

Special Issue EdTech and Policies of Human Formation

education policy analysis
archives

A peer-reviewed, independent,
open access, multilingual journal



Arizona State University

Volume 26 Number 114

September 17, 2018

ISSN 1068-2341

The Maelstrom of Online Programs in Colombian Teacher Education

Citación: Pineda, P., & Celis, J. (2018). The maelstrom of online programs in Colombian teacher education. *Education Policy Analysis Archives*, 26(114). <http://dx.doi.org/10.14507/epaa.26.3873> This article is part of the special issue, *Edtech e Políticas de Formação Humana*, edited by Lílian do Valle, Daniel Mill and Aldo Victorio Filho.

Abstract: The replacement of direct human interaction by the computer connected to the internet is one of the most radical reforms in the history of education. In the first part, we show chronologically how—unlike correspondence, radio and television—the internet is the only technology that has sought to replace human interaction in teacher education training in Colombia. By consulting databases, we describe the institutionalization of online programs in terms of a maelstrom with problems and tensions that occur while growing exponentially to represent 18.3% and 33.8% of the offer in higher education and educational sciences in Colombia. In a second part, we compared the experience of 1,206 teachers who study postgraduate teacher training programs in Bogotá in both online and face-to-face modes through a student survey and a writing test. The results indicate lower weighted performances in the theoretical content and work volume among those who study their programs in the online modality, as well as a lower but statistically non-significant mean in teachers enrolled in online programs. The history and problems encountered in the importation of curricular models entirely based on the internet warrants being studied empirically in the teacher training programs to determine their educational effects.

Key words: online courses, online degree, distance education, teacher education programs, teaching models

Journal website: <http://epaa.asu.edu/ojs/>

Facebook: /EPAAA

Twitter: @epaa_aape

Manuscript received: 30/4/2018

Revisions received: 21/7/2018

Accepted: 25/7/2018

El vortex de programas online en la formación de profesores en Colombia

Resumen: El reemplazo de la interacción humana directa por el computador conectado al internet constituye una de las reformas más radicales en la historia de la universidad. En una primera parte, mostramos cronológicamente cómo—a diferencia de la correspondencia, la radio, y la televisión—el internet ha sido la única tecnología que ha pretendido reemplazar la interacción humana en la formación educación docente en Colombia. Mediante consulta de bases de datos describimos la institucionalización de programas virtuales en términos de una vorágine con problemas y tensiones que ocurren mientras crecen exponencialmente para representar 18,3% y 33,8% de la oferta en educación superior y en ciencias de la educación en Colombia. En una segunda parte, comparamos la experiencia de 1.206 profesores que estudian programas de formación posgradual docente en Bogotá tanto en modalidad online y presencial mediante una encuesta estudiantil y una prueba de escritura. Los resultados indican desempeños ponderados más bajos en el contenido teórico y volumen de trabajo y un puntaje promedio más bajo, pero no estadísticamente significativo de habilidades de escritura académica en los profesores que cursan sus programas en modalidad online. La historia y los problemas encontrados en la importación de modelos curriculares enteramente basados en internet merece estudiarse empíricamente en los programas de formación docente para determinar sus efectos educativos.

Palabras clave: educación online, programa online, educación a distancia, educación docente, modelos de enseñanza

O vortex de programas online na formação de professores na Colômbia

Resumo: A substituição da interação humana direta pelo computador conectado à Internet é uma das reformas mais radicais da história da universidade. Na primeira parte, cronologicamente vamos mostrar como – ao contrário de correspondência, rádio e televisão – a internet tem sido a única tecnologia que tentou substituir a interação humana na formação de professores na Colômbia. Ao consultar bancos de dados descrever a institucionalização de programas virtuais em termos de um turbilhão de problemas e tensões que ocorrem à medida que crescem exponencialmente a representar 18,3% e 33,8% da oferta na educação educação e ciência superior na Colômbia. Numa segunda parte, comparamos a experiência de 1.206 professores que estudam o ensino programas de treinamento de pós-graduação em Bogotá tanto online como modalidade através de uma pesquisa de estudante e um teste escrito. Os resultados indicam menor desempenho ponderada no conteúdo teórico e carga de trabalho e uma pontuação média mais baixa, mas acadêmicos não estatisticamente significativas habilidades de escrita em professores que freqüentam seus programas no modo online. A história e os problemas encontrados na importação de modelos curriculares inteiramente baseados na Internet merecem ser estudados empiricamente nos programas de formação de professores para determinar seus efeitos educacionais.

Palavras-chave: cursos online, programa online, educação a distância, programas de formação de professores, modelos de ensino

Introduction

I have a feeling that my path is coming to an end ... and, like a dull hum of branches in the storm, I perceive the threat of the maelstrom. (José Eustasio Rivera, 1924/2013, p. 217)

The replacement of face-to-face interaction by the computer connected to the internet is one of the most radical reforms in the history of education in schools and universities. This particular use of information and communication technologies (ICT) to support teaching and learning processes has rapidly changed the educational dynamics and university experience of many of the more than 156 million people enrolled in higher education (UNESCO, 2018). In Colombia, by 2017, 18.3% of students enrolled and 33.8% of those enrolled in educational sciences (equivalent to 432,071 and 64,190, respectively) did not regularly attend university campuses to obtain their respective degrees. It is important to note that in 2007, only 10.2% (139,774) of the total number of students enrolled in Colombia were studying through online or distance education (with online methodology). In the case of students enrolled in Bogotá, 6.3% (26,171) and 24.1% (186,976) were studying online programs in 2007 and 2017, respectively, also showing a significant increase in this modality in the field of higher education. In the same period, teaching education programs dramatically increased from 14.3% to 43.3% (4,716 and 25,940) in Bogotá. Through the online modality, the Corporación Universitaria Minuto de Dios and the Universidad Nacional Abierta y a Distancia in Colombia have become the universities with the highest number of students enrolled in online programs in the country, with 64,327 and 119,314 students, respectively (SNIES, 2018).

Most of the literature on the effects of these programs is based on the hope that the use of ICT has generated. The literature review represents the illusion about their ability to replace colleges and universities as we know them today [see for example the compilations of and Moore and Anderson (2003) and Arboleda and Rama (2013) in English and Spanish]. The reading of these publications shows that apart from the positive view of online programs, there remains an unexplored space regarding the historical dimension and the educational effects on their use.

This space has begun to be filled by some studies that have identified problems associated with online programs. At least 10 problems have been analyzed using theoretical frameworks of the educational sciences. From a pedagogical and philosophical perspective, online programs can be associated with (a) the limitation of critical (Smith & Jeffery, 2013, 376) and conceptual (Paechter & Maier, 2010) thinking. It is unclear how the main components of online programs—their scaling and online methods—can be articulated with the historical educational process and fundamentally based on the human interaction and debate characteristic of Greek and Romanesque philosophical traditions and the pedagogical accompaniment (as an art and not as a technology) that promotes new forms of self-construction of the subjects who teach and learn (Hopmann, 2007). As for university didactics, (b) the standardization (industrialization or macdonalization) of a single online form of courses is questioned, replacing the university academic spaces (the professorship, the seminar, the colloquium, the research or professional practice, the undergraduate thesis advisories) that—according to the principles of didactic planning—must be adapted according to the type of student and the contents to be developed (Loviscach, 2013). This tradition has basic epistemological differences that makes the approach of university teaching incompatible as a technology that generates abrupt changes under the understanding that such teaching can be standardized under the principle of “copy and paste”. By contrast, pedagogy understands training as the accompaniment to the processes of personal and intellectual growth of students through conversations that are slowly

refined through the experience and personal transformation of the teacher throughout his/her professional career (Hopmann, 2007, 2003; Tenorth, 2006).

Other authors refer to (c) the deterioration of the educator's job and the precariousness of his/her work as represented—for example—by the increase in the working hours of university professors (Bender, Wood, and Vredevoogd 2004; Lawrence, 2006; Smith & Jeffery 2013): “seven days a week, both night and day, to stay on top of responses to email and monitor students' posts to course sites” (Smith & Jeffery, 2013, p. 376). Additionally, appealing to educational psychology, evidence has been found regarding the impact of computer use on psychological processes such as (d) concentration through the tendency to intercalate with other activities (Sana, Weston, & Cepeda, 2013), (e) memorization through the use of the keyboard versus handwriting (Mueller & Oppenheimer, 2014), (f) communication problems (Hara, 2000) and (g) the consequent lack of development of social skills through the replacement of human communication (verbal and non-verbal, which makes some teachers feel that they are speaking in a vacuum) by the internet (Engelberg & Sjoberg, 2004; Hew & Cheung 2014; Paechter & Maier 2010) and, in general, habits typical of the academic or professional field that are acquired through learning located in the formal and informal spaces of university life and culture that are forged and reproduced in the physical spaces of the campus (Adams et al., 2011; Falconer, 2013.). These limitations are compounded by (h) low student motivation and high dropout rates of up to 90% in the case of mass courses (Hew & Cheung, 2014; Lee & Choi, 2010), (i) problems in assessing students who do not get to know each other (Hew & Cheung; 2014), and finally (j) the low credibility of online program titles (associated with stigma and employability issues) as shown by surveys in the United States, where only 16% of employers gave the same value to an online program compared with a face-to-face program (Rosendale, 2017). Principals of schools surveyed in the United States have also been skeptical of hiring educators trained in online programs (Adams, Lee, & Cortese, 2012).

The current state of the literature therefore allows us to start from the premise that the import of ICT for the creation of online programs cannot necessarily be explained in terms of the import of “best practice” that works to improve educational processes. Statements about its functionality in the literature—which reproduce heroic stories about its implementation according to the imaginary model of how the university operates elsewhere—seem to be based more on an ideology rather than the effectiveness of its use. It is therefore necessary to study the institutionalization of online programs from approaches that do not assume their functionality in an a-critical way. The sociological, neo-institutional perspective of the theory of world society (Meyer & Ramirez, 2013) offers an alternative perspective, by allowing us to understand the expansion of online education as a modality of university training that is part of the package of pedagogical models and technologies that universities around the world adopt to show themselves and the general public that they are fulfilling their role of supporting national progress.

