E-Universities in Developing Countries: a Need and a Challenge

Giselle M. d. S. Ferreira[1] and Ana M. B. Pavani[2]

Abstract ¾ Developing nations have a prominent characteristic: there are typically big gaps between social groups and considerable differences between regions within the countries. Within the same country, and often within the same region, so-called developed areas coexist with very poor locations. Massive inequalities seem to govern the availability and access to education, work, information and knowledge, not to mention basic needs of food, water and proper housing. This paper explores perceived needs and requirements for the establishment of an e-university in Brazil, which is a particularly interesting example as a major player within the global economy that is, nevertheless, still plagued by illiteracy. The paper discusses also some of the challenges envisaged. In conclusion, partnerships are suggested - involving universities, businesses, and, perhaps, international collaborations - as the basis for a possibly workable model of development and deployment of e-universities in developing countries.

Index Terms ¾ Brazil, developing countries, e-university, higher education, lifelong learning, staff development

INTRODUCTION

In addition to a diversity of geographies, climates, races, languages, and cultures, our world is characterised by marked differences of economic development and infrastructure. In particular, developing countries are characterised by substantial inequalities in terms of access to education, work, information and knowledge, not to mention basic needs of food, water and proper housing. In these nations, there are typically big gaps between social groups and considerable differences between regions. Within the same country, and often within the same region, so-called developed areas coexist with very poor locations.

Developing countries grapple with a conundrum that is very difficult to solve. Education, or, at least, some sort of training, is necessary for the integration of individuals into the job market. On the other hand, people tend to take up some form or another of paid employment quite early, being thus bound to forego already scarce opportunities for education.

This scenario suggests that e-schools, in general, and e-universities, in particular, may be a potential or partial solution to the problem of widening access to education. However, a number of issues are raised that relate to the socio-economic conditions of a developing country: poor basic infrastructure, insufficient IT literacy, lack of teaching materials that are adequate, sensitive and responsive to the local culture and needs, scarcity of groups proficient in developing quality courseware, shortage of properly trained tutors. This list goes on to include also issues related to attitudes towards education itself. Political and ideological issues aggravate the problem that educational provisions vary widely.

This paper discusses the need for e-universities in developing nations, looking specifically at the state of affairs in Brazil. Brazil is an especially interesting case, as it is a major player within the global economy that is, nonetheless, still plagued by illiteracy. The paper explores perceived needs and requirements for the establishment of an e-university in this country, discussing some of the challenges envisaged. In conclusion, the paper discusses partnerships - involving universities, businesses, and international collaborations.

ABOUT BRAZIL

Brazil is a country with a population of nearly 180 million people spread over an area that is larger than continental Western Europe. The population distribution is, nonetheless, irregular, as there are large expansions of land nearly uninhabited and often uncultivated, in contrast with overpopulated cities. As a general rule, most of the population is concentrated along the country's long coastal line.

The country is a federation of 26 states organised into five geographic regions: North, Northeast, Centre-West, Southeast, and South. There are considerable differences in nearly all aspects across the country, from landscape to fauna, from ethnic majority to job market. The two latter regions, South and Southeast, are the most developed according to industrialised standards, and contain most of the population in the cities of Rio de Janeiro and São Paulo. Indeed, these cities are characterised by a cosmopolitanism that is due also to internal population migrations originating in nearly all the regions of the country. The Amazon forest dominates the North region, which is very rich in natural resources and, therefore, subject to all sorts of pressure, national and international, on the one hand to promote exploitation, and, on the other hand, to preserve its rich ecosystem. The Northeast region is marked by a

---

[1] Giselle Martins dos Santos Ferreira, The Open University, Faculty of Technology, Walton Hall, Milton Keynes MK7 6AA, England, g.m.d.s.ferreira@open.ac.uk
[2] Ana Pavani, Pontifical Catholic University of Rio de Janeiro, Rua Marquês de Sao Vicente 255, 22453-900 Rio de Janeiro, Brazil, apavani@lambda.ele.puc-rio.br

predominantly dry climate and, consequently, low productivity, with population concentrated in the coastal cities that are largely exploited by the tourism industry. The central region is dominated by farming activities but possesses large stretches of completely unused land.

