropriate strategies to retain students by providing up-to-date information in a changing world.

According to Alves, the requirement stipulated in Decree 5622, the courses offered from a distance university should be the same duration as the classroom courses is, "contrary to the principles of accelerated learning as it will cause a higher dropout rate percentage" [4].

After analysis of the literature on evasion e-learning, Abbad et al. [5] which indicates that the factors leading to students' withdrawal from a course, can be classified into two broad categories: factors related to students and their choice of course, and factors related to the e-learning design, i.e. the institution We highlight the main reasons for students withdrawing from courses are related to their habits and lack of control over factors such as time, study conditions in the workplace, financial difficulties, distance to the places where tutorials are held, inability to manage study time, etc.

Taking into consideration the geographical size of Brazil and its regional diversity for example, the South East which is the most populous and economically developed region compared to other regions. Consequently, it holds the largest number of undergraduate courses in the country, especially in the State of São Paulo, which reached the highest enrollment numbers in 2013, (1,643,925), and, of the total only 15.8% of students were in public institutions. Therefore, the Higher Education Census of 2013 [2] highlights that there are more than 1,38 million students in the State of São Paulo alone that are enrolled in private institutions.

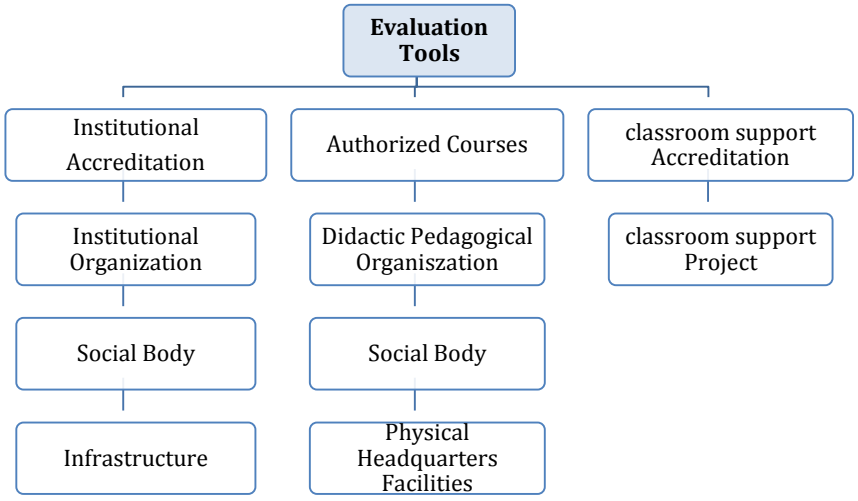
3. Legal Bases of Distance Education Learning in Brazil

Despite the rapid increase of distance education in Brazil over the last ten years, there are still legal issues which need to be evaluated and discussed, and appropriate changes need to be made to guidelines and quality thereof. Considering the historical aspects and the regulatory framework, distance education was introduced into the Brazilian educational system through the Law of Educational Guidelines and Bases - LDB (Law No. 9394 of 20/12/1996), in particular Articles 80 and 87, whereby this method of teaching is classified as an "emergency" solution to address the deficiencies in teacher education as well as a complimentary solution to young adults who have been poorly educated [6]. The regulation by Decree 5622 of 19/12/2005 was a big jump from when distance education was compared to classroom teaching from basic education to the next level. It is worth noting, that according to Art. 9 of The Accreditation of Public and Private Institutions, offering courses and post-secondary programs in distance mode is intended for those students who have proven excellence in research and relevant production [7]. To maintain quality education, it is believed that to ensure a coherent and appropriate measure, institutions need to be experienced in classroom teaching, to be accredited in distance learning.

Subsequently, Decree No. 5773 of 09/05/2006 makes provision for regulatory functions to monitor and evaluate higher, undergraduate and federal educational systems. It is noteworthy that the assessment is carried

out by the National Higher Education Evaluation System - SINAES, who sets the benchmark for the regulation and supervision of processes in higher education in order to promote and improve their quality [3].
Ordinance No. 1047 of 08/11/2007, as defined by the Ministry of Education and the National Council of Education (MEC / CNE), sets out guidelines for the development of assessment tools for the delivery of distance education, which are divided into three basic categories: 1) Institutional Accreditation for evaluation; 2) Assessment Courses for authorization; 3) Evaluation for classroom support Accreditation. For each of these three categories, there are specific analysis criteria (as shown in Diagram 1) which are measured according to a weighted scale by category. The resultant weightings that these tools provide, is important data which is used for testing and monitoring the quality of competent distance education bodies. Note: An institution cannot begin to offer distance learning courses without specific permission as well as classroom support accreditation where applicable [8].