How has online education been institutionalized and what educational effects has it had on teacher training programs? In order to understand the institutionalization of online programs, we intend to investigate—in particular—their presence in teacher training programs. To date, empirical research on the effects of online education in Latin America is practically non-existent, especially in teacher training programs. However, the detailed analysis of the institutionalization of online education in these programs is crucial to understand the history and effects on student training of educational reforms based on the logic of standardization of these new technologies. It is within the same programs that social critique is generated regarding the use of ICT based on what we know about education, learning and teaching and the educational sciences. Through our analysis of the Colombian case, we argue that online education programs in higher education and especially in the area of education should be understood as a continuation of the cycles of processes of incorporating technologies into education rather than a completely new phenomenon, such as especially the

introduction of radio and television in the 1940s and distance education in the early-1980s. Additionally, we discuss the difference between this cycle and the previous one in that the use of technologies has been proposed through the internet not as a tool, but rather as a replacement for the teacher and human interaction at the university level, including teacher training programs. We describe its accelerated use in terms of a maelstrom of educational problems already mentioned in scholarly literature, which in this particular case can be evidenced in the decrease in academic content and the number of study hours.

In the first part, we present the importation of radio and television education and the rhetoric used to adopt distance education as a response to offer greater opportunities for access to primary and higher education initially and later to the Colombian population, as well as a way to contribute to the professionalization of teachers in Colombia, especially those who were located in remote areas. We now focus on distance learning programs to make way for online teacher training programs in Colombia with the support of document review and consulted databases. We do this because the shifts from correspondence to radio and subsequently to television and the emergence of distance education—which incorporates the three previous mechanisms—are seen as the precursors of online education. Although they all share in one way or another the idea of providing opportunities for access to education, especially for the disadvantaged, as well as a way of modernizing classroom teaching in the case of television, the major difference between online education and other forms of education is that it is focused on higher education specifically and is assumed to be a factor contributing to the quality of education. We propose that the adoption of online media for the accelerated expansion of higher education enrolment based primarily on teacher training programs can be described in terms of the metaphor of the maelstrom used in a classic of Latin American modernist literature (Rivera, 1924/2013). This novel was a social critique of the maelstrom of events following the rubber rush in the Amazon. We use this metaphor to move away from the dominant rhetoric describing the functional and organized adoption of “best practice”, whereby we describe the fever in internet adoption for the creation of entirely online programs as a series of confusing social events that change and break into the field of higher education. In a second part, we analyze the current situation of the specific case of state-funded postgraduate teacher training programs in Bogotá. Based on data from a survey of 4,763 and a writing test of 1,206 teachers collected in 2015, we showed how these programs are related to less theoretical content and less workload in contrast to face-to-face programs. In the conclusions, we reflect on the future of university online education, discussing whether it will have a dynamic similar to the adoption and forgetfulness of university fashions in the way described by Birnbaum (2001) or whether beliefs about their supposed benefits will continue to strengthen the current trend of contributing to the massification of higher education enrolment. We finish our article by reflecting on implications for educational policy and management.

Importing Distance and Online Education Methods

1940s-1980s: Birth and Decline of Radio Courses

In the 1940s, the first radio programs with educational content were implemented in Colombia (Bernal, 2012). This technology was imported two decades after its use in other countries, with the educational use of radio being recorded in the United States in 1917 (Cuban, 1986). In Colombia, education by radio was initially promoted by religious organizations, after which the state and other private organizations joined forces (Bernal, 2012). Unlike what would later happen with university online courses, radio education did not seek to replace the education system that preceded it. Its general trend was in its use for literacy (alphabetical knowledge, basic mathematical operations)

as well as community (health and agricultural) programs and it was not used as the main means of communication for academic content, as will be shown below. In tune with literacy, Gómez (2012) adds that the radio was seen as an ideal mechanism to increase access to education for the rural population, especially when at that time “Colombia had 9 million peasants and of these only among the adult population[there were] more than three and a half million total illiterates [there were] more than three and a half million[...] in each of these intelligences who were necessarily asleep[there was] a human loss for the country and a shame for Colombia” (Banco de la República, 2012). Radio thus became the mechanism for families to learn in their own homes (Leal, 2013).

The main objective of the organizations that promoted the radio courses in Colombia was to serve those populations located in remote areas of the national territory, which—due to their geographical characteristics—could not receive or have access to education, in this case to primary education. The areas where radio education was most widely used were rural and generally inhabited by the country's illiterate adult population. According to Bernal et al. (1965, 223), this education was considered to be “asystematic”, education “outside school system” or “education for community development”. These expressions show the recognition of radio education as opposed to the educational offer that did not use this medium and featured school infrastructures that students regularly attended to be educated. In addition, this type of education was not tied to a particular curriculum or strongly organized by grade level and did not lead to a specific title, as was the case with “systematic education” (Leal, 2013).

The Colombian state also used radio for adult education in connection with social and community programs (Bernal et al., 1965). The programs were integrated into day and night literacy centers; interdisciplinary teams of adult and health educators, agricultural and home improvement experts; rural boarding schools; the community action program aimed at improving the quality of life of the rural population; and agricultural education services, which explicitly proposed the economic and cultural insertion of the agricultural population (Bernal et al., 1965). Radio Nacional de Colombia—later called Radiodifusora Nacional de Colombia and now Señal Radio Colombia—has been the main radio station since 1940 (Gómez, 2012).

Some universities have also used radio for an explicit educational purpose and part of their outreach missions (Pineda, 2015). By 2017, there were 78 university radio stations, although they generally do not report being linked to formal university programs (Red de Radio Universitaria de Colombia, 2017). During the implementation of educational radio in the 1940s, the private sector carried out work through the National Federation of Coffee Growers, the Tobacco Development Institute, the Cotton Development Institute and the Social Crusade (Bernal et al., 1965). These institutions formed teams of people who moved to rural populations with literacy programs and technical assistance to improve their educational level and production.

The Catholic Church also promoted the use of radio through various programs and projects, including the Popular Cultural Action Project (ACPO). Founded in 1947, it would represent the first community radio channel in Latin America (Girard, 2003) and become a symbol of radio education in Colombia. This program aimed to indoctrinate the population in the Catholic religion and teach community skills (Girard, 2003). The ACPO received an annual budget allocation from the state and the “linking of international organizations such as UNESCO and public and private international foundations” (Bernal et al., 1965, 229).

The main organizer of this project was the priest José Joaquín Salcedo in the municipality of Sutatenza, about 120 kilometers away from Bogotá. The first radio schools were set up in this municipality “as an experiment to educate illiterate peasants [...], to reduce alcoholism, to improve the way of life of parishioners and to provide them with a religious and moral education” (Bernal et al., 1965, 228). It is not fortuitous that the emergence of this radio school was of Catholic origin. In 1941, the Society of Jesus had created Ecos de Pasto, Radio Sutatenza was related to the Diocese of

Tunja, Bolivarian Radio was associated with the Pontifical Bolivarian University in Medellín. Later, in 1953, Reina de Colombia in allegory to the Virgin of Chiquinquirá was operated by Dominican friars and in 1955 the Mariana Radio stations were led by the Augustinian priests (Gómez, 2012). The religious and political agenda behind this project also generated tensions with sectors with other ideologies and even within the Catholic Church itself. The disagreements between Salcedo and Father Camilo Torres (then representative in Colombia of liberation theology and later a guerrilla killed in Colombia) documented in correspondence (González, 1962/2012) and in the book that the latter wrote—in which he engaged in a sociological critique of the program (Torres & Corredor, 1961)—suggest that educational radio was not implemented as an apolitical literacy program but rather accompanied by a political and educational program.

At that time, the radio schools were the first network of Catholic radio stations in Latin America, according to Roland (2014). In 1948, the Catholic Church and the government of that time financed the expansion of the radio schools. By 1961, 892 parishes were participating, with a total of 15,924 schools and 129,681 students enrolled (Bernal et al., 1965). In the mid-1960s, Acción Cultural Popular had five radio stations located in the main cities of Colombia (Barranquilla, Bogotá, Cali, Medellín & Magangué) with two channels broadcasting “nineteen hours of daily programming reached millions of Colombians” (Roldán, 2014, 29).

The ACPO was in favor of an “integral Christian education of the Colombian peasant” through the interiorization of five values (spirituality, health, alphabet, number, economy and work) (Bernal et al., 1965). An additional feature of this program was its intention to reach out directly to peasants' households. On the other side, there was the teacher-announcer with an assistant, traditionally located in a school. This was the most important element to consider because although the radio was used, it was never intended to replace the teacher. By contrast, the teacher who taught the course was supported by an assistant who was properly trained to assist the peasants who listened to the teacher. “These assistants were the direct link between the teacher and the students” (Banco de la República, 2012). Thus, radio was seen as a mechanism to unite teachers with peasants.

The ACPO also exemplifies how radio education integrated previous technologies and ways of delivering instruction, specifically through the use of newspaper and correspondence education. The latter had been systematically implemented in England and Germany since the mid-19th century (Rothblatt et al., 1988), although no reference to its widespread use in Colombia is found. However, it is important to note that by the 1930s the government in Colombia had carried out mass education campaigns through “the printing and mass distribution of libraries with priority destination for teachers in public schools” (Gómez, 2012, p. 53). Thus, the radio programs were accompanied by i) primers and educational material distributed free of charge, ii) the weekly *The Peasant*, which had a circulation of 100,000 copies, iii) records and tapes as well as iv) correspondence comprising queries made by students and answered by teachers by return post. The contents of the programs were also accompanied by the so-called extension courses on rural economy, given to the managers and students of the radio schools, as well as the so-called peasant institutes of Sutatenza. Rural leaders were trained in these centers, and an estimated 275 people per year completed their training (Bernal et al., 1965). According to Bernal (2012) and Gómez (2012), this was one of the innovative aspects of educational radio in Colombia, complementing it with other “mechanisms” to enrich the educational process of students. By 1992, after 45 years of service, ACPO had achieved “the distribution of 6,453,937 primers nationwide, the publication of 75,749,539 copies of the newspaper *The Peasant*, the response of 1,229,552 letters from students and listeners, 1,489,935 hours of radio programs on Radio Sutatenza, and the distribution of 690,000 Discoestudio records in conjunction with 170,000 primers” in Colombia (Bernal, 2012, p. 11).

This new form of education posed major challenges for teachers, among whom more than half were said to have lacked vocational training who by the early-1960s, while no more than 10%

had a bachelor's degree and slightly more than 2% had attended a secondary school (Sarmiento 2009). However, it was also necessary for the teacher to have a mastery over peasant life in a broad sense for them to become true educators of the peasant school. Like the peasants, the teachers also received courses through the radio. The courses were designed so that teachers could recognize their students as people with previous experience and thus this implied knowing very well who the object of their teaching was (Sarmiento, 2009). At ACPO, teachers were classified into researchers and speakers. As their main responsibility, the former was tasked with designing the educational material used by the peasants, while the latter had to have a mastery of a field of knowledge, accumulated experience in teaching, a high level of knowledge of peasant life and especially exceptional communication skills (Sarmiento, 2009).

By the 1980s, radio courses began to give way to the growing use of television as a new media in the same way as they had in other countries such as the United States in the 1950s (Cuban, 1986). In 1989, Radio Sutatenza—a symbol of radio education in Colombia—was bought by a commercial radio station and ceased to operate (Girard, 2003). The importance of radio education faded as governments expanded the education system. However, state television continues to broadcast educational programs nationwide through Señal Radio Colombia, which replaced the Colombian National Radio Station, as mentioned above.

1950s-2000s: Educational Television and Radio Produce Distance Education

“Educational television is not in any way a new saving formula for our vast cultural shortcomings, nor is it intended to replace, as the Minister of Education has said, the indispensable work of the teacher. We want it to be your helper, a powerful audiovisual aid to fill the gaps that for known reasons are presented at all levels of our education.” (Restrepo, 1961).

The above statement of the Director of the National Television of Colombia was made during the inauguration of the educational television for the whole country. It represented the winds of the 1950s and 1960s in the political sphere and the discourse according to which television would support the educational process as the main mechanism for overcoming the country's underdevelopment, which prevented it from entering the international economy with impetus (Bernal et al., 1965; Lucio & Serrano, 1992). Eradicating illiteracy and increasing the years of schooling of the population continued to be seen as the most important purposes, since they constituted the bulwark upon which a new country would be built. The above quote also shows how the import of television for educational use was initially focused on supporting educational processes rather than replacing face-to-face interaction in the education system, as would happen later in universities. Proof of this—as will be discussed later—is the fact that television was used in classrooms. In particular, television was initially imported as a tool to support the exercise and training of primary school teachers, increase their motivation and reduce dropout rates (Universidad del Rosario, 2012, pp. 2-3). The educational television project was supported by the same sectors that had already promoted the educational use of radio, namely the state (through the Ministries of Education, Communications and Health), the Catholic Church and private organizations. These actors were joined by international and private organizations such as the US Embassy, which provided resources (Universidad del Rosario, 2012).

In Colombia, the development of television was linked to its educational use. Channel 1—the first national channel—began operating in 1954 under the administration of the Colombian National Broadcasting Corporation and later the National Institute of Radio and Television (Inravisión) in 1963 (El Tiempo, 2010). The educational use of television already had a long history, which can be traced to its use for these purposes in the United States from 1910 (Cuban, 1986).

Initially, educational television focused on primary education (through sessions called tele-classes) for use in the classroom. Unlike radio—which was thought of as a mechanism that inhabited peasant homes—television was conceived as a model based on a frontal relationship in which a teacher taught content and students listened to their explanations in the classroom. Accordingly, it can be said that both radio and television were two media—whether they were used in the home or the classroom—to support the teaching work of teachers. They turned to the media to teach their students: in the case of radio for those who did not have access to a particular educational infrastructure, and in the case of television for students who regularly attended a classroom.

Using television in the classroom implied the design of booklets by the Ministry of National Education to support the work of teachers (Universidad del Rosario, 2012). These materials included objectives, methodologies, topics to be developed, activities that the teacher could carry out in the classroom and even evaluations that the teacher could apply to know how much the students had learned. In addition to the material, teachers were trained through demonstration classes and were provided with psychologists and tutors who provided guidance to help them better incorporate television into their classes. By 1962, state programming had programs in the natural sciences, social sciences, music, drawing and handicrafts (Universidad del Rosario, 2012, p. 4). The Ministry of National Education was the entity in charge of selecting the topics and developing the contents that would then circulate in the tele-classes. In 1958, the Ministry of National Education began to offer training programs for teachers (Salazar & Melo, 2013).

At the end of the 1960s, Colombia received financial support and technical assistance through the United Nations to promote educational television. It had one of the four training centers of the Latin American Centre for Educational Television, whose purpose was to produce content for both television and teachers and which was then funded by the Organization of American States (Universidad del Rosario, 2012). In 1964, the government founded the National Institute of Radio and Television (Inravisión). This agency was in charge of organizing the television signal and providing cultural and educational programs until its disappearance in 2004. The Universidad del Rosario (2012, p. 6) estimates that in 1970 educational television accounted for one-third of television content at the national level.

The first distance vocational training program in Colombia offered by a university was the Unschooling University (UNIDES), as a project of the Faculty of Education of the Universidad de Antioquia between 1973 and 1976. The Universidad del Valle and the Departmental Secretariat of the Valley offered a similar program in 1973 (Salazar & Melo, 2013). According to Arboleda (2013), this offer was designed especially for teachers who needed to become professionalized, but who were unable to do so due to living in remote areas. The offer was organized in modules according to the organization of the curriculum and these were called self-study modules because the students had to appropriate them themselves. These modules gathered the experiences accumulated by the country with radio and television, as students had audio and video recordings available in the regional centers where students carried out group activities and received advice via "telephone and face-to-face tutoring meetings on weekends" (Arboleda, 2013, p. 55). The project of the Universidad de Antioquia did not present a successful case of formal university programs, as some authors present (Arboleda, 2013). On the contrary, the initiative to convert it into a formal undergraduate program was stopped by the student and faculty community (James & Arboleda, 1979). "Political confrontations with non-project students, staff anxieties, administrative, production, printing, distribution, and communication difficulties, and a 50-60 per cent dropout were unexpected events observed" (James & Arboleda, 1979, p. 272). The logistical, student motivation, dropout and performance problems encountered led to political tensions between the program promoters and groups of students and teachers, who were critical of the program's problems.

The use of the technologies of the time (radio, television, correspondence) for the provision of university programs entirely at a distance was made by private and Catholic universities. The Open University Program of the Pontificia Universidad Javeriana (1974), the Center for Non-School Education (CED) of the Universidad Santo Tomás and the Universidad of la Sabana (1975) were supported by the Distance Professionalization Program at the Universidad de San Buenaventura in Bogotá (1977) (Pinilla Diaz, 2001). In 1975, the Universidad de la Sabana created the Institute of Distance Education by offering undergraduate programs that combined face-to-face meetings with distance learning activities (Salazar & Melo, 2013). Through television and correspondence, the Pontificia Universidad Javeriana offered continuing education programs for teachers and undergraduates from 1982 onwards (Pinilla Diaz, 2001). The other public institution that promoted distance higher education was the National Learning Service (SENA), created in 1957 and until today the main institution of this level of education. In this regard, Salazar and Melo (2013) note that in 1977 SENA created and put into operation the Distance Learning Centre. It is important to note that this initiative led by the universities was supported by the Colombian state through the Colombian Institute for the Promotion of Higher Education (ICFES), created a decade earlier, which—despite proposing a model to the universities—was not successful because it led ICFES to become a distance university when its objective was to promote this type of education (Arboleda, 2013).

In the 1980s, a milestone occurred in the change in the use of ICT as a replacement and not as a teacher support: the official recognition of distance education at the higher education level during the presidency of Belisario Betancur (1982-1986; Lucio & Serrano, 1992; Salazar & Melo, 2013). This president played a major role in the import of this modality after being a student of an economic theory course at the Open University in England and his study of the distance education system of France in Senegal, as well as the distance universities of Costa Rica and Venezuela authors (Arboleda, 2013).

The distance learning modality was designed to cover all programs in higher education, as well as responding to national and international pressures to expand enrolment. In 1982, the same government created the Universidad del Sur—now called the Universidad Nacional Abierta y a Distancia (Lucio & Serrano, 1992)—to offer this type of program. In Colombia, the adjective *open* was added to the adjective distance. By this time, other universities had already been founded entirely at a distance across the world, such as the Open University in England, founded in 1969, followed by others such as the Universidad Nacional de Educación a distancia (UNED) (1972), in Spain; the Fernuniversität in Hagen, in Germany; (1974), the University of the Air, in Japan (1981); and the Open University of the Netherlands (1984; Arboleda, 2013).

Higher education institutions could create or transform face-to-face programs—denominated by the standard as school children—into distance learning programs as well as creating regional hubs for their offerings with new logic and terminology based on engineering rather than pedagogy. The term *mediatization* was used to describe the interaction between students and teachers with the use of “self-instruction and tutorial printed materials” and media such as ‘radio, television, audio cassette, video cassette’ (MEN, 1983). This concept was substantive because it had the real possibility that higher education could be “more flexibly adapted to the circumstances of the student's place and time, [making] wider access to the educational process possible for individuals” (MEN, 1983). Mediatization should be accompanied by “radio, television, audio cassettes, video cassettes” (MEN, 1983), among others. Distance education regulations warned that the distance learning modality should include face-to-face sessions and at least “one test or summative face-to-face” (MEN, 1983). Subjects taken by students in face-to-face programs could be recognized in distance learning programs and vice versa, thus guaranteeing the “right to transfer” that students had (MEN, 1983). Finally, decree 1820 of 1983 established that “the degrees awarded to those who complete Open and

Distance Higher Education programs will have the same validity as those issued by institutions with schooled programs” (MEN, 1983). Similarly, the state provided resources to provide educational credits for students to cover the costs of tuition for these programs (MEN, 1983). The expansion was also accompanied by evening programs (Lucio & Serrano, 1992, pp. 118-119).

At the governmental level, the policy of support for distance education was promoted and financed by the United Nations, the Inter-American Development Bank and the Organization of American States. Through decrees 2412 (1982) and 1820 (1983), this government created the so-called distance learning higher education system. Within the framework of this system, several universities began to offer distance learning programs around the country (Salazar & Melo, 2013). The goal of this government was to expand enrolment by 200,000 students through decrees and economic stimulus, although the actual coverage was 60,000 students in the four-year period (Lucio & Serrano, 1992). Jaime Arias—who helped to implement the process of inspection and creation of the National Open and Distance Higher Education Program—describes the process as a “monumental (...) and distressing” task (Arias, 1985, p. 23) because it was implemented in a few months and in a way that was unplanned in comparison with other countries. In 1982, 98.8% of students in distance learning programs (9,941) were teachers or educational administrators and the remaining 1.2% were nursing students (Castro, 1983, cited by Pinilla, 2001). Around 60% of the real supply was destined to teachers, who also moved up the teaching ladder and their remuneration through these programs (Lucio & Serrano 1992, p. 215).