Brazil has a massive waterway network that facilitates transportation and communications within its territory and provides means of subsistence for local populations. The country produces and exports a wealth of raw materials, foods and industrial products, and is a key nation within Latin America. There has been consistent national and international investment in a range of areas over the last thirty years, from agriculture to oil extraction and processing, from banking to the car and IT industries.

Brazil is, therefore, a country of massive territorial span and resources of all types but with serious socio-economic problems related to the ways in which the nation was established and evolved politically. Indeed, Brazil has stood as an independent country for only one hundred and eighty years, following nearly four centuries of existence as, essentially, an exploitation colony.

In contrast with the European advance in Asia, for instance, the Portuguese who first reached the shores of Brazil were welcomed by the very curious eyes of a relatively "primitive" and peaceful population. For a long time, Brazil played the role of a supplier of whatever could be taken from its soil, and it was only towards the beginning of the twentieth century that larger migrations to the country aimed predominantly at settlement and local development. In particular, following the abolition of slavery in 1888, whole communities of Italian, German and Japanese people, just to name a few, migrated to this land in search of opportunities for growth and, simultaneously, escape from complex situations – wars, famine, political and religious persecution - in their countries of origin.

The slave trade brought Africans mainly from the West Coast to meet the indigenous populations and the various other peoples of European origins who inhabited different regions of the country. Brazil has become, thus, the home of a complex miscegenation of ethnicities transplanted into its territory from across the globe, which now accounts for an unequalled richness of cultural nuances. However, the country's reality is indeed a struggle against its own social inequalities inherited from a colonisation process that, for some, seems to have only changed in appearance rather than finished with the Portuguese Heir's 1822 act of rebellion against his own Crown. [3]

Education in Brazil

---

[3] Brazil was declared an independent nation in 1822 by Dom Pedro I, the heir to the Portuguese crown, who then became the Emperor of the newly established country. Brazil was subsequently ruled as a Monarchy by Dom Pedro's son, and became a Republic in 1889 following the political turmoil aggravated by the abolition of slavery during his reign. The close association of Brazil and Portugal remains to this date.

Education in Brazil, generally, has changed considerably over the last thirty years, with a perceived decline of standards. Education is State-funded, but with the progressive decline of quality along the last few decades, there has been a surge of the privately owned sector at all levels of instruction. Higher education (HE), in particular, has changed considerably over the last ten years with this surge. Nonetheless, excellence in both teaching and research is still perceived as the monopoly of public institutions and the few Catholic institutions, and attitudes towards education tend to be largely elitist.

A number of issues that arise relate to the recent changes in the country's political system, from a military regime for over twenty years, to a full-blown democracy that, to a large extent, must rebuild national confidence and modernise attitudes, ideologies and institutions. The Catholic teaching institutions, for instance, belong to the Vatican and tend to operate much more smoothly and efficiently than their public counterparts. These suffer considerable damage from their "civil service" status and only recently abolished policies of tenure with correspondingly low stipends. Nevertheless, there are centres of excellence in both teaching and research, staffed with a well-qualified and creative workforce that has produced significant technological and scientific developments. [4]

Most HE study is geared towards degrees. In a way, there seems to be an expanding "degree market" in a context in which there is remarkable pressure created by initiatives that aim at modernising working methods and the job market itself. This is following a wave of privatisation of formerly state-owned companies that must now operate more efficiently and cost-effectively. Recent governmental measures have introduced quality control mechanisms that have begun to regulate HE more strictly. [5]

There is, therefore, an extended network of research and teaching in the country, mostly government-funded. However, Brazil is still plagued by illiteracy. Official numbers of the latest census indicate that fifteen percent of the population cannot read or write their own names. However, that figure reflects a very loose definition of illiteracy, not to mention that it excludes the rural population

---

[4] A research programme funded and promoted by the government has yielded the production of the world's first ethanol-fuelled car. Although the programme was, unfortunately, abandoned at a relatively early stage, there is a large fleet of ethanol-fuelled cars still in operation all across the country. Indeed, research into alternative eco-friendly fuels is a strength in the country.