Diagram 1 - Evaluation Tools for the provision of Distance Higher Education



Source: Ordinance no. 1047. MEC / CNE, 2007.

With regard to accreditation of the institutions, it is observed that the "Institutional Organization" category has the highest number of evaluation indexes and carries the highest weighting (40%) of all the categories. What stands out among the indicators is the description of the "institutional plan" of its management and maintenance of the courses, as well as its teaching staff, in addition to experience in distance learning. The "Social Body", represents 35% of the weight in the evaluation and its indicators consist mainly of the definition of working arrangements, training programs and training of teachers, tutors, technical and administrative staff. As for "Infrastructure", which amounts to 25% of the total weight, the indicators comprise of; administrative facilities, services infrastructure, audiovisual and multimedia facilities, the expansion plan for updating equipment and the library collection and other facilities.
Within the Authorization courses category, the "Social Body" has a higher weighting (45%), which highlights, among the indicators, work regime, titration and training facilities, the ratio of tutors to students, intellectual and qualification and experience in delivery of distance education. The "Didactic Pedagogical Organization" has a weighting of 40%, and has the largest number of indicators, of which we highlight the following; student's profile, methodologies, resources and material, evaluation of teaching materials and technological infrastructure. The "Physical Facilities", only account for 15% of the weighting, they require a physical

description of the headquarters facilities, the teachers, tutors and assembly rooms as well as the working offices for teachers and tutors facilities; audiovisual and multimedia resources, and the library collection.
To complete the description of Ordinance No.1047, "classroom support e-learning accreditation", requires that every individual project has to include a full description of its deployment, physical facilities, technical and administrative team, coordinators, tutors, technological resources, specialized informatics laboratories, libraries and their respective requirements [8].

4. Current regulations limiting the practice of distance education in Brazil.

From a comprehensive collection of legal data, based on the most recent laws regarding distance education in Brazil, normative decrees and orders have been analysed in chronological order.
In the Decree 5,773 there is a list of necessary elements for the accreditation of institutions in the federal education system. Item VI of the ten elements described in Art. 16, highlights the reference to the physical infrastructure and academic facilities, and details the spatial characteristics and equipment for the library and laboratory operations, in addition to the accessibility plan and priority seating. A brief description of points that are considered fundamental for distance learning is required, which does not include the total structure [3].
Overall, Normative Ordinance No. 2 of 10 January 2007, sets forth the procedures for regulation and evaluation of higher education in the distance mode for institutional accreditation. It specifies the mandatory documents required to prove existence of physical structure and technology, in addition to proof of adequate human and financial resources to offer higher distance education [9].
It is noteworthy that for the accreditation of ODL, it is necessary to determine the scope of the educational institution, whether at the institution's headquarters or the on-site classroom support, with regard to the location of the buildings in relation to mandatory classroom moments. Such classroom support e-learning, as described in Decree No. 5622, are the operating units for the decentralized development of pedagogical and administrative activities related to the courses and programs offered by the distance learning institution [7].
Prior to the advances in new technologies we were in agreement with Alves' critique [4] regarding the need for face-to-face meetings, however, now distance learning have proven contrary as it is a reliable technological means in the evaluation process. However, before the law, to expand the courses, it was necessary for the institution to ask for the accreditation of new support centers, which proved the existence of physical infrastructure and appropriate human resources. In order to expand the scope of performance of an institution this can only take place after the completion of its first distance learning course.
It is observed that higher educational and distance learning institutions shall be subjected to inspections, which may occur at any time, under the terms of the Arts. 45-57 of Decree No 5773. This controls the educational institutions' adherence to proceedures and will disqualify them in the event of any rregularities not corrected by the deadlines given and is a precautionary measure to protect students [3].

