



OPEN ACCESS

EDITED BY

JohnPaul Kennedy,
University of South Australia, Australia

REVIEWED BY

Jorge Ignacio Maluenda-Albornoz,
San Sebastián University, Chile
Fernando José Sadio-Ramos,
Instituto Politécnico de Coimbra, Portugal

*CORRESPONDENCE

Sandra Barragán
✉ sandra.barragan@utadeo.edu.co

RECEIVED 04 September 2023

ACCEPTED 11 October 2023

PUBLISHED 08 November 2023

CITATION

Barragán S and Marcelo E (2023) Results of
standardized government tests: an educational
quality indicator.
Front. Educ. 8:1288640.
doi: 10.3389/feduc.2023.1288640

COPYRIGHT

© 2023 Barragán and Marcelo. This is an open-
access article distributed under the terms of
the [Creative Commons Attribution License
\(CC BY\)](#). The use, distribution or reproduction
in other forums is permitted, provided the
original author(s) and the copyright owner(s)
are credited and that the original publication in
this journal is cited, in accordance with
accepted academic practice. No use,
distribution or reproduction is permitted which
does not comply with these terms.

Results of standardized government tests: an educational quality indicator

Sandra Barragán* and Eliacid Marcelo

Faculty of Natural Sciences and Engineering, Universidad de Bogotá Jorge Tadeo Lozano, Bogotá, Colombia

Considering the advances of standardized government assessments and their impact on the quality of education around the world, the aim of this paper was to characterize the influence of the results of the Saber 11 standardized test on Colombian public policies and on the quality of education, especially in Bogotá, from 2012 to 2022. To achieve this objective, a non-experimental methodology was designed using a mixed descriptive approach and a documentary source. Following the two phases of the methodology, the public policies, the characteristics of the test, the students assessed, the assessors, and the results for Bogotá were described. When achieving the proposed characterization, the discrepancy between the results of those evaluated and the goals proposed in the government plans was also observed. This discrepancy has not subsided despite the evolution of related public policies. The results of the standardized government tests for Bogotá were better than in the rest of the country, without implying that they were good. The national average and the average of the global scores for Bogotá were very close to half of the possible score to obtain. The results of the English tests placed Bogotá in the lower part of the scale of the Common European Framework.

KEYWORDS

educational evaluation, educational quality, standardized tests, educational policies, academic standards

Introduction

[Bogoya et al. \(2014\)](#) defined assessment as an act of recognition of the abilities and skills of students, the stages of their mental operations, and as part of the process of strengthening their capacity in a discipline. As [Castañeda \(2021\)](#) stated, assessment is not a finished state in the process of building knowledge, but rather transcends into cognition and metacognition. [Pardo \(2006\)](#) warned about the validity of standardized assessments – centered on evidence and the interpretations of scores or results – since it becomes an adequate and appropriate comprehensive evaluative judgment of actions based on scores or another form of evaluation.

The United Nations Educational, Scientific, and Cultural Organization (UNESCO) stated that there are different approaches to quality of education based on multiple currents of thought. For [UNESCO \(2005\)](#), the main factors that influence quality of education are the heterogeneity of the students, the socioeconomic level of the nation, human and material resources, and the teaching and learning processes. [Barba \(2018\)](#) affirmed that these factors are related to the learning achieved by students, the equity of their resources, the processes and investments of education, and the concordance between the educational service and the needs of the population, as well as their social, political, and economic environments. [UNICEF \(2020\)](#) associated quality of education with the social experiences of the student's family, stimulating and safe

environments, relevant content included in the teaching material, the student-centered teaching and learning process, and the learning outcomes. **Figure 1** shows the evolution of standardized assessment within the framework of quality of education.

Meeter (2022) analyzed the different roles of standardized tests in terms of (1) determining admission to university, (2) predicting students' dropout in higher education, (3) comparing the levels of academic achievement, and (4) analyzing the evolution of the quality of education since the results are steady year after year. The standardized assessment systems that measure the quality of education have thus been established in different countries according to these roles (see **Table 1**). Another important role of standardized tests has emerged from international organizations, such as the World Bank. The participation and results of their member countries have become the subject of study and analysis by specialized entities, who have observed the behavior of transnational educational progress. Among those entities are the Organization for Economic Cooperation and Development (OECD), the World Bank, and the Inter-American Development Bank. An example of the tests studied by organizations is the OECD Programmer for International Student Assessment (PISA) test, which estimates competencies and aptitudes in mathematics, science, and reading of 15-year-old students regardless of the grade they are in (**OCDE, 2019**). The studies are conducted under the premise that the economic well-being of nations is directly proportional to the knowledge, skills, and competencies of their citizens.

The research question – derived from what was previously described – that guides this work is the following: How can the impact of the results of the standardized test applied at the end of middle education on the quality of education in Bogotá, Colombia, be characterized?

Accordingly, the objective of this work was to characterize the impact of the results of the standardized test applied at the end of secondary education on the quality of education in Bogotá. This objective was circumscribed to the period between 2012 and 2021 because the transformation of standardized tests in Colombia began

in 2013 and from there, the Colombian Institute for the Evaluation of Education (ICFES) coordinated the integration of all standardized government tests and aligned them with the national educational levels. These educational stages and the application of the Saber test are primary (Saber 3° and 5°), secondary (7° and 9°), middle (Saber 11), higher education (Saber TyT, Technical and Technological), and Saber Pro (undergraduate). This way, they became a fundamental input for decision-making procedures related to public policies regarding the quality of education in Colombia (**Congreso de la República, 2009; Instituto Colombiano para la Evaluación de la Educación. ICFES, 2021**).

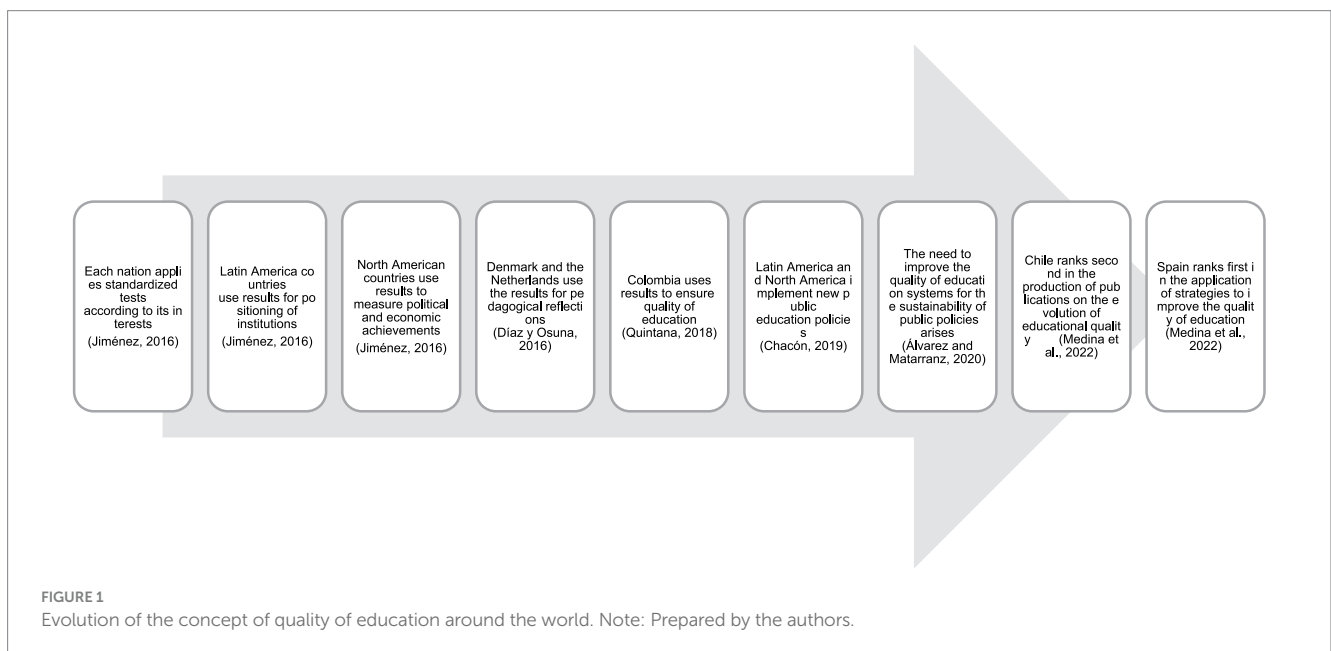
Theoretical framework: context of the Saber 11 test