[5] Students graduating from any degree programme must sit the *provão*, an exam covering various areas of their particular degree, and institutions are graded and evaluated (partially) on the basis of the scores that students obtain. Although the system facilitates a number of statistical distortions (for instance, a few very good students from one institution as opposed to a larger number of average students from another would yield a better score for the former, which may not reflect the relative quality of teaching in either universities), it has been serving the purpose of stalling the proliferation of second-rate institutions over the six years since its inception.

of nearly the entire North region. Possibly, twice as many or more are, in fact, illiterate.

Access to HE

In order to undertake studies in HE, students must sit examinations that, over the past ten years, have progressively grown in number. Currently students must sit exams for each university they might consider attending, both public and private, and entry criteria and standards vary widely. The exams cover all topics viewed in secondary school, where students must study all subjects equally (including world history and geography, at least one foreign language, mathematics, etc.) to a depth comparable to that of English A levels. The student's intended area of study affects only the length and style of the exam for each topic; for instance, those pursuing a course of studies in mathematics will sit multiple choice history exams, as opposed to those pursuing a course of studies in history, who will sit essay-like exams in this subject. Most courses of study last four or five years, similarly to the French system. In particular, engineering curricula have a high proportion of mathematics and physics, as do medical studies in relation to chemistry and biology.

Private universities are normally the option for those who either do not succeed in entering the public sector or choose to attend one of the Catholic institutions, recognised internationally for both teaching and research. Paradoxically, students who attend public universities are, predominantly, exactly those students who might afford university fees. This is partially related to the low quality of public teaching at primary and secondary levels, and those who can afford it enrol their children in private schools, thus enabling them to better prepare for future exams. Also, there is very little governmental incentive for HE students in terms of grants that cover either fees of a private institution or subsistence, and students normally prefer not to take up the few grants available for undergraduate study due to unexpected effects of the country's economic instability on their debt.

WHAT COULD AN E-UNIVERSITY DO?

In contrast with distance teaching based on printed materials, an e-university might offer more embracing opportunities for networking for learners and teachers, not to mention the advantages derived from the use of media that can be much more easily changed and adapted. However, in a country with so many inequalities, the question remains of what an e-institution could effectively do, not to mention the issue of how it could be implemented. It would certainly be unrealistic to suggest such an enterprise as the panacea that will solve all the educational problems of the country. Indeed, there have been a number of initiatives using distance learning methods in Brazil since the sixties, which have exploited existing media – print, radio, TV broadcast, etc. – to provide teaching to the population of various remote areas of the country. Some of these initiatives have trodden

on problems related to local politics in a sense that embraces not only educational issues but also established social arrangements.

It is true that, generally, educational provisions are concentrated in the larger cities, and access is restricted due to social and economic issues. The proportion of women in higher education, for instance, is still considerably inferior to that of men, particularly in science and technology. Unfortunately, education, generally, is not necessarily considered a right; worse still: it is not widely understood as a need. This widespread attitude may be one of the main problems that create such an enormous gap between sound, well-funded strategies for the implementation and use of distance teaching, and the realities of setting up any programme subject to the reactions motivated by such attitude and its underpinning ideologies.

Despite the multitude of initiatives, including current coalitions of universities such as the UniRede, which includes nearly 90 public universities joined to develop and deploy, together, distance teaching programmes, the country has yet to implement more embracing educational policies that guarantee quality and, most importantly, suitability of those programmes to the local market. Official directives tend to emphasise a fragmented view of education, in which the role of distance teaching, and, in particular, e-teaching, does not yet seem clearly defined.

Teacher Training and Development

This is an area that has been receiving consistent governmental attention since the creation of the Secretariat for Distance Teaching, a special organ of the Brazilian Ministry of Education formed to oversee and regulate distance teaching in the country. A programme is currently underway to provide funding for projects that aim at teacher training and development using distance teaching methodologies, including the use of the latest IT-based media. As in all the other possible niches for an e-university we discuss, this is viewed as a cost-effective alternative to the dislocation of personnel from their workplace to the places where training is available.

Teacher training is vital to a country like Brazil since this is at the basis of any imaginable solution to the illiteracy problem. Some of the population groups of Brazil live in places so isolated that they need to travel on canoes to find the nearest TV set many miles down a river. It is, therefore, very hard to imagine that, in cases like this, student development of basic skills, amongst which IT skills are included, might ever happen without the presence of a facilitator nearby.

