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Experiences of Educational Inclusion in Colombia: Towards Useful Knowledge

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Abstract

This article expounds on the challenge that higher education faces in the information society: to provide students and professionals with timely, practical knowledge that is truly useful. It also considers how e-learning, m-learning, b-learning and u-learning are becoming useful systems for the fulfilment of this mission.

Statistical data are presented on virtuality in higher education programmes in Colombia, as are some examples of how it is now used in that country for the particular purpose of educational inclusion.

Keywords

Colombia, disability, virtual higher education, educational inclusion, interculturality

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Experiencias de inclusión educativa en Colombia:
hacia el conocimiento útil

Resumen

Este artículo expondrá el reto que enfrenta la educación superior en la sociedad de la información: ofrecer un conocimiento oportuno y práctico, verdaderamente útil a los estudiantes y profesionales, y cómo el e-learning, el m-learning, el b-learning y el u-learning se convierten en sistemas ventajosos para cumplir con dicha misión.

Presentaremos estadísticas de la virtualidad en los programas de educación superior en Colombia, y algunos casos de los usos que se vienen haciendo de ella en este país, especialmente los orientados a la inclusión educativa.

Palabras clave

Colombia, discapacidad, educación superior virtual, inclusión educativa, interculturalidad

1. Introduction

In the 20th century, the French philosopher Jean-François Revel (1924-2006) wrote an essay entitled *La connaissance inutile* (1989), in which he questioned whether or not the overabundance of information at our disposal was really a driver of development. For a number of reasons, he concluded that it was not.

First, despite our "superiority" over our predecessors, having a previously unimaginable wealth of information and capacity to communicate, the universalisation of information is no guarantee that such information is genuine. This is so because the pervasive media system tends to distort and mutilate it. Consequently, a high percentage of it is nothing but conjecture. Nowadays, it is not ignorance that constrains development, but rather mendacity.

Second, there is a propensity not to make full use of this overabundance of information (when truthful information can indeed be discerned). Knowledge needs to be put into action, otherwise it becomes useless.

Finally, even though we accumulate knowledge, it is important for it to be timely: it needs to be there when we need it. Untimely knowledge cannot be put into action, and that makes it useless.

In the knowledge economy, the challenge that higher education faces is to provide students and professionals with knowledge that is "just-in-time" and actionable, taking account of certain factors such as interculturality, diversity and inclusion. Universities should ensure that individuals have access to the training they require, anytime, anywhere, in accordance with their specific needs, whenever necessary. In this context, ICTs are invaluable: they are the foundations on which learning processes are being developed. In turn, these processes are transforming teaching models through e-learning, m-learning, b-learning and, more recently, u-learning, all of which are becoming useful systems for the fulfilment of the mission as described.

2. e-Learning Models

Given that this study is on e-learning approaches used by higher education institutions to fulfil their mission of offering useful knowledge, I shall give a short definition of each one.

Teaching-learning processes implemented in virtual learning environments (VLEs) via distant audiovisual networks (commonly the Internet) – otherwise known as "e-learning" – tend to enhance the experiences of students and lecturers alike. e-Learning allows them to work together, an aspect that gives new meaning to teamwork, and it undeniably allows today's learners to become tomorrow's tutors, despite the fact that the lack of face-to-face contact between students and lecturers is occasionally criticised. Another advantage is that it offers students from rural areas the same educational opportunities as young people from urban areas, and the chance for those from wealthy areas to relate to those from poor areas, thus facilitating multiculturalism and tolerance.

