FGV DAPP
DEPARTMENT OF PUBLIC POLICY ANALYSIS

SCHOOL UNIVERSE
THE STATE OF EDUCATION IN BRAZIL

EDUCATION

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FGV DAPP

SCHOOL UNIVERSE

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Rio de Janeiro, 2016

FGV is an institution with a philanthropic, educational, technical and scientific nature, created on 20 December 1944 as a private entity, whose aim is to act in a broad manner in all questions with a scientific nature, with an emphasis on the social sciences, administration, law, and economy, contributing to the socio-economic development of the country.

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EDUCATION

SCHOOL UNIVERSE

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OVERVIEW

The aim of FGV/DAPP's School Universe series is to provoke a discussion about the state of Brazil's High School education and its impact on school performance and students personal achievement. Brazil is a very heterogeneous country, a fact that reflects in all areas of its population life. When it comes to education, it could not be any different. This document attempts to shed some light on these differences, specifically in relation to the Brazilian schools infrastructure, taking into account the possibilities of students of achieving development and well-being given this reality.

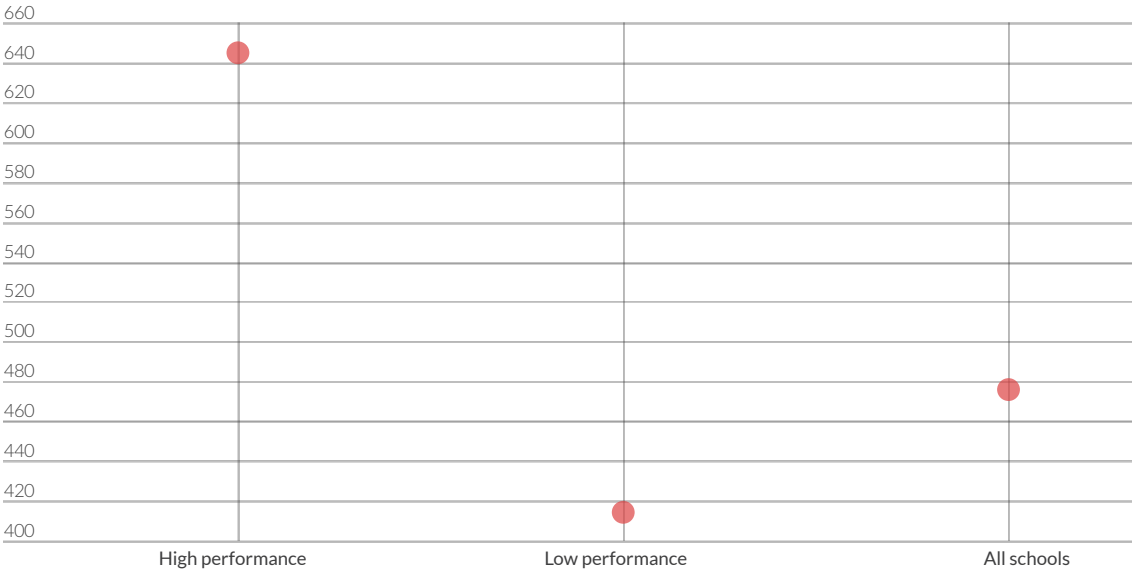
Amartya Sen's capability approach (1993, 2000) is a development theory that assesses well-being based on the possibilities people have of leading a life they value and have reason to value. From this perspective, as well as well-being, an actual capability approach evaluation considers the substantive freedom that people have to make the choices about what they can be or do in their lives. In other words, under the metric proposed by Sen (1993, 2000), development is measured not only by the available monetary resources, but also the capability of individuals to convert resources into possibilities of being and doings. It involves assessing not only what individuals actually achieve, but also considering what are available choices in the society and under the conditions in which they live.

This study contains cross-tabulated information from two databases: the National High School Evaluation (ENEM) in mathematics results per school in 2014, and the School Census for the same year. For comparison purposes, data selected comes from 10% of the institutions that obtained a high performance in ENEM and 10% with a low performance. The aim is to verify infrastructure differences between those two groups.

FGV/DAPP's School Universe series shows what Brazilian schools declare they offer to their students in order to carry out an exploratory analysis of the different situation each group of schools face. Exposing infrastructure differences in terms of what is offered to different students and to start to question whether this might be linked to the development of cognitive and socio-emotional abilities.

> *"(...) schooling gaps across ethnic and income groups have more to do with ability deficits than family finances in the school-going years"*
> *Heckman 2008*

Median distribution of mathematics grades per school from ENEM 2014



Source: ENEM 2014
Prepared by: FGV/DAPP

The graphic above presents the median grades on mathematics per school in 2014 ENEM exams. While the 10% with high performance presented median grades of around 640, the 10% with the lowest performance had median grades close to 400.

The graphic representation shows that the mathematics median grades of all schools with students who did ENEM is closer to low performance schools than to high performance schools.

> *Median grades among high performance schools is 645.2, while median grades in low performance schools is 414.5.*

Median grades distribution per geographic location draws attention to some facts:

Concentration of high performance schools in Brazil's Southeast region...

The southeast region has 67.4% of high performance schools, distributed in three states. The state of São Paulo, alone, has 33% of the sample with this level of performance.

... and low performances school in Brazil's Northeast

The Northeast concentrates 53.8% of low performance teaching establishments, although the states of Piauí and Ceará have the highest grade average among high performance schools. However, it should be noted that these states represent only 1.2% and 2.1%, respectively, of the total sample of high performance schools.

The case of Amapá

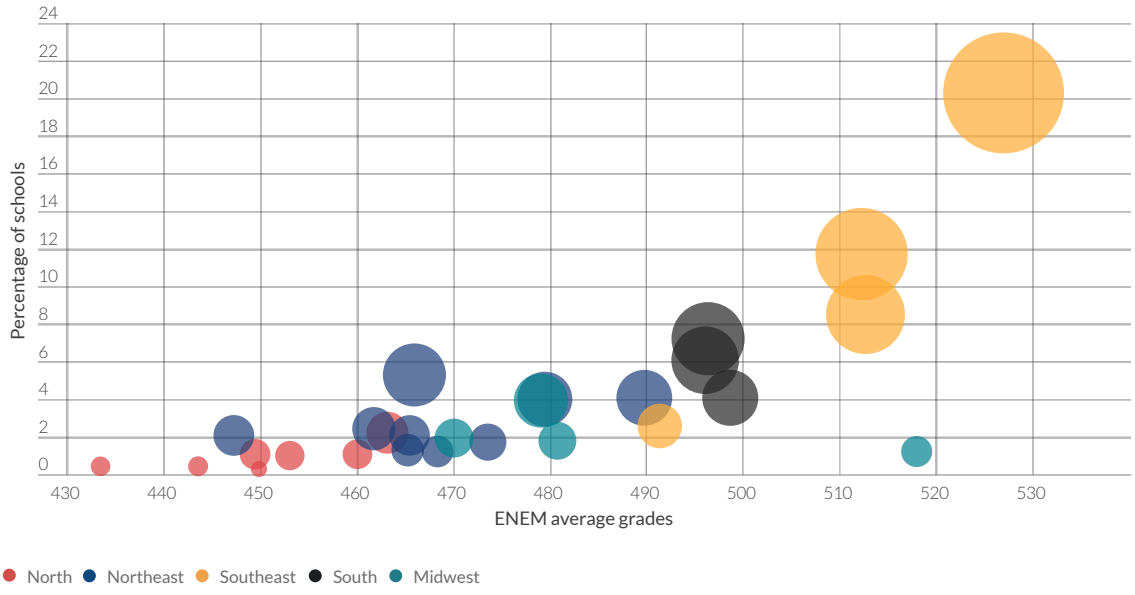
Amapá is the only state that does not appear among schools with high performance.

Greater grade dispersal within high performance schools

Grade dispersal among high performance schools is greater in terms of amplitude than among low performance schools. The difference between the highest and lowest grade observed among high performance schools is 72.8, among the low performance this difference is only 7.6.

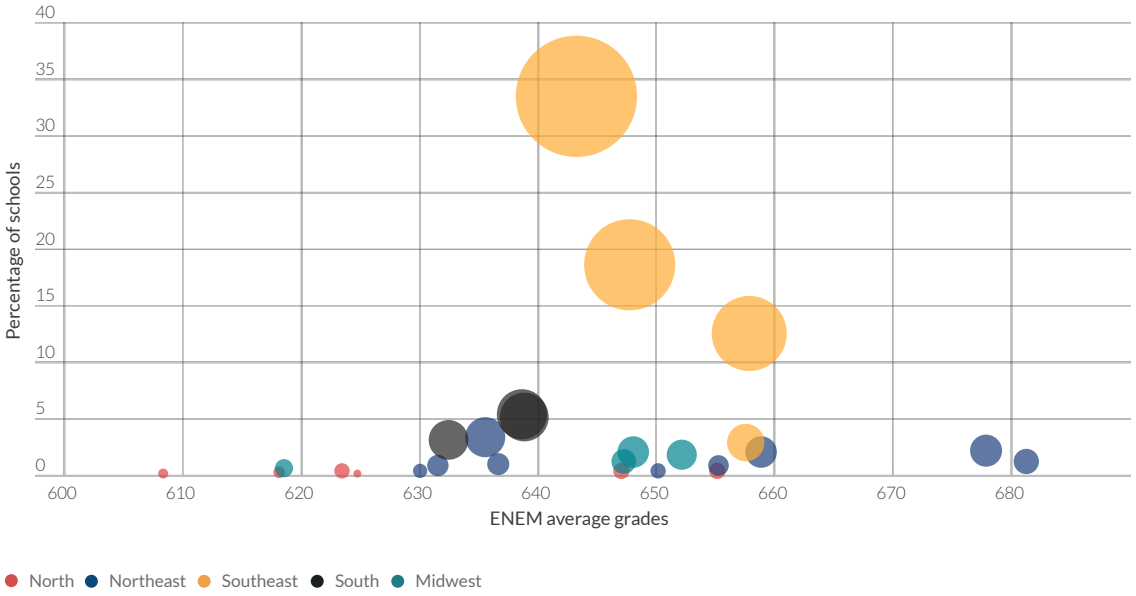
School distribution per region, state and respective mathematics average in ENEM 2014

All

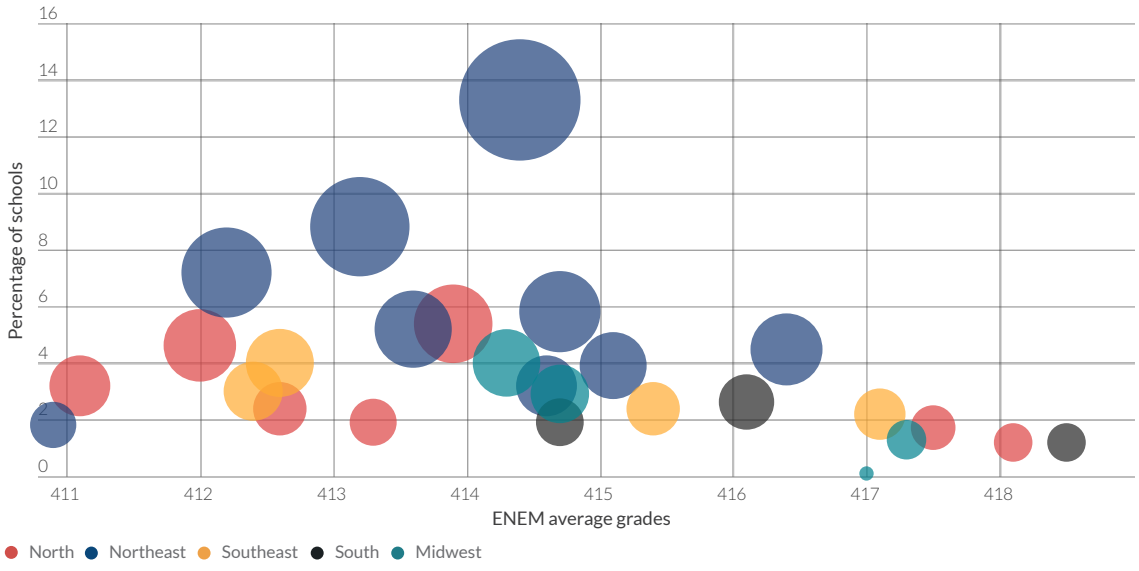


Source: ENEM 2014
Prepared by: FGV/DAPP

High performance



Low performance



Source: ENEM 2014
Prepared by: FGV/DAPP

The following dispersal graph shows the distribution of mathematics grades in ENEM, it contains data from all schools that took the evaluation. Added to it is the HDI (Human Development Index) classification of the municipality where the schools are located. HDI is a measure of well-being that varies between 0 and 1, the greater the level of well-being, the higher the index. United Nations Development Programme (UNDP) classifies HDI in five bands, with the very low HDI ranging 0 – 0.499; low HDI between 0.5 and 0.599; average HDI, from 0.6 – 0.699; HDI from 0.7 – 0.799; and very high HDI from 0.8 up.

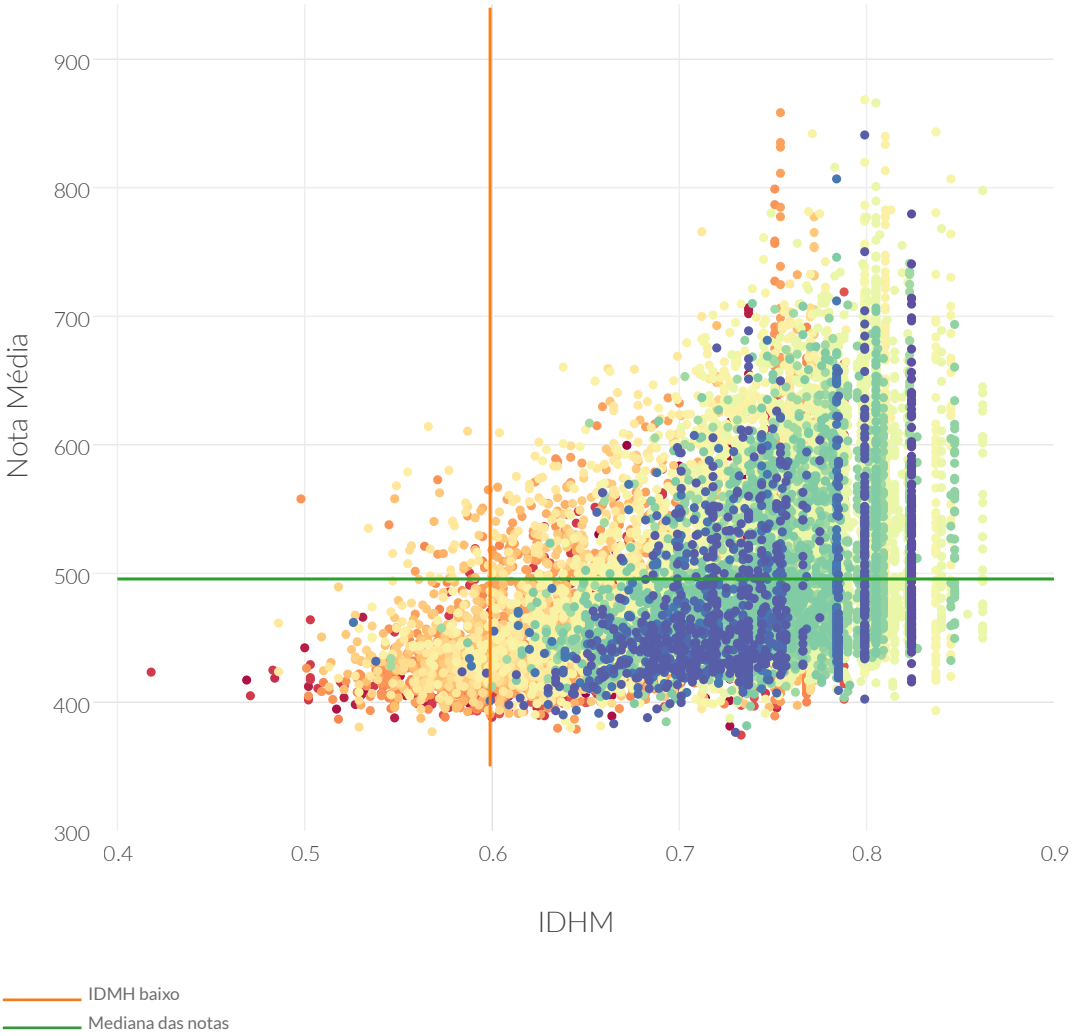
The vertical line splits the graph between low HDI and average HDI. To the left of the line are the municipalities that have a HDI lower than 0.6, in other words, they have a low or very low HDI. To the right of the line are the municipalities which have average, high or very high HDI.