Indeed, over nearly twenty years, a partnership between governmental agencies, professional class associations and the Roberto Marinho Foundation – the cultural foundation of Globo Network, Brazil's biggest broadcasting company – has given the opportunity for the completion of secondary schooling to thousand of Brazilians through their *Telecurso Segundo Grau* (distance teaching) programme. Many have

travelled on farm carts in search of a TV set or a radio to follow a broadcast lesson. The programme utilises a host of the network's facilities and resources, from radio production to printing, exploiting, most importantly, Globo's expertise in the development of high quality TV broadcast materials, albeit, predominantly, for entertainment and subject, naturally, to the political associations that underlie the organisation. *Telecurso* is, arguably, the most successful distance learning initiative in the country, albeit still subject to severe criticism motivated partially by exclusionary views of education. The programme, curently known as *Telecurso 2000*, now delivers primary and secondary teaching both to individuals, directly, and to workers through their employers. An e-university might be a most interesting partner to a programme such as this.

Lifelong Learning

TV broadcasting has been used for general education, in addition to programmes such as *Telecurso* mentioned above. A host of programmes produced in Brazil, as well as a number of BBC educational productions (including co-productions with the UK Open University) have been used either as part of wider programmes or as general "edutainment". The advent of cable television has enabled the diversification of general educational offers beyond government-funded initiatives, but the country has yet to define clearer guidelines concerning lifelong learning aims, objectives and mechanisms to create opportunities. The growth of the internet in Brazil has been consistent over the last 5 years, which clearly makes this an area that could be developed by an e-university, with the use of portals containing "taster" materials, for instance.

Staff Development

This is one area that we consider most promising as a possible starting point to develop a strategy for the implementation of an e-University. Firstly, there is an imperative need for alternative means of training and re-training staff in a country as large as Brazil. Oil extraction companies and banks, for instance, operate all over the territory, and it is either financially unfeasible or strategically impossible to move personnel across the country for updating their skills and knowledge. Secondly, and, perhaps, most importantly, these companies operate on a completely different basis than the public institutions. It would seem that clearer purposes and modes of functioning such as those of a privately owned organisation might be a sounder basis to motivate the development of quality programmes. This is not to mention that such organisations already possess their own infrastructure in terms of computer networking that would allow access to e-learning without the need for funding to establish a minimal network for use by their employee-students.

CHALLENGE

The previous sections provided a (very rough) overview of the state of affairs of education in Brazil, and attempted to suggest a number of possible niches that could be explored by an e-University. In the light of this overview, there are a number of issues that would need addressing in the development of a strategy for the implementation of an e-university in the country.

Teaching Infrastructure

An e-university cannot be viewed exclusively as a supposedly cost-effective alternative to campus-based teaching. In a way that is very close to traditional distance teaching using printed text, e-learning requires an infrastructure for development and delivery that guarantees standards and quality, not to mention client satisfaction – where "client" is both the student and their sponsor. In particular, the web requires a whole new pedagogy to be made effective as a teaching medium. Therefore, a number of concerns related to infrastructure must be dealt with.

Courseware

One vital issue, which may have been, perhaps, the major issue encountered in past ventures of foreign distance teaching expertise in one form or another in Brazil, is the suitability of the courseware to the national context. Issues of globalisation in education have only begun to be examined, but it seems clear from the outset that the re-versioning of teaching materials is never merely a matter of translation. There are a host of issues that arise concerning the tone of the material, at which level it is pitched, what sort of skills students are expected to bring into their studies as previous knowledge, and, most importantly, the content itself. Content is totally linked to context: belief systems, national educational system, split of disciplines within academia, job market.

However, this is not to dismiss the possibility of collaborations and exchanges with colleagues from other nations that already have some form or another of an e-university being implemented. On the contrary, from the perspective of these nations, developing countries might be viewed as new markets that could be collaboratively explored. Bearing in mind many words of caution concerning ideological, cultural and political differences, certainly a lot could be learnt by both sides in such collaborations.

Author Training and Development

Suitable courseware can only be developed by properly trained authors, developers who understand the methods, media and audience of their work. This applies, clearly, not only to an e-university, but to any enterprise involving distance teaching methodologies. There are decades of available expertise in these methodologies, which have been used across the globe but have been developed, mainly in and for developed countries. There is, therefore, the need to contextualise this expertise to allow for the development of

modes of operation that are responsive to the rapidly changing needs of developing countries like Brazil.