Although there are numerous indicators that account for quality of education (**Quintana, 2018; Chacón, 2019; Álvarez and Matarranz, 2020**), the results of the standardized Saber 11 test evaluate the competencies defined in the quality of education benchmarks in Colombia: the Basic Competence Standards (BCS), the Basic Learning Rights (BLR), and the curricular guidelines oriented by the Ministry of National Education (MNE) of Colombia (**Instituto Colombiano para la Evaluación de la Educación. ICFES, 2022b**).

TABLE 1 Examples of standardized assessment systems.

Country	Standardized assessment systems
Argentina	National System of Quality Assessment (SIMCE)
Chile	National Quality Assessment System (SINEC)
Mexico	National Institute for Educational Evaluation (INEE)
Colombia	Colombian Institute for the Evaluation of Education (ICFES)
Denmark	National Cohort Study of Education (NCO)

Prepared by the authors based on **Demarchi Sánchez (2020), Rodríguez and Vallejo (2022)**, and **Meeter (2022)**.



Castro et al. (2019) pointed out that the Saber 11 standardized test is applied as a governmental tool to characterize students, as a criterion to measure the quality of education, and as an indicator of the academic capital of Colombian students now completing middle education and at the beginning of higher education. It is also applied to classify educational institutions and as a requirement for the admission of students into higher education. Additionally, the Instituto Colombiano Para la Evaluación de la Educación. ICFES, (2022c) publishes results and aggregated reports on different variables to rank the municipalities, so that they get resources allocated to them, and to reward students and schools that have obtained outstanding results. The ICFES provides strategic references for the design of national, territorial, and institutional educational policies based on these results (Congreso de la República, 1991, 1994; Ministerio de Educación Nacional, 2011; Ospina, 2022).

Characteristics of assessing institutions, tests, and the population assessed

The ICFES is the public institution whose main function is to conduct assessment procedures and design the instruments for the execution of the evaluations under the guidelines of the MNE in all stages of Colombian education, both nationally and internationally (Congreso de la República, 2009; Instituto Colombiano para la evaluación de la educación. ICFES, 2017; Demarchi Sánchez, 2020). Additionally, the ICFES conducts the necessary research to account for ISCE (Synthetic Index of Educational Quality) indicators of quality of education (Ministerio de Educación Nacional, 2018). It also defines the admission criteria for higher education, informs students about their competencies in the areas evaluated, and promotes standards for fostering a culture of assessment to facilitate state inspection and surveillance (Murillo, 2008). Table 2 summarizes the characteristics

of the Saber 11 test, the Rasch model, the assessment approach of basic competencies, and its inclusive nature, as established by the ICFES.

Characteristics of the assessed population

The Instituto Colombiano para la Evaluación de la Educación. ICFES (2021) pointed out that the characterization of students and educational institutions is based on a multilevel model made up of two axes (Table 3), one that describes the characteristics of the students and another that describes the characteristics of the institutions.

Governmental standardized test data

Table 4 shows the structure of the Saber 11 test. The historical participation of students from different populations, areas, sectors, and calendars has fluctuated. Figure 2 shows that, despite the pandemic, the highest number of students enrolled in the history of the Saber 11 test was registered in 2022. It is noteworthy that 2021 had the highest rate of absenteeism (Data ICFES, 2014–2021). In 2020 and 2022, different types of populations participated in all regions, as well as populations with diverse abilities.

It is essential to remark that from the perspective of Palacios (2020) and Radinger et al. (2018), the conditions experienced by students at the time of taking the Saber 11 test affect their performance and impact their results and the quality of education.

Research methodology

To achieve the proposed objective, a non-experimental mixed methodology was designed, with a documentary source, to study the

TABLE 2 General description of the Saber 11 test.

Characteristic	Description
Item Response Theory	These are standardized by pre-calibration and calibration processes under the Rasch model, which allows the identification of the correct answers, the omitted answers, the incidence of the character of the institutions of origin of the students, the socioeconomic levels, and other variables of influence (Barragán, 2013). Item Response Theory defines test scores and establishes guidelines and underlying basic concepts of observation and analysis (Caballero, 2022). It incorporates the analysis of the results for the quality of education in Colombia (Baker, 2001; Barragán et al., 2015; Cadena et al., 2018).
Assessment of basic competences	This is conceived as the combination of mental operations, comprehensive development, and skills demonstrated in each context (Hincapié and de Araújo, 2021). This is also defined as a student's ability to apply the knowledge he/she possesses and transform it to adequately face everyday situations (Guzmán, 2012; Universidad Autónoma de Occidente, 2016; García and García, 2022).
Results	Dissemination: The report delivered to the institutions classifies them into one of seven categories and allows them to define improvement strategies (Sanabria et al., 2020; Instituto Colombiano Para la Evaluación de la Educación. ICFES, 2022c). Students are grouped into four levels in accordance with their performance. These levels have three main characteristics. They are specific, they are hierarchical, with the level of greatest complexity being 4, and they are comprehensive since students are required to have passed the lower levels to be located at the upper ones (Instituto Colombiano Para la Evaluación de la Educación. ICFES, 2022c). They are organized by departments, zone, sectors, regions, and school day.
Type of question	Whether they are closed or open (Wright and Stone, 1979).
Alignment with other tests	This establishes a systematic follow-up of the results through the different educational levels (Instituto Colombiano Para la Evaluación de la Educación. ICFES, 2014).
Types of texts	The two universally accepted types of texts are: Continuous and Discontinuous (Loureda, 2003; Instituto Colombiano para la Evaluación de la Educación. ICFES, 2022b).
Educational inclusion	The test has a differential approach since it accommodates students regardless of their physical condition, their population type, or their nationality status (Instituto Colombiano Para la Evaluación de la Educación. ICFES, 2019).

Prepared by the authors.

TABLE 3 Description of the characterization factors of those evaluated in the Saber 11 test.

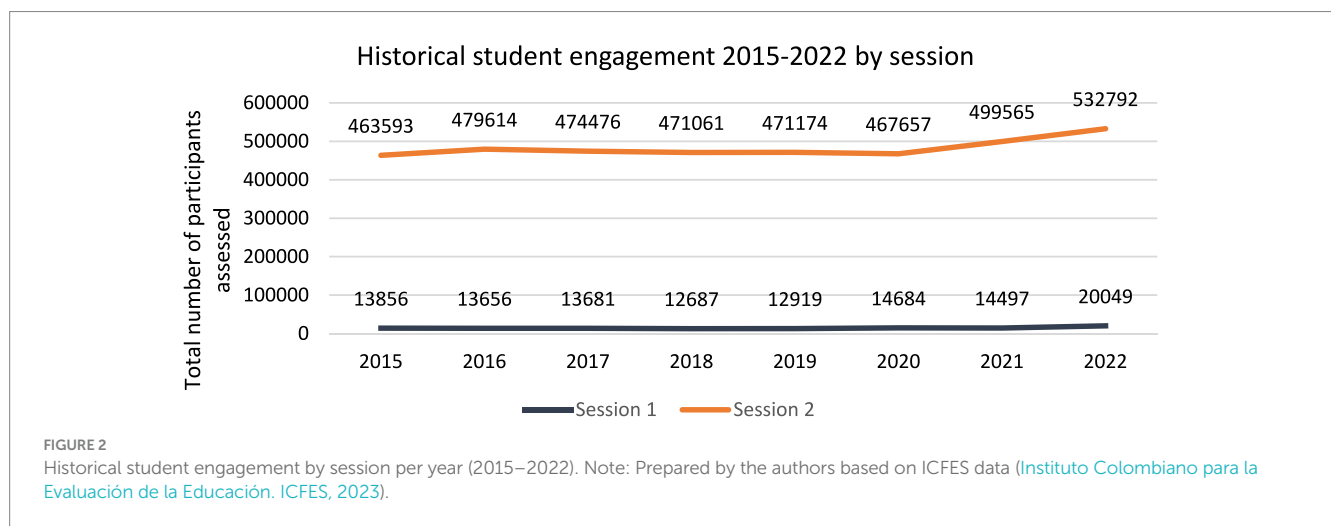
Characterization factor	Description of the characterization
Level of education	Determines the educational level of the parents of those assessed (Ministerio de Educación Nacional, 2010).
Socioeconomic level	Classifies the results into four levels, with 1 representing the greatest privations and the following indicating better conditions in the home (González, 2016; Morocho, 2017).
Communities	Defines indigenous, afro-descendant, or migrant communities (Angulo, 2017).
Sex	Defines two categories.
Age	Defines the ranges of age: 15 years or less, 16, 17, 18, 19, and 20 years or more.
Second language	Determines whether the student is bilingual or not.
Existence of technological devices at home	Determines the presence of technological devices (tablet or computer) and internet access.
Calendar	Determines the school stage in the academic year in which the test is taking place (A or B).

Prepared by the authors based on data from Instituto Colombiano Para la Evaluación de la Educación. ICFES (2014, 2021, 2022a).

TABLE 4 Structure of the Saber 11 test.

Areas	Subareas or components	Competences evaluated
Critical reading	Language, philosophy	Identifying and understanding the explicit contents of a text, understanding how the parts of a text are articulated to give it a global meaning, reflecting on a text, and evaluating its content.
Mathematics	Quantitative reasoning	Interpretating, representing, formulating, executing, reasoning, and arguing. Components: numerical, variational, geometric, metric, and random. Contexts of quantitative reasoning. Financial, scientific dissemination, social, and occupational.
Natural sciences	Biology, chemistry, physics, technology.	Using knowledge comprehensively, explaining phenomena, and inquiring.
Social and civic	Civic skills	Social thinking, interpreting, and analyzing perspectives, and systemic and reflective thinking.
English	Common European Framework (MCE)	Linguistic, pragmatic, and sociolinguistic competences.

Prepared by the authors based on Instituto Colombiano Para la Evaluación de la Educación. ICFES (2022c).



results of standardized tests in Bogotá from 2012 to 2022. To characterize the impact of the results of the Saber 11 standardized test on the quality of education, the methodology included two consecutive development phases: (1) A literature review focused on public policies. On the one hand, this review involved documents that link test results and quality of education and, on the other hand, documents related to the structure, instruments, protocols, and

methods for the Saber 11 test (Guirao, 2015; Arnau and Sala, 2020). In this phase, the review was conducted in terms of the Search, Appraisal, Synthesis, and Analysis (SALSA) framework (Grant and Booth, 2009). The search included a comprehensive approach; the appraisal did not include quality assessment because most of the documents were official; the synthesis was conducted narratively; and the analysis was developed conceptually and chronologically to shape

the theoretical framework and the context for this article. (2) A results database analysis was conducted to describe statistically the historical behavior in the observation window (2012–2022) and in the most recent application (2022). For phase 2, a database with 552,841 records was constructed with two databases of the 2022 Saber 11 test sessions (20,049 records in the first and 532,792 in the second) available from the [Instituto Colombiano para la Evaluación de la Educación. ICFES \(2023\)](#). Interactive georeferentiations were designed in this phase using Tableau software as a business intelligence and analytic platform. They can be visualized scanning the QR codes added in [Supplementary Table 1](#).

The score for the areas of Critical Reading, Mathematics, Social and Civic, and Natural Sciences was calculated by the ICFES using the Rasch model of Item Response Theory (IRT) on a scale between 0 and 100 points, and the overall score for each student was calculated from a weighted average on a scale between 0 and 500 points, taking as reference the sum of the results in each of the five areas ([Table 4; Instituto Colombiano Para la Evaluación de la Educación. ICFES, 2022c](#)). The performance levels of each area were structured on a scale, ranging from one to four, in which one is the lowest and four is the highest. The English levels were inspired by the Common European Framework of Reference for Languages, used by the ICFES to issue the results in five levels: A-, A1, A2, B1, and B+ ([Instituto Colombiano para la Evaluación de la Educación. ICFES, 2021](#)). Educational institutions were classified into five categories (A+, A, B, C, and D; [Instituto Colombiano para la Evaluación de la Educación. ICFES, 2021](#)).

In summary, phase 1 enabled the identification and classification of Colombian public policies that made direct and indirect references to the Saber 11 test and the analysis of its structure, assessment concept, and application criteria. Phase 2 allowed the georeferencing of the results obtained by the population in Bogota in the Saber 11 test.

Results

Considering the 552,841 records of those students evaluated in 2022, it was found that 54.11% were men and 45.88% were women. Of those students evaluated in 2022, 1.28% indicated having a nationality

other than Colombian, most of them Venezuelan (1.22% of the total), and 6.66% recognized themselves as a part of an ethnic group. Regarding academic information, 25.33% of those evaluated stated that they studied in a private school and 74.66% studied in a public school; 97.03% studied in calendar A while 2.56% in calendar B (a description of these calendars is included in [Table 3](#)). In total, 83.08% of the schools were in urban areas and 16.92% were in rural areas.

[Figure 3](#) shows the behavior of the country's global scores from 2015 to 2022. In 2016, the maximum global score for the observation period was reached. From 2017 to 2019, the behavior of the results decreased, while in 2020 and 2022, it remained steady ([Data; Instituto Colombiano para la Evaluación de la Educación. ICFES, 2023](#)). It should be noted that the population in the lowest socioeconomic level obtained the lowest overall result average and the population in the highest level obtained the best overall result average. Additionally, it is also worth noting that the assessed students located in urban areas consistently got better overall scores than those in rural areas, as was the case with the global scores by sector, in which better results were reflected in the private (non-official) sector than in the public (official).

[Figure 3](#) reveals that the general results have been fluctuating with a tendency to improve. However, this does not mean that they are good, since the scale goes from 0 to 500 points ([Instituto Colombiano Para la Evaluación de la Educación. ICFES, 2014, 2017, 2019, 2021](#)). When the global results in Bogotá from 2019 to 2022 are compared against the national ones and the characterization factors in [Table 3](#) are considered, the urban areas obtained a higher global score compared to the rural areas, similarly to the national level.

In addition, comparing the mean of the global scores in each of the five areas evaluated from 2019 to 2022 of Bogotá and Colombia reveals that the average for Bogotá was always higher than that for Colombia. The area that consistently had the lowest scores was Social and Civic as opposed to Critical Reading, in which Bogotá had the best performance. It is noteworthy that those evaluated were in the levels of medium or low performance. Moreover, when analyzing the student's performance in English, it was observed that most of the population was classified in the first three levels of the Common European Framework of Reference for Languages. That is, in categories A-, A1, A2, and the lowest percentage of students were in category B.

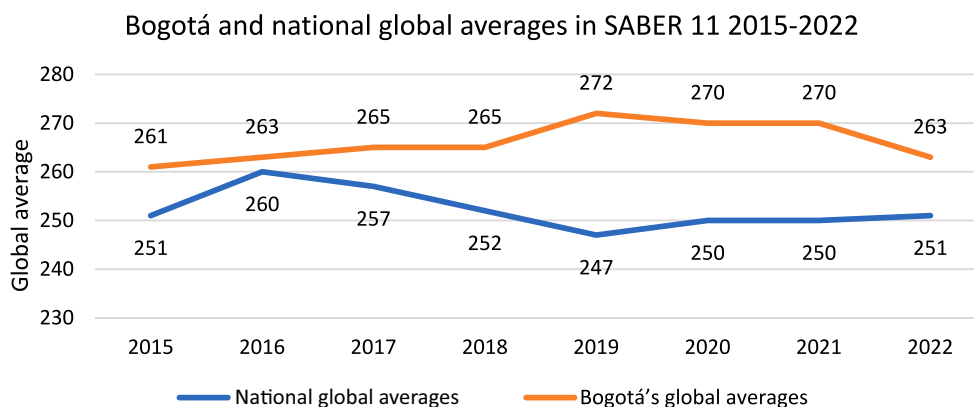


FIGURE 3

Bogotá and national global averages in the Saber 11 test in the years 2015 to 2022. Note: Prepared by the authors based on [Instituto Colombiano Para la Evaluación de la Educación. ICFES \(2022c\)](#) and ICFES data ([Instituto Colombiano para la Evaluación de la Educación. ICFES, 2023](#)).

The average for the assessed population in rural areas was 230.7 and for the population in urban areas was 255.59. The same situation was identified for each one of the five areas assessed: urban areas registered better scores than rural areas. When considering the nature of the school, the average scores in all areas and the overall score were better for private schools than for the public institutions. According to the character of the school, the students who obtained the best overall average score were the ones who underwent the academic curriculum (255.8), then those who underwent the technical/academic curriculum (249.1), and finally those who underwent the technical curriculum (244.3).

The choropleth map in Figure 4 was elaborated to represent the overall average score of schools located in municipalities in Colombia (municipalities are the second level of administrative division and currently there are 1,103 municipalities). The georeferentiation of Figure 4 shows such averages in different intensities of blue. Light blue is the lowest average and dark blue the highest. It is important to emphasize that, on the possible scale from 0 to 500 for the overall average score, at the municipal level, the minimum average was 169.3 and the maximum was 306.9. The municipality that had the best overall average score is adjacent to Bogotá and belongs to its conurbation, which might be due to the fact that private bilingual schools have country centers there to receive students who reside in Bogotá and who go to these centers during the school day. The monthly fee in these schools is within the reach of families with certain economic resources, which is consistent with the information in Table 5, which shows that lower socioeconomic levels obtained lower averages. Bogotá obtained 271.5 points as the overall average score and was placed 47th among the 1,103 municipalities.

When analyzing each of the five areas evaluated, it was observed that, on a scale of 0 to 100 possible points, the 552,841 students assessed in 2022 obtained an average of 53.0 points in Critical Reading, 50.8 in Mathematics, 49.3 in Natural Sciences, 47.9 in Social and Civic, and 50.3 in English. The results by area, according to the location of the

school, showed that students in urban schools had better averages in all areas than the rural ones. In the English test, the fact that private bilingual schools had better average scores (77.5), as opposed to the public bilingual schools which had the lowest average scores (44.9) stands out. Those evaluated were situated in the English performance levels of the Common European Framework (CEM) as follows: 46.20% in A-, 26.14% in A1, 15.48% in A2, 3.08% in B+, and 8.73% in B1. Table 6 presents the results in Bogotá in five areas evaluated according to the legal nature of the school of origin of the student, in which better results were identified in all of them for private schools.

Discussion

The Saber 11 test results serve as one of the inputs to measure the level of quality of education in Colombia (Rangel, 2019), as is done in

TABLE 5 Description of the characterization factors of those evaluated in the Saber 11 test 2022.

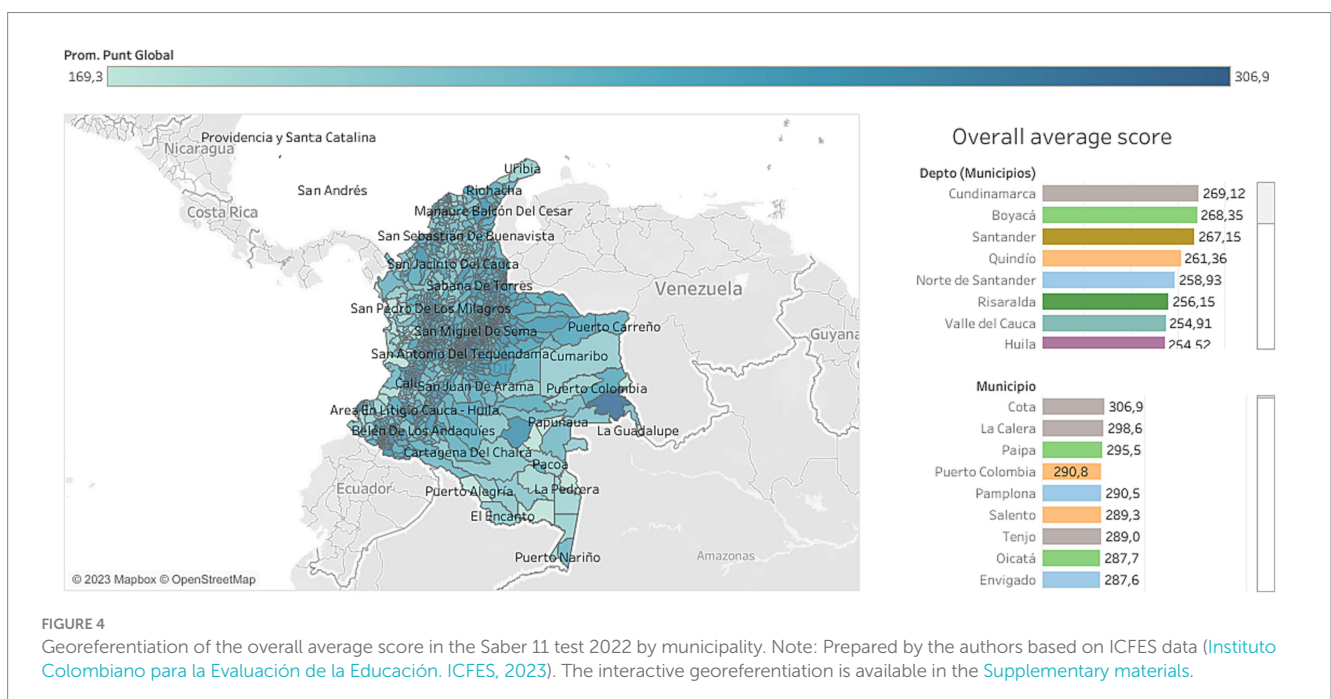
Socioeconomic level	1	2	3	4	Total
Overall average score	223.8	238.6	263.4	306.8	251.3

Prepared by the authors based on Instituto Colombiano para la Evaluación de la Educación. ICFES (2023).

TABLE 6 Bogotá results by areas according to the legal nature of the school Saber 11 test 2022.

	CR	MT	NC	SC	ENG	Overall average score
Private	59.7	58.3	55.8	55.5	62.2	288.4
Public	54.2	52.1	50.2	49.2	51.6	257.2

Prepared by the authors based on Instituto Colombiano para la Evaluación de la Educación. ICFES (2023).



countries such as Spain and Chile. These countries occupy first and second place, respectively, in quality of education and research regarding standardized tests and the generation of policies for their improvement (Medina et al., 2022).

Applying standardized tests is becoming increasingly relevant at an international level to measure the quality of education, the effectiveness of government educational plans, and the hierarchical positioning of educational institutions in accordance with the order of results, as is the case for Latin and North America (Jiménez, 2016). In Denmark and the Netherlands, the results serve as an input to improve student competencies and, therefore, the quality of education (Díaz and Osuna, 2016).

The results of the Saber 11 test allows the definition of new strategies and generates opportunities for equity and equality if they maintain the quality of education. Also, this test provides a solid base of information that can be used to transform education substantially and to produce a formative, comprehensive, processual evaluation system based on performance, achievements, and indicators (Barragán Moreno et al., 2022).

One of the results of this study shows that Bogotá's scores on standardized tests in the areas evaluated during the period 2012–2022 were placed at the medium level. The number of institutions located at the high and higher levels decreased. It was noteworthy that the institutions in Calendar A had lower results compared with those in Calendar B, most of which are private institutions. This evidence is analyzed to address the hypotheses about the causes and consequences of the quality of education (Elías, 2017), of the higher education enrollment (Rincón Quiñones and Espitia Suárez, 2021), and as predictors of student dropout in higher education (Barragán et al., 2015).

In fact, the results of the Saber 11 standardized test are used as an indicator of the quality of education in institutions in the regions and in the Colombian capital. They also serve as a parameter to measure the ISCE in the learning processes, the evaluation methods, and the training of teachers in schools (Ministerio de Educación Nacional, 2019). They are also considered to position and classify educational institutions. Thanks to this, the students and the institutions have access to different types of benefits such as scholarships and automatic admission to Higher Education Institutions (HEI), among others (ICETEX, 2021).

In Bogotá, the Secretariat of Education classifies educational institutions into three groups, in accordance with their scores obtained in the Saber 11 test. Likewise, it invests economic resources on a greater or lesser scale, with the purpose of improving results. However, this is not reflected in the percentages achieved by the Colombian capital (Instituto Colombiano Para la Evaluación de la Educación. ICFES, 2022c).

The ISCE of the capital's institutions is related to the results of the Saber 11 test, and these, in turn, to the academic work conducted in the different areas of knowledge. Therefore, why the scores achieved did not exceed an average of 54 points out of 100 during 2019–2022 is the subject of study (Instituto Colombiano Para la Evaluación de la Educación. ICFES, 2022c).

The overall results in the Saber 11 test are fixed in a range of 0 to 500 points. Colombia has achieved a national average of 250 points, that is, only 50% of the expected goal. Although Bogotá was positioned above the national average, and despite the investments and efforts

made, it only reached 266 points on average during the 9 years between 2014 and 2022 (Instituto Colombiano Para la Evaluación de la Educación. ICFES, 2022c).

Divergent perspectives on standardized tests

While the results are widely understood to indicate the quality of education, there are divergent perspectives on standardized tests. Gómez (2004) warned that using standardized assessments to measure the quality of education leads to the fact that, when the results are not as expected, responsibility is placed on teachers and educational institutions. Ravela et al. (2008) also highlighted that caution should be exercised when the results are translated into positions in the hierarchies of educational institutions, since the differences in the averages, when they are considerable, may be irrelevant. In this sense, Guevara (2017) pointed out that the issue of the quality of education should be addressed from the construction of knowledge in different historical and cultural contexts and not from numerical results.

Internationally, standardized tests, according to Cifuentes Medina et al. (2018), are seen as political and economic tools that reflect multiple interests other than academic or pedagogical. Their purpose is interventionist on the part of multilateral organizations in the countries with the lowest results, given that tests do not fully evaluate the multi-diverse reality of each educational context and only conduct generalized measurements that do not consider specificities when classifying or categorizing. Indeed, standardized tests are neither the absolute measure nor the only determining factor of quality of education. However, they do not ignore the processes within educational institutions, as well as their different geographical, economic, and social realities. On the contrary, through standardized tests, the general conditions on what all evaluated students should know are established using a common instrument (Instituto Colombiano Para la Evaluación de la Educación. ICFES, 2013).

Side effects of standardized tests

The MNE positions and ranks educational institutions and their students, providing prestige to the best by rewarding the best results. The Ministry concedes the Andrés Bello award to those students who obtain the highest results in the Saber 11 test at the national, departmental, and regional levels. This recognition allows the best-placed students to obtain medals, diplomas, 100% tuition subsidies in public HEI, sustenance subsidies depending on the place of residence and study or in case they fail to obtain a forgivable scholarship credit to study in an accredited high-quality HEI in Colombia (Ministerio de Educación Nacional, 2020). Likewise, the *Generación-E* government program has promoted equity and excellence and benefits students who have obtained 350 points or more in their overall result of the Saber 11 test during the four-year period from 2019 to 2022, providing them with a reduction of 100% of their tuition payment and a sustenance subsidy for the duration of the academic program (Ministerio de Educación Nacional, 2019). Likewise, ICETEX grants scholarships and credits to students based on their results in the Saber 11 test at the national, regional, or

municipal level, which covers 100% of the enrollment and offers monthly support for technical, technologists, and undergraduate programs. Students also receive flexible payment choices and forgivability options depending on the scores they obtained. Additionally, ICETEX has agreements established with national and international institutions for students to advance undergraduate studies abroad (ICETEX, 2021).

It is also noteworthy that most of the public universities use the results of the Saber 11 test as the only requirement for enrolling students and to classify applicants. The higher the results, the better the academic options and the resources.

In the private sector, some universities maintain full or partial scholarship programs and in some cases subsidies, depending on the scores obtained by students in the Saber 11 test. Along these same lines, the Colombian Petroleum Company (Ecopetrol) offers a scholarship program (Ecopetrol, 2021). Likewise, at the regional level, territorial entities allocate certain grants to the best students in their department or region funded by companies or state entities, as is the case of EPM (Empresas Públicas de Medellín).

Finally, it is worth noting that the classification of schools in scales and the benefits students are granted, at national and regional rankings, and the percentages or qualifications achieved in the Synthetic Quality Index depend on results obtained. In consequence, student results are factors that have a positive impact on educational institutions in such a way that they seek multiple strategies, be those academic, commercial, or instructional to achieve the desired results. In some cases, the classification on an A+ scale is used as an advertising element to promote the image and prestige of an institution and thus attract applicants and retain students. It is also an input to establish connections with HEIs with the purpose of obtaining qualified benefits for their graduates, such as discounts, scholarships, and other added values. Likewise, institutions use their classification to show their communities their achievements and advances in the academic assessment processes.

Conclusion

The historical, legal, conceptual, statistical, and experimental documentary review of standardized assessment in Bogotá allowed us to achieve the proposed objective of characterizing the impact of the results of the standardized test applied at the end of secondary education on the quality of education in Bogotá, Colombia. It also allowed us to demonstrate the evolution of the concept of standardized assessment in Colombian public policies during the period 2012–2021.

The concept of standardized assessment, as an input of educational quality in Colombian public policies, has progressively evolved in historical, budgetary, conceptual, and cognitive aspects, and has become a tool to promote the dimensions and potentialities of human development to meet the needs of the national population.

Bogotá's participation in standardized tests has allowed the building of internal and external reference parameters. Regarding the endogenous parameters, they are an indicator to measure compliance with the criteria of quality, relevance, and management established in the national educational public policies. The exogenous parameters have been useful to promote international

relations and have become a learning factor from the experiences and methodologies applied by other participating countries, especially those that have obtained better results, such as China, Japan, and Finland, among others.

Standardized assessment, as a relevant element in the teaching–learning process and in the construction of student knowledge, transcends numerical measurement and is an integral training component in which the different dimensions of the person prevail (cognitive, spiritual, social, rational, and emotional). Therefore, it is a current object of study that calls for transdisciplinary techniques and approaches in the search for opportunities for improvement through research.

Standardized tests in Bogotá have had significant and progressive advances in their application and modeling, as well as in the transformation of classroom practices, teaching processes, learning, curricular updating, and methodological dynamics. They have gone through various phases, from being a memory-based, hidden, and subjective evaluation, to becoming a participatory, open dynamic that develops critical, conceptual, and analytical capacities.

Nevertheless, the discrepancy between the plans and goals of educational public policies subsists despite the evolution of educational policies. The results of the standardized government tests for Bogotá were better than those in the rest of the country. The national average and the average of the global scores for Bogotá were very close to half of the possible score to obtain. The results of the English tests placed Bogotá in the lower part of the scale of the Common European Framework.

This analysis revealed an opportunity for future work in the analysis of direct or indirect variables of an individual, academic, institutional, and socioeconomic nature that act in an interrelated manner on the results. By identifying these variables and recognizing among them those that can be addressed through public policy by decision-makers, progress can be made toward the quality of education from this indicator.

Data availability statement

The original contributions presented in the study are included in the article/[Supplementary material](#), further inquiries can be directed to the corresponding author.

Author contributions

SB: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Validation, Visualization, Writing – original draft, Writing – review & editing. EM: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft.

Funding

The author(s) declare that no financial support was received for the research, authorship, and/or publication of this article.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's note

All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated

organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.

Supplementary material

The Supplementary material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/feduc.2023.1288640/full#supplementary-material>

References

- Álvarez, G., and Matarranz, M. (2020). Calidad y Evaluación como tendencias globales en política educativa. *Revista Complutense de Educación* 31, 83–93. doi: 10.5209/rced.61865
- Angulo, C. (2017). Efectos de la deserción. Casa Editorial El Tiempo, 1. Available at: <https://www.eltiempo.com/opinion/columnistas/carlos-angulo-galvis/efectos-de-la-desercion-desercion-escolar-138230>, consultado febrero 23 de 2023
- Arnau, L., and Sala, J. (2020). *La revisión de la literatura científica: Pautas, procedimientos y criterios de calidad*. 1–22. Barcelona: Universidad Autónoma de Barcelona.
- Baker, F. B. (2001). *The basic of item response theory*. US: University Wisconsin United states of America.
- Barba, B. (2018). La calidad de la educación. Los términos de su ecuación. *Revista Mexicana de Investigación Educativa*. 23, 963–979. Available at: http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S1405-66662018000300963&lng=es&tlng=es
- Barragán, S. (2013). Respuestas omitidas: examen de Matemáticas Básicas. *Revista Mutis* 3, 69–85. doi: 10.21789/22561498.480
- Barragán, S., Calderón, G., and Rodríguez, R. (2015). *Estrategias y acciones para la retención estudiantil en la Universidad de Bogotá Jorge Tadeo Lozano*. (pp. 69–112). Colombia: Universidad de Bogotá Jorge Tadeo Lozano.
- Barragán Moreno, S. P., Marcelo Escalante, E., and Marcelo, E. (2022). Educación inclusiva, perspectiva desde la evaluación. *revHUMAN* 11, 1–22. doi: 10.37467/revhuman.v11.4016
- Bogoya, D., Ocaña Gomez, A., Barragán Moreno, S. C., and Contento Rubio, R. (2014). Funcionamiento Diferencial de ítems: examen de matemáticas. *Interdisciplinaria*. 31, 121–138. Available at: <http://www.redalyc.org/articulo.oa?id=18031545008>
- Caballero, E. (2022). Acompañamiento Pedagógico y Competencias docentes [Tesis de Doctorado]. [Trujillo (<https://hdl.handle.net/20.500.12692/91122>)] Universidad César Vallejo.
- Cadena, S., Roldan, C., González, D., Rodríguez, O., and Ruano, C. (2018). Evaluación de aula, evaluación estandarizada y emergencia de sistemas de evaluación de aprendizajes. Cali Universidad Autónoma de occidente. Available at: <https://file:///C:/Users/user/Desktop/Dropbox/PC/Documents/Downloads/L0112.pdf>
- Castañeda, L. (2021). Una experiencia de diseño de una tarea de evaluación sumativa en formato transmedia para formación inicial de profesorado. *RIED. Revista Iberoamericana de Educación a Distancia* 24, 203–224. doi: 10.5944/ried.24.2.29148
- Castro, M., Ruíz, J. V., and Ruiz Linares, J. (2019). La educación secundaria y superior en Colombia vista desde las pruebas Saber. *Prax saber* 10, 341–366. doi: 10.19053/22160159.v10.n24.2019.9465
- Chacón, L. (2019). Calidad educativa: una mirada a la escuela y el maestro en Colombia. *Revista Educación y calidad*. 36, 35–49. doi: 10.36737/01230425.v1.n36.2019.2120
- Cifuentes Medina, J. E., Chacón Benavides, J. A. Universidad Pedagógica y Tecnológica de Colombia, and Moreno Pinzón, I. A. Universidad Pedagógica y Tecnológica de Colombia (2018). Análisis de los resultados de las pruebas estandarizadas Saber pro en profesionales de la educación. *RHS. Revista Humanismo y Sociedad* 6, 22–48. doi: 10.22209/rhs.v6n2a02
- Congreso de la República. (1991). Constitución Política de Colombia de 1991. Available at: <https://dapre.presidencia.gov.co/normativa/normativa/Constitucion-Politica-Colombia-1991.pdf>
- Congreso de la República. (1994). Ley 115. Por la cual se expide la Ley General de Educación. Diario oficial 41214. Available at: https://www.mineducacion.gov.co/1621/articles-85906_archivo_pdf.pdf
- Congreso de la República. (2009). Ley 1295 de 2009. Por la cual se reglamenta la atención integral de los niños de la primera infancia. Diario Oficial 4731. Available at: https://www.mineducacion.gov.co/1621/articles-187668_archivo_pdf_ley_1295_2009.pdf
- Demarchi Sánchez, G. D. (2020). La evaluación desde las pruebas estandarizadas en la educación en Latinoamérica. *Receptor* 8, 107–133. doi: 10.53995/23463279.716
- Díaz, K., and Osuna, C. (2016). Las evaluaciones estandarizadas del aprendizaje y la mejora de la calidad educativa. *Temas de Educación*. 22, 131–146. Available at: <https://revistas.userena.cl/index.php/eduacion/articulo/download/741/828/0>
- Ecopetrol. (2021). Incentivos (2021) a los mejores estudiantes. Available at: <https://www.ecopetrol.com.co/wps/portal/Home/es/noticias/detalle/ecopetrol-lanza-convocatoria-abierta-mejores-bachilleres-del-pais>. Consultado el 16 de agosto de 2023
- Elías, R. (2017). Los programas internacionales de evaluación de logros académicos y su influencia en las políticas en américa latina. *Revista Población y desarrollo*. 45, 74–82. doi: 10.18004/pdfce/2076-054x/2017.023(45).074-082
- García, J., and García, M. (2022). La evaluación por competencias en el proceso de formación. *Revista Cubana de Educación Superior*. 41, 336–357. Available at: http://scielo.sld.cu/scielo.php?script=sci_abstract&pid=S0257-43142022000200022
- Gómez, R. (2004). Calidad educativa: más que resultados en pruebas estandarizadas. *Revista Educación y Cultura*, XVI 38, 73–89. Available at: <https://revistas.udea.edu.co/index.php/revistaeyc/article/view/7274>
- González, M. (2016). Ausentismo y abandono escolar. *Revista Iberoamericana sobre calidad, Eficacia y cambio en la educación*. 6, 1–15. doi: 10.15366/reiche
- Grant, M., and Booth, A. (2009). A typology of reviews: An analysis of 14 review types and associated methodologies. (H. L. Group, Ed.) *Health Information and Libraries Journal*. 26, 91–108. doi: 10.1111/j.1471-1842.2009.00848.x
- Guevara, R. (2017). La calidad, las competencias y las pruebas estandarizadas: una mirada desde las organizaciones internacionales. *Revista Educación y ciudad* 2017:159. doi: 10.36737/01230425.v0.n33.2017.1658
- Guirao, G., and Silaman, A. (2015). Utilidad y tipos de revisión de literatura. *Ene* 9. doi: 10.4321/S1988-348X2015000200002
- Guzmán, F. (2012). El concepto de competencias. *Revista iberoamericana de educación* 60, 1–13. doi: 10.35362/rie6041289
- Hincapié, N., and de Araújo, C. (2021). Evaluación de los aprendizajes por competencias: una mirada teórica desde el contexto colombiano. *Revista de ciencias sociales (VE) Universidad del Zulia*. XXVIII, 6–22. Available at: <https://dialnet.unirioja.es/servlet/articulo?codigo=8297213>
- ICETEX. (2021). Subsidios con base en los mejores resultados en las pruebas saber 11. Available at: <https://web.icetex.gov.co/es/-/subsidios-mejores-resultados-saber-11>, August 16th of 2023.
- Instituto Colombiano Para la Evaluación de la Educación. ICFES (2013). Alineación de las Pruebas Saber 11. Available at: <https://www.google.com/search?q=alineacion+de+las+pruebas+saber+11&oeq=Alineacion+de+las+pruebas+&qs=chrome.1.69157j0i512.15957j0j7&sourceid=chrome&ie=UTF-8>
- Instituto Colombiano Para la Evaluación de la Educación. ICFES (2014). Sistema Nacional de la Evaluación Estandarizada Alineación de la Prueba Saber 11. Colombia. Available at: <https://www.icfes.gov.co/documents/39286/1645749/Alineacion+examen+Saber+11.pdf/b52a7760-0133-5e17-c0b3-de49876db0c6?version=1.0&t=1647378636616>
- Instituto Colombiano para la evaluación de la educación. ICFES (2017). Resolución 135 de 2017. Por la cual se reglamenta el proceso de inscripción del Examen de Estado de Calidad de la Educación Superior y se dictan otras disposiciones. Diario oficial 52168. Available at: https://normograma.icfes.gov.co/docs/resolucion_icfes_0135_2017.htm
- Instituto Colombiano Para la Evaluación de la Educación. ICFES (2019). Resolución 268 de 2019. Por la cual se actualiza el Modelo Integrado de Planeación y Gestión (MIPG) en el Instituto Colombiano para la Evaluación de la Educación (Icfes). Diario oficial 50924. Available at: https://normograma.icfes.gov.co/docs/resolucion_icfes_0268_2019.htm