The horizontal line is the median of ENEM marks per school in 2014. Schools below the horizontal line represent the half with lower marks. Schools that are above the horizontal line are in the upper half of the sample.

One can note that schools with high performance are mostly concentrated in municipalities with a high and very high HDI. By contrast, schools with low performance are more evenly spread among all the HDIs. It is a fact that the larger the municipality, both in demographic terms and area, the higher the probability of heterogeneity of HDI in different regions/neighborhoods.

However, the quadrant that calls attention is the one that contains schools that are above the horizontal line and to the left of the vertical line, which are the ones that are above median grades performance in mathematics in ENEM 2014, but are in municipalities with low or very low HDI. These schools are located within vulnerable municipalities; however, they are among the 50% schools who did better in ENEM in 2014.

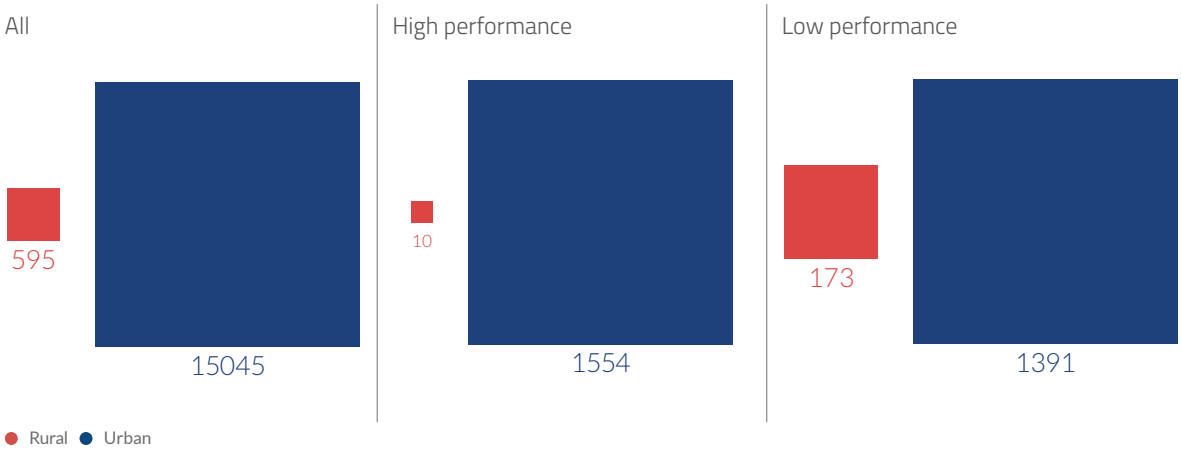
Performance in ENEM in mathematics per school and municipal HDI



Source: ENEM 2014, Atlas de Desenvolvimento do Brasil 2013
Prepared by: FGV/DAPP

It is known that the majority of high schools in Brazil (96.2%) are in urban communities. However, this proportion increases considerably among schools with high performance, in which 99.4% of the universe is located in the urban zone.

High and low performance in ENEM mathematics 2014 school locations



Source: ENEM 2014
Prepared by: FGV/DAPP

> *"(...) developing countries have very distinct realities in relation to school equipment, there is a greater precariousness when it comes to the public education system and schools are much more heterogenous on infrastructure matters, we have to reconsider the very peremptory hypothesis that there's no direct results in school performance when there's an input increase."*
> *Soares e Sátyro (2008)*

According to the National Institution of Educational Studies and Research (INEP) high school students in Brazil spend, on average, 4.9 hours in the classroom per day. At the end of the year this sums up to 980 hours within the school. What type of abilities may school environment stimulate? How these abilities reflect in each student grades?

There is a whole body of consolidated literature, such as the 1966 Coleman Report, which minimizes the effects of school infrastructure on children's performance when compared to family socio-economic conditions and the characteristics of the other students in the same school. Despite this, the question is still controversial: Hanusheck wrote an article in 1986, updated in 1997, analysing various studies about school productivity and resources and reached the conclusion that the literature in this area tended to be ambiguous. Nonetheless, according to him, studies that confirmed the importance of school resources for student performance are inconsistent.

Discussion Text 1338 from the Institute of Applied Economic Research (IPEA, 2008) questioned whether the irrelevance of resources, raised by Coleman et al (1966), is true and valid for developing countries, due to the heterogeneity of school conditions and the existence of precarious structures, not found in developed countries. In this sense, Alves and Soares (2008) suggest that there exists space for schools to minimize differences in student performance, resulting from resources associated with social origin.

> *"(...) certain factors call attention: school administration appears to have a determining role in how functional a school will be, such as the economic and social vulnerability of students and the community, and the resources available to schools, both in terms of teachers and other qualified staff, and physical infrastructure and basic material."*
> *Souza, C.B.R. (2014)*

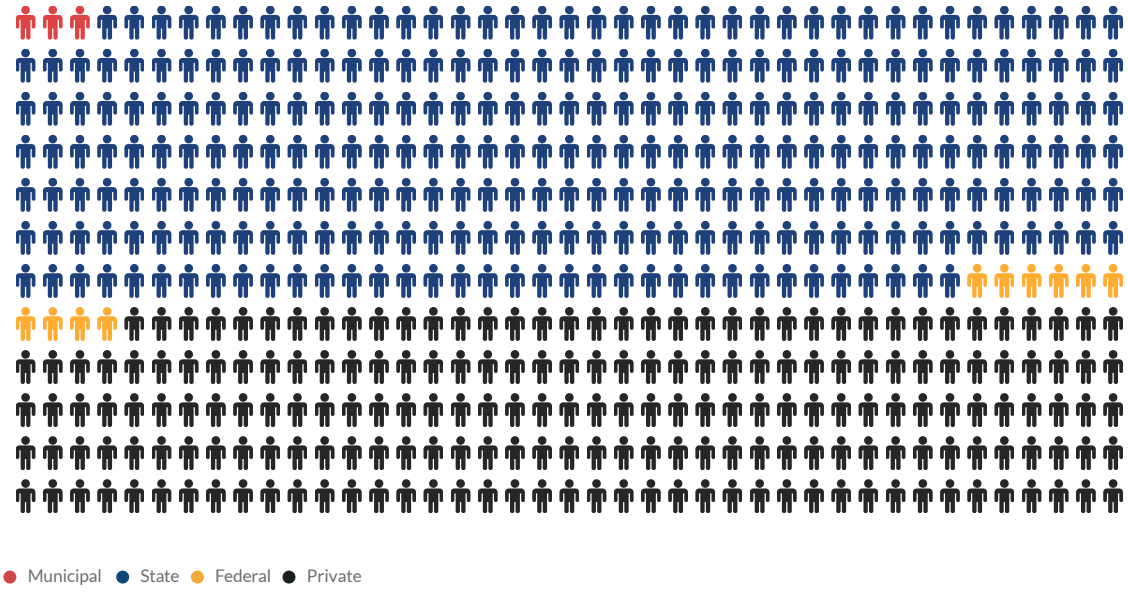
In Brazil the majority of schools that took part of ENEM, precisely 57.5%, are under state administration, followed by private administration (39.7%), while federal and municipal represent 2.1% and 0.7%, respectively. Nevertheless, this proportion changes drastically when we extract the 10% with high performance and the 10% with low performance.

A majority of high performance schools are privately administrated (90.84%), followed by federal (6.7%), state (2.4%), and municipal schools (0.06%). In turn, low performance schools are mostly administered by the state (96.29%), followed by private administration (3.07%), municipal (0.58%) and federal (0.06%).