The proposed goals were not met: in 1986, 54 higher education institutions offered distance learning programs, although this number subsequently dropped to 40 in 1990 and by 2000 there were only 35 (Salazar & Melo, 2013). It is likely that this decrease in participation is due to the opposite policy of President Virgilio Barco (1986-1990). This government focused on the quality of higher education, which it did not see as compatible with the policies to exponentially expand the access to higher education (Lucio & Serrano, 1992). Implicitly, their offer was discouraged and this change in institutional frameworks was reflected in the low participation of distance education in enrolment in higher education in Colombia. The discussion about the quality of the programs also took place at the institutional level. While the National University of Colombia and many of the main regional public universities never offered distance learning programs, others closed them (Lucio and Serrano 1992). Other private universities never became interested or gave up on offering distance learning while several public and private universities had distance learning programs (Salazar & Melo, 2013).

1990s-2018: The Internet and the Maelstrom of Online Education Programs

At the beginning of the 1990s, Colombia began to integrate the previous technologies with computers and the internet. The introduction of online methods to training programs was first made by universities and then in 2010 by establishing online education as an educational modality in the field of higher education in Colombia by the Ministry of National Education (MEN, 2010), defined as such when at least 80% of its academic activities are carried out using online methods. According to Facundo (2003), the first online programs were offered in 1992 when they began to offer master's programs at the Instituto Tecnológico de Estudios Superiores de Monterrey (Mexico) in partnership with the Universidad Autónoma de Bucaramanga (Colombia). The courses were produced in Mexico and transmitted by satellite to Colombia. Under the same scheme, universities from other countries offered programs: the University of Nova (United States), University of Calgary (Canada) and the Universities of Salamanca and Oberta de Cataluña (Spain; Facundo, 2003; Zapata, 2006). At this stage, Colombian universities did not participate in the curricular design of the courses. Later, in 1998, the Universidad Militar Nueva Granada and the Fundación Universitaria Católica del Norte began to offer online undergraduate programs (Facundo, 2003).

The initial discourse to promote online programs was first in his view as a mechanism to bring higher education to remote areas of the country (Alvarado & Calderón, 2013). Thanks to online methods, more people who could not move from their place of residence where there was no university could access higher education (Alvarado & Calderón, 2013; Facundo, 2003; Zapata, 2006). This political rhetoric is not new in public policy discourse, as has been shown with the experiences of radio and television and later on with distance education.

However, this narrative has been replaced by one that presents online education as capable of replacing face-to-face courses with higher quality. Some teachers attribute it in terms of increased student motivation: “Now more than ever, autonomous learning is becoming more and more relevant as the assumption and arrival point of training processes, especially in e-Learning environments” (Leal, 2013, p. 76). “The type of interactions that foster this type of non-formal learning environment is characterized by a positive assessment of the contributions of others, that the learning that was achieved is closely related to the objectives proposed in the course, and finally, that the motivation changes from an extrinsic to an intrinsic one, where students find meaning in the proposed activities by relating them to their work practice” (Cifuentes, Hernández, & Tafur, 2010).

This idea of best practice often includes the notion of innovation and the insertion of the logic of economics and engineering into teaching (Pineda & Streitwieser, 2018; Ramirez, 2010; Ramirez & Tiplic, 2013). Teachers are often confronted by managers or students who see more prestige in teachers who present themselves as innovators rather than as professionals guided by educational tradition and evidence-based pedagogical reflection. This perspective makes it possible to identify the profound tensions in its implementation. On the one hand, in the publications on online education reviewed (e.g. Arboleda & Rama, 2013), a view of university teaching prevails as a technology that generates abrupt changes that are suitable for being standardized and can be copied and pasted. This conception can be identified in the recurrent use of economic and engineering terms such as innovation, pedagogical innovation, educational innovation, synchronous and asynchronous sessions, ICT, online classroom, online campus, etc. English acronyms such as e-learning, online education or blended learning are also frequently used. Additionally, this view sees online education as the solution to the what is called “traditional” university or pedagogy. Practitioners following the economic perspective believe that both must be replaced with innovative technologies and a new university in the hills of their imaginations.

This understanding is in tension with the humanistic conception of teaching as an art for promoting personal development. This approach is rooted in pedagogy and the philosophy of education (Hopmann, 2007, 2003; Tenorth, 2006). In practice, this view translates into educators accompanying students’ processes of personal and intellectual growth of through conversations. From this perspective, teaching is not improved through jumps of adopting technologies but through a slow process of personal development through own experience and personal transformation (Celis, 2013; Celis Melo, 2006). Many Colombian educators still follow the tradition of social and political engagement and thus they tend to emphasize promoting social and political consciousness in seminars and the educational experience in universities overall (Malagón, 2007; Pineda, 2015). Online programs and universities are viewed as having lower quality (Misas, 2004) Academics following this conception see the term *tradition* not as old-fashioned but rather as evoking intellectually-grounded practices and in accordance with cultural practices developed over hundreds of years.

Online education in Colombian universities began to generate an isomorphic trend towards similar curricular forms and pedagogical strategies: two or three sessions a month accompanied by online forums and videos to be seen at home (called synchronous and asynchronous sessions) for all types of disciplinary areas, levels of study and student placement in the curriculum, thus replacing the university didactic organization. The old distance programs became online programs to the point

where it is now impossible to differentiate them in terms of their methodology. It is interesting how ICFES promoted the publication of a book in which discourses on educational psychology were taken up again to talk about teaching models and the importance of bringing them closer together with online methods (Henaó, 2002), partly due to the urgency of not seeing online methods as a mere technique without pedagogical correlation. Some—more radical—tended to see online methods as a new pedagogy, which was revolutionizing the way in which students learned and especially teachers taught (Alvarado, 2013; Facundo, 2003). It is interesting to note that these pedagogical discourses—especially those on the potentialities of online methods in learning—are not based on robust research; rather, they were exercises made from the discourses on which pedagogy had been built in the past.

Within this institutional framework, there was a boom in online programs and teacher training, generating a maelstrom that changed educational experiences and administrative forms in many universities in a very short period. The directives and teachers were guided by their belief in the suitability of replacing human interaction with computers connected to the internet. In the midst of this social impetus, the Colombian state—through the Ministry of National Education—began to launch calls for proposals to encourage higher education institutions to adopt the online modality of both distance face-to-face programs offered at the time (Salazar & Melo, 2013). An additional factor to the rhetoric of quality was the inclusion of online methods to improve administrative processes within universities (payments, certifications) to better serve students (Salazar & Melo, 2013).

This change in institutional frameworks has allowed online programs to grow exponentially in just one decade. Figure 1 clearly shows an exponential growth in online education at the national and district levels, as well as in the field of education. Online programs have had an exponential increase in enrolment in both absolute and relative terms. Enrolment has grown steadily between 2000 and 2017. The increase is exponential: from 9.5% of students enrolled, equivalent to 87,115 students studying in online or distance mode (distance learning programs are currently and in practice equivalent to online ones) to 18.3%, corresponding to 432,071 students. In Bogotá, there is an even greater increase, from 13.6% (51,021) to 24.1% (186,976) over the same period. The field of educational sciences has been one of the fields with the greatest propensity for online enrolment: currently 33.8% of those enrolled in educational sciences—equivalent to 64,190—are enrolled in online programs. At the graduate level in education, almost half of the students (48.8%) do not regularly visit the university. The growth in enrolment in online programs is partially due to the increase in the number of undergraduate and postgraduate degrees in education, where there is a greater proportional increase than found in programs in other areas of knowledge.

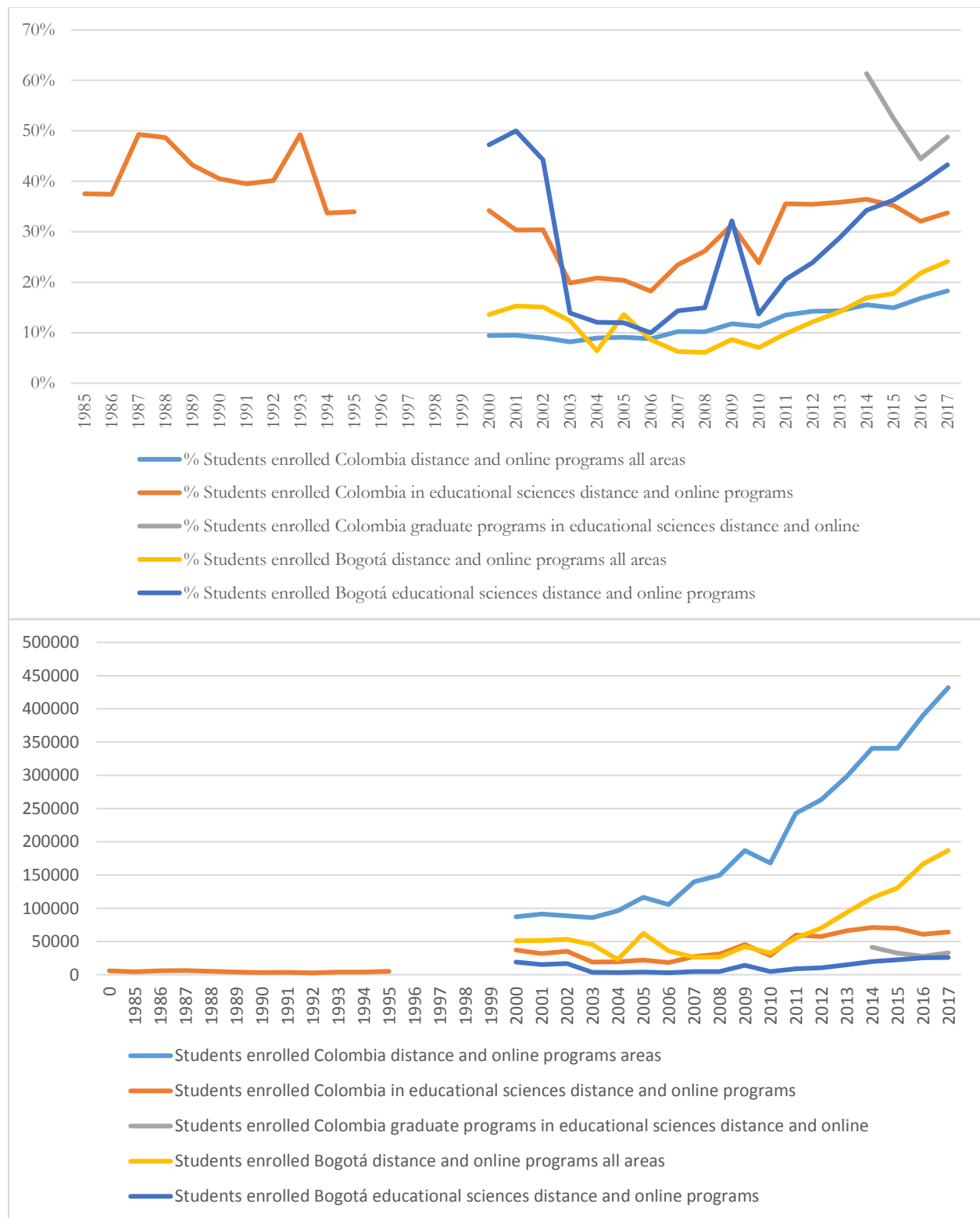


Figure 1. Percentage and number of students in online, teacher training and graduate programs in Colombia 2007-2017.