- Instituto Colombiano para la Evaluación de la Educación. ICFES (2021). Resolución 676 de 2021. Por medio de la cual se crea el Comité de Publicaciones para el Análisis y Difusión de los Resultados de las Evaluaciones. Diario oficial 51895. Available at: https://normograma.icfes.gov.co/docs/resolucion_icfes_0268_2019.htm
- Instituto Colombiano Para la Evaluación de la Educación. ICFES. (2022a). Informe Nacional de Resultados de la Prueba Saber 11 2021. Colombia. Available at: https://www.icfes.gov.co/documents/39286/1689945/Informe_nacional_de+resultados_Saber11_2021.pdf/68ccc718-dc51-71de-5693-bb907477fa87?t=1655481600171
- Instituto Colombiano para la Evaluación de la Educación. ICFES (2022b). Guía para la interpretación de resultados. Available at: <https://www2.icfes.gov.co/documents/39286/2163504/Gu%C3%A1da+de+interpretaci%C3%B3n+de+resultados+02052022.pdf>
- Instituto Colombiano Para la Evaluación de la Educación. ICFES (2022c). Informe Nacional de Resultados de las Pruebas Saber 11 2021. Available at: <https://www.icfes.gov.co/en/informe-nacional-2022>
- Instituto Colombiano para la Evaluación de la Educación. ICFES (2023). Documentación, Diccionarios y bases de datos. Bogotá Colombia. Available at: [https://www.bing.com/search?q=Instituto%20Colombiano%20para%20la%20Evaluaci%C3%B3n%20de%20la%20Educa%C3%B3n.%20ICFES%20\(2023\).%20Documentaci%C3%B3n%2C%20Diccionarios](https://www.bing.com/search?q=Instituto%20Colombiano%20para%20la%20Evaluaci%C3%B3n%20de%20la%20Educa%C3%B3n.%20ICFES%20(2023).%20Documentaci%C3%B3n%2C%20Diccionarios)
- Jiménez, J. (2016). El papel de la evaluación a gran escala como política de rendición de cuentas en el sistema educativo mexicano. *Revista Iberoamericana De Evaluación Educativa* 9, 109–126. doi: 10.15366/rie2016.9.1.007
- Loureda, Ó. (2003). *Introducción a la tipología textual*. Cuadernos de lengua española. 78.
- Medina, R., Carcausto, W., and Guzmán, E. (2022). Satisfacción de la calidad en la educación Superior. *Revista Iberoamericana de Educación*. 88, 1–16. doi: 10.35362/rie8814774
- Meeter, M. (2022). Predicting retention in higher education from high-stakes exams or school GPA. *Educational Assessment*. 28, 1–10. doi: 10.1080/10627197.2022.2130748
- Ministerio de Educación Nacional. (2010). Encuesta Nacional de Deserción Escolar ENDE. Colombia. Available at: https://www.mineduacion.gov.co/1621/articles-293664_archivo_pdf_resultados_ETC.pdf
- Ministerio de Educación Nacional. (2011). Programa para la transformación de la calidad educativa. Available at: <https://www.mineduacion.gov.co/1621/article-280058.html>, consultado marzo 15 de 2023.
- Ministerio de Educación Nacional. (2018). Decreto 1280 de 2018. Por el cual se reglamenta el Sistema de Aseguramiento de la Calidad de la Educación Superior. Available at: <https://www.funcionpublica.gov.co/eva/gestornormativo/norma.php?i=87642>
- Ministerio de Educación Nacional. (2019). Decreto 1330. Por el cual se sustituye el Capítulo 2 y se suprime el Capítulo 7 del Título 3 de la Parte 5 del Libro 2 del Decreto 1075 de 2015-Único Reglamentario del Sector Educación. Available at: https://www.mineduacion.gov.co/1780/articles-387348_archivo_pdf.pdf, consultado 15 de marzo de 2023
- Ministerio de Educación Nacional. (2020). Guía para la interpretación y uso de resultados históricos de la prueba Saber 11. Bogotá Colombia. Available at: https://www.mineduacion.gov.co/1780/articles-400767_recurso_1.pdf
- Morocho, J. (2017). El acoso escolar. Cuenca Ecuador. Available at: <https://dspace.ups.edu.ec/bitstream/123456789/15024/1/UPS-CT007412.pdf>
- Murillo, J. (2008). Hacia un modelo de eficacia escolar. *Revista Iberoamericana sobre calidad, Eficacia y Cambio en la Educación*. 6, 4–28. Available at: <http://www.redalyc.org/articulo.oa?id=55160102>
- OCDE. (2019). El trabajo de la OCDE sobre Educación y Competencias, Francia. Available at: <https://www.oecd.org/education/El-trabajo-de-la-ocde-sobre-educacion-y-competencias.pdf>
- Ospina, M. (2022). Informe Nacional de Resultados de la prueba Saber 11 2021. Colombia. Available at: https://www.icfes.gov.co/documents/39286/1689945/Informe_nacional_de+resultados_Saber11_2021.pdf/68ccc718-dc51-71de-5693-bb907477fa87?t=1655481600171
- Palacios, A. (2020). *Mejora y adaptación virtual de la organización y gestión educativa. En Didáctica y organización educativa* (págs. 1714–1736). Spain: Universidad de Sevilla.
- Pardo, C. (2006). El modelo de Rasch, una alternativa para la evaluación de la educación en Colombia. *Universidad Católica de Colombia*. 5, 9–21. Available at: <https://actacolombianapsicologia.ucatolica.edu.co/article/view/587>
- Quintana, E. (2018). Calidad educativa y gestión escolar. *Revista educación y educadores* 21, 259–281. doi: 10.5294/edu.2018.21.2.5
- Radinger, T., Echazarra, A., Guerrero, G., and Valenzuela, J. P. (2018). *OECD Reviews of School Resources*. OECD Publishing. doi: 10.1787/9789264303751-en
- Rangel, J. (2019). Evaluación del diseño de las pruebas estandarizadas en Colombia. *Dialéctica, Revista de investigación educativa* (2019-2). Available at: <http://creativecommons.org/licenses/by-nc-sa/3.0/ve/>
- Ravela, P., Arregui, P., Valverde, G., Wolfé, R., Ferrer, G., Martínez, F., et al. (2008). Las evaluaciones educativas que américa Latina necesita. *Revista Iberoamericana de evaluación educativa*. 1, 46–63. Available at: <https://revistas.uam.es/rie/article/view/4680>
- Rincón Quiñones, C., and Espitia Suárez, A. (2021). La educación superior de Colombia en riesgo: ¿Dónde están los estudiantes? *ecosecon* 24, 4–28. doi: 10.17230/ecos.2020.51.1.y Espitia, A
- Rodríguez, R., and Vallejo, R. (2022). Valor agregado y las competencias genéricas de los estudiantes de educación superior en Colombia. *Revista Iberoamericana de educación superior*. 36, 44–66. doi: 10.7440/res64.2018.03
- Sanabria, L. A., Pérez Almagro, M., and Riascos Hinestroza, L. (2020). Pruebas de evaluación Saber y PISA en la educación obligatoria de Colombia. *Revista UM Universidad de Murcia*. 38, 231–254. doi: 10.6018/educatio.452891
- UNESCO. (2005). La conceptualización de la UNESCO sobre calidad: un marco para el entendimiento, el monitoreo y la mejora de la calidad educativa. Available at: <http://www.unesco.org/education/gmrdownload/chapter1.pdf>
- UNICEF. (2020). Educación y aprendizaje Calidad educativa. Las niñas, niños y adolescentes tienen derecho a ir a la escuela y aprender. Available at: <https://www.unicef.org/colombia/retornoalaescuela#:~:text=%E2%80%9C1r%20a%20la%20escuela%20y,los%20ni%C3%B1os%2C%20ni%C3%B1as%20y%20adolescentes>.
- Universidad Autónoma de Occidente. (2016). sistemas de evaluación de los aprendizajes en la educación superior. Seminario internacional 2016. Available at: <https://usbali.edu.co/node/3678>
- Wright, B., and Stone, M. (1979). *Best Test Desing*. Chicago: University of Chicago.