

## EDUCATIONAL INDICATORS ASSOCIATED TO THE TEACHER: LACK OF PROFESSIONAL EDUCATION OR NEGLECT

### *INDICADORES EDUCACIONAIS ATRELADOS AO PROFESSOR: FALTA DE FORMAÇÃO OU NEGLIGÊNCIA*

### *INDICADORES EDUCATIVOS VINCULADOS AL PROFESOR: FALTA DE FORMACIÓN PROFESIONAL O NEGLIGENCIA*

Paulo Sergio GARCIA<sup>1</sup>  
Carlos Alexandre Felicio BRITO<sup>2</sup>

**ABSTRACT:** This study analyzes, in municipalities in the metropolitan region of São Paulo, some indicators linked to the teacher, in particular, higher education, adequacy and teaching effort. At the same time, it seeks to understand how they are treated within the scope of the management carried out by the education departments with a focus on Elementary Education, final years. The mixed methodology was used, with data collection on the website of the National Institute of Studies and Research. In parallel, interviews were carried out with specialists who worked in the education departments. The results showed, on the one hand, that there were unqualified teachers, teaching classes in subjects which they were not majored and with a high teaching effort. The data were more unfavorable in the Southeast sub-region. On the other hand, the professionals who worked in the education departments, those who induce teacher education and local educational policies, were unaware of some indicators and their implications for education. The most used indicator to manage municipal education was the Basic Education Development Index, which demonstrates a certain lack of professional education. The data from this study can promote discussions in the context of education departments and in public universities.

**KEYWORDS:** Educational indicators. Educational policies. Elementary school final years. Teachers.

**RESUMO:** Este estudo analisa, em municípios da região metropolitana de São Paulo, alguns indicadores atrelados ao professor, em particular, a formação superior, a adequação e o esforço docente. Paralelamente, busca compreender como eles são tratados no âmbito da gestão realizada pelas secretarias de educação com foco no Ensino Fundamental, anos finais. Foi utilizada a metodologia mista, com a coleta de dados no sítio do Instituto Nacional de Estudos e Pesquisas Educacionais. Paralelamente, foram realizadas entrevistas com

<sup>1</sup> Municipal University of São Caetano do Sul (USCS), