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STANDARDIZED TESTS AND THE QUALITY OF EDUCATION IN PANAMA: ANALYSIS IN THE CONTEXT OF THE HEALTH CRISIS CAUSED BY COVID-19

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Abstract
Standardized assessments provide relevant information about the circumstances that influence student performance. Students living in rural or low-income areas tend to obtain lower scores. This desk-based research investigated Panama's experience with census tests. The findings were that the country had not made significant progress in internal exams, while it is well below average in international exams. In conclusion, a crisis such as the one caused by COVID-19 may deepen the learning gaps and worsen the nation's difficulties so far in these measures.
Keywords: Educational quality, COVID-19, standardized tests.

1. Introduction

Standardized tests as a criterion of quality in educational systems have been questioned by different researchers (Cerón & Cruz 2013; Cueto 2011; Albornoz 2018; Olivos 2016; Rudy 2017). Among the arguments mentioned against them are that they do not consider the particularity of the students' contexts or learning rhythms. Likewise, they are blamed for this form of exam responding to transnational economic policies of a capitalist type whose main interest is reducing economic budgets to education. Finally, some argue that the homogenization of knowledge that census evaluations encourage restricts other types of student abilities.

However, according to Benítez & Gamboa (2022), when standardized assessments are aligned with learning objectives designed by teachers in their daily practices, they become very useful as they provide valuable information for feedback processes. Teachers can use the results to identify curricular strengths and weaknesses and, of course, also to verify individual student achievement. Likewise, Shepard (2006) stresses that it would be wise for teachers to use the tests as criteria for self-evaluation and to determine the successes of the curriculum and the schools compared with the scores obtained. Likewise, the questionnaires can be used as bibliographic material to enrich the topics taught in the classroom.

However, regardless of the debate on the convenience or not of this type of test, the truth is that they indicate variables of analysis that other information instruments can quickly provide. For example, international measurements show that girls tend to have lower scores than boys in mathematical competencies; they also indicate that the origin, social stratum, parents' level of education, and teachers' training significantly influence students' performance in the overall results of the evaluations (Agudelo et al. 2019; World Bank 2021; UNICEF 2020). Therefore, they are supplies of studies with high informative value.

In this sense, this research investigated the results obtained by Panamanian students in national and

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international standardized tests to determine the characterization they make of the country's educational system. Likewise, to foresee how the COVID-19 health crisis could affect future measurements in which students will be submitted. One is the Programme for International Student Assessment -PISA- scheduled for 2022 in a post-pandemic scenario.

For this purpose, qualitative research was carried out with a documentary design methodology. The categories of analysis were: standardized evaluation, educational quality and the consequences of COVID-19 in the Panamanian educational system. Therefore, bibliographic sources were consulted to answer the question of how prepared students were, according to the results of the census tests, to face the challenges imposed by the health crisis caused by the pandemic.

2. General Objective

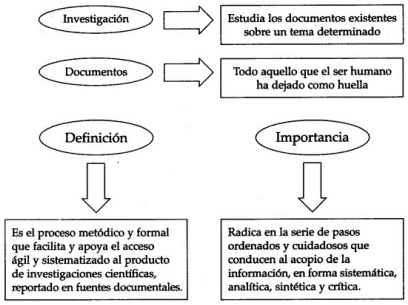
To determine, according to the results of standardized tests, the quality of the Panamanian educational system to predict how the COVID-19 health crisis may have affected students' academic performance.

3. Methodology

The nature of the study was qualitative, with a documented research design. It sought to determine, according to the results of standardized tests, the quality of the Panamanian educational system with the intention of foreseeing how the COVID-19 health crisis could affect students' academic performance. This was the object and phenomenon of study. To this end, following the epistemological guidelines established in this type of inquiry, there was a "series of techniques for searching, processing and storing information contained in documents, in the first instance, and the systematic, coherent and sufficiently argued presentation of new information in a scientific paper, in the second instance" (Tancara, 1993. p.94).

However, the documentary nature of the research should be understood, according to Gómez (2010), as a reconstructive exercise, a renewal of knowledge based on previous studies but which must respond to new concerns. This rigorous and exhaustive process, which ends with the publication of the results, is scientific, according to Morales (2003), insofar as it leads to the construction of new knowledge about a problem. For this, it is necessary to follow, according to Chong (2007), a methodical process that she understands, as shown in the following figure.

Figure 1. Documentary research process.



Source: Chong, 2007.

For this study, the methodological guidelines for collecting information revolved around three categories of analysis. These were: standardized evaluation, educational quality, and the consequences of COVID-19 in the Panamanian educational system. Therefore, the search, collection, systematization, and evaluation of the information were aimed at answering the question: how to determine, according to the results

of the standardized tests, the quality of the Panamanian educational system in order to foresee how much the COVID-19 health crisis affected the academic performance of students? For this purpose, the designed cards strictly adhered to the abovementioned criteria and were synthesized as shown in the following table.

Table 1. Data collection sheets.

Standardized tests.	**Educational quality**	**Consequences of COVID-19 in the Panamanian educational system.**
-Results of standardized tests applied in Panama before the pandemic.	-Performance of Panamanian students in standardized tests. -Comparison of results with students from other educational systems in the region.	-Pedagogical strategies implemented by the Panamanian educational system during the health crisis. -Academic performance of students during the confinement caused by COVID-19.

Source: Own elaboration, 2022.

4. Results.

4.1 Results of the standardized tests applied in Panama before the pandemic.

About the results of the standardized tests obtained by Panamanian students in the measurements taken before the pandemic, in general terms, the suggestions made by Pinzón et al. (2018) were followed. For them, these tests should be taken as a basis for adopting educational policies based on optimizing the management of the systems. Likewise, the positive aspects or significant contributions of census evaluations in classrooms or teachers' praxis are valued (Popham 2017; Ravela 2010).

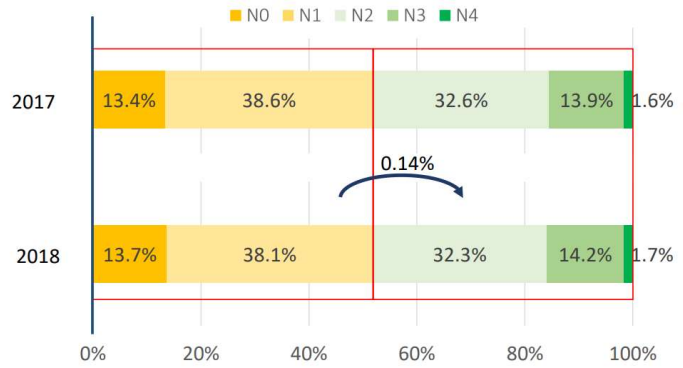
It should be noted that Panama does not yet have internal educational policies to evaluate students through census exams on a consolidated basis. Although some initiatives, such as the CRECER national evaluation, have been developed, their regularity has yet to be institutionalized. However, to generate, teachers participate in large-scale international tests such as PISA and the Regional Comparative Study: PISA and the Regional Comparative and Explanatory Study - ERCE -. So, all existing data report measurements were implemented before the pandemic and although another version of PISA will be conducted, it has not yet become effective. Nevertheless, it is pertinent to analyze the data in correlation with the progress obtained in the historical results and how they could be influenced by the time students spent in compulsory social isolation and access to technological means.

In Panama, the CRECER test was implemented consecutively in 2017, 2018, and 2019. They sought to assess students' skills in the domains related to Spanish and mathematics competencies during the first stage of schooling, especially in third grade. For measurement purposes, the exam defined the estimates of students' performances by a continuous scale ranging from 400 to 1000 points. From 400 to 600, the performance is deficient, from 600 to 700 low, 700 to 800 satisfactory, and from 900 to 1000 excellent.

Now, when comparing the results obtained by third-grade students in the area of Spanish between 2018

and 2019, no significant progress or setbacks are observed in any of the performances. In 2017, the sum of the scores of deficient levels students was 52%, while those who were in excellent were 1.6%. For the following year, the percentages evaluated in the very low and low levels was 51.8% and in excellent was 1.7%. This is shown in the following figure.

Figure 2. Comparison of Achievement Levels in Spanish in 2017-2018.



Source: Latin American Agency for Evaluation and Public Policy - Aleph- (2019).

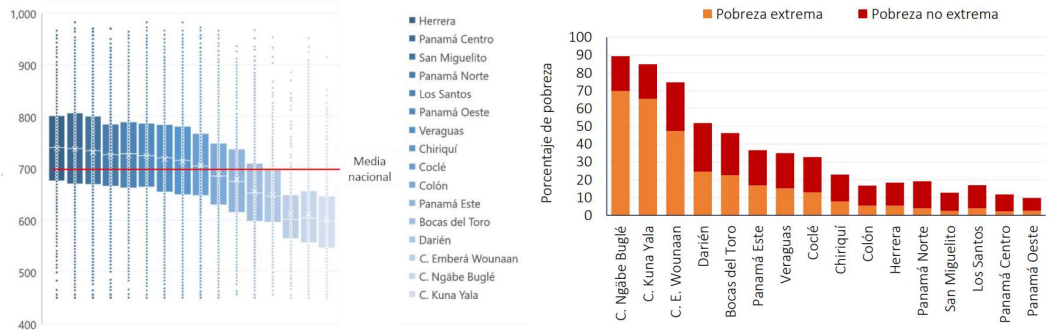
Likewise, the tests in the area of mathematics, applied to the same population, have similar characteristics to those previously analyzed. According to the data, in none of the levels, there were significant differences in the statistical percentages between 2017 and 2018. However, more than 50% of the students evaluated their competencies at very low and low levels. On the other hand, only 1.3% are in an excellent performance.

Figure 3. Comparison of Achievement Levels in Mathematics in 2017-2018.

Source: Aleph (2019).

However, what is significant for public policy decision-making is that the assessment shows how economic, cultural, social, and territorial gaps influence student performance. For example, populations historically marginalized by their ethnic origins or where the highest poverty rates are found in those with lower census results (Economic Commission for Latin America and the Caribbean -ECLAC-2020). In this sense, it can be inferred that academic competencies to face standardized tests are significantly influenced by family, socioeconomic and cultural backgrounds, as evidenced in the following figure shows a direct relationship between performance and poverty.

Figure 4. Relationship between performance at the national average and percentage of poverty.



Source: Aleph (2019).

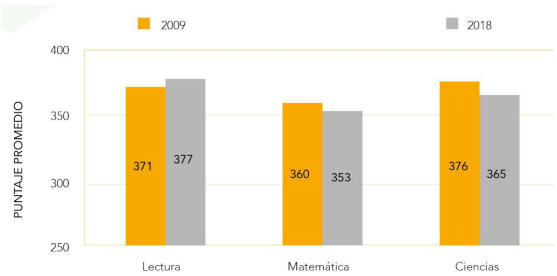
4.2 Educational Quality.

The quality of education, as a reference for determining the success of a country's education ministries, is an indicator that is difficult to define from a single variable. In general, multiple factors converge to ensure that students achieve learning objectives. Therefore, it is a mistake to consider only standardized assessments to label the totality of students' academic performance. However, given their comparative and measurable nature between internal regions of a nation, as well as the internationalization of measurement, this provides the possibility of finding points of coincidence and initiatives to opt for the positive experiences others are implementing (Ravela 2010; Miranda & Trigo 2019).

Therefore, it is basically in the aspect highlighted above in the information was collected and analyzed. In this regard, the Inter-American Development Bank -IDB- (2012) has shown that Latin America is one of the regions of the world with more debts in the educational field. According to its analysis, the educational systems of these countries lack optimal physical and digital infrastructure. Likewise, the World Bank (2021) states that students hold second place in the world in growth in learning poverty. In addition to the above, there are high levels of inequality, inequity, and few public policies to train teachers.

In the case of Panama, according to PISA reports (2018), it is shown that in the last test, the country's students decreased their scores in the areas of science and mathematics and except in reading. This test measures young people aged 16 in mathematics, reading, and science of all member countries and guests of the Organization for Economic Cooperation and Development - OECD-. According to the data, between 2009 and 2018, there were no significant advances in the competencies and skills required for the exam, as evidenced in the following figure.

Figure 5. Compare Panama's average score in the three domains in PISA 2009 and PISA 2018.

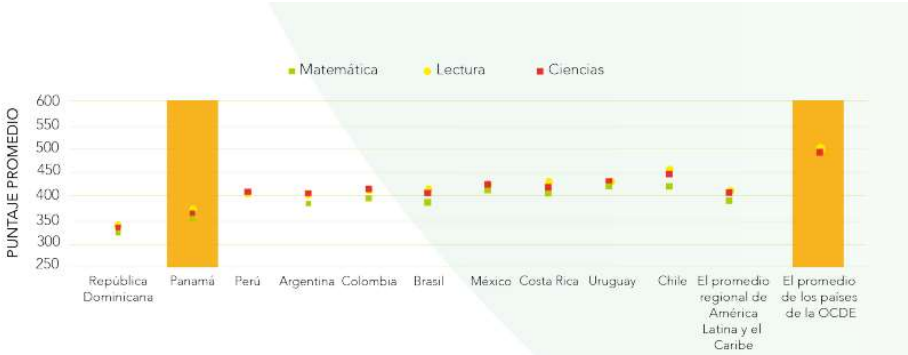


Source: PISA (2018).

However, when the results are compared with those of other countries in the region, Panamanian students are below the OECD averages and those of Latin American and Caribbean countries. Thus, only 36%

of the students evaluated reached the minimum level in critical reading. However, young people located in marginal areas or with low economic income performed less well on the test. The following figure shows the average scores of each country participating in the exam and Panama's position in the overall consolidation.

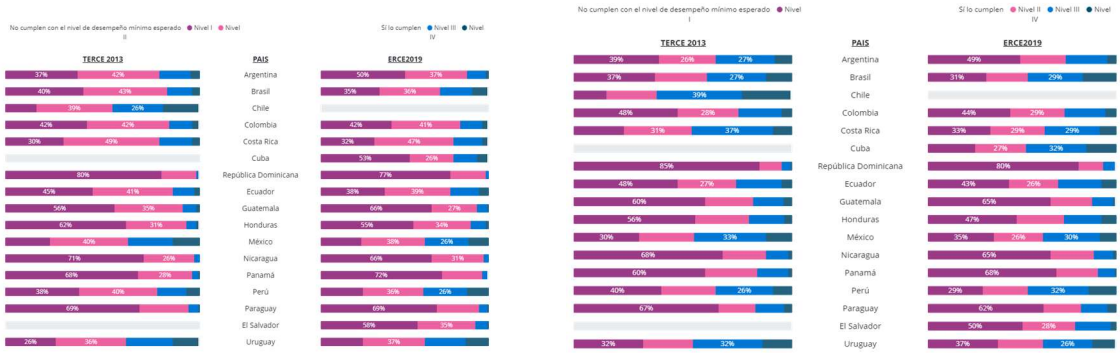
Figure 6. Overview of average performance in the three domains in Latin American and OECD countries.



Source: PISA (2018).

This fact is not only evident in the PISA results. The evaluations carried out within the framework of ERCE seem to confirm that, in the latest measurements implemented for students in Panama, they have decreased their scores in almost all the areas examined. In the case of the second census exam, it is pertinent to note that it applies to 3rd and 6th-grade primary school students. The study evaluates performances in reading, writing, mathematics, and science, and its last version was in 2019, before the pandemic. For example, in the case of mathematics, in both the 3rd and 6th grades, the number of young people in level 1, whose criterion establishes that the minimum expected performances are not met, increased. For the year 2013, in grade 3°, the percentage was 68%; in 2019, it increased to 72%. In 6th grade, in 2013, it was 60%, and in 2019 it was 68%.

Figure 7. Performance levels and results in mathematics in 3rd and 6th grades.



Source: Latin American Laboratory for Evaluation, Quality and Education -LLECE- (2019).

The fact that standardized test scores have been declining in the country implies that learning processes should be intensified. However, the interruption forced by the pandemic makes us foresee that future census exams will indicate marked deficiencies in the competencies and skills of students, which are required to face this type of measurement. In the absence of data to determine precisely what was stated above, it is necessary to analyze other variables to glimpse the true consequences of COVID-19 on student learning in Panama.

In conclusion, the latest results in all the standardized tests in which Panamanian students have participated do not show statistically significant advances in the national measurement, while in the international tests, the averages are significantly below the average. Among these, it is noteworthy that compared with Latin American and Caribbean countries, there is evidence of significant setbacks in competencies and skills necessary for performance in working life. However, these facts are more marked in vulnerable and low-income populations.

