



*Serie Investigation*

# ICT, INNOVATION IN THE CLASSROOM AND ITS IMPACT ON HIGHER EDUCATION

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*(Editors)*



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## ICT, INNOVATION IN THE CLASSROOM AND ITS IMPACT ON HIGHER EDUCATION

The accelerated progress of technology in society nowadays, means that the way of carrying out formative activities in the different fields of knowledge is constantly being rethought in order to obtain more efficient, effective and innovative methods. This avalanche of changes also invades the educational environment and forces society to pose a series of questions regarding all areas of teaching. This influence in the educational field is not only limited to the impact that the development of new applications and programs has on the teaching-learning process, but also to the impact that the incursion of new technologies, techniques and software has on the curriculum, since these modify the skills required for professional practice.

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Ph. D. SERGIO ALEJANDRO RODRÍGUEZ JEREZ  
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## Access to higher education: much more than entering the system

Adriana Díaz<sup>1</sup>

### Abstract

The problem of access to higher education (HE) continues to be a challenge for many countries in the world, just as it is for Colombia. Based on a literature review, there is no consensus on the concept of access, which can be related to the particular situation of HE systems in each country, and to the new approaches and interests that emerge. This study builds four notions of access from literature: entrance, representation, successful participation, and college choice. The state of access to HE in Colombia is different depending on the notion that is selected, and it is suggested that by focusing only on one of them, relevant aspects are excluded. Finally, there is a need for a systemic understanding of HE, from which emerges a notion of access that focuses on the abilities and opportunities of people from the moment they develop an aspiration to HE until they achieve it.

### Keywords

Access to education, higher education, social system.

### 1. Introduction

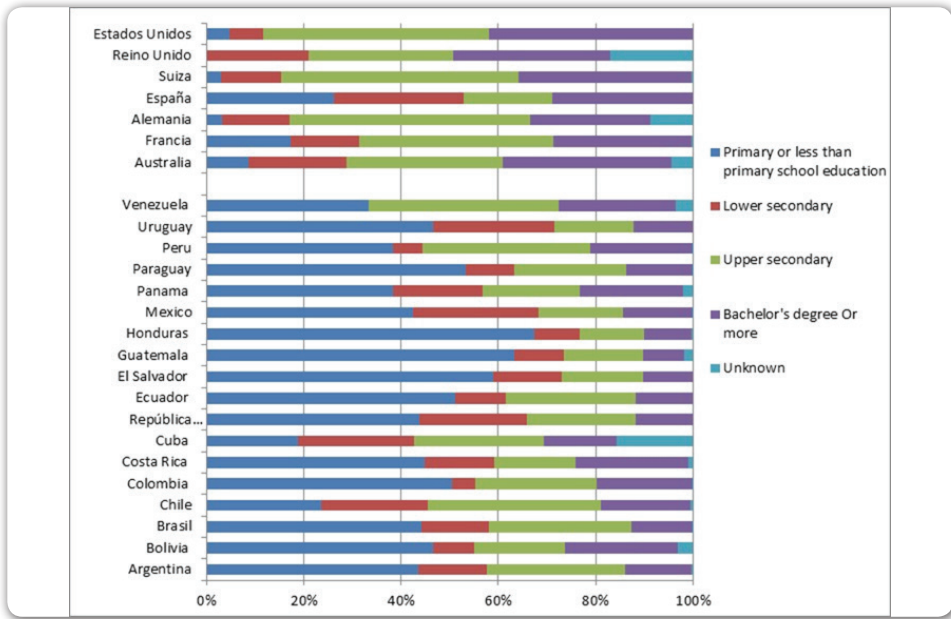
Higher education (HE) is increasingly recognized as a pillar in the development of any country or region. The declaration of the World Conference on Higher Education in 2009 states that at no other time in history has investment in higher education been

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more important than now (UNESCO, 2009b). Guaranteeing access of all people to HE has become a global challenge for each nation.

**Figure 1. Educational achievement of people from 25 years and over**



Source: UNESCO database, (2016).

Since mid 20th century, the expansion of HE has been a worldwide phenomenon. This growth has been characterized by an increasing demand for access, resulting from the social, economic, and political changes in the world that have led to HE being considered in many countries as necessary to get a job, guarantee income, and for social mobility (Altbach, Reisberg & Rumbley, 2009b). The total number of students in HE has increased fivefold from 1970 to 2007, from 28.6 million to 152.5 million people (UNESCO, 2009a). The distribution by regions of these enrolled students has also changed significantly. For instance, in the year 1970, North America and Western Europe represented 48% of students in the global enrollment, while East Asia and the Pacific represented 14%, and Latin America and the Caribbean (LAC), 6% of students. For the year 2007, those enrolled in North America and Western Europe represented

23% of the global total, while East Asia and the Pacific, 31%, and 12% in LAC (UNESCO, 2009a).

The expansion of HE is also visible in LAC, where the number of students in HE increased tenfold from 1970 to 2007, reaching a total of 17.8 million students in that year (UNESCO, 2009a). LAC countries grow in the years of schooling of the population, which represents an increase in the accumulation of human capital in the region (CINDA, 2007). However, the region's pace is far from the growth rate in developed countries.

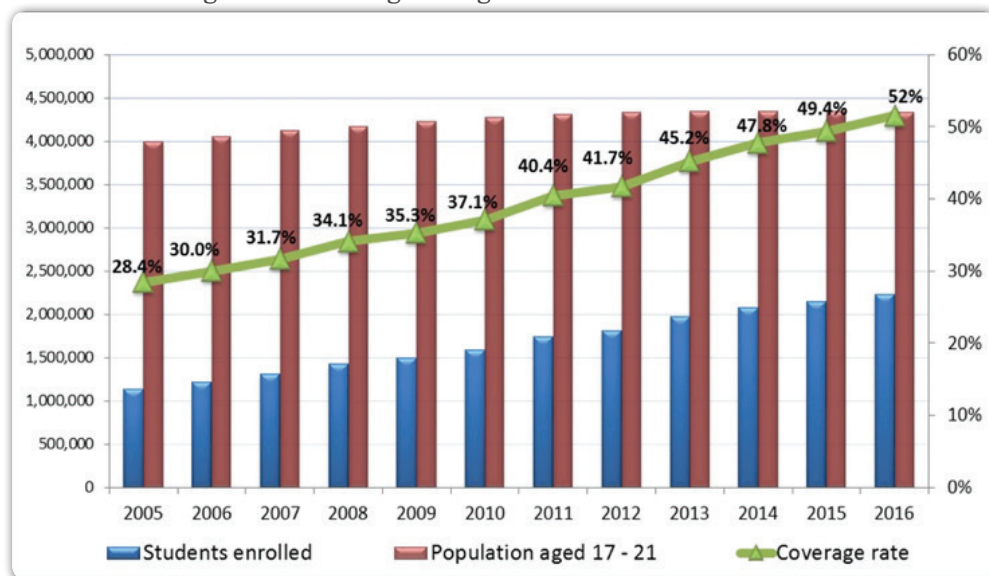
Figure 1 shows the comparison of educational attainment of the population over 25 years of various LAC and developed countries. A large part of LAC countries have more than 40% of their adult population with primary basic education as their highest level of education; very different from developed countries where this proportion is very low and the highest proportion of adults reach full secondary education. Figure 1 shows that developed countries have a higher proportion of people with tertiary education or higher compared to countries in the region. The United States is the country with the highest percentage of adults who have achieved an HE or more with 42%.

### **1.1. Access to HE in Colombia**

Access to HE in Colombia is an issue that has worried governments for years. They have strived to comply with the National Constitution that requires the state to respond for the provision of the service. The problem of access has been present in government development plans since 1974 (Orozco, 2010).

The indicator that typically supports the discourse surrounding access to HE in Colombia is the coverage rate or gross enrollment rate (GER). Figure 2 shows the relationship between enrollees and the population in the age range in HE over the last 10 years. Those enrolled, as well as the coverage rate, have been increasing in these past 10 years, and Colombia has managed a mass system in HE (GER>50%).

Figure 2. Coverage of higher education in Colombia



Source: MEN<sup>2</sup> (2016).

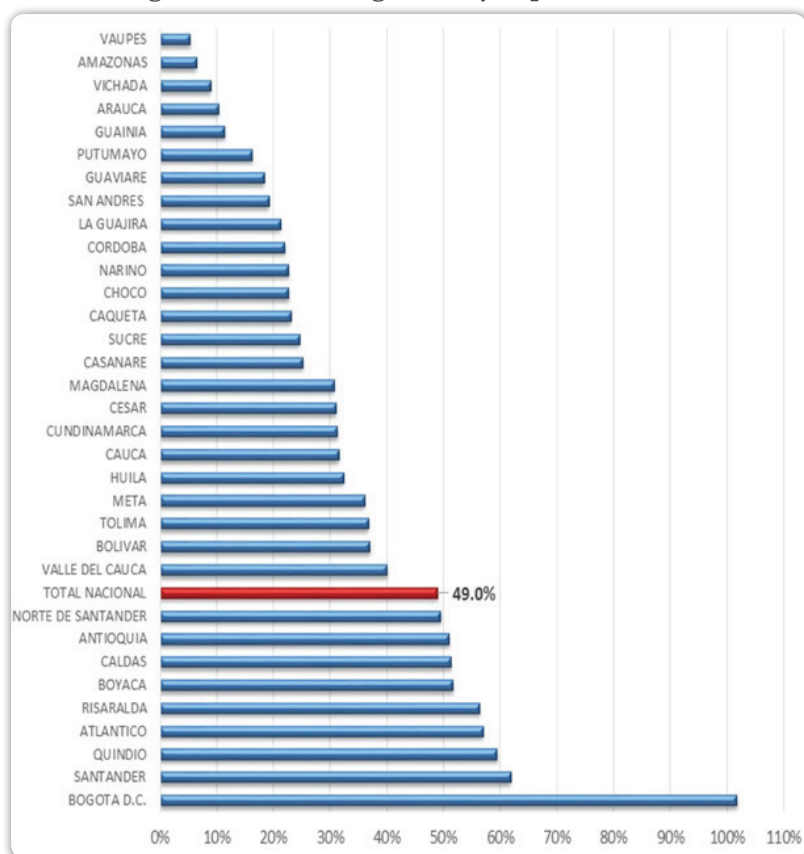
Coverage rates show that Colombia is very close to the South American average, which according to UNESCO (2016) was at 53.3% in 2014. Still, Colombia remains well below countries in the region and the world. When comparing data from 2014, there is a large gap in the Colombian GER in relation to countries such as Chile (86.61%), Argentina (80% in 2013), United States (86.6%), Germany (65.5%), France (64.4%), and Finland (88.67%) (UNESCO, 2016).

An increase in student entry to HE does not guarantee access to all Colombians. The great diversity in population, cultures, territories, and opportunities in the regions, as well as armed conflict, are some of the reasons associated with the difficulty of certain social groups to access HE in Colombia. Even though the number of enrollees in HE has increased, there are wide differences among departments, as illustrated by coverage rates shown in Figure 3. While Bogota has a GER greater than 100%, 70% of the departments (23 of 33) have rates below 40%. The country's coverage rate in 2015 (49%) indicates that there was a mass HE system,

<sup>2</sup> *Ministerio de Educación Nacional* (Ministry of National Education).

but the coverage rate by department illustrates that opportunities are not the same for everyone, and there are still many young people outside the system. In 2015, less than a third of the departments had coverage above the national GER of 49%, and 50% of the country's enrollees concentrated in only three departments –Bogota, Antioquia and Valle del Cauca.

**Figure 3. HE coverage rate by departments 2015**



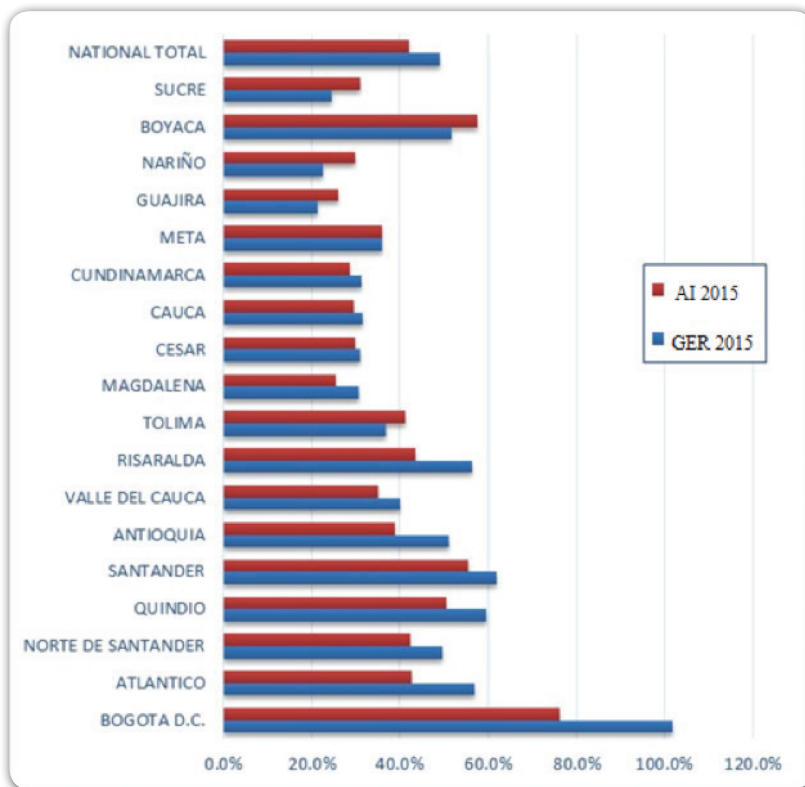
Source: MEN (2016).

Bogotá has the highest coverage rate, yet this includes a large number of people from other departments who move to the city to study, since it offers a high range of HE programs and institutions, including several highly recognized throughout the country. This migration indicates that, despite a GER exceeding 100%, several students from Bogotá are not

entering HE. This phenomenon is observed in another access indicator defined by the MEN in 2011: the access index (AI), which was calculated from that year until 2013 (MEN, n/d). This indicator is very similar to the GER, although to calculate the AI in each department the population enrolled in the HE whose origin corresponds to that department is used as a numerator, instead of using the total population enrolled in HE in that region. The denominator continues being the number of people aged between 17 and 21 in each department. The calculation is determined to know the percentage of young people guarded by the system in each of the student's original departments.

GER values are compared with the AI for some departments in the year 2015 in Figure 4.

**Figure 4. Comparison between GER and IA for some Departments**



Source: MEN (2015d)

The AI is lower than the coverage rate for most departments in the country. This difference shows student migration from certain departments, where high coverage does not mean access to HS for the entire population of each department. Bogota shows the greatest difference between the two indicators (25 percentage points), corroborating a high migration to the country's capital. In addition to Bogota, the only departments with AIs greater than 50% are Quindío, Santander and Boyacá. The remaining 50% might assist HE in other departments or might actually be excluded from the system.