Delivery

Student support is clearly a vital area in the delivery of distance teaching. Students need to be encouraged to feel part of a learning network as component of the development of independent learning skills. This can be enormously facilitated with the use of the internet and the Web, but the tools themselves need to be used within clear, well-planned strategies. As a consequence, tutors need to be trained for their new roles as facilitators, lest they become part of a process they neither understand nor contribute to. Quality control mechanisms must be put in place to guarantee not only that standards be met in terms of courseware, but also that there is consistency across the various areas of the whole process, from development to student and tutor support.

A Change of Culture?

Education in Brazil has been and still is considerably "traditional" in the sense that students undergo studies in various topics considered basic to their area without necessarily being provided with a thread or threads that attempt to unify this knowledge and bring it into the context of that area. For example, Engineering students take a number of mathematics and physics courses over the two initial years of the programme, and in some institutions these courses are offered to Engineering, Physics and Mathematics students alike as a first block, regardless of their chosen area of specialisation. This is not to mention that there is very little flexibility in the definition and scope of existing occupations – there is still a widely accepted trinity of "golden professions", namely Engineering, Medicine and Law. There is little or no mobility across professions and existing roles within the job market.

Additionally, there seem to be ingrained views of distance teaching as a second-rate class of teaching methodologies. This is partially due to known unsuccessful enterprises, but is also due, perhaps in a far greater degree than is normally acknowledged, to snobbish and outmoded views on what education is or may be, views that were, to a large extent, supported by inherited political agendas and the climates they promote.

Clearly, these are not issues that can be solved by an e-university, but they are, forcefully, questions that an e-university would have to confront. Distance teaching over the web implies a radical change of culture for a context in which the relationship between teacher and student is infused with many obvious political undertones. Teaching materials, therefore, must be sensitive to the conflicts created when teachers become facilitators rather than repositories of knowledge to be revered by "ignorant" students. Ultimately, what is taught, including the skills required for independent learning, must be of interest and substance to the learner, and must be taught in ways that are culturally sensible and sensitive.

CONCLUSION

We envisage an e-university in Brazil that would be established, in the first instance, based on partnerships between businesses and those in distance education who are willing to work in a more market-oriented environment. This view is due, basically, to the fact that employers have specific needs that might be met with the minimum initial investment. An e-university would require a reliable and consistent network for web access, and perhaps a well-established network, such as that of the businesses mentioned, would be the best starting point to test methods, procedures and content, reserving larger funding initiatives on the physical infrastructure front for implementing programmes that have already been piloted on a smaller scale. It should be possible to make use of existing facilities to build the physical bases of an e-university, departing, perhaps, from the businesses' own infrastructure to include, at later stages, existing university resources prior to planning and deploying a more extensive, purpose-built network. Possibly one could count on academic collaborations with international providers who might be willing to work sensitively on the cross-cultural communication issues that are bound to arise.

Generally, developing countries would ideally define policies and deploy strategies that build upon their existing strengths to yield competitiveness within a globalised market. Local communities and their activities need to be supported according to clearer development strategies that, all too often, also need to include basic sanitation and food supply systems. Although an e-university could not, for obvious reasons, reach these communities directly, it could also contribute, with its web presence, to publicise a vital piece of information: that the world of information is available at the fingertips of a relatively small proportion of the planet's population.

REFERENCES

[1] Roberto Marinho Foundation http://www.frm.org.br

[2] Instituto Brasileiro de Estatística (IBGE, Brazilian Institute of Statistics) http://www.ibge.gov.br

[3] Ministério da Educação (MEC, Ministry of Education) http://www.mec.gov.br

[4] Programa Nacional do Carro a Álcool PROALCOOL (The Alcohol Programme) http://www.mct.gov.br/clima/ingles/comunic_old/alcohol.htm

[5] Secretaria de Educação à Distância (SEED, Secretariat for Distance Education) http://www.mec.gov.br/seed/default.shtm

[6] Telecurso Segundo Grau   http://www.telecurso2000.org.br

[7] UniRede http://www.unirede.br/index.html