Source: From 1984 to 1995 ICFES (1998), cited by Pinilla Díaz (2001); and 2007 to 2016 (SNIES 2018)

Through this offer, some universities have rapidly converted into key players in higher education in the country. Corporación Universitaria Minuto de Dios (now the largest university in the country) and the Universidad Nacional Abierta y a Distancia—with 119,314 and 64,327 students, respectively—base their offer on online programs. Accordingly, they have reached a student population similar to that of the larger traditional universities in a short space of time. For example, Universidad Nacional de Colombia (founded in 1867 and with 53,067 students)—once the largest university in Colombia—had taken more than 150 years to reach this offer (SNIES, 2018).

With the massification of online programs at the undergraduate and postgraduate levels, their offer and methodology began to be institutionalized in many circles as part of the norms and customs to be followed within the universities. It is for this reason that initiatives such as the Ministry of Education with the support of ICETEX began in 2009, only with the support of master's degrees in online or blended mode (ICETEX, 2010). The Ministry of Education of the district had the largest project to finance postgraduate offers for 9,000 public school teachers from 2008, integrating new, previously-unknown policy mechanisms: first, it was a financing mechanism of supply and not demand, in tune with the new forms of governance of higher education in Colombia (Pineda & Celis 2017, 2018); second, it promoted postgraduate formal education and not non-formal education courses; and third, it financed programs of different areas of knowledge in face-to-face and online modalities according to the teacher's choice. Between 2008 and 2012, 732 teachers were trained, and in the following district government from 2012-2016, 5,481 teachers were qualified (SED, 2015). In 2017, another call was made for the financing of 134 teachers (SED, 2017), albeit none of them in online mode. Other regional education secretariats also had similar offers, such as the Department of Antioquia and Cundinamarca.

As of 2015, it becomes clear in the regulations that the fascination with online programs begins to have contradictors that limit their application for teacher training. The tensions in academic media about the relationship between the low levels of performance of Colombian students and the quality of distance programs caused the Ministry of National Education in 2016 to change the previous regulation of 2010 to give the approval of operation to the degrees in education in which it limited online management through decree 2450 (2015). This rule explicitly contravenes the imaginary about the virtues of online education and reinforces the face-to-face component so that undergraduate programs in education can obtain or renew the operating license of these programs. The Ministry maintains in Resolution 0246 (2016, 2) that creates regulates the creation or renewal of operating licenses to offer degrees:

That national and international studies indicate that a greater face-to-face component in the formation of a teacher, directly affects a better performance of their students in the subsequent professional practice of the teacher. (...).

That different studies show that the presence in the undergraduate academic programs positively impacts the decrease in the dropout rates of such students.

That in response to the above, must have a regulation that requires that the degree programs have a substantive face-to-face content and practice spaces in real contexts, which allow future teachers to develop skills that positively impact on educational quality from the country (MEN, 2016, p. 2).

It is evident then that some officials and advisers of the Ministry of National Education established a dialog with the academy to recognize that online methods are related to the desertion of students and does not necessarily contribute to the development of the competences required by students to practice the teaching profession. The ministry established additional requirements to degree programs that adopt the distance modality, which revolve around having robust information systems so that students can access materials, repositories of information and all of the necessary

technological infrastructure to give administrative support to the programs (MEN, 2016). It is appropriate to highlight that a regulation of this type that establishes face-to-face conditions regardless of whether the program is remote or online has not been imposed on another area of knowledge in Colombia. This regulation represents a breaking point with the whole tradition that had been built around the incorporation of radio, television and distance and online methods as elements to train teachers. Face-to-face modality is according to this regulation no longer seen as an aspect that did not allow the professionalization of teachers. Now the professionalization depends on the students to attend programs that must obligatorily have face-to-face components, especially regarding pedagogical practice, whether it has online or remote components.

This regulation seems to represent a distancing from the tumult of the creation of license plates and online programs that had occurred in the last decade. The standard recognizes and institutionalizes online training through terms such as online campus, TIC, Online Learning Objects (OVAS) and other terms that are incorporated with ICT. However, the ministry establishes that the pedagogical practice must be carried out in person (MEN, 2016). In addition, the regulation has established the compulsory accreditation for undergraduate degrees in education, a requirement that has brought new demands for the opening or maintenance of programs.

The critical mass compared with online programs has recently been faced with the last form of virtualization that arrived in the country along with a new curricular form: the modality of courses nominated as MOOC (Massive Online Open Course). This modality of free online courses has become increasingly popular since the Stanford University course in this modality had 160,000 entries in 2011 (Lewin, 2012). At the national level, it remains in the imaginary represented by Arboleda, the educational consultant in online education: the MOOC that “allows students to define topics of interest, schedules, techniques and methods of study, as well as to create their own blog in any of social networks or share in it their videos within the dynamics of collaborative work” (Arboleda, 2013, p. 59). But academic literature has estimated that MOOCs are not representative of how learning occurs in universities (Al-Imarah & Shields, 2018). The first national university to develop them was University of los Andes, which has played an important role in giving legitimacy to online education in Colombia given its prestige and position in national and international rankings and its master's degree in education with a 70% online modality (Pineda, 2015). The process can be described in a manner similar to a ceremony of legitimation towards society, whereby different universities and even state agencies have imported and invested enormous resources in their preparation. Reading the advertising produced by the new administrative units responsible for managing them, it can be interpreted that MOOCs are used as a tool of reputation to make the university more accessible, as well as more innovative and attuned to global trends in higher education.

Of course, the offer includes teacher training courses, including courses such as citizenship trainers (Universidad de los Andes, 2018), education for peace (under the names conciliation of conflict and culture of peace and making peace in Colombia) and teaching science and mathematics (now known as STEM for its acronym science, technology, engineering and mathematics). The Universidad de la Sabana (2018)—another private university—offers a MOOC on educational innovation and educational video games. The new imported discourses through which the teaching of ethics at the national moral level is institutionalized are especially prone to be combined with methods equally brought from the United States and other Western countries for the elaboration of curricular reforms. Unlike the use that is frequently given to MOOCs in the elite universities of the United States, in Colombia these courses can be validated with academic credits and thus they can be part of formal undergraduate and graduate programs. At present, there are no critical academic documents on this educational offer as they exist in the countries from which they were imported (Guzdial & Adams, 2014; Hew & Cheung; 2014; Loviscach, 2013; Rosendale, 2017). As in the case

of online programs, there is a very large space to inquire about their educational effects through scientific tools.

Educational Effects of Online Training Programs: The Case of Bogotá

In the state of the art about online programs, the analysis of their educational effects is also required. This inquiry could complement the historical analysis of the difficulties in their implementation and their connection with previous forms related to the introduction of radio, television and distance education. The first part of our study contributes to filling this gap by presenting the institutionalization of distance education as a way related to previous distance methods that has also occurred as a process of expansion of online programs and teacher training that we describe as confused, disorganized and not precise, due to its planning and rationalization of resources for the improvement of the educational system. In the second part of our study, we situate ourselves temporarily in the current situation in which the number of online programs has increased. We complement this analysis by studying the current situation of master's programs in education to which the professors access to be trained.

Method

In methodological terms, the method selected for the whole study is a three-phase design, involving (corresponding with the previous section) the consultation of educational indicators, the application of the student survey and the application of a written test. We applied a student survey and an academic writing test to students—in this case, practicing professors who worked in official or public schools—in the face-to-face and online modality of postgraduate academic programs in the 2007-2014 period. Students financed the cost of tuition so that they could enroll in these programs. The financing was granted by the Secretary of Education of the District of Bogotá (SED)—the administrative division of the capital of the country in the Colombian semi-decentralized system—by means of a system of forgivable credits in 70%. The students could study programs in different thematic areas and modalities chosen by themselves from a previously selected list.

First, the survey inquired about the educational experience of the students. The main theoretical constructs that we approached were the educational, learning and teaching processes during postgraduate training. We return to the definition of education of the continental European tradition as a process of self-construction of the person and the development of their potentialities (Henningsen, 2013; Humboldt, 1810/1982; Tenorth, 2006). We define learning as individual changes in behavior that facilitate a new possibility of interaction with the world from their previous knowledge (Piaget, 1964, 1972). We start from a constructivist dwelling to inquire about learning processes, but we also ask questions based on situated cognition theories that explain other types of changes that occur in people, such as changes in their sense of identity and ways of seeing the world (Lave, 2009, Lave & Wenger, 1991). Finally, we identify the teaching process with a close link between teaching and research, again from the European perspective of education as a personal and intellectual transformation known as *Bildung*.

The survey had 139 variables on different subjects of the studies and it was completed on average in 25 minutes through an online platform. Variables of the inputs and the educational process were included (Madaus, Scriven, & Stufflebeam, 1983). We had closed questions, which were supplemented in some cases with open questions. Out of them, we chose two in this article: theoretical content and academic load. The values of these variables allowed us to infer relevant patterns for this article. In addition, the type of question that inquired about the perception of the student's time and academic workload facilitated a comparison between groups. Many of the other study variables were discarded because they were not relevant (the instrument included other topics

such as school leadership) or because they did not show different results between modalities or areas.

The information collected was analyzed by comparing 1,206 respondents, corresponding to 1,011 students who responded to the mail sent to the total population of 3,218 students in programs from different areas of knowledge. Of them, 1,011 corresponded to face-to-face or blended modality and 178 online modality (17 did not classify their program and therefore were discarded). The online programs essentially belonged to private universities: Universidad de la Sabana, University de los Andes, Corporación Universitaria Minuto de Dios, Tecnológico de Monterrey (in Mexico) and Universidad Santo Tomás. The only public one was the National Pedagogical University. The information collected and analyzed by descriptive statistics and t-test for two independent samples allows discussing the perceptions about the theoretical weight and the academic load and contents of these programs with empirical information.

Second, we applied a test comprising writing a 1,000-word essay on a specific topic in a time of four hours. The theoretical construct of the test is academic writing, understood as a certain form of written communication that allows communication between colleagues in the same field (Gillett, Hammond, & Martala, 2009), in this case the educational field. The theoretical construct of academic writing became operable in organizational items (Gillett, 2014), coherence (Ferreiro, 1989), argumentation (Braun, 2003; Sinnott-Armstrong, 2010), conceptual thinking and analytical thinking (Ausubel, 1968; Novak & Gowin, 1996; Spencer & Spencer, 1993), grammar and citations (UNICert, 2017).

The writing test was applied through an online platform to 216 students of face-to-face programs and 41 students of online programs. Accordingly, 257 volunteer participants voluntarily answered the test among a total number of 1,206 students. The tests were collected and evaluated by independent experts. The reliability analysis of the test showed a Cronbach's Alpha of .857 among its six evaluation items, which represents a good internal consistency. The reliability analysis between two evaluators of $r(18) = .623^{**}$ also showed that there was a stable relationship between different evaluations. Finally, the student scores were analyzed by descriptive statistics and a *t*-test for two independent samples.

Analysis 1: Theoretical Content

In order to study the theoretical content of the programs, we chose one of the questions in the survey that referred to the theoretical content of the courses. In order to investigate the perception of academic content—as opposed to a practical emphasis—we asked the following question: “What percentage of the topics of the training programs has been or were practical or theoretical, either within the courses or through the program? If you have not finished with the courses of the program, the question does not apply.” The answers of the different students were divided by the modality of the programs. There were responses from 400 students, of which 346 were students in face-to-face or blended modality and 54 in online modality.

In order to examine the differences in the theoretical content under statistical criteria, we performed an analysis using a t-test for independent samples. The analysis of the independent sample t-test shows that this difference is significant with a medium effect. On average, students who studied in online programs had a lower level of theoretical content of their courses ($M = 54.14\%$, $SE = 2.55$) compared with those who attended face-to-face or blended programs ($M = 65.94\%$, $SE = 1.14$) (see Figure 2). The difference between the two groups is -11.8% , BCa 95% CI $[-17.079, -6.552]$ can be considered significant with $t(398) = -4.395$, $p = 0.000014$. We calculated the standard deviation difference and found that the difference between the two groups corresponds to a Cohen's $d = \frac{65.94 - 54.14}{20.593} = .573$, showing a medium effect.

The difference in the total load of theoretical courses of the students provides evidence that allows discussing the criticisms of authors regarding the changes of contents and educational objectives that are implicitly given in the online programs. It is possible that the limitations of generating critical thinking spaces identified by Smith and Jeffrey (2013) and the limitations of discussing and clarifying concepts by online means discussed by Paechter and Maier (2010) lead to a tendency to reduce analytical contents of the programs by other types of activities that were considered more practical, being focused on professional content. The online programs chosen by the beneficiaries of government aid had a more professional emphasis and less theoretical foundation.

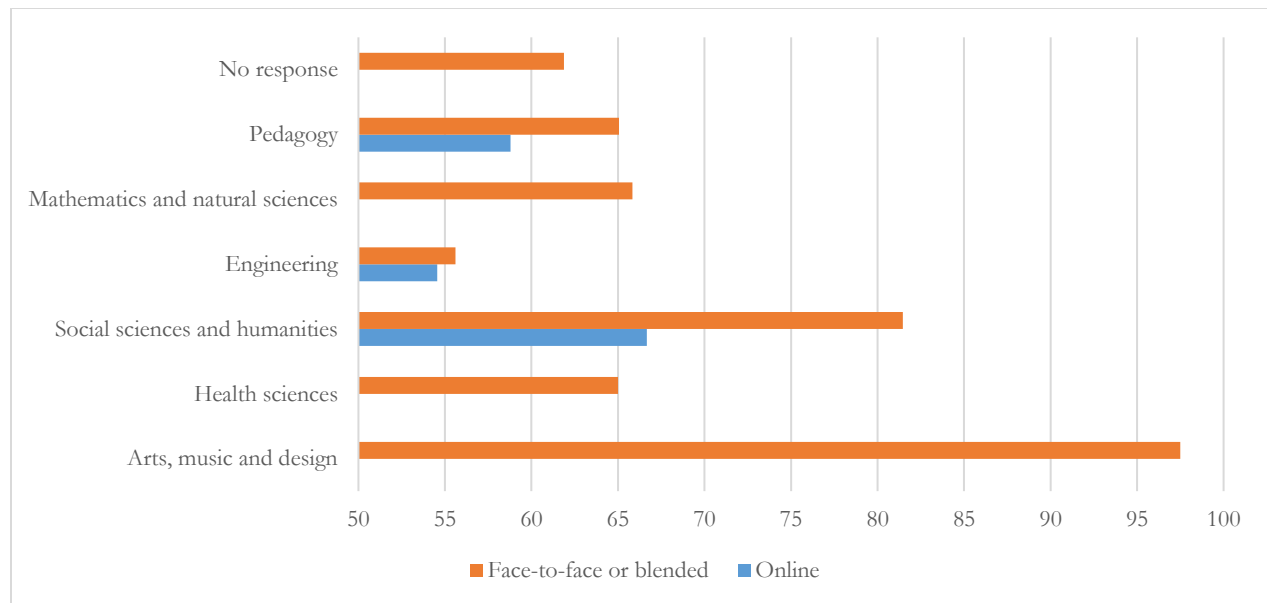


Figure 2. Percentage of theoretical courses according to online or blended modality.

Note: All, n = 1206, Art, Music, Design n = 11, Health Sciences n = 4, Social Sciences and Humanities n = 81, Engineering n = 132, Mathematics and Natural Sciences n = 15, Pedagogy n = 672, Did not answer n = 291

Additionally, we reviewed the areas of knowledge that had a lower average level of theoretical content in relation to the modality used. Figure 2 shows that the percentage of theoretical courses is on average lower in all areas of knowledge in which there are online programs, based on the perceptions of the students themselves. There is a pattern of reducing the theoretical content in all areas of knowledge when offered in online mode. The emphasis is clearer in the area of social sciences and humanities, in which the theoretical load is reduced by 13.15% when students take online programs. However, in the field of pedagogy, the difference is 5.41%. In turn, in the programs categorized in the health sciences and the field of arts, music and design, students did not attend online programs. This tendency also supports criticism of the bias towards a certain type of content that occurs when a modality is privileged.

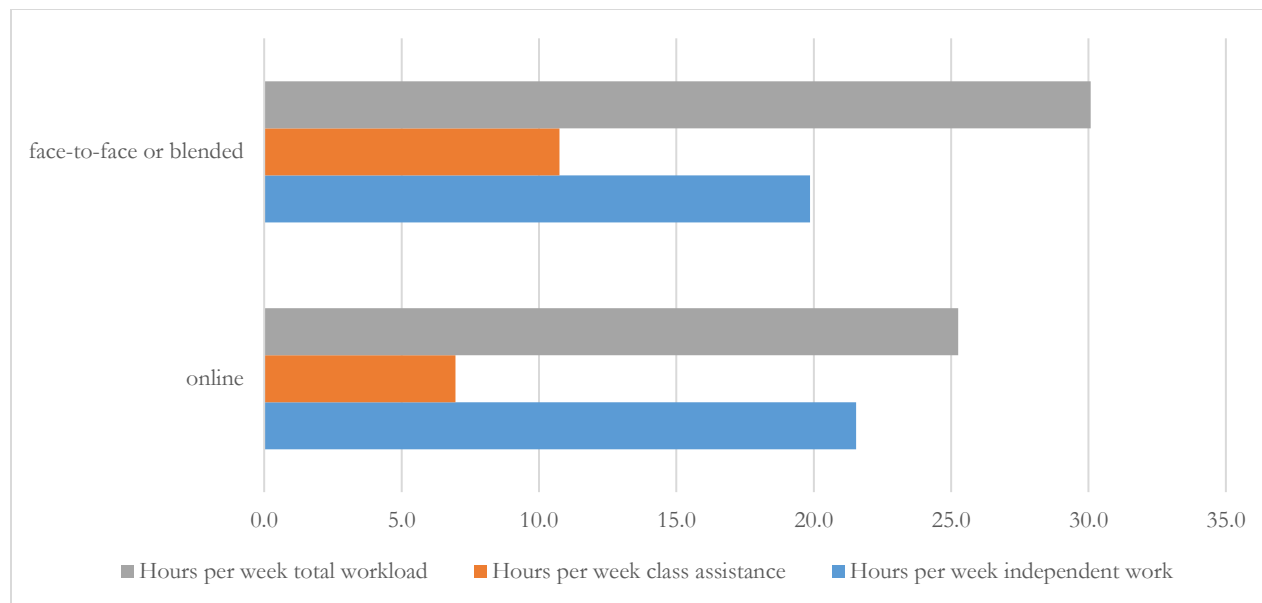
These differences in the content of the courses suggest that the teachers of the online programs adapt them to contents that can be managed through online platforms. A lower level of theoretical content shows that the adaptation of these programs is not guided by an objective to make them more academic and work better, as the research component that defines a master's degree. This evidence shows that the online education programs financed in Bogotá are more

adapted to a postgraduate education that seeks to generate professional skills than to the intention of academic discussion. In fact, this emphasis on skills for work is precisely the advantage that the promoters of online programs present at the national level as advantages of this modality (Arboleda, 2013; Cifuentes, Hernández, & Tafur, 2010). However, for other education experts, this direct search for job skills and human capital formation reduces the critical and academic educational purpose of university and postgraduate education (Paechter & Maier, 2010; Smith & Jeffery, 2013). These differences may be representative of how the change of modality in Colombia and the world may be associated with a change in the content and educational objectives of university education towards an emphasis on professional skills only in contrast to the previous analytical and scientific emphasis that has been characteristic of postgraduate education since the emergence of the modern university (Clark, 1995).

Analysis 2: Academic Load

In our next analysis, we looked for other patterns that differentiate online and face-to-face programs. Thus far, it has been identified that online courses can mean more work for the teacher, partly due to the difficulties that they face in communicating effectively (Bender, Wood, & Vredevoogd, 2004, Lawrence, 2006; Smith & Jeffery, 2013). However, we could not find a job that compares the number of hours worked, even though this is an elementary factor in the educational process and the educational quality of an academic program that is often overlooked in the literature on education and distance education. In order to estimate the perception of the number of hours worked by the student, we asked the question: “On average, how many hours per week worked for the program?”. In turn, the questions differentiated between class time, independent work and total time spent without taking transportation hours into account. Essentially, we are guided by the information provided by the students without having the possibility of a physical record of their attendance.

Figure 3 shows differences between the different groups, which were verified again by means of a t-test for independent samples. We found significant differences and strong effects between these two groups in the volume of work reported by the students. Students of online programs report a lower workload ($M = 25.82$, $SE = .899$) compared with those who attended face-to-face or blended programs ($M = 29.92$, $SE = .497$). There is a difference between the two groups from -4.1 hours per week BCa 95% CI $[-6.012, -2.218]$. Differences are significant with $t(1168) = -3.627$, $p = 0.000299$. A large effect is inferred from Cohen's $d = \frac{29.92 - 25.92}{.497} = .825$. This difference allows waiting for changes in educational outcomes by a difference of almost four months in a two-year study. These tests support our argument about the difficulties that exist between the educational process depending on the modality of the courses. Figure 3 also shows that the differences are mainly in the hours of class attendance and not in the time dedicated to the activities independently.



	Hours per week independent work	Hours per week class assistance	Hours per week total workload
Online	n=178	n=178	n=178
Blended	n=1011	n=1011	n=1011
N/A	n=17	n=17	n=17

Figure 3. Hours of weekly work, assistance and independent work in face-to-face and online programs

The differences between the workload of students in online programs and face-to-face programs have important educational implications. The lower amount of time devoted to studies should not be analyzed as if this time was rewarded in some way. Several critics of online education point out that interaction with the teacher is not replaceable in the ease of communicating, motivating and presenting oneself as an example to students (Engelberg & Sjoberg, 2004; Hew & Cheung, 2014; Paechter & Maier, 2010). This criticism would be especially valid if it also shows that online programs do not offer the same quality of interaction but also a lesser amount of time. There is not much academic literature delving into this problem that would allow us to question the premise according to which online education has been implemented because it is a better educational option. It is also worthwhile to inquire about the students' perception of these differences in the volume of work, especially in the case of programs such as the one at Columbia University at the international level and the Universidad de los Andes at a national level, where the titles of the master's programs in education are formulated equal for the students without reference to the modality through which they were studied. If this is the case, it is also appropriate to study the differences in the academic performance of students in different modalities.

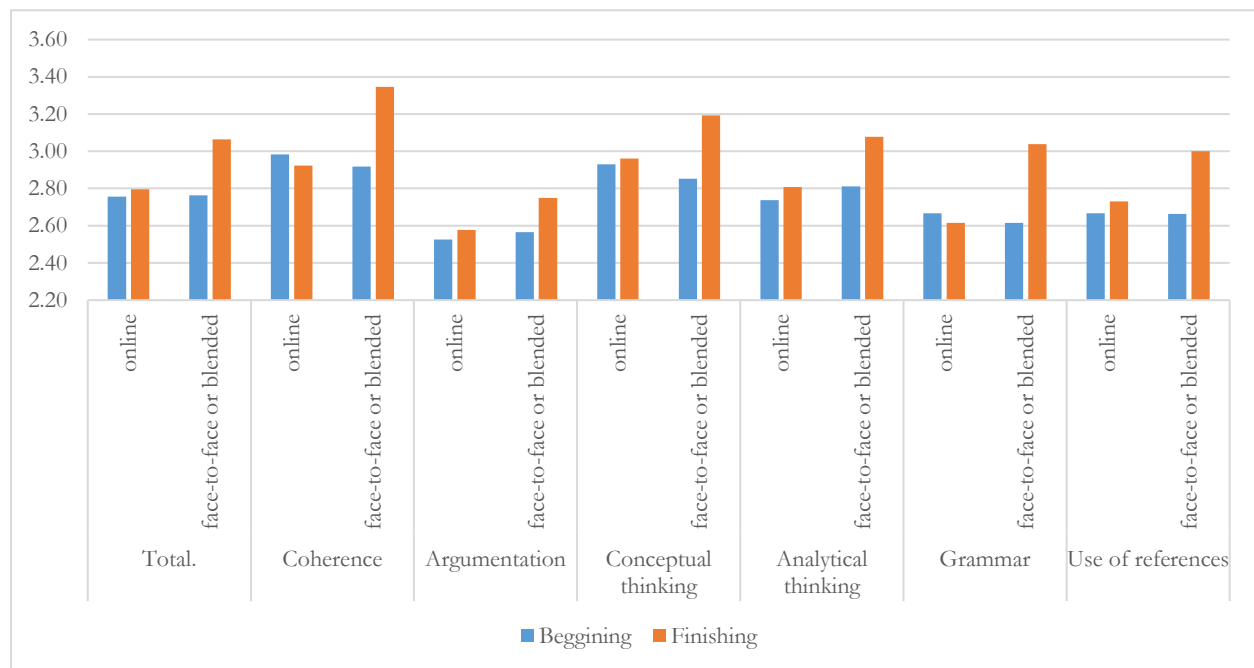
Analysis 3: Academic Writing Skills

In order to examine the differences in academic performance, we implemented an academic writing test under the assumption that it is a general skill and specific skills that allow us to approach the cognitive aspects of the training programs and the differences between modalities. We designed Figure 4 to ascertain whether there were differences in written communication skills in an educational topic. The highest score of the test with a 0-5 scale was obtained from the weighted average of the different components. The analysis of comparison of means of students face-to-face

or blended ($M = 3.063, SE = 0.094$) and online programs ($M = 2.79, SE = 0.106$) through a t-test did not yield significant results between groups of students finishing studies: $t(76) = 1.747, p = .0847$. The difference between means of students in each of the modalities of -0.267 BCa 95% CI $[-.0375, 0.572]$ does not allow conclusively determining that there are differences between students in each of the modalities. However, the differences represented a small effect, calculated by $d =$

$$\frac{3.06-2.79}{0.68} = 0.40.$$

These results are unsurprising: the ability to write appropriately takes years of schooling, and it is not necessarily expected that measurable effects will be found within a difference of one-and-a-half to two years between participants. However, the general tendency of the means of the two groups in Figure 4 shows that there is an initial tendency of higher evaluation averages between students who attended face-to-face mode and those studying in virtual masters.



	Beginning	Finishing	Total
face-to-face or blended	$n=122$	$n=52$	$n=174$
Online	$n= 57$	$n=26$	$n=83$

Figure 4. Written communication and related high-level cognitive skills of teachers beginning and ending studies according to face-to-face and online modality

Figure 4 also shows that postgraduate programs seem to improve written communication in all dimensions: organization, coherence, argumentation, conceptual thinking (deductive), analytical thinking (inductive), grammar and citations. This evidence would allow supporting in a moderate way the notion that the study time allows improving some cognitive abilities of the students that possibly also cover other aspects of their further training in postgraduate programs. This exercise also allows presenting how future research on online programs can involve empirical information for reflection on their educational effects.

Discussion

This study on the institutionalization of online programs in Colombia—with an emphasis on teacher training—had as a sociological perspective its starting point, and in particular a neo-institutionalist approach to the theory of world society (Meyer & Ramirez, 2013). Assuming this perspective, we were able to distance ourselves from the dominant rhetoric found in the literature on online education. This modality is part of the reform packages that teachers, principals and politicians export and import as rituals that they must adopt to make sense of their practices and develop a professional identity. In this case, online education is an element of social distinction that shows a teacher as an “innovative” university professor or an innovative university generating a cultural pressure that activates the mechanisms to implement computers and the internet. This adoption of new technologies in connection with standard pedagogical forms such as online forums in replacement of university didactic forms such as the chair, the seminar and the research seminar. Online education came to Colombia from a global environment, and in this article, we have shown how its import has been given as a disorganized process and guided by a social prestige that is not necessarily based on its proven educational effects.

As it occurred around the world, the social recognition of online programs shared two previous features in correspondence education, namely radio and television. First, distance and online education are mainly aimed at higher education, while the other two are aimed at primary education. The reason is that radio and television were designed to teach literacy to peasants and raise the cultural level of students. On the other hand, the distance and online modalities are conceived as essential elements to increase opportunities for entry or access to higher education. This is hardly comprehensible from a functionalist perspective because by the time that radio and television were adopted, Colombia needed to create conditions to increase the access to primary education. In the case of distance and online education, the social context was different and the pressure for access to higher education remains the priority.

Within this framework, we have shown that the use of the internet does not represent an abrupt innovation that has started to solve educational problems at different levels, but a further development of the use of ICT in education. A first emphasis on ICT as a tool for the teacher began to be replaced by a rhetoric that maintained the idea of accessibility, although it added the idea of efficiency. In Colombia, from the 1990s onwards, different actors within and outside universities began to proclaim something different: the viability of replacing the tradition of university pedagogy and didactics with the use of the internet, not as a tool but as a replacement for university classes. Unlike the use of previous technologies, online education had a boom that can be seen in the increase in enrolment to the point that 18.3%, and 33.8% university enrolment in educational sciences and 48.8% of enrolment in educational sciences at the graduate level correspond to online programs. The number of students enrolled and the mechanisms for financing supply and demand by the state are often guided by the imagined and untested educational benefits of online education.

The historical dimension appropriate to the neo-institutional perspective allowed us to observe the origin and differences between the different models that Colombia has been importing since the 1940s. It was also useful to highlight the critical opinion of actors in Colombia that is not usually highlighted in the literature. Academic discussions about online education are not clearly present in the literature in Colombia on the subject, although until 2016 they began to be explicitly integrated into local regulations with the Ministry of National Education limiting them to fully online teacher training programs. It is possible that the end of the maelstrom these new institutional frameworks will generate and demonstrate fever towards online teacher training programs.

At the same time, the case of the online postgraduate programs financed by the SED in Bogotá allowed us to continue developing our argument that emphasizes the adoption of online programs as a copy and not as a mechanism with necessarily proven effectiveness. Collected evidence allows discussing the educational implications when online programs show differences compared with face-to-face programs in this specific context, especially in key aspects such as the theoretical content and workload. The literature on online programs has not received sufficient attention to discuss these aspects based on empirical information.

In this second part of our study, we did not intend to provide definitive evidence on these issues. As social scientists and educators, we are well aware of the difficulties of empirically following up on complex issues such as the educational effects of a postgraduate program. There is not and cannot be a valid and reliable test to measure the overall educational effects of an undergraduate and graduate program, not to mention the ethical and practical impediments to randomization. In turn, surveys have the intrinsic bias of being subject to the opinion and emotions of respondents. This means that education cannot be measured as it can be with a mousetrap or a vaccine, since it affects different dimensions of the person and has profound effects in the medium and long term (Ramirez, 2010). These methodological limitations cannot be solved with instruments from sociology or psychology, although they can be used to collect useful information to discuss central issues such as the expansion of online programs with an educational approach. The survey and the written test that we applied are mere approximations of what may be happening within programs and we were explicit that cognitive skills are only some of the common pedagogical and disciplinary skills of the teaching activity. Much of the literature on e-learning simply does not start from systematically-collected data on students' experience and skills.

Conclusions

In conclusion, our argument differs from the thesis that the computer connected to the internet is a technology that has proven its benefits to replace the university class. In any case, this other perspective is understandable. The internet and even academic literature is flooded with texts that reproduce a discourse about the power of technology in changing already-troubled education systems. These writings present stories about the achievements of ICT implementation in the institutions themselves. Some are even published in indexed journals whose main theme is online education or the use of technologies (for example, the ERIC database (2018) mentions 15 journals with the online title and 49 with technology) and whose editorial dynamics probably favor their use because the very existence of the journal is due to the emergence and maintenance of the use of ICT in education. In addition, in a context of scarce resources, there may be a tendency to use the resources available, to maximize them or obtain them from the state through the use of methods that have social legitimacy; thus, it is believed that online programs are central to universities in developed countries, where the view is directed in a *Zeitgeist* in which the rationalized myth of progress has an ideological weight that favors the importation of new technologies and educational methods from other latitudes.

In fact, the adoption of distance learning programs could have a similar dynamic to that observed by Birnbaum (2001) in his analysis of the loss of prestige of higher education fads. This dynamic may be particularly evident in countries that are often recipients of models and practices, although it is specific to the dynamics of the sector and may occur in the same countries from which ICT were invented and adapted to education. Nonetheless, over time, the turbulent waters generated by the widespread use of the internet have been settling as they had in the case of correspondence, radio and television. Tensions exist precisely in the universities that have contributed to its popularization worldwide regarding its use. This is what Stanford University President John

Hennessey says: “Two words are wrong in ‘Mooc’: massive and open” (Hill & Waters; 2014). Their perspective allows us to glimpse into the possible loss of momentum within the curricular reforms within the fever of internet use. There are countless cases of this same process of disenchantment. For example, Richard McKenzie—professor emeritus—left a MOOC in economics that he was teaching at the University of California at Irvine in the middle of the semester and disappeared from the academic scene after his hope for transformation in online courses had faded (Kolowich, 2013). The novel of *The Maestrom* also ends with its missing protagonists when the rubber rush is over. They too “were devoured by the jungle!” (Rivera, 1924/2013, p. 221). In this sense, a future viable line of research could seek the effects of online education on the working conditions of university professors if they support their professionalization or—on the contrary—through their promotion the professors themselves are contributing to the precariousness of the already-unstable working conditions in Colombian universities.

Our study provides evidence of this critical view. In Colombia, the implementation of online programs has been problematic without the academy having sufficiently shielded their widespread use. Its use has been especially accepted in teacher training where there had been state support and permissiveness until 2015. The central weight of studies in online education is paradoxical due to the contradiction that learning in front of the computer can cause in a field of study and professional practice where human interaction is the central element. No previous study departing from this perspective had analyzed the global diffusion of online program based on an ideographic approach the allowed describing in detail the case of a Latin American country. Therefore, we contributed to neo-institutional explanations to the expansion of schooling (Meyer, 1977; Meyer et al., 1977) and higher education (Meyer & Ramirez, 2013; Schofer & Meyer, 2016) through including in the explanation the role that online programs have played in educational exponential growth that occurs worldwide irrespective of national configurations.

On a theoretical level, our text has shown how online education can be studied from different perspectives to a functional approach that takes its efficacy for granted. The institutionalization of online higher education and online teacher education did not occur as an organized process of politician and intellectuals reviewing the state of the art in the literature before gradually adopting a new best practice. By contrast, the process has been chaotic expansion of online programs and so we adopted the metaphor of the maelstrom. In this social confusion, English acronyms and a jargon based on economic terms such as innovation—and not pedagogy—are used to provide foundations to new practices. Didactic approaches such as opening chat discussion and demanding a reflection by each student can be described as a ceremonial activity since no evidence is consulted about its efficiency and capacity to promote personal development in contrast to a research seminar. Precisely this lack of discussions about the educational consequences of online programs call our attention, especially if contrasted to the educational expansion and the current differences in current online programs that we show in the second part of our article.

Second, the explanation of the rapid expansion of online programs including teacher education online programs in Colombia is only possible if they are viewed within broader institutional frameworks. The online modality was favored by the previous acceptance of television and radio and all of them are technologies brought from abroad together with curriculum and didactic traditions brought from abroad that have followed an isomorphic trend towards similar practices including online forums and videos viewed at home. Governments such as the case of former president Betancur eagerly imported a distant model because he had had studied in England and wanted to reproduce nationally what he had seen abroad. Other promoters have been university professors working in the private universities such as the Universidad de los Andes, the Universidad de la Sabana, the Corporación Universitaria Minuto de Dios, and the Universidad Santo Tomás. International organizations have supported the creation of online programs because they have been

viewed as compatible with their agenda. Governments' initiatives to promote distance education had the backup from the United Nations, the Inter-American Development Bank and the Organization of American States as well as the Catholic Church. We could not identify whether other organizations played a key role in the establishment of online programs, and possibly they have followed more the dynamics of mimetic pressures of universities trying to imitate what they think occurs in leading universities around the world rather than normative or coercive isomorphism conceptualized by neo-institutional authors (DiMaggio & Powell, 1983).

Third, online programs expand due to the intrinsic value provided to education, but also because it conflates with the hope that people place in technology. The legitimization of online programs in the general idea educational expansion strengthened by ideas from economics and the focus in technology has brought local politicians and experts to implement them without major discussion about their quality of online tools when viewed as a replacement and not as a tool for teachers and professors in the classrooms. Criticisms of the expansion of higher education and teacher education based on the internet are often discarded through an omnipresent discourse about the unlimited and unquestionable possibilities of technology. They may also be compatible with the global trend on student-centered pedagogies identified by neo-institutionalists (Bromley, Meyer, & Ramirez, 2011; Lerch et al., 2016; Ramirez, Schofer, & Meyer, 2018), although our design did not allow capturing this relationship. Nonetheless, the institutionalization of online programs does not occur entirely without tensions. At a governmental level, this are represented by the attempt to slow the expansion of distance and online programs by the Barco government (1986-1990; Lucio & Serrano, 1992) and more recently by the limitations of online components in teacher education through the Decree of Ministry of Education (2015) under Santo's administration.

In turn, the second part of our research does not correspond to a typical study based on the theory of world society, but rather it proposes an additional empirical element in the second section complementary the historical sociology analysis with the use of indicators. The instrumental perspective of the second part of our article and the use of joint methods of psychology to obtain evidence allows us to support the overriding thesis that educational models such as online education do not necessarily occur as a functional response to implement better education practices. Our study pinpoints previously unknown effects of imported online program formats: the reduction of workload and theoretical content. Therefore, it responds to the need to develop "studies designed to more directly compare the explanatory power of neo-institutional arguments with those generated by alternative perspectives" (Ramirez & Tiplic, 2013, p. 451).

The main practical implication of our study is obvious and direct: many university professors and politicians need to thoroughly review the assumptions on which they promote ICT-based curricular reforms as a supposed panacea that has already been followed by universities around the world. They can review the premises that allow such reforms to be promoted. For example, the simple principle of university didactics according to which an educational medium is chosen according to students and content (Loviscach, 2013) allows a pragmatic approach to the use of ICT. Its uses may be promising in education, but not unlimited, even less so in contexts where there are basic deficiencies in training that make it difficult to have an informed criterion for its appropriate use in different circumstances. In our article, we distance ourselves from the hegemonic rhetoric that the internet-connected computer became a supposed best practice that can be imported and implemented in all kinds of areas, locations in the curriculum, types and numbers of students and teachers. The internet may be a useful tool, but not as a "one size fits all" solution for all university academic spaces. Educators with a greater sensitivity to the needs of their students, the discipline to follow the stipulated academic load and theoretical foundation to which entirely online programs can provide can probably be needed.

Future studies may also be useful in understanding how online education is linked to educational and pedagogical models. It would be interesting to determine which types of universities and in which sectors they are most likely to develop online programs according to their form of organization and relationship with society. It is also important to establish the relationship between online education and pedagogical models that standardize teaching and how this dynamic affects the quality of programs and the educational experience of millions of people. They may be based on a different premise than believing that their implementation occurs simply because they are functional for universities and society. Our article has sought to draw a horizon to discuss theoretically-guided research with historical and empirical information to understand reforms in higher education.

It may be particularly interesting to explore the relationship between discourses on student-centered pedagogy (Phillips, 1997; Schweisfurth, 2015, 2011) and its use as a basis for discourses on distance education. Correspondence, radio and television have a common feature and it is precisely the role that was assigned to them to contribute to the professionalization of teachers. They were seen as real and objective options for increasing the levels of schooling of teachers, especially those who were located in remote areas of the national geography and who needed to be professionalized so that students could later learn. Despite sharing this purpose, the way in which they define their relationship with the teacher is different. Radio, television and distance education itself revolved around the teacher who taught, which meant that everything that was done with this educational modality was designed to support the teacher. On the other hand, online education is assumed to be an approach that is organized around the student, which means that the teacher is part of the educational means available to the student. This shift is global, but it was clearly observed in the field of higher education in the early-1990s in Colombia (Celis & Gómez, 2005). This is why online education was defined as the factor of change in the learning of students who could now be autonomous and trained at the frontier of knowledge due to the open nature of online methods (Zapata, 2006).

Our research on online programs can also be complemented by studies from other theoretical perspectives. Future studies may focus on the financial aspect, considering the benefits or economic costs for universities that offer online programs, as well as ascertaining who benefits from this offer. Future studies may allow us to understand whether the alternative explanation of the adoption of online programs under the working hypothesis of economic benefit to certain social groups can serve as a working hypothesis. This line of research may include use of marketing strategies such as offering programs where students attend two or three sessions a semester at the university but which—having an online load below or close to the minimum level of 80% established by the government for categorization—are offered under the euphemism of "semi-face-to-face" rather than probably being called "semi-online".

Linked to this point, it would be appropriate to focus on the population currently entering online programs. We have shown that historically distance education had been seen as a necessary, but lower quality offer, especially for the Colombian peasantry. Now that the rhetoric states that it is of the same or better quality than face-to-face programs, it would be interesting to ascertain whether this optimism has generated a real change in enrolment. From a critical theory perspective, it could be investigated which social groups enroll in online programs, as well as whether the children of the elites who have proposed it as a political strategy of massification are also educated through this educational offer.

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SPECIAL ISSUE
EdTech and Policies of Human Formation

education policy analysis archives

Volume 26 Number 114

September 17, 2018

ISSN 1068-2341



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