In short, guaranteeing access to HE for all people, regardless of their socioeconomic, racial or geographical origin, persists as a challenge in Colombia and for many governments globally. Different actors (e.g. governments, academia, global organizations) have developed research and proposals that seek to contribute to the design of policies to solve this issue. An interesting and important aspect in the matter is that there is no consensus in the definition of access. Access to HE is rarely explicitly defined in research or even public policy documents, as well as when it can be stated that someone has or does not have access to it.

Based on the literature reviewed, this research defines four different conceptualizations of access to HE, analyzing the Colombian situation according to each of them. Each notion seems to fall short at understanding the issue and defining effective policies. There is a need for a broader perspective that encompasses the development of the aspiration of HE, until finally culminating the studies. According to this understanding, access has to do with people's abilities, but also with the opportunities they have throughout their educational process.

The four notions of access to HE constructed from a literature review are discussed in detail. In section 3, the Colombian data is shown for each notion. Finally, results are discussed comparing each one. Also, a new perspective of the HE system is shown and from it a new notion of access to HE is derived. This notion involves a broader view of the problem that encompasses the ideas found in previous literature. Furthermore, it is based on the active role of people in accessing HE or not, the importance of the context, and the need to understand that access is a process in different stages.

## **2. Four notions of access to HE**

There is no consensus on the notion of access (Burke, 2012; Clancy & Goastellec, 2007; Commission/EACEA/Eurydice, 2014; Land, Eggins, Gordon, Owen & Boon, 2011), and it is rarely made explicit in studies or policies. Each country and society recognizes and defines certain conditions of access in their particular HE systems as problematic, and it is this particular definition of the problem that guides policy, decision-making, and investigations. Therefore, it is very relevant to clearly state how the matter is understood.

Four great notions of access were defined based on literature review. Studies that do not explicitly define how access is understood -the majority- are categorized based on research objectives or results.

### **2.1. Entering HE**

The first discourse on access to HE emerged as a result of the intrinsically inequitable conditions of the first universities (Kettley, 2007). Entry was limited to a few privileged ones due to factors such as socioeconomic class, gender, and racial or ethnic origin - inherited merit. Progressively, equality in access to HE became a general clamor (Clancy & Goastellec, 2007).

Access to HE is understood as entering or being enrolled in an HE program. Researchers and decision makers focus on finding the factors that represent a barrier on people transiting from complete secondary education to HE, and in the participation or enrollment of young people in HE.

Researchers have studied the factors that influence the likelihood of a person entering HE, seeking in particular those factors that represent a barrier. Some of these are the family's socio-economic background (Tieben & Wolbers, 2010), ethnicity (Cameron & Heckman, 2001; Kane, 1994), gender (McCoy & Smyth, 2011), characteristics of the secondary education they've received such as the quality, selectivity, and organizational structure of the institution, academic performance in secondary education, cultural capital -represented as parent education, participation in classes and cultural activities, and social capital-operationalized as parent participation in the educational process of their children, social networks,

etc. (Alexander & Eckland, 1977; Falsey & Heyns, 1984; Frempong, Ma, & Mensah, 2012; Karen, 2002; Engberg & Wolniak, 2010; Perna & Titus, 2005).

Some of the studies focus on the entry of specific groups recognized as minorities or vulnerable populations, e.g., students belonging to families of low socioeconomic status (NSE), African-Americans and Latinos in the United States; children of manual and non-manual workers in Ireland, and women in India. There are several factors that have been incorporated into the research on access and that have been found to have an impact on entry to HE (Frempong et al., 2012; Cameron & Heckman, 2001; Kane, 1994; McCoy, Byrne, O'Connell, Kelly & Doherty, 2010; Sahni & Shankar, 2012).

The impact of policies, institutionally or nationally, on entry to HE has also been evaluated. In the United States, for example, research results suggest that the change in tuition and financial aid prices has a significant impact on post-secondary education entry, an impact that differs between two and four-year programs and between state institutions and private institutions (Heller, 1997; Kim, 2012; Leslie & Brinkman, 1987; Perna & Titus, 2004; Kane, 1995, 1999).

Admission policies and the unfavorable consequences they generate for minority groups have also been discussed. Konečný, Basl, Mysliveček & Simonová (2012) study the impact of different entrance exams -one based on knowledge and the other on aptitudes- on the number of students of low socioeconomic strata (SES) who are admitted in the Czech Republic.

Rendon, Novack & Dowell (2005) note that getting admitted to a public university in California has become a challenge for African-Americans and Latinos, as a result of selectivity, budget cuts, and increase in the number of students applying to these institutions.

## **2.2. Representation in HE**

It is often found that the expansion HE has not significantly reduced social inequalities in access (Clancy & Goastellec, 2007; Marginson, 2016). Despite the accelerated growth in enrollment, college population does not

reflect the universal composition of society, even in countries with high participation rates in which social inequalities in participation continue to happen according to race, ethnicity, gender or SES (Altbach et al., 2009b; Asplund, Abdelkarim & Skalli, 2008; Liz, 2001). The focus of the problem is no longer quantitative, but rather qualitative and structural. Studies are interested in why, even though minority groups have greater participation in HE, their participation is limited to certain programs, fields of study or institutions in such a way that inequalities continue to arise in HE specific opportunities for these groups.

Understanding access as representation puts the focus of research beyond the flow of students to HE or the number of enrolled people, but they are rather interested in college population characteristics and their diversity. Access to HE ceases to be a problem associated with entering the system, and involves the equal opportunity that people have to participate in programs and institutions of different levels and with different characteristics (e.g., quality, cost). The lack of opportunities or inequality is reflected in the low representation of some social groups in the total number enrolled in HE or in certain programs and institutions, that is, in the academic or institutional stratification of HE (Posselt, Jaquette, Bielby & Bastedo, 2012; Reimer & Pollak, 2010; Stephan, Rosenbaum & Person, 2009; Triventi, 2013).

The social groups in which access research is focused vary between countries. In each society, it is possible to identify one or several characteristics (e.g., ethnicity, SES, race) on which HE representation is assessed, as well as equality of opportunities. These are related to the idiosyncrasies of each nation, its history, and context of their HE system. Some examples of the groups in which the studies are focused are: hispanics in the USA (O'Connor, Hammack & Scott, 2010), ethnic minorities in China, students from low SES families in Serbia; women and people of certain castes and religions in India; rural population and indigenous communities in Canada (Clancy & Goastellec, 2007; Basant & Sen, 2009; Chanana, 1993; Zhu, 2010; Vukasovic & Sarrico, 2010; Alberta, 2000).

Disadvantages or differences in educational opportunities between groups are associated with characteristics of individuals and HE systems

(Vukasovic & Sarrico, 2010). Some of the factors that have been associated with these differences are the family environment (e.g., parent education, SES), (Finnie, Lascelles & Sweetman, 2005, Koucký, Bartušek & Kovařovic, 2007, Li, 2007; Triventi, 2013; Vukasovic and Sarrico, 2010); race; the information young people have about HE; the lack of awareness or stimulation about the value of HE; the geographical distribution of institutions, population and wealth (Gibbons & Vignoles, 2009; Metcalfe, 2009; O'Connor, 2010); performance in secondary education, and the type of HE institution (Li, 2007; University of Alberta, 2000; Posselt et al., 2012; O'Connor, 2009; Stephan et al., 2009).

Several of the disadvantages faced by minority groups are generated by inequalities in previous education. The difficulties faced by these youths to meet the academic requirements necessary for certain programs or institutions reflect this situation (OECD, 2008). The increasingly demanding admission standards of HE institutions contribute to the disadvantages of groups with low representation, as suggested by the study on institutional stratification in the USA by Posselt, Jaquette, Bielby & Bastedo (2012). HE expansion has generated incentives for differentiation and competition between institutions, where the most recognized ones compete for the students of the academic elite -typically associated with a high SES- who strengthen the prestige of the institution. At the individual level, the costs of enrollment and selection processes contribute to horizontal inequity where many students are excluded from the most recognized institutions (Davies & Zarifa, 2012).

Affirmative action in admission processes is also relevant to consider. The effects of these actions on the representation of minority groups in HE have been studied. Bertrand et al. (2010) examine the caste-based admission program in engineering schools in India, and find that this program has managed to increase the diversity of social groups related to caste and family income, however, they also observe a reduction in gender diversity, a problem that is also confirmed by Sahni & Shankar (2012) at the national level. Francis & Tannuri-Pianto (2012) investigated the effect of racial quotas in Brazil, and conclude that although these actions promote equity, the majority of Brazilians with low SES have fewer opportunities to participate in HE.

### **2.3. Successful participation**

As UNESCO states, the interpretation of access must go beyond “going through the door and entering”, where true progress depends on the levels of completion of studies of all population groups (Altbach, Reisberg & Rumbley, 2009a). HE systems require mechanisms that support and accompany people in their participation process in order to achieve their educational goals. However, these mechanisms are very scarce and those that do exist do not adequately address the needs of HE population (Altbach et al., 2009a). People from minority groups, once enrolled, face different challenges and disadvantages that affect their educational process, their participation, and study completion, all of which are necessary to fully enjoy HE benefits.

A notion of access that involves the opportunities that people have to participate and graduate from HE is then raised. Participating now has a broader sense, including being enrolled in any HE program, as well as managing to be part and get involved in the institution, its culture and its community. It invites institutions to welcome diversity so people are valued, integrated, and welcomed by their institutional culture (Iverson, 2012). This conceptualization is characterized by an interest in the opportunities that students have in their educational process to graduate from HE and in the differences in these aspects that can explain the disparities in terms of academic performance, participation, and graduation rates between social groups.

Access as successful participation includes problematic HE situations that are typically associated with other issues, such as desertion, retention, and termination. These are matters of growing interest as can be seen in the number of research on these subjects and the various programs that institutions and governments have to support students progress in HE (OECD, 2008). Different indicators are used to monitor and assess this progress, such as dropout rates, academic mortality, retention, and persistence rates. These last two terms are often used as synonyms, however, some authors establish retention as the institution’s ability to keep students from the time they are admitted until graduation, while persistence refers to the student’s decision continue to be enrolled in the HE system until graduation (Troxel, 2010).

Research on these issues has incorporated elements from different theories (e.g., sociology, psychology, economics), and has given special attention to certain social groups considered vulnerable. Retention was first studied in psychology regarding motivation, abilities, and individual differences. After a few years, the role of the context, particularly the institution, was taken into account in the study of persistence in HE (Tinto, 2006). Some studies have focused on retention in the first year, considered a critical year, and others focus on the different experiences from students of diverse socio-cultural backgrounds, or HE programs. In general, results suggest that the decision to withdraw from HE is the result of multiple factors such as academic preparation, student adaptation to the institutional environment and courses, academic experiences in teaching-learning environments, social integration, financing, and other personal circumstances (Jones, 2008; Tinto, 1975).

Institutions play a fundamental role, since the differences in opportunities and conditions that students have in HE do not rely exclusively on their academic preparation, motivation or on affordability (Bauman, Bustillos & Bensimon, 2005; Jones, 2008). Engstrom & Tinto's (2008) study concludes that access without support does not constitute an opportunity, and that differences in graduation (time-amount relation) among students from high and low income families persists especially due to the lack of preparation of the latter group. Students' failure also depends on the environment in which they must learn, and the institutions have the responsibility to build an appropriate setting, answering to their students' needs, and not just of those who are well prepared.

Based on a literature review, Jones (2008) and Troxel (2010) synthesize the factors that, from the institutional perspective, influence the retention and success of students. Some of these factors are the information and preparation prior to entering the HE (e.g., the summer courses to prepare students for admission); support in the processes of induction and transition from high school, which provide the opportunity for students to integrate and participate in the community; and support programs -usually academic- that extend throughout the first year, since this phase is considered decisive in the persistence of students. Curriculum

development is another key factor in the student-institution interaction and evidence points to the importance of active learning, teaching strategies (e.g., learning communities), formative evaluation, flexible learning, and course relevance. They also recognize the role of support academic programs, financial, psychological, pastoral, or other programs that favour students in order to encourage their retention, and not just from majority groups.

#### **2.4. College choice**

College choice is a topic that has been researched for years aiming to understand what influences students' decisions on whether to attend HE or not, and the type of programs and institutions they apply to, exploring their decision-making processes. Previously, the interest in these subjects was to support enrollment management and tuition planning in institutions, marketing, and student recruitment. For some years, the interest in understanding the choices and aspirations of students has been to support policy-making related to access and equity (Bergerson, 2009). Bergerson suggests that understanding HE selection processes is essential for researchers and professionals interested in increasing access, and persistence in HE (2009).

Three papers with extensive literature reviews on college choice are those of Paulsen (1990), Perna (2006) and Bergerson (2009). These reviews consolidate hundreds of publications, where changes in the theories, concepts and methodologies used in research on the subject can be observed. A relevant aspect on these researches is that HE choices are conceptualized and studied as a transition process, where students go through several stages from developing their HE aspirations, seeking options, and finally deciding the type of HE and institution to apply to and enroll in (Bergerson, 2009). Different multi-stage models for college choice process can be found in the literature. One of the most referenced models is by Hossler & Gallagher (1987), which states that college choice has three stages (Table 1), where individual and institutional factors interact. These interactions in each stage determine certain results for the student, which in turn influence the next stage of the process.

**Table 1. Three stage process model for college choice**

Model dimensions	Influential factors		Students' results
	Factores individuales	Factores organizacionales	
<b>Phase 1: Predisposition</b>	* Students' characteristics * Educational activities * Other significant characteristics	* School characteristics	Search for: a. HE options b. Other alternatives
<b>Phase 2: Search</b>	* Values of students prior to HE * Student search activities	* Students' search of HE activities	a. Set of options b. Other alternatives
<b>Phase 3: Choice</b>	* Set of options	* HE institutions activities to gain students	* Choice

Source: Adapted from Hossler & Gallagher (1987).

Based on this model by Hossler & Gallagher, some studies have focused on refining some of the three stages or the whole model, studying students' experiences, and specific social groups during the process of choosing HE (e.g., Cabrera & La Nasa, 2000; Hossler, Braxton & Coopersmith, 1989; Hossler & Vesper, 1993; Terenzini, Cabrera & Bernal, 2001).

Other authors have questioned the applicability of this type of model for all students, especially for those who belong to minority groups, since it is assumed that all students have access to the same information regarding funding and HE, among other reasons (Bergerson, 2009; Paulsen & St. John, 2002).

### **3. Access to HE in Colombia regarding the four notions**

The previous chapter considered four different concepts of access to HE. The current Colombian access situation is discussed according to each notion.

### 3.1. Access as entry

Entry to the HE system has been the traditional view on the access problem, and the one leading studies and public policies on the matter. In Colombia, the most commonly used indicator to refer to access is the coverage rate or GER. In two recent policy documents (MEN, 2015a; CESU, 2014), coverage is one of the fundamental variables when addressing the issue of access. The following coverage goals were proposed in a medium and long-term term: 56% for 2018, and 84% for 2034. Figure 1 shows the indicator of coverage in recent years and shows its growth.

Another challenge associated with access that persists in the Colombian system is the articulation between secondary and HE. An articulation strategy is to allow students of the last two high-school terms to start complementary studies of technical programs so that by the end of their secondary education they can validate this knowledge and move more easily to HE. However, studies show serious problems for homologation in HE institutions, in addition to issues such as quality and inclusion (CESU, 2014). One of the indicators of this high school-HE transition is the absorption rate, which seeks to capture the proportion of students who, once they finish secondary education, effectively move on to HE. Absorption rate for a year  $t$  can be calculated in different ways:

$$TasaAbsorción_t = \frac{Estudiantes\ matriculados\ 1^{er}\ semestre_t}{Estudiantes\ presentan\ Saber\ 11_{t-1}} \quad (1)$$

$$TasaAbsorción_t = \frac{Estudiantes\ Admitidos_t}{Solicitudes\ de\ admisión_t} \quad (2)$$

$$TasaAbsorción_t = \frac{Estudiantes\ que\ estaban\ matriculados\ en\ 11_{t-1}\ que\ aparecen\ SNIES_t}{Estudiantes\ que\ estaban\ matriculados\ en\ 11_{t-1}} \quad (3)$$

The first indicator shows the proportion of students enrolled in the first semester in relation to students who have taken the Saber 11<sup>3</sup>. This estimate

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<sup>3</sup> The Saber 11 is a mandatory test by the Colombian State for its secondary education population as a requirement to enter higher education. It is usually taken at the end of high school, although it can also be obtained after having a high school diploma or having passed a validation exam for studies of this level. It consists of 5 tests: critical reading, mathematics, social and citizenship skills, natural sciences and English.

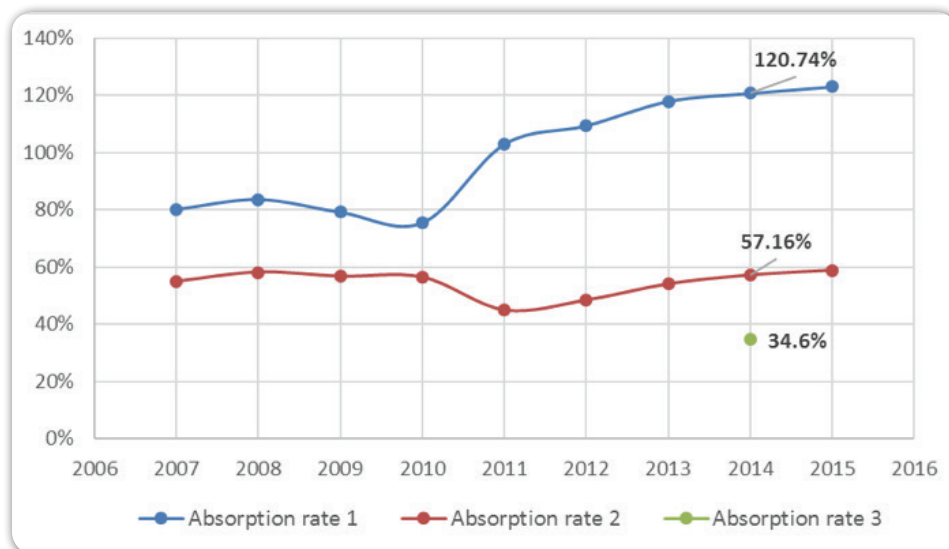
can be higher than the actual value of absorption, since people enrolled in the first semester include students who finished secondary education several years prior but did not immediately enter HE. Another relevant aspect is that the number of students taking the Saber 11 may be greater than the real amount of students who actually finish secondary education in year  $t$ , since people can take the test as many times as they wish, and several do before finishing high school as a way to prepare (which would imply a double count for these students in the same year). Others re-take the test after graduating in order to improve their score.

The second absorption rate may also have problems in measuring the transition, because admission requests do not correspond exactly to the number of people wishing to enter the system. Many apply to several institutions and there is an overlapping effect on the figures because the distinction is not taken into account in the SNIES data. Moreover, the number of students admitted can also include a student several times, in case more than one institution has admitted them.

The third indicator seems to be the most appropriate to measure HE absorption because it captures the proportion of students who were enrolled in the last year of high school in relation to those enrolled in HE for year  $t$ , which means that they are registered in the SNIES.

A comparison of the three ways to assess absorption is shown in Figure 5. Option 1 shows that, as of 2011, a larger number of students entering HE than those graduating secondary education by 20%, a difference that tends to be stable. This could be interpreted as if all graduates will enter HE. The second indicator, on the other hand, shows that 40% of applications for admission to HE are rejected, meaning not all who want to enter HE have the opportunity or ability to do so. The third indicator is much more revealing since it shows that only 34% of those who graduated in 2013 entered HE in 2014. This suggests that almost 70% of people who graduate in a year do not enter HE in the next year.

Figure 5. Absorption rates by semesters



Source: MEN (2015c)<sup>4</sup>.

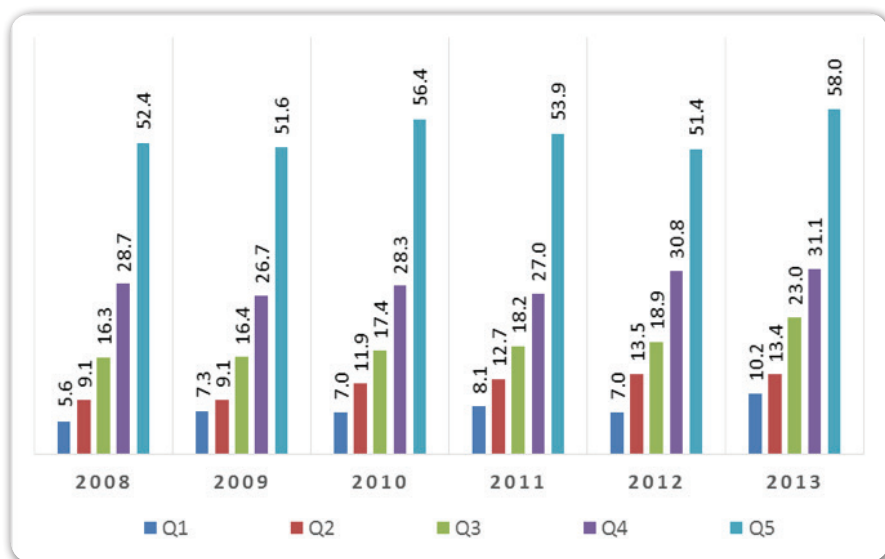
### 3.2. Access as representation

Higher quotas and more enrolled students in HE do not translate into a more representative system. According to the net enrollment rate (NER) by income quintile (Figure 6), while 90% of young people between 18 and 23 years of age from the poorest quintile of the population were excluded from HE, while for the richest quintile, entry was almost 42% in 2013. In the 6 years shown in the graph (2008-2013), the group that has had the highest growth is quintile 1 with a growth of 84%, followed by quintiles 2 and 3 with 48% and 41% respectively. These figures reflect the Colombian government's efforts to improve representation from the lowest SES in HE. However, this shows there is still a lot to do: the system is less accessible for people with low SES and the progress related to the increase

<sup>4</sup> It should be clarified that the following information is not available in the MEN archives: there is no registration data in SENA, admitted and enrolled in the first course for semesters prior to 2011-1. For the rest of the institutions, information on these variables is available since 2007. There is no information on the admissions for previous semesters.

in quotas and enrollment seems to be widening the gap between the poorest and the richest.

Figure 6. Net enrollment rates in HE per income quintile



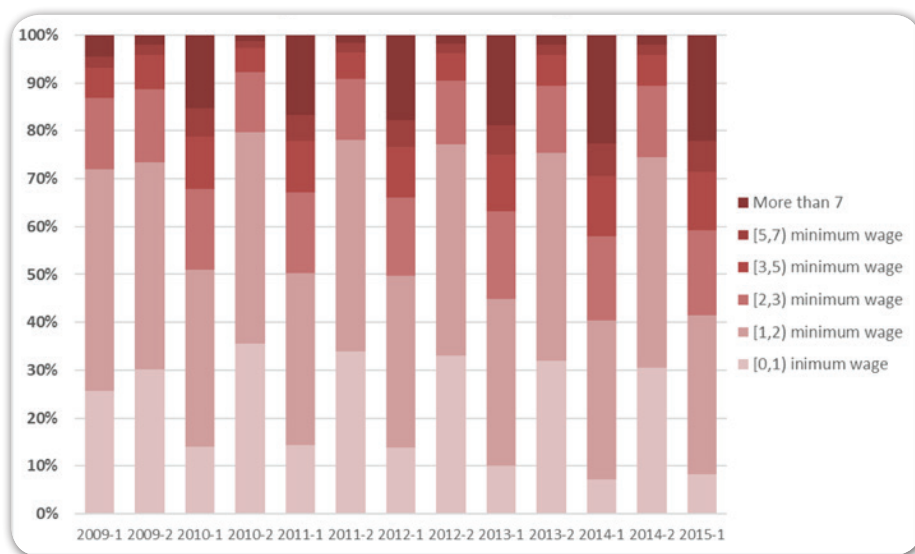
Source: SEDLAC and World Bank (2015).

It is also relevant to compare the trends in the family income of potential HE students (i.e. those who finish middle school), as well as of students enrolled in HE. The following graph shows the proportion of students for each level of income for potential students and for those who are already enrolled.

A significant proportion of potential students (taking the Saber 11 test at the end of middle school) have low income. Over time it is observed that a large percentage of students affirm that they belong to low-income families (between 0 and 2 minimum wages). This proportion changes according to the semester of the year in which the Saber 11 test is taken: during the first semesters of the year, the proportion is close to 50%, while it is higher almost reaching 75% in the second semester. These differences per semester are also observed in students from families with high income (greater than 5 minimum wages) but contrary to the previous case, the

proportion of these students is higher in the first semesters with values close to 25% while in the second semesters the proportion drops to 4%. These differences may be related to school calendars. Those who take the test in the first semester of each year usually belong to schools with a B calendar, which are typically high-cost private schools, while those who take the test in the second semester of each year normally belong to calendar A schools, among which are all the official schools of the country and other private schools. Finally, the proportion of students from families with average income (between 2 and 5 minimum wages) has remained between 20% and 30% (Figure 7).

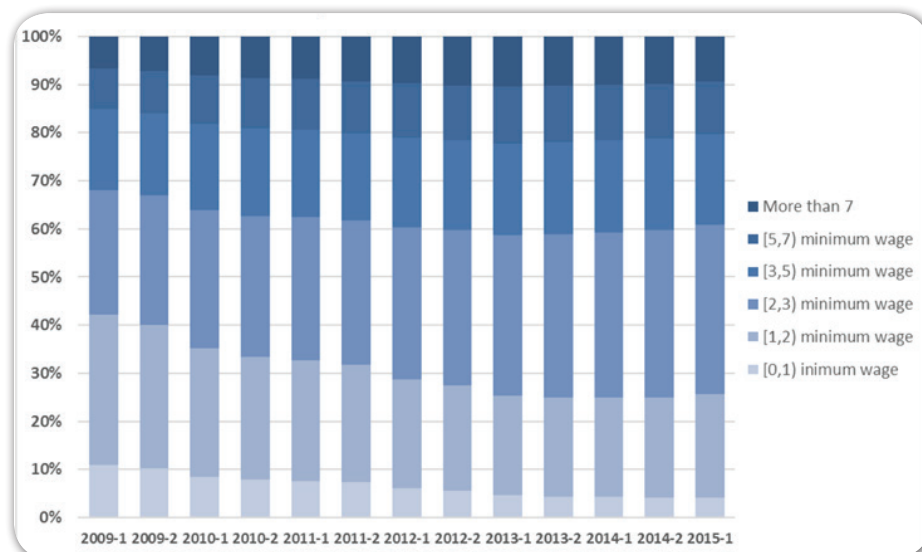
**Figure 7. Family income of students taking the SABER 11**



Source: elaborated from ICFES (2016) and SPADIES<sup>5</sup> (2016).

The proportion of students from low-income families decreased from 2010 to 2013, going from 42% to 25%, a value that has been maintained in the last semesters. In contrast, the proportion of students from high-income families has grown by 15% in 2009, and 20% in 2015. Students from median-income families have also increased from 43% to 54% (Figure 8).

<sup>5</sup> *Sistema para la prevención de la deserción de la educación superior* or System for the prevention of the desertion of higher education.

**Figure 8. Family income of students enrolled in HE**

Source: elaborated based on ICFES (2016) and SPADIES (2016)

This data (Figures 7 and 8) shows that participation in HE is not representative of the whole population, especially for people with the lowest incomes. Although the trend of potential students shows that a large part belongs to low-income families, this proportion is much lower (one third or half) regarding those who are actually a part of HE. High-income students seem to stay and be representative of the potential population. Students who belong to middle-income families are half of the enrolled population, which can indicate greater access from those in lower-income families.

### 3.3. Access as successful participation

Efforts to increase enrollment rates, generally and among the poorest quintiles, are ineffective if the people who enter eventually desert the system. Dropout indicators can help understand access to HE in

Colombia, when understood as successful participation. The MEN follows two indicators: annual desertion<sup>6</sup>, and desertion by cohort<sup>7</sup>.

The annual desertion indicator focuses on the short term and seeks to show strategy results from one year to the next. Colombia has achieved a low tendency, which according to the MEN (2015b) shows the result of investments of over 10 billion pesos in the accompaniment of HE institutions to prevent desertion (Table 2).

**Table 2. Annual HE dropout rate (%) in Colombia**

Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b>Annual desertion rate</b>	12.9	10.7	12.1	12.4	12.9	11.8	11.1	10.4	10.1	9.3	9.0

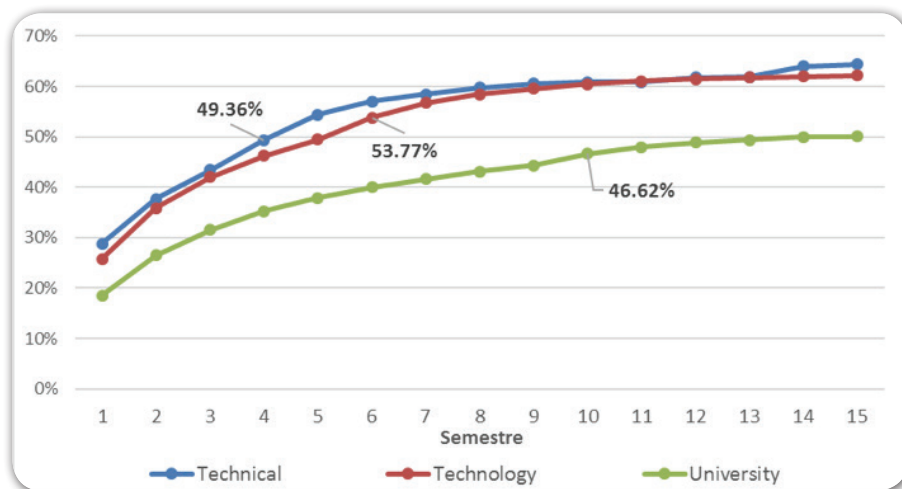
Source: MEN (2016).

The cohort desertion indicator reflects retention in the system in the long term. In Colombia, most people drop out during the first two semesters: between 28 and 38 people out of 100 have abandoned their studies by the second semester (Figure 9). Attrition is higher in technical rather than college programs (Figure 8). Figure 8 indicates the dropout rates in the number of semesters expected to finish each type of program. Dropout is similar for all three types of studies and shows that by the end of the program, half of the students who entered have dropped out. This shows that although the system offers places and supports students from minority groups to enter, only half of them actually achieve their aspirations. Therefore, access to this level of education is not guaranteed.

<sup>6</sup> Annual desertion: proportion of students enrolled during the school year, who for different reasons abandon their studies without having completed the degree.

<sup>7</sup> Cohort desertion: cumulative desertion in each semester for a group of students who entered first year in the same academic period (cohort). The older the cohort, the more accumulated semesters.

Figure 9. Cohort dropout rates by type of studies



Source: SPADIES (2016).<sup>8</sup>

### 3.4. Access as college choice

There are not many studies or research on college choice in Colombia. Two studies focused on analyzing HE and labour aspirations in students from the last grade of secondary school in two popular schools in Usme, Bogotá, were found. Romero (2009) found that despite the precarious capital possession (economic, cultural, social, and symbolic) the majority of students (98.8%) aspire to enter college rather than technical education, which is little valued. These students managed to overcome their parents' schooling (only 12.3% of parents were high school graduates), however, they do not have the capital or academic preparation to continue their project. The study by López-Pino & Moncada-Jaimes (2012) gives continuity to Romero's work and explores the academic trajectory of those who expressed their desire to go to college. They affirm that aspirations are important, but they are not the main engine to climb in the educational pyramid, since social origin and regulations in the education sector are

<sup>8</sup> As reported by SPADIES, this indicator corresponds to program dropouts, that is, a student who during two or more consecutive semesters does not enroll in the HE program in which he/she started, even if studying a different program in the same university.

determinant to crystallize, and generate practices and habitus oriented to achievement. Young people are disoriented at the end of high school and renounce their aspirations early, since the Saber 11 or public university tests in other cases showcase their lack of abilities. This, added up to economic difficulties and misinformation on HE, would allow them to establish strategies to pursue their aspirations.

The preference for college rather than technical programs is relevant regarding college choice in Colombia. Technical studies are a second alternative for young people in this sociocultural context. It supposes a second-class modality. It is the choice of those who renounce their college aspirations, or of those who do not get admitted into universities for professional formation (Díaz, 2012; López-Pino & Moncada-Jaimes, 2012; Orozco, 2013).

Technical training in Colombia lacks academic or social status, as well as the quality it requires. According to the MEN, there are several reasons that support this notion: There are historical reasons, given these programs are recent in the nation; economic, since no significant investments have been made for education and research in this field; institutional, because there are no guarantees on these programs' quality; and social, given the lack of recognition on this type of education, where labor and salary rewards focus on professional occupations obtained in colleges, and higher education (table 10).

More than 70% of the students surveyed during Saber 11's registration expressed their desire to go to university, 20% said they aspired to technical education, and only 5.5% declared not wanting to continue on HE (Table 10).

This preference for college education could suggest an intergenerational change in individual and family projects, taking into account that the proportion of adults (people over 25 years old) with HE in Colombia is low (20% in 2014) compared to that of the United States (42%) and the United Kingdom (32%) (UNESCO, 2016). However, beyond aspirations, economic, educational, cultural, and symbolic capitals are also necessary to create practices and habitus aimed at achieving HE. The lack of these

coupled with the scarcity of real HE opportunities creates a working class without a sense of their occupation, and who do not comply with a life project they can value (López-Pino & Moncada-Jaimes, 2012).

**Table 10. Types of higher education of career preferred by students taking the Saber 11**

<b>SEMESTER</b>	<b>NONE</b>	<b>TECHNICAL</b>	<b>TECHNOLOGY</b>	<b>UNIVERSITY</b>
2009-1	6,64%	9,33%	7,70%	76,33%
2009-2	3,29%	13,08%	7,94%	75,69%
2010-2	4,30%	12,70%	7,99%	75,01%
2011-1	8,77%	11,40%	8,98%	70,85%
2011-2	4,09%	11,92%	7,67%	76,32%
2012-1	7,98%	11,58%	7,70%	72,74%
2012-2	4,34%	10,99%	7,35%	77,31%
2014-1	5,78%	9,18%	6,89%	78,16%
2014-2	3,55%	12,03%	8,10%	76,32%
2015-1	6,13%	10,49%	7,55%	75,83%
<b>Average</b>	<b>5.49%</b>	<b>11.27%</b>	<b>7.79%</b>	<b>75.46%</b>

Source: ICFES (2016a).

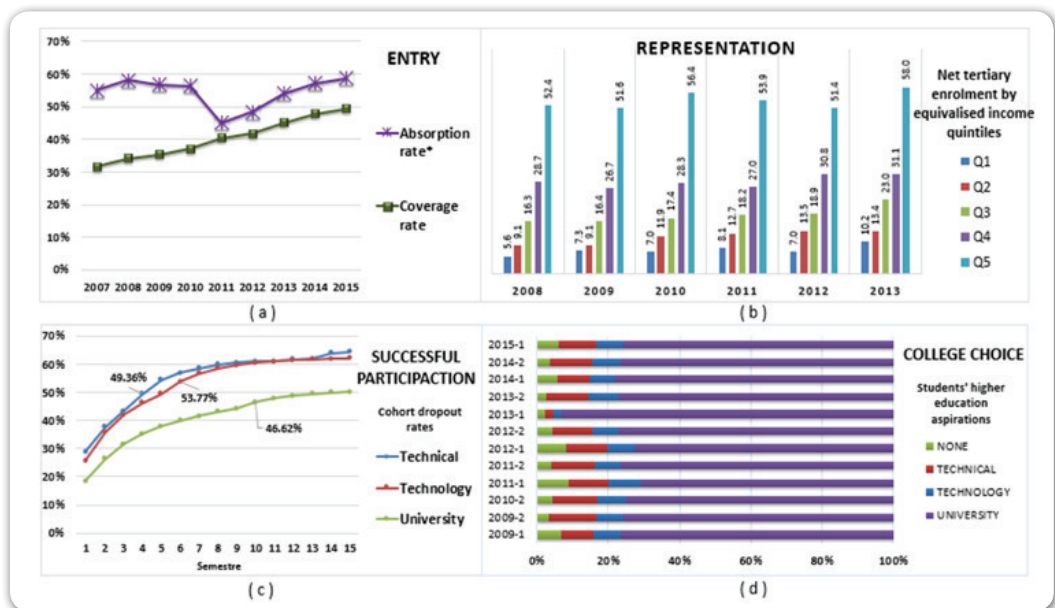
#### **4. Discussion**

The situation of access to HE in Colombia was observed and compared from the four described notions (Figure 10). Each notion entails different results and, therefore, implies different approaches and purposes when formulating policies to solve the problem.

Access, understood as entrance to the system, indicates progress in the Colombian situation with a GER that has been growing for several years. Even so, only about 60% of students who submit applications actually enter the HE, and about 50% of Colombian youth between the ages of 17 and 21 are excluded from the system. Coverage is the indicator most used by the

Colombian government when referring to the matter of HE access and, consequently, goals in this area usually involve this indicator. For instance, one of the current goals for 2018 is to achieve a GER of 57% (ICETEX, 2016). But growth in enrollment does not translate into a more equitable system, guaranteeing opportunities for all. According to the NER by income quintile (see Figure 10.b), there are wide differences between social groups of higher and lower income; the latter being the least represented in HE. Although the graph shows the general stratification of the system, it is necessary to study stratification by institutions, which could show if all students, regardless of their social origin, have the same opportunities to enter high-quality institutions or the most prestigious ones. Recent governments have tried to improve the representation of the less favored groups, yet figures show that the efforts have been insufficient.

Figure 10. HE access status from different conceptualizations<sup>9</sup>



Source: own elaboration.

<sup>9</sup> (a) Access as entry, (b) access as representation, (c) access as successful participation, and (d) access as college choice. \*Absorption rate=Admitted students/Requests for admission.

Efforts to increase enrollment rates, generally and in the poorest quintiles, are ineffective if those who enter desert. In Colombia, nearly 50% of the students who enter by cohort leave the system without finishing the program (Figure 10.c). The results of efforts to secure more places for new students, and to increase the income of students from minority groups are limited if only half of them have the opportunity to achieve their HE aspirations.

The notion of access as a college choice broadens the scope of these studies to include the development of aspirations, as well as the search for institutions, which take place even before a person decides to enter HE. There are few studies in Colombia in this regard and, although the government has strategies to improve vocational guidance, its purpose is more focused on preventing young people from leaving their program instead of having an interest in the process of how these aspirations are developed. References from other countries studying the subject show that young people from disadvantaged social groups usually do not aspire to higher levels of education. The majority of people in Colombia, regardless of their origin, aspire to a college education; seemingly, few aspirations are not an issue (Figure 10.d). However, characteristics of the Colombian context may be generating limitations in this process, such as (1) the lack of universalization of secondary education, (2) high school students' age by the time they graduate, and (3) the lack of information they have to make these decisions. Firstly, not all young people in Colombia finish secondary education, level required to enter HE. Secondly, according to the OECD report (2012), students in Colombia finish secondary school at 16 or 17 years old, sooner than their peers in Latin America (e.g. Argentinians, Brazilians, Chileans, and Mexicans graduate at 18), North America, and Western Europe (usually, students finish high school around 18, 19 or 20 years of age). Furthermore, Colombians have two years less of schooling, finishing high school in the 11<sup>th</sup> grade, whereas other countries have 12<sup>th</sup> and even 13<sup>th</sup> grade. Finally, the information available to students to make the decision is limited, where the low percentage of parents with HE is relevant; in the second semester of 2015, close to 80% of the students who took the Saber 11 test said their parents had no experience in HE (ICFES, 2016).

Each conceptualization shows a different side of the same problem, all of which are relevant. Improving one aspect does not mean improving others. It is thus necessary to formulate public policies with a broader vision of “access to HE”, considering all matters involved in whether someone has access to higher education or not.

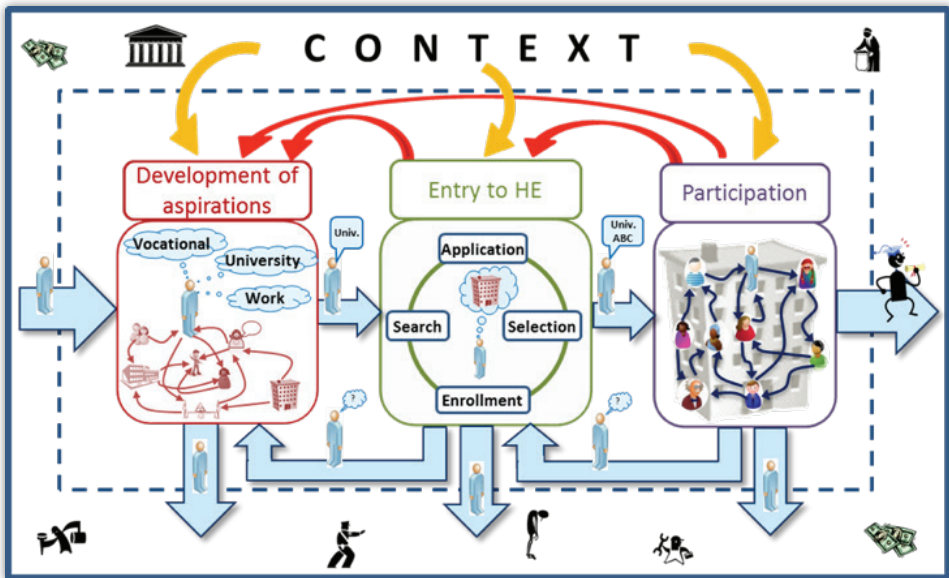
Díaz & Olaya (2017) approach HE from a systemic perspective. They argue HE as a social system, driven by the actions and decisions taken by actors, who have very different purposes, interests, abilities, and values. According to this perspective, the actions and decisions on HE depend on the personal goals and objectives that each one pursues, but also on the particular context in which they find themselves, and interact with other actors. Enrolling in HE is not only a matter of overcoming certain barriers individually, but rather of a much more complex process that begins when aspiration regarding HE are developed or not. These goals and the subsequent decisions of where to register depend on the context in which people develop and interact, as well as on their abilities, aspects that can facilitate or limit decision making.

Recognizing the diversity of individuals, and their aspirations (occupational and educational), Díaz & Olaya (2017) state that the study of access to HE should incorporate the opportunities and capabilities of each individual to decide and act through the processes related to obtaining their educational aspirations. Agency should therefore be incorporated.

The notion of agency incorporates the opportunities and skills of each individual to act through the processes related to the development and achievement of their educational aspirations. The dynamics of interest are not limited to the process of entering the HE, but include the dynamics related to the development of an HE aspiration, as well as those related to the achievement of those aspirations.

Díaz & Olaya (2017) propose a notion of access as an exercise of agency as a whole process. The following figure illustrates the proposed access model as a process of three interrelated stages.

Figure 11. Access model to the HE as an agency exercise



Source: Taken from Díaz & Olaya (2017).

The model proposes that access as an agency comprises a three-stage process: the development of aspirations, entry, and participation. The conceptual model of access to HE as an agency raises the processes that comprise an access process, and shows the interactions between actors and the context generally. This model aims to guide a systemic understanding of access to HE, so that it can be used by policymakers in any context to study and intervene on this matter.

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