4.3 Consequences of COVID-19 in the Panamanian educational system.

The confinement of 137 million students in all Latin American and Caribbean countries revealed the deep crises that have been ignored for years: social and economic inequalities, lack of Internet coverage, disproportionate distribution of technological resources and categorization of educational quality. In this context, one of the consequences has been, according to UNICEF (2020), that more than 3.1 million students have returned late to the educational system and a third have not received minimum quality training.

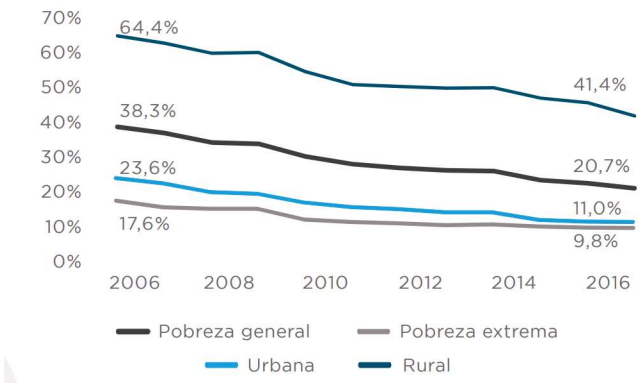
Undoubtedly, several factors have influenced this. However, according to the OECD (2020), in 2016, of the 14 countries that make up the region, 42% of people living in urban areas have access to the Internet, while in rural areas, the figure is barely 14%. This gap was one of the reasons for the educational backwardness of students from marginal populations. From this perspective, it can be argued that the digital infrastructure of Latin American countries lacked sufficient capacity to meet the challenge imposed by COVID-19.

It is important to mention the importance of Information and Communication Technologies -ICT- in education because they played a fundamental role during confinement. According to data (IDB, 2020), in all Latin American countries, education strategies during the pandemic were mediated by some digital resources. Likewise, multiple researchers worldwide have concluded that access to computers with web connection positively influences students' performance in standardized tests. Accordingly, the scores of young people who do not have these tools are notably lower when compared to those who do (Flórez 2021; Orlov et al. 2020; Barrios et al. 2021; Maldonado & De Witte 2020; Clark et al. 2020).

In the context of Panama, according to UNICEF (2020), this country was one of the nations in the world that took the longest time for its students to return to the classroom. According to estimates, this fact caused deep learning losses in students of approximately 1.7 years of setbacks every ten months without attending classrooms. In other words, if the results on standardized tests were not optimal in the normal context of academic regularity in the pre-pandemic periods, the context suggests that future measurements will not be significantly higher in terms of scores.

It is necessary to consider the academic strategies implemented during confinement and determine how they impact student learning. In this regard, according to the IDB (2019), Panama is one of the countries with the highest per capita growth in recent years in Latin America and the Caribbean; it has managed to reduce poverty in all its manifestations; however, the situation of rural poverty is a marked problem in the development of its society, for the year 2016 it indicated 41.4%. This indicates a deep gap between students whose permanent residence is in the Panamanian countryside and those who attend urban institutions.

Figure 8. Poverty in Panama.



Source: IDB (2019).

This is reflected in the fact that, according to Sánchez et al. (2020), in Panama, before the pandemic, only 43% of the inhabitants of rural areas had Internet access in their homes and 24% of low-income families were unable to provide connection opportunities to their school members. In other words, the negative impact of the health crisis was mostly for students located in the countryside and those with low incomes. However, during the crisis, Urribarri (2021) claims that a lack of connectivity affects 40% of all students in the country. Centro de Investigación Educativa de Panamá confirms this fact - INDICASAT- (2020), shows the few ICT tools with which the indigenous communities faced the challenge imposed by COVID-19. Furthermore, it should be noted that these communities have obtained the lowest scores in national and international standardized tests.

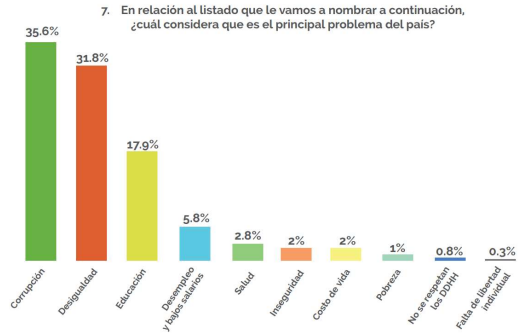
Figure 8. Percentages of educational resources by area in Panama.

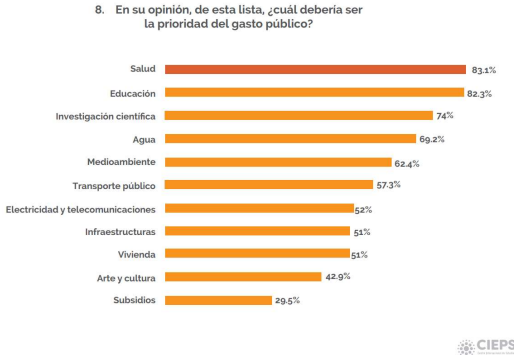
Área	Electricidad	Computadora	Celular	Internet/Data
Comarcas Indígenas	5%-60%	2%-7%	50%-75%	10%-20%
Bocas Del Toro y Darien	70%-85%	15%-20%	80%-85%	40%-50%
Otras Provincias	80%-98%	30%-45%	80%-95%	55%-85%

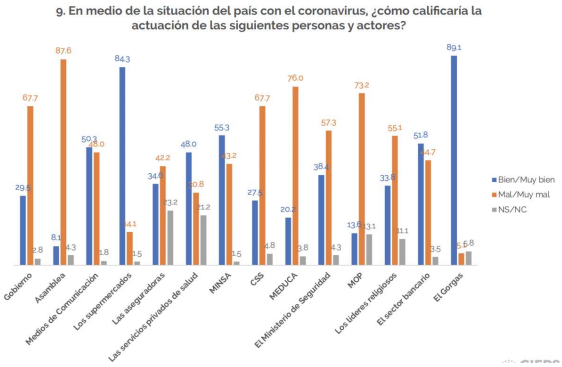
Source. INDICASAT (2020).

The lack of preparation in Panama's digital infrastructure to face the challenges imposed by the pandemic on the country's educational system is evident in the possible results of student performance in the standardized tests that will soon be implemented. Rather, the opinion of citizens shows that they consider the havoc caused by COVID-19 on student learning a severe difficulty. According to the Centro Internacional de Estudios Políticos y Sociales - CIEPS- (2020), in a survey of citizen perception, those questioned placed education in third place as a social problem that requires an urgent solution. Likewise, in second place, they indicate that this is the sector where public investments should be prioritized. Perhaps, for this reason, they believe that one of the sectors that handled the Pandemic crisis the worst was the Ministry of National Education.

Figure 9. Citizen perception of the consequences of COVID-19 in Panamanian society**.**







Source: CIEPS (2020).

In short, Panama's digital infrastructure was not prepared to meet the challenges imposed by COVID-19 on the country's education system. In this regard, the most affected population was the rural and low-income population. In this sense, considering that these students obtain the lowest scores on standardized tests, it can be foreseen that the results will not be optimal in future measurements. In the absence of evidence, the bibliographic sources indicated that the national education system should strengthen census measurements and institutionalize data analysis to adjust public policies in the sector.

5. Conclusions

The documentary research allows us to formulate the following conclusions based on the findings. In the first place, the decision-making exercise in public policy in education should focus on the economic, cultural, social, and territorial gaps that influence student performance and are indicated by the evaluations. For example, pop populations historically marginalized due to their ethnic origins or where the highest poverty rates are found to obtain the lowest results in census measurements. In this sense, it can be inferred that academic competencies to face standardized tests are significantly influenced by family, socioeconomic and cultural background.

Secondly, the latest results in all the standardized tests in which Panamanian students have participated do not show statistically significant progress in the national measurement, while in the international tests, the averages are significantly below the average. Among these, it is noteworthy that compared with Latin American and Caribbean countries, there is evidence of significant setbacks in competencies and skills necessary for performance in working life. However, these facts are more marked in vulnerable and low-income populations.

Finally, Panama's digital infrastructure was not prepared to meet the challenges imposed by COVID-19 on the country's education system. In this regard, the most affected population was the rural and low-

income population. In this sense, considering that these students obtain the lowest scores on standardized tests, it can be foreseen that the results will not be optimal in future measurements. In the absence of evidence, the bibliographic sources indicated that the national education system should strengthen census measurements and institutionalize data analysis to adjust public policies in the sector.

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