Students have individual needs, preferences, learning styles and space-time availability. To facilitate access to the valuable information available on the web and to enable browsing in general,

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technologíes have evolved. However, e-learning content is mostly available via wired infrastructures with space limitations, hence the usefulness of m-learning and, beyond that, of other approaches, such as b-learning and u-learning, since they contemplate a variety of situations, depending on location and context, and therefore adapt activities to these situations. In addition, due to cheaper access to certain mobile devices, television services, etc., the digital divide is reduced.

m-Learning, or mobile learning (Alexander, 2004), involves e-learning via mobile devices, such as mobile phones, i-Pods, Smartphones, personal digital assistants (PDAs), Tablet PCs, MP3/MP4 players or any other handheld device with a wireless connection, allowing files to be uploaded and downloaded, tasks to be undertaken and institutional VLEs to be accessed.

b-Learning, or blended learning (also called hybrid learning), is a system that has evolved from e-learning, and is a blend of e-learning and more traditional educational methods. It allows technological innovations offered by e-learning to be blended with the interaction and participation offered by face-to-face learning, thus overcoming the lack of contact in e-learning and acknowledging that, in some instances, classroom instruction with a well-prepared teacher is the most appropriate method; in other instances, e-instruction works better, and in others still, the ideal method is a sensible combination of both. In addition, it allows business training activities to be added to simulations.

u-Learning, or ubiquitous learning, is a distance learning approach that can be accessed in various contexts and situations at the same time. It involves the use of available technologies (computers, mobile devices, televisions, etc.) that allows information for educational purposes to be received, incorporated and assimilated. It covers a variety of activities using Web 2.0, interactive television, videoconferencing, simulations, discussion boards, chats, e-training, etc.

3. Virtual Education Figures for Colombia

Despite the advantages that ICTs offer, most of the official and private universities in Colombia have yet to make up their minds about replacing face-to-face programmes or, at the very least, to create the option of virtual education as a new kind of education for the 21st century. In late 2009, according to data published by SNIES (National System for Higher Education Information), out of a total of 16,223 programmes offered, 15,282 or 93.8% used a face-to-face approach (including undergraduate and graduate programmes). In contrast, only 997 or 6.2% used a distance approach, within which we find virtual education.

In an analysis performed by Cristina Centeno in "Los sistemas digitales de enseñanza y aprendizaje en las universidades latinoamericanas" ("Digital teaching and learning systems in Latin American universities") (2004), Colombian institutions only used e-tools in 11% of their teaching processes. This situation changed substantially over the following years: in the document "Modelos virtuales en las IES colombianas" ("Virtual models of Colombian higher education institutions") (Rondón, 2007) produced along the lines of the document "Virtual Models of European Universities", at that time it was estimated that 32.4% of the programmes offered by Colombian universities were undertaken using an e-learning approach; 21.8% expected to continue or start offering them in 2009, while 15.3%

did not have any plans to do so. This study found that e-resources were used in 20% of the cases in order to set up new programmes at universities, and in 21.5% to develop educational materials. The variables taken into account gave these results:

Table 1. Levels of virtuality in Colombian higher education institutions in 2007; based on a report by Maritza Rondón.

| Programme approach	Universities	University institutions	Technology institutions	Vocational technical institutions
100% virtual	19.0%	17.8%	0.0%	0.0%
80% virtual and 20% face-to-face	26.8%	23.6%	14.3%	25.0%
50% virtual and 50% face-to-face	17.1%	24.1%	28.6%	50.0%
20% virtual and 80% face-to-face	37.1%	34.5%	57.1%	25.0%

Regarding the current situation, the Colombian Ministry of Education reported that between 2007 and 2009, 98 new programmes had been created with a level of virtuality higher than 80%. However, a report presented by the Colombian University Observatory showed that Colombian universities were neither very interested nor made much effort to offer programmes entirely online: between 2006 and 2009, the number of distance-learning higher education programmes only grew by 1.26%.

Table 2. Distribution of higher education programmes in Colombia between 2006 and 2009, by approach.

Approach	2006	%	2007	%	2008	%	2009	%
Face-to-face or partly face-to-face	11,307	95.26%	13,874	94.6%	14,469	94.3%	15,226	92.0%
Distance	562	4.74%	794	5.4%	877	5.7%	997	6.0%
N/K							321	1.9%
Total	11,869	100%	14,668	100%	15,346	100%	16,544	100%

For 2009, and having monitored the websites of Colombian universities and institutions offering virtual education, we found that the virtual methodology was being incorporated very quickly, from short courses and diplomas to graduate education. This occurred in the National Learning Service (SENA) (with 332 wholly virtual courses in late 2009) and the Distance Education Centre (CECADI). Of all online academic offerings as a whole, courses and diplomas accounted for 65%, undergraduate and graduate programmes for approximately 13% each, and technical or technological qualifications that students were encouraged to take for 6%. At the bottom of the ranking came basic and secondary education, hardly getting off the ground with 1% each.

Graph 1. Virtual education offering in Colombia in December 2009 (own compilation by direct observation of the websites of educational institutions, by level).

Virtual education offering in Colombia (2009)
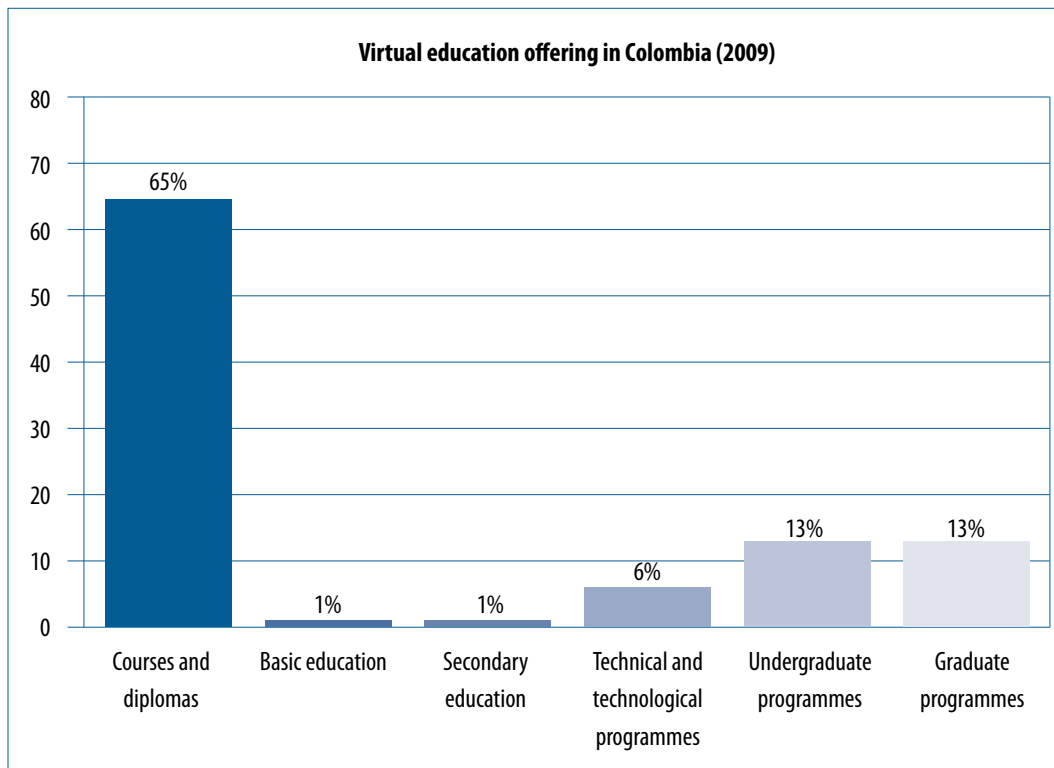
4. Some Valuable Experiences

The Colombian Constitution guarantees equality for all people and compels the State to promote such equality by taking measures to assist groups of people that are discriminated against or excluded, and particularly those who are clearly in a weak position as a consequence of their financial, mental or physical condition, and urges it to eradicate illiteracy, to educate the mentally or physically disabled, and to offer the various ethnic groups an education that respects their cultural identity.[1]

Despite this, in the 2005 Colombian census, the statistical data regarding disability-educational exclusion were alarming: 6.3% of Colombians have some type of disability;[2] of these, 33.3% are illiterate, 29.1% have undertaken basic primary studies, just 2.34% have any kind of higher education qualification and only 1% have completed their higher studies (whether technical, technological or university), while a minimal 0.1% have been fortunate enough to take postgraduate courses.

According to the report by the Colombian National Department of Planning and the National Administrative Department of Statistics (DANE), assisted by the Economic Commission for Latin

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1. Articles 13 and 68 of the Colombian Constitution.

2. Source: National Administrative Department of Statistics (DANE) (2005). Although the recent WHO report shows that 12% of the Colombian population has some type of permanent disability due to illness or disease, and State reports assert that the figure may be as high as 26.6% if it were to include those disabled due to violence, narcoterrorism and accidents.

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America and the Caribbean (CEPAL), in 2008, the rates of poverty and extreme poverty were 46% and 17.8%, respectively.

Even though the 1991 Constitution recognises the rights of ethnic minorities (which, in 2008, accounted for approximately 14% of the population) and Decree 804 of 1995 sets out that ethnoeducation forms part of the education service, there are underlying conditions of inequality, discrimination and exclusion. For example, in 2003, the mean illiteracy rate was 7.8%, but for the indigenous population it was 17.7% and for the Afro-Colombian population it was 13% (Caicedo & Castillo, 2008).

There is therefore, a need for inclusive education, the kind of education that respects difference and guarantees equality of opportunity, and higher education that fosters intercultural dialogue in an environment of diversity and tolerance. There is a pressing need to listen to the "other", and provide him/her with what is rightfully his/hers.

This is why, despite the fact that several higher education institutions have indeed set up e-learning programmes using a variety of approaches, we believe that endeavours aimed at educational inclusion are of special interest. Some examples of such endeavours are described in the sections that follow.

4.1. Tiresias (University of Antioquia)

Visually-impaired students have graduated from this university since the 1980s. However, it was not until 2006 that Resolution 1852 was approved. This resolution allows visually-impaired students to submit their tests in audio, Braille or large print, whichever format suits them best, and gives them more time (50% more) to do so. It has been a considerable success and has now been applied for several semesters, albeit with some adjustments made by staff engineers and the Test Committee as more experience has been gained. Thus, in terms of gaining access to the university, the admissions process applies the same level of exigency and equality to all students (whether visually impaired or not). In addition, the differentiated process allows disabled students to be registered and academically monitored later on.

The Tiresias platform was developed for this purpose. It is a support for teaching visually-impaired students that facilitates their access to information (browsing, reading – with a screen reader – and downloading documents) via mobile phone, other mobile devices and, needless to say, via desktop devices connected to the Internet. As a result, by using m-learning, content is accessible anywhere, anytime.

What is Tiresias? It is a web-based application in PHP,[3] following guidance on usability as set out in ISO 9241-11. According to the information supplied by the university itself, it comprises a database and a web application server; the institutional academic application (MARES) interfaces with the database to get academic information on users; an e-mail server to send information; various kinds of equipment, such as user PCs and mobile phones with Internet access and screen readers, which allow users to request bibliographic materials, browse, download and access documents.

The library has bibliographic materials in various formats (Braille, audio and electronic) to provide visually-impaired users with an optimal service. This equipment facilitates reading via adapted

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3. Preprocessed Hypertext Pages or Hypertext Preprocessor, the most widely used web page generator.

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technology (users can access any document with screen readers and text-to-speech scanners) and access to the collection of audio books (Tiflolibros, a Spanish-language digital library).

Tiresias is supported by the Colombian Ministry of Education, and it is one of the five institutions funded under the "Programa de innovación en educación superior para población con discapacidad" ("Programme for innovation in higher education for the disabled population"). With a view to meeting the Ministry's objectives, the University of Antioquia issued Agreement 317 of 2007, through which it created the Inclusion Committee, a steering and advisory body to the Academic Council and to the Central and Decentralised Administration, in order to propose policies, plans, strategies and programmes in order to promote and successfully achieve the inclusion of people with abilities or cultural conditions different to those of the average population.

4.2. InclUtics (University of San Buenaventura, Medellín)

The University of San Buenaventura, Medellín, has also received funding under the same programme to implement InclUtics, a project aimed at guaranteeing equality of opportunity for the disabled population (whether intellectual, psychological, visual, hearing or motor disabilities, and even quadriplegia) to access higher education academic programmes by using ICTs.

To that end, an IT classroom was adapted with support software and hardware for disabled students. Some of these resources were: Plaphoons,[4] virtual keyboards, facial mouse devices, ZAC Browsers,[5] games to support mouse handling teaching activities, ergonomic computers for people with impaired mobility and JAWS induction.[6]

Among other activities, the university organises workshops where disabled people interact with the attendees and the former share their life experiences with the latter, showing them how to deal with and attend to people with disabilities. It also has specialist services, such as sign-language interpreters and tutors for deaf students.

4.3. Digital Literacy in the Guambía Reserve:
Contributing to the construction of interculturality (University of Cauca)

Between 2006 and 2007, the University of Cauca and the Guambía Reserve Education Committee implemented an 18-month digital literacy project in the Guambía Indigenous Reserve, through which basic ICT competencies were developed using the ECDL (European Computer Driving Licence) digital literacy model.[7] To do this, there was a group of teachers (both ethnolinguists and specialists in other disciplines) qualified to provide such training, which focused on word processing (Microsoft Word), since the software was already installed on over 90% of the computers available for the lessons.

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4. Plaphoons support software for people with impaired speaking and motor functions, which mainly promotes reading and writing learning. It basically consists of a series of drawings that a disabled person selects via the mouse or the cursor in order to write.

5. A web browser designed specifically for children and teenagers with autism and other communication impairments.

6. Job Access With Speech, screen reader software for the visually impaired.

7. The ECDL, known as the ICDL (International Computer Driving License) outside Europe, offers users full basic training in IT, and allows their competencies and skills in this area to be measured.

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The project was carried out at a community ICT training centre located a few minutes away from the reserve. It had eight computers and a 256-kbps broadband Internet connection, which the teachers used to access the University of Cauca's VLE resources. b-Learning was the strategy adopted, which included face-to-face training (one weekly two-hour session for 11 weeks) and e-learning (two hours a week) undertaken on the VLE platform. With regard to the latter, worthy of note is the use Guambian students made of the chat rooms, where they conversed with their tutor and sought answers to their questions, mostly in their own language, which was something that motivated them to take part. In addition, the students were given a CD of modules 2 and 4 of the ICDL so that they could learn how to manage files and Microsoft Excel spreadsheets themselves.

Due to the critical and respectful use of the Guambians' own cultural elements, the project became trusted, ICT-related terms were constructed in the participants' own language (Namui Wam) and module 3 of the ICDL (Word processing) was translated. Multimedia materials were developed, and these took account of the graphic conception of these indigenous people, for whom it is very important for figures to have real characteristics (dress, physical traits and symbols) that are inherent to their culture. This was distributed to schools to show how it is possible to create and use an ICT-related language based on the Guambian language, and, of course, to help with the students' literacy. The community is now using this course for its validation.

Figure 1. Multimedia materials developed by the Guambía Indigenous Reserve community on completion of the digital literacy project.

Source: Solarte, Urbano, Triviño (2007)

Conclusions

Colombian universities are gradually introducing VLE platforms to offer degree courses with a high e-learning component and are beginning to offer a wide range of programmes entirely online. For its part, the State – through the Ministry of Education – offers funding for certain programmes aimed at educational inclusion. But there is a long way to go: it is essential to broaden the reach of existing initiatives to encourage other educational institutions to implement virtual projects in a responsible way with high-quality content. Networks of e-instructors need to be created with advice from other highly-trained teachers with a solid research background. Although e-learning has the potential to democratise education, it is a major risk because of the need to create new academic and administrative structures in order to produce high-quality, constantly-assessed programmes.

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