Beyond testifying about the quality of the administration of these schools, this data indicates resource availability for the kind of education each type of school offers. This may serve as a proxy to understand the social context of its students. In other words, it may lead to understand the type of life and the opportunities available to them, and how schools respond to these different realities.

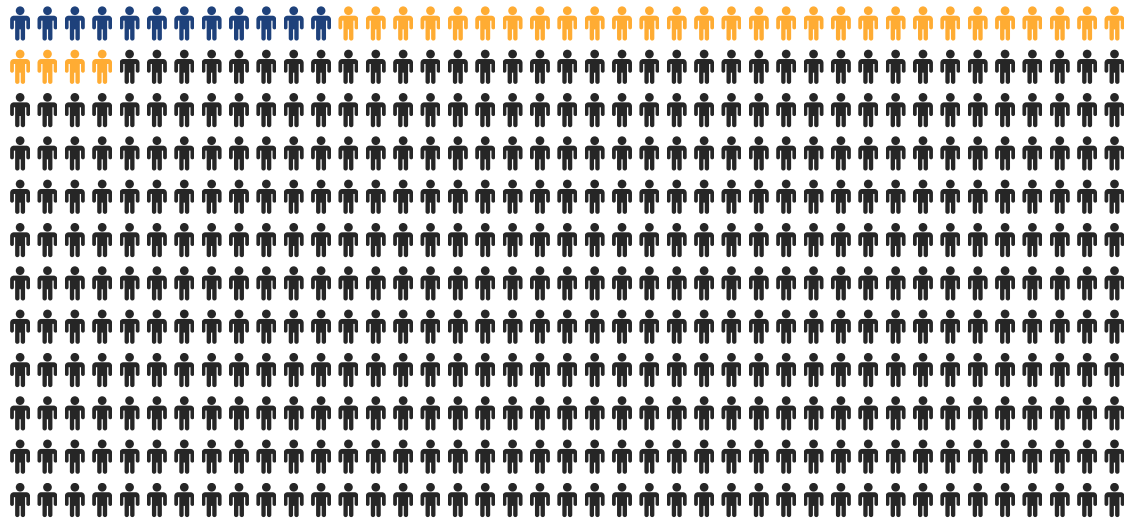
ENEM 2014 schools's Administration

All



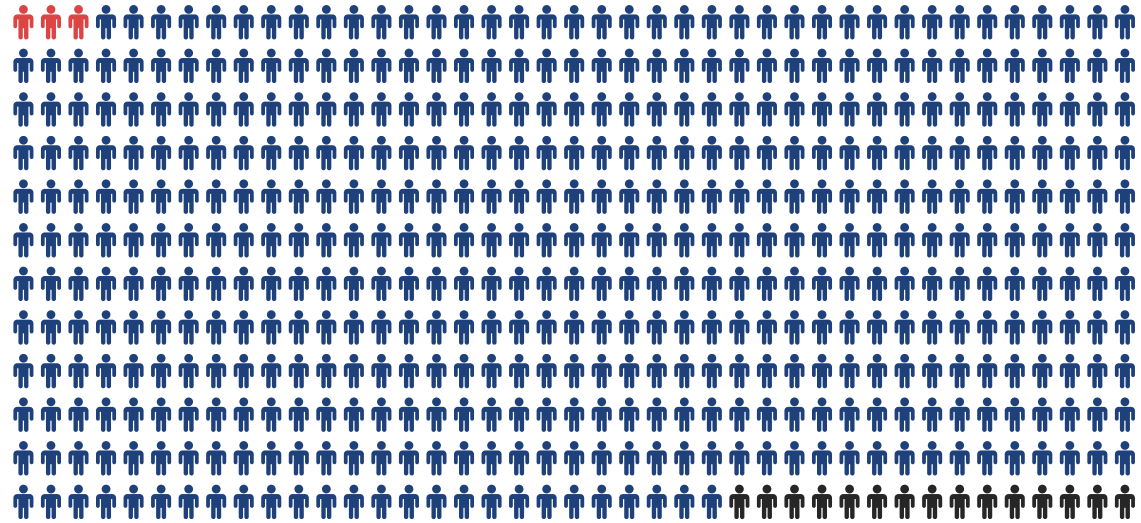
Source: ENEM 2014
Prepared by: FGV/DAPP

High performance



Municipal State Federal Private

low performance



Municipal State Federal Private

Source: ENEM 2014
Prepared by: FGV/DAPP

> *(...) the core equity issue in Brazilian education has shifted from equalizing access to equalizing learning attainment*
> *Banco Mundial 2010*

What does high performance schools offers that is different from low performance ones?

The following data presentation aims to provoke a reflection on the differences in realities and context about teaching in Brazil. The idea is to provide transparency on differences that exists, hoping that this might assist the drafting of public policies that can make education appropriate for its purpose: the stimulation and development of our youth.

It is important to understand that the information from the School Census is a self-administered form that means that survey answers are under responsibility of each school. This information was selected and organized in five dimensions: Sanitation, Administrative Structure, Special Environments, Leisure and Extracurricular Activities.

School Census has self-declared data. It should be noted that certain schools register a different CNPJ (school I.D) for a group of high performance students, and register separate responses for these schools. With these arrangements, the performance of the best students is accounted separately from the performance of all others attending the same school, hence, school average appears better than it really is. In the census 13 high performance private schools declared that they did not have a restroom. Based on this, two hypotheses can be raised: the first is that there was an error while responding to the survey. Alternatively, these schools might actually be a second separate CNPJ with only high performance students.

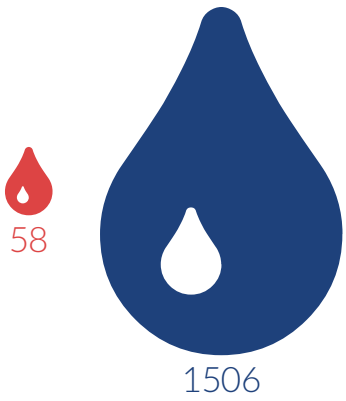
SANITATION

This dimension deals with water access conditions, waste disposal, sewage, and matters regarding hygiene quality of the school environment as a whole. It has been stablished in the Academic literature (such as Freeman et al, 2012; Jasper, Bartram, and Water, 2012) a correlation between adequate sanitation conditions and student health which consequently affects school attendance. The promotion of an environment suitable to interaction and learning concerns the guarantee to drinking water and clean toilets access.

The survey identified schools that do not offer restrooms to their students. Among the 1.564 high performance schools, 13 answered that they did not have either internal or external lavatories, while among the 1.564 low performance schools, 57 stated the same, 14 revealed the non-existence of water and nine did not have a sewage network.

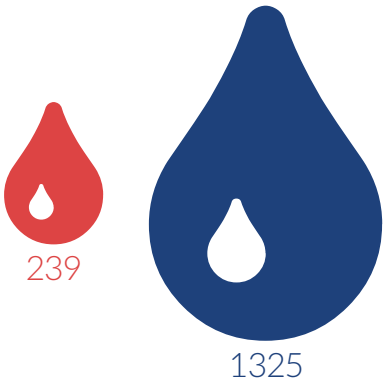
Access to public water suply

High performance



No Yes

Low performance



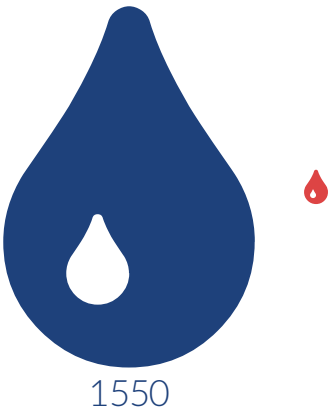
No Yes

Water

High performance

No Yes

Low performance

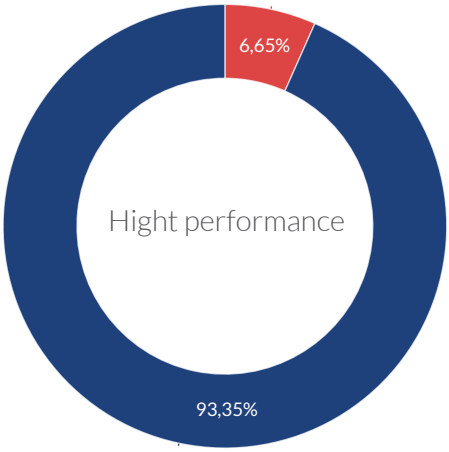


No Yes

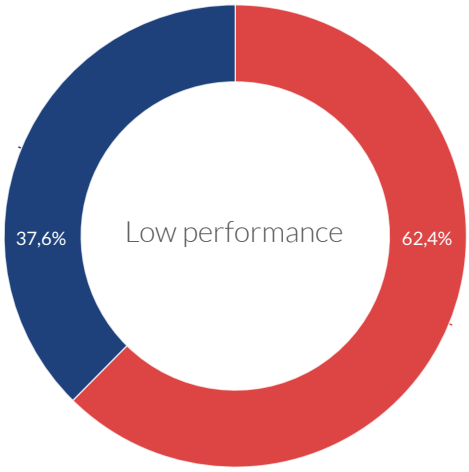
Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

Access to the public sewage

High performance

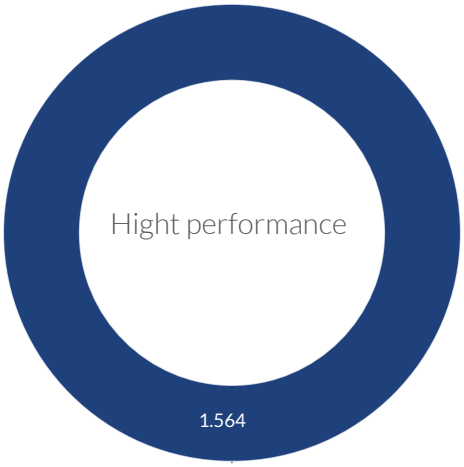


Low performance

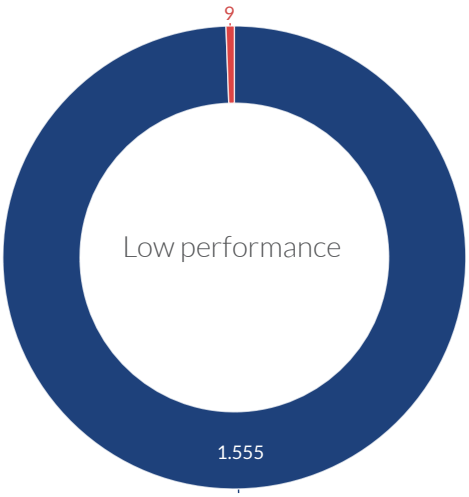


Sewage

High performance



Low performance



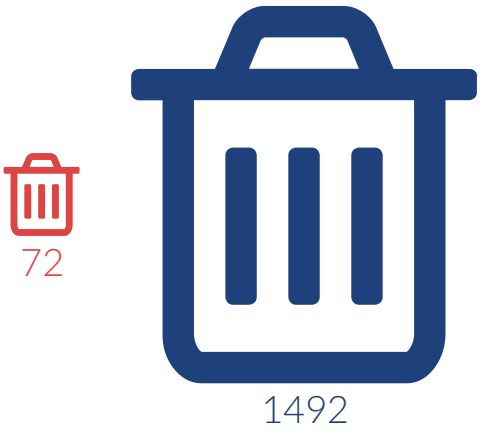
Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

Regular waste disposal service

High performance

No Yes

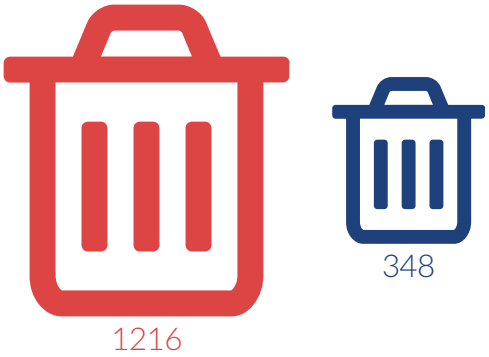
Low performance



No Yes

Waste Recycling

High performance



No Yes

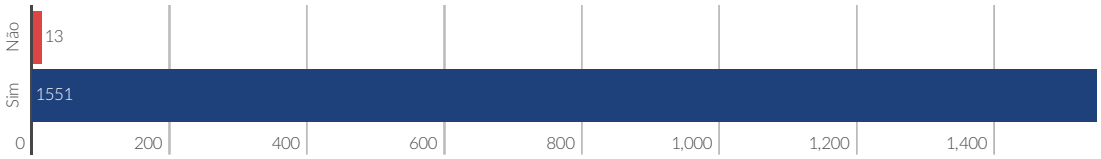
Low performance

No Yes

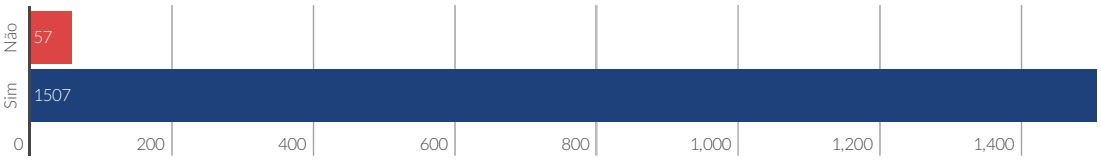
Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

Restrooms

High performance



Low performance



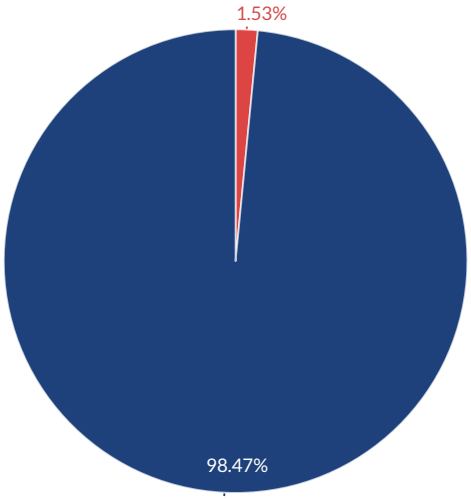
Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

ADMINISTRATIVE STRUCTURE

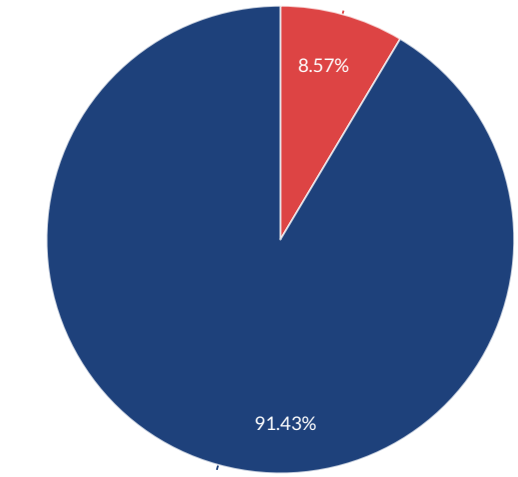
Administrative Structure covers the working conditions of teachers and direct work with the school community, with data about whether or not there is teachers's room, principal's office, and school administration office. These variables are directly linked to the administrative capacity of the school and serve as a raw material facilitating the implementation of its internal processes. It can be seen that in all the cases looked at, low performance schools had less resources related to administrative structure when compared to high performance schools.

Teachers's Room

High performance

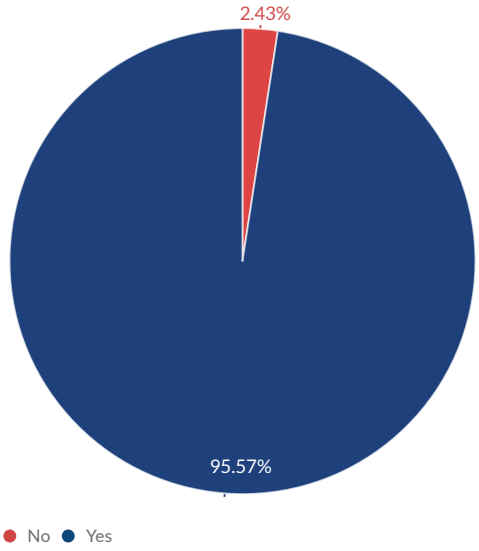


Low performance



Principal's Office

High performance



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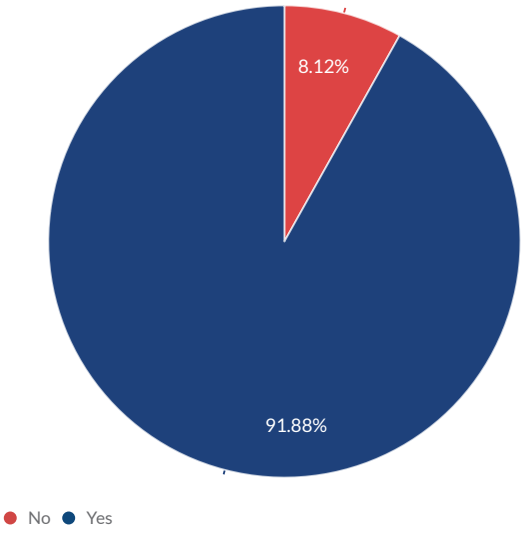
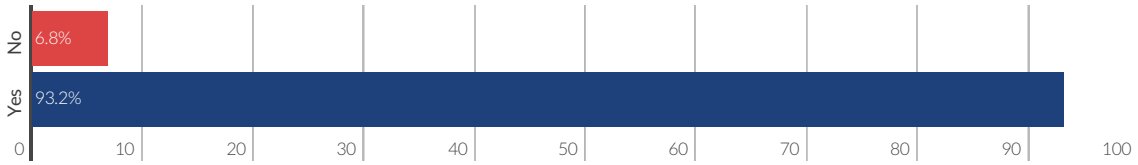


Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

School Administration Office

High perfomance



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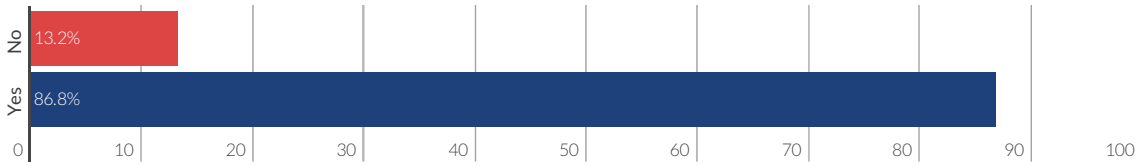


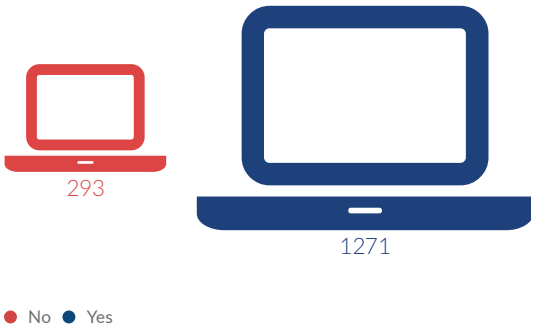
Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

SPECIAL ENVIRONMENTS

This dimension includes data about rooms and equipment, which provides new learning, experiences with different pedagogic resources, whether this accomplished with different materials or environments suited to the exercise of specific activities.

Information Technology Laboratory

High performance



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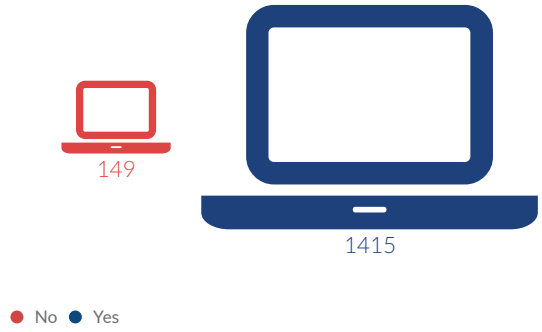
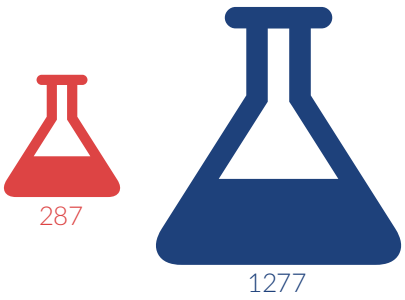


Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

Science Laboratory

High performance



No Yes

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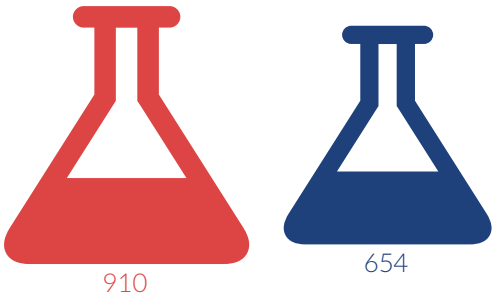
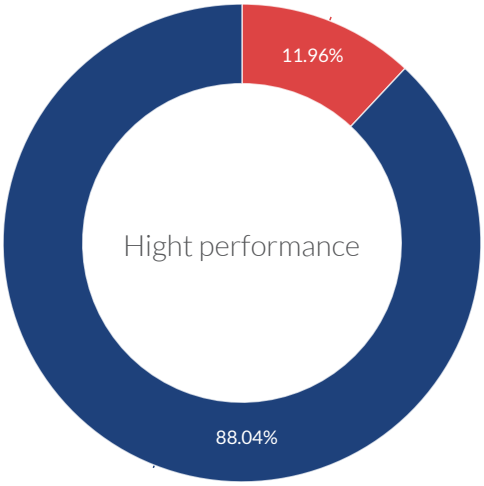


No Yes

Library

High performance



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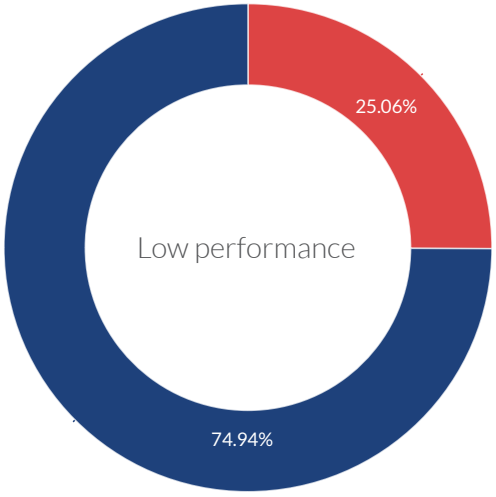
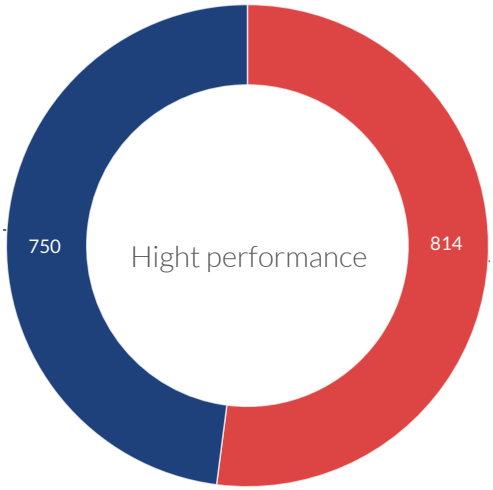
Low performance



No Yes

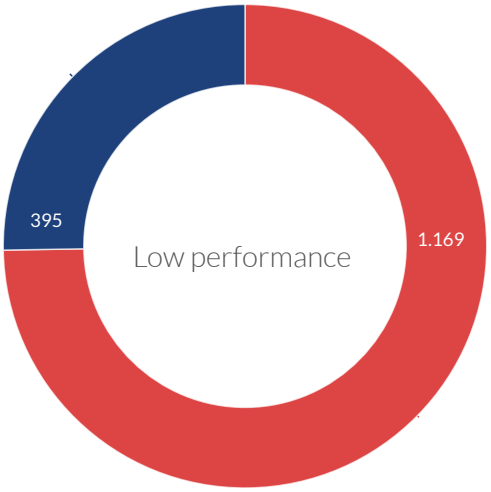
Reading Room

High performance



No Yes

Low performance

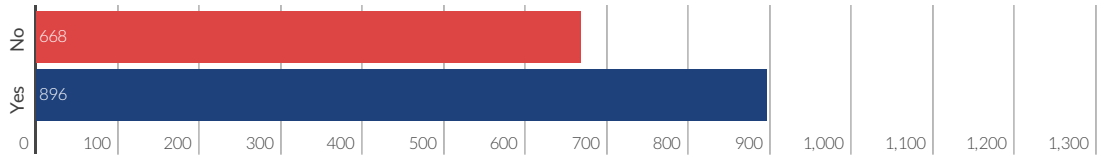


No Yes

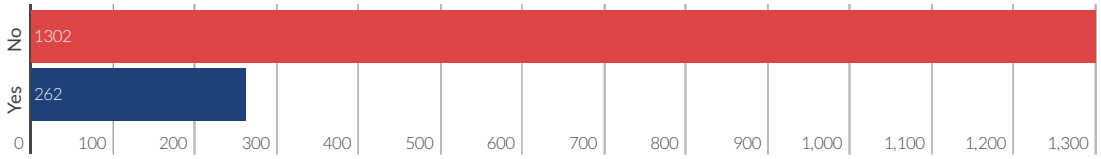
Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

Auditorium

High performance



Low performance



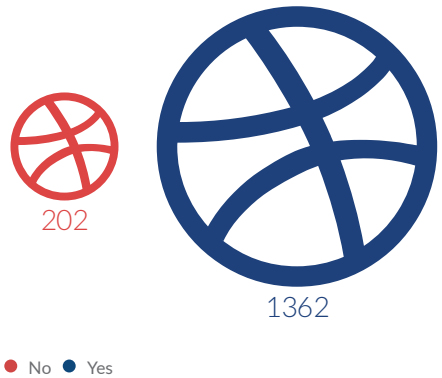
Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

LEISURE

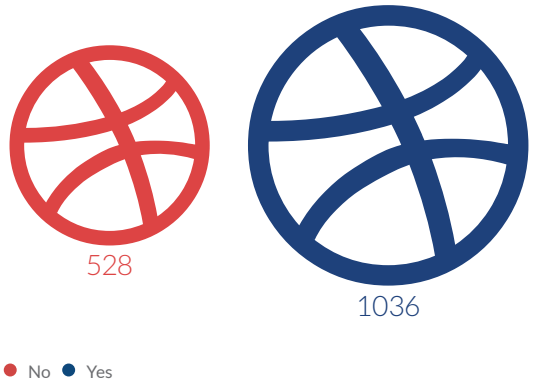
Related to socializing activities this dimension refers to the existence of a place where students may experience ludic and sporting activities, gathering areas that stimulate interactions among peers. Social coexistence is fundamental for the development of social abilities such as the sense of autonomy and the ability to engage in cooperative activities, as Piaget notes (1948). These environments are suited to the development of ludic activities and stimulate the imagination, which are "architectonic capabilities" to socio-emotional development (Nussbaum 2003).

Sports Court

High performance



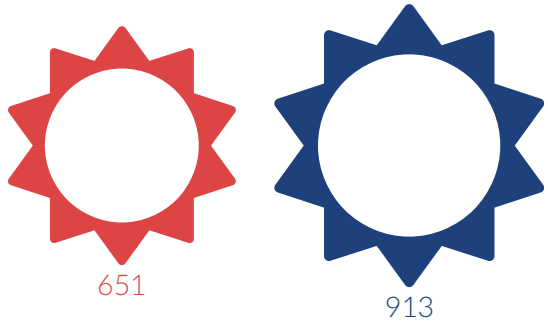
Low performance



Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

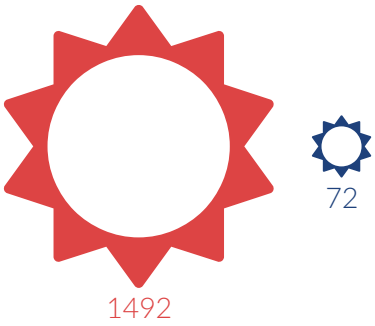
Playground

High performance



No Yes

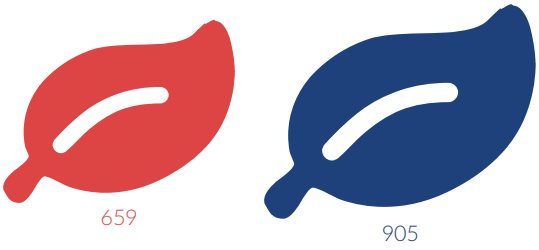
Low performance



No Yes

Green Area

High performance



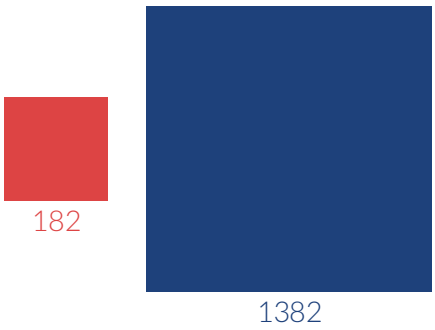
No Yes

Low performance

No Yes

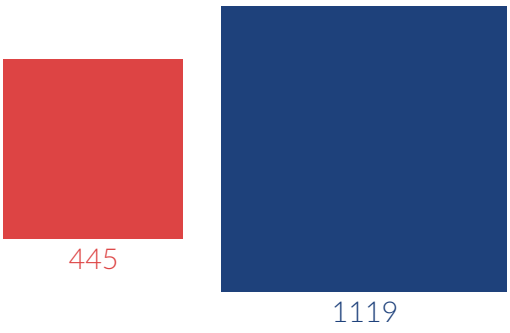
Patio

High performance



No Yes

Low performance



No Yes

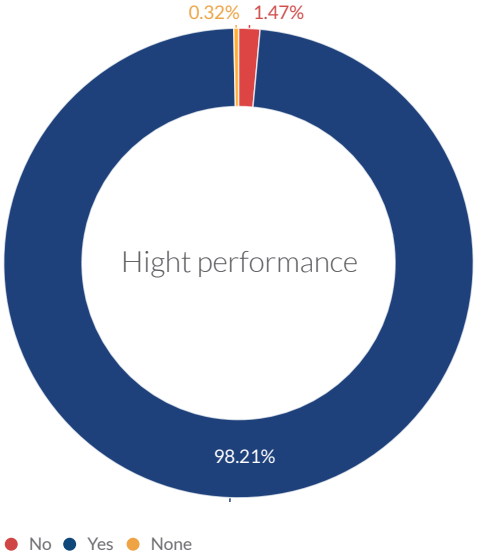
Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

EXTRA-CURRICULAR ACTIVITIES

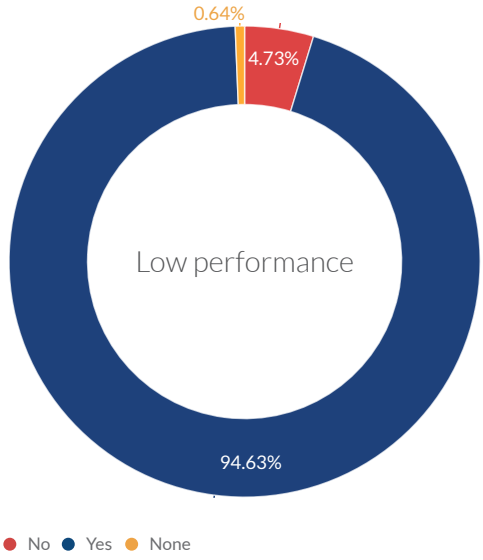
Extra-curricular activities vary from the provision of internet access, school meals, and elective subjects outside the minimum obligatory curriculum. Heckman (2008) and Doyle et al (2009) find a relationship between an individual cognitive ability with socio-emotional abilities; they argue that children with well-developed emotional abilities are less likely to get involved in potentially damaging activities. This way, it may be understood that being well nourished and being able to avail of a diverse curriculum, may aid the flourishing of socio-emotional abilities.