5. Future Prospects of Distance Education in Brazil

In October 2014 the North American organization, New Media Consortium (NMC) issued a report identifying the main trends and emerging technologies that should be part of a standard Brazilian university within the next five years. The report "Technological Outlook for the Brazilian Universities: a regional analysis of the Horizon Project", was compiled in collaboration with 41 experts who were asked to consider hundreds of relevant articles, news, blog publications, research and examples of projects. The Brazilian company Saraiva Group, who creates and distributes content, technology, services, and features educational solutions as

adaptive learning, digital library subscriptions, gamification platforms, content and methodology for distance learning, also collaborated in the production of this report. According to this report, the intention is that the study may assist in the dissemination of information for the education of leaders in Brazil on significant developments in support of learning technologies, and creative research in higher education [10].

The results presented 12 trends and 9 technologies, which should form part of university life over the next 5 years. This period is divided into short-term (less than one year), medium term (2 to 3 years) and long term (4 to 5 years), as summarized in Table 1.

Table 1 - Trends and Technologies for Brazilian higher education

Time-to-Adoption	Trends	Technologies
short-term	Evolution of Online Learning Increasing Use of Hybrid Learning Designs Rethinking the Roles of Educators	Flipped Classroom Games and Gamification Mobile Apps Online Learning
medium term	Digital Delivery is Increasingly the Norm Growing Ubiquity of Social Media Shift from Students as Consumers to Students as Creators.	Learning Analytics Mobile Learning Open Content Virtual and Remote Laboratories
long term	New Forms of Multidisciplinary Research Massive Reinvention of the Personal Computer Agile Approaches to Change	Augmented Reality The Internet of Things Location Intelligence Virtual Assistants

Fonte: NMC, Panorama Tecnológico para as Universidades Brasileiras: uma análise regional do Horizon Project. 2014.

In addition to the NMC report, the publication Challenges and Prospects of the Brazilian Higher Education for the Next Decade - 2011/2020 - compiled by the MEC, CNE and UNESCO as well as proposals and suggestions from the public agencies for development of higher education, were evaluated.

In general, the challenges that are highlighted poses the need for the expansion of networks and vacancies in public education, right of access to permanent education, regional inequality reductions, course diversification, quality training and encouragement of scientific and technological research. The highlighting of these aspects shows the need for changes to the building systems and institutions that promote equality, and the expansion of the mechanisms of social inclusion, with quality [11].

Given the range of issues highlighted in the debate between the authors, Xanthopoylos and Kenski, on new technologies for open education and distance learning (ODL), will lead to the growth of academic quality. It is believed that the transformation generated by technologies that permeate society, can influence the world of education and should establish itself as the central ingredient for the knowledge of society, focusing on qualified expansion.

Brazilian universities have indicated that the online learning trend will be available to all, as has become commonplace between educational institutions and online open learning organizations. Thus, it is expected that in the short term online learning will be popularized and seen as a viable alternative to some form of classroom teaching. Its flexibility should facilitate access, and provide greater integration of technological resources with educational content.

In this context, the focus of online learning has been the stimulus for MOOCs (massive open online courses), which are free courses offered by renowned institutions, where the connection between the students and the institutions, as well as between students, giving them the opportunity to discuss with each other what they have learned, is possible. Thus, the open content uses this license to encourage the sharing of information, experiences and pedagogy. The favoring of the movement to open content and educational resources (OER) reflects changes in how scholars around the world are conceptualizing education as a focused vision to the learning process and not only for the information conveyed [10].

Xanthopoylos (2012) estimates that one of the challenges for the Brazilian higher education is the creation of an efficient and extensive network for internet access, which favors the formation of digital citizenship, in which teachers are the learning process agents and students can create a new learning culture with access to open educational resources. This should be the first step in the formation of learning networks that favor the use of hybrid or fully online systems [12].

For the NMC [10] the relationship between the ease of access to content and the flexibility made possible by technology, shows that the hybrid learning models should gain strength by allowing the balance between the person and virtual environment, so that the student can take the best out of each of them. As a result of online and hybrid learning, the teacher's role is impacted because they now assumes the position of mediator, or instructor, independently and actively promoting the development of students.

Besides the possibility of hybrid learning, the inverted classroom model is seen as a trend in which students must be present for the online theoretical content, so that questions may be asked and answered and projects can be done in teams. It is believed that this mode promotes self-knowledge and develops the students' skills for the professional market, such as, the ability to rationalize situations and solve problems.

According to Kenski (2012) the greatest challenge of a hybrid model, in which all course participants partake, regardless of the mode, is that the imposition of higher education enables the integration and transition between the two modes, without distinguishing between them [13].

6. New Paradigm and Technological Innovations for Distance Learning.

Among the challenges and prospects for the Brazilian higher education during the 2011 and 2020 decade, Kenski believes that social inclusion of new technologies must be a rapid transformation which is incorporated and replaced by something new withinin the shortest time-frame. In this scenario, the study of the challenges and prospects for the next decade indicate that in the near future the internet will be more intensely used through mobile devices such as tablets and smartphones with the creation of cycles for processing, consumption and overcoming the constant improvement of digital technology [13].

In relation to this rapid transformation, the NMC report notes that a number of technological features designed for tablets and smartphones are being evaluated and incorporated into schools. This is intended to become a study of tactics, which will enable access to content from anywhere with mobile applications being one of these resources, through which simple programming at low costs has become the focus of development, and has a potential market with a wide range of products. With the increasing development of applications for devices and smartphones in Brazil, educational institutions are adopting them into their curricula, and modifying sites, educational materials, resources and educational tools as required. This progress highlights the importance that mobile learning has in the potential to facilitate educational experiences, and allows students to organize virtual meetings with colleagues around the world, using software and specialized tools, to collaborate on shared documents or development projects in a cloud, among other activities [10].

The trend is that computers are becoming increasingly lighter with online access, to the extent that mobile divices can replace them in the long term, as the performance and interfaces of smaller computing devices

improves. Another factor which is currently being used by people, which can be used as a means of study, is the social networks where you can share news about academic content and scientific developments, generating changes in the attitudes of students, who will no longer be passive agents, consuming content but rather active agents in their own knowledge creation. [10]

According to Kenski (2012) a radical change in behavior and teaching practices in the Brazilian technological culture is necessary, because technology has been so readily accepted and incorporated into social relations. This will require new attitudes to overcome the wide gap between education mediated by ICTs and dynamic processes that can happen in relationships between teachers and students online [13].

According to NMC [10], the academic departmental areas that do not have laboratory or components with more practical focus, will incorporate practical learning experience as an integral part of the curriculum. Therefore, the expectation is that the undergraduate courses have been created in order to start investing more in areas which will stimulate the creation of innovative thought and entrepreneurship.

Evaluating the growing culture of digital games, we have noted that the gamining industry has produced a steady stream of games that have increased in nature and impact. In conjunction with this fact, we have observed psychological studies that highlight the cognitive, motivational, emotional and social impact that games have on human behavior. This demonstrates the potential of digital games to teach new ways of thinking and behaving. Therefore, the gamification of learning environments is gaining support among educators, who are recognizing that to be effective, the games must stimulate engagement, productivity, creativity and authentic learning.

Remote and virtual laboratories enable educational institutions to make equipment and elements of a physical science lab easily available to students from any location over the internet. Virtual labs are web applications that mimic the operation of real laboratories and enable students to practice in a "safe" environment before using physical components for real. In contrast, remote labs provide a virtual interface to a physical and real lab, exposing students to cutting-edge equipment in universities around the world. While critics of this system argue that real experience is irreplaceable, defenders believe in its advantages, such as ease of access, cheaper processes, safety in carrying out certain experiments, and the possibility of sharing information through large databases [10].

The use of high-speed Internet enables media access through immersion in a three dimentional reality. According to Kenski [13], virtual reality can be improved through experienced knowledge, which means that overall more and better opportunities can be offered in the concrete spaces referred to depending on the developmental conditions. It is worth noting that their specifications allow registration, monitoring and interaction using other methods with others through a large database.

In the long run, usage of augmented reality as a potential tool to enable learning experiences that are used in specific contexts, promotes the exploitation of real-world data in virtual environments and simulations.

The analysis of learning is a science commonly used by companies to analyze business activities, identify spending trends and predict consumer behavior. In education, this analysis seeks to profile the students by analyzing individual interactions during online learning activities, in order to build better pedagogies thereby enabling students to be active in their learning, which will contribute to the their progress in the online universe.