Internet

High performance



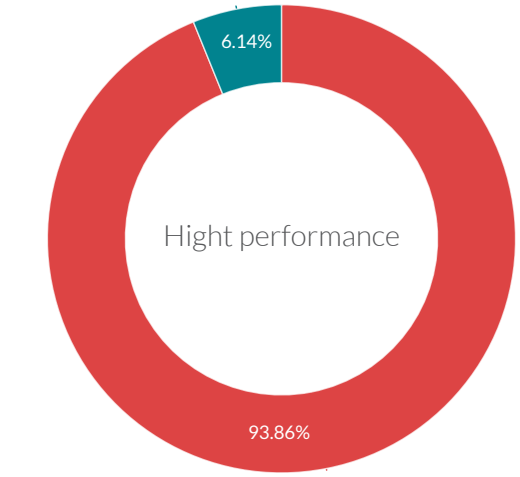
Low performance



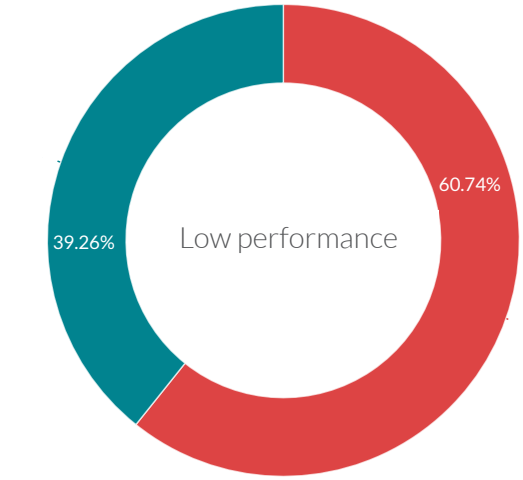
Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

Supplementary Activity

High performance

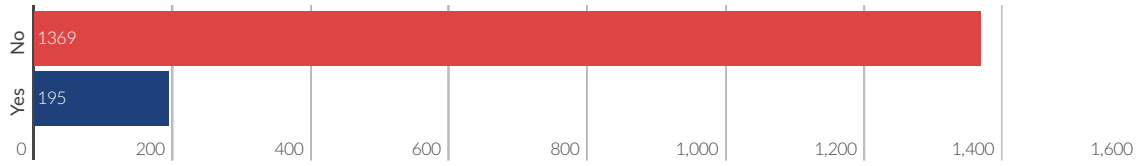


Low performance

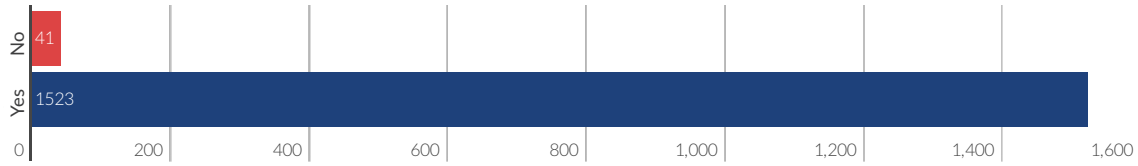


Food

High performance



Low performance

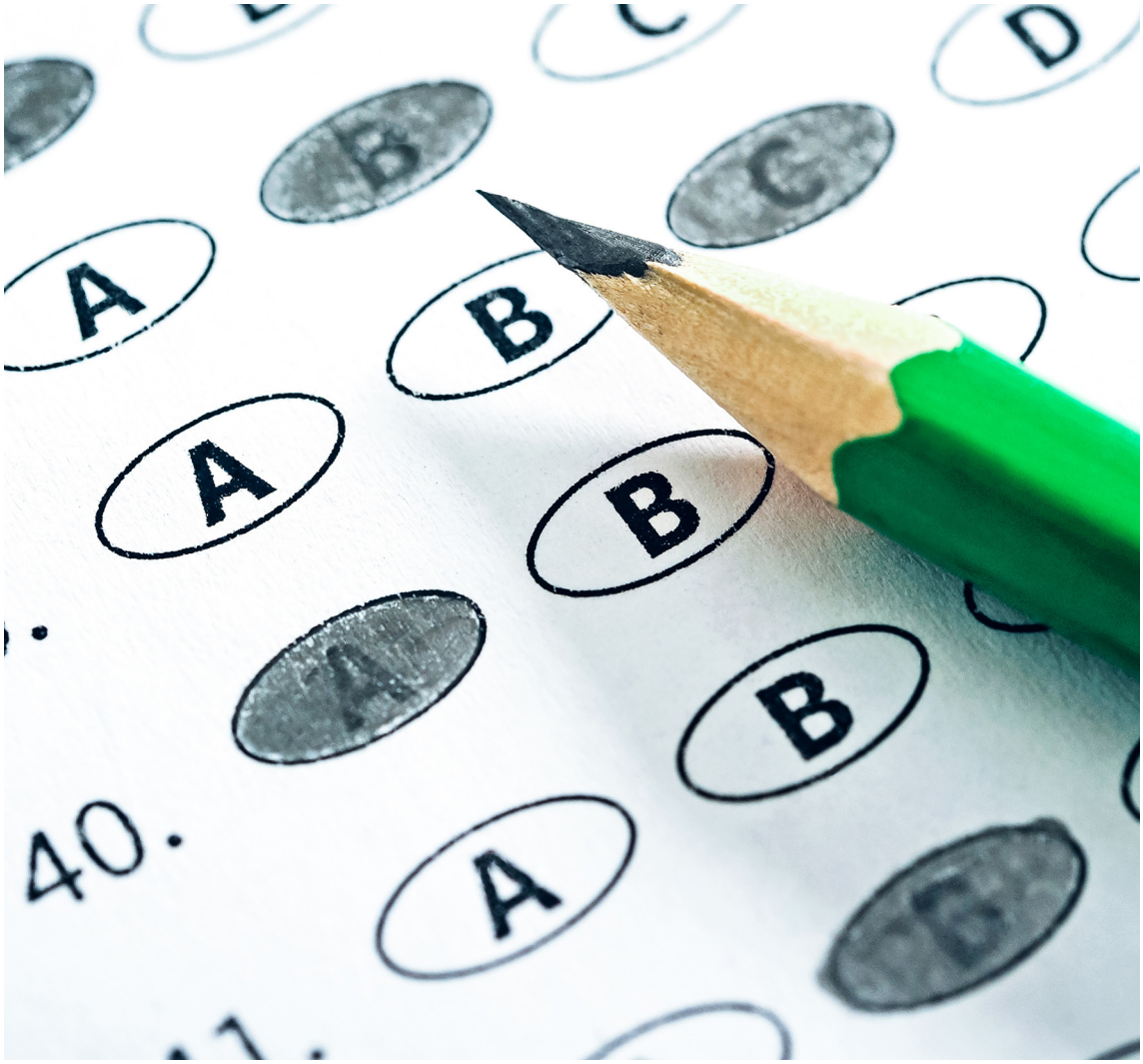


Source: ENEM 2014, Censo Escolar 2014
Prepared by: FGV/DAPP

Investment in school resources are not direct related to student performance (Banco Mundial, 2004) because beyond the existence of the resource its effectiveness depends on its proper and good administration. Coleman (1966), Cunha and Heckman (2006), Jencks (2008), research shows that socio-economic conditions, parents education attainment, and peers interactions are determinant to the development of the individual and their capacity to achieve social success. Nevertheless, school resources influence on learning capability are heterogeneous, especially in developing countries. Infrastructure resources are not sufficient to explain good or bad school administration, however, the lack of resources certainly set boundaries on the kind of influence a school may have on a community, especially when basic attributes for harmonious coexistence are lacking, such as the existence of working bathrooms and an area for non-formal interactions among peers.

It is important to note that resources are diverse and range from the availability of special classrooms to the existence of a room for school administration. This initial phase assessment does not intend to identify and classify the impact of resources on students's grades, but to shed light on the differences of opportunities caused by the availability and use of these resources.

Although resources are imperfect indicators of well-being (Sen, 2000), the discussion is focused on the diversity and effectiveness of resources to create possibilities to a person be and do. From a perspective of social justice, schools coping with individuals with greater necessities should have more resources to be able to reverse situation. It is imperative to verify the availability of the use of resources for the provision of an adequate education and to choose as a priority attacking the vulnerable points of have low performances schools, without neglecting and understanding what aggravates this performance. Based on the data collected and systematized the next step of the research is to verify different teaching and learning conditions in schools with different performances from the average of the context/background they are in, in order to understand what may change student performance for better.



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