Another area of great potential is the internet of “things”, which is a network of inter-connected objects used to connect the physical world to the world of information over the internet. This enables tracking material or sensitive equipment to be connected to tiny processors that convey useful information about the objects on the internet. For education, these features can be used by informal educational institutions, such as museums, to track and monitor the condition of ancient artifacts, and facilitate the opportunity for students to collect scientific data through mobile devices and instantly update the large databases. In addition, the location of intelligence, which refers to the mapping of spatial data, will provide information about how people are

interacting with various applications and services based on their locations. Moreover, with advances in voice recognition and gesture-based technologies, people are increasingly interacting with their devices, through pointers and keyboards, or virtual assistants, which are based on the evolution of the concept of interfaces and the entire spectrum of engineering, computer science and biometrics. The importance of these virtual assistants for education, makes access possible for students through natural interfaces, which can be designed to help the visually and hearing impaired, as well as students with other special needs. [10]

Given the diversity of technological resources and programs available for distance learning, it is essential when developing a media plan to consider the availability of equipment as well as the definition of its use in a given situation. As pointed out by Kenski, the choice of media to ODL will guide, among other things: the organization and training of responsible personnel, investments in technology infrastructure, planning and educational activities [14]. Thus, the management of media used in education involves a plan which contains an analysis of investment in equipment, treatment of content available and the formation of professional teams (technicians and teachers) to use in the educational area which is centralized for articulation in pedagogical planning.

Of all the trends identified in the NMC's report [10], it appears that there are significant challenges in Brazilian universities that are preventing the adoption of emerging technologies. Among the challenges considered solvable, i.e. the know-how, is the access to increase the number of students participating in undergraduate programmes, to consider technical education as an integrator between the environment Universities and professional private practice, as well as encouraging experimentation as a way to bring innovation and improvements to teaching and learning.

7. Considerations

Distance education in Brazil, from its inception, has been used as a mechanism to enable education for all as a democratic right. Its development has been accentuated quickly with the evolution of technology, new technologies of information and communication, making it a reality, as it has been adopted by educational institutions and allowed organizations of all types to offer higher education in addition to continuous professional training.

In the “Challenges and Prospects of the Brazilian Higher Education” [11], we evaluated the national strategic plan for the previous decade (2001-2010), which shows increased public participation in the right to education, however, many actions were vetoed or set aside, due to insufficient financial resources for higher education and this resulted in the plan not being achieved. Due to this, there was a huge growth in the higher education range courses, mainly in the private sector, as seen in 2013. Higher Education Census data for the 10 year plan (2011-2020), maintains the proposal for expansion of quality higher education to be made available to all. However, it is understood that this discourse versus the lack of action is not well regarded by international bodies, as public policies have shown no progress to date.

Despite the existence of legislation, there has been little effect on the system. We are still in the process of improving and consolidating however, despite the huge enrollment growth, there is still a large dropout rate, caused by the lack of learner autonomy, and the lack of course structure from a new perspective, not classroom teaching (based on lectures, texts and illustrations), but one that builds on other areas of technology to make learning more interesting and efficient e.g. gamification, mobile learning and virtual remote laboratories.

Although Brazilian legislation has many guidelines that aim to implement and maintain quality distance education, education as a whole, has experienced a transformation that has generated the need for updates, new definitions and changes to existing laws. Within this framework, the question is whether the requirements

of existing laws are sufficient to create a satisfactory framework for quality distance learning to replace classroom learning, whereby students can develop their cognitive, social, emotional, professional and ethicical skills, which are important tools for the construction of knowledge in contemporary society.

In general, it is observed that the integration of technology in everyday life has made educational leaders rethink the way we learn, with the inevitability of new techologies, information and communication in Brazilian higher education. With the development and adoption of increasingly accessible equipment and connectivity, coupled with Internet tools, new educational modes are enabled, such as models of hybrid environments or inverted classrooms, where new features will be adopted as tactics for active and creative learning.

There is a need to reform and improve the ODL models currently in use, as these models are very recent and in general constitute imported techniques applied in other realities, or simple transposition of classroom teaching programs for distance learning, thereby being ineffective and tedious. It is therefore necessary to define pedagogical methods, institutional organizations, social bodies and the infrastructure of facilities and equipment to enable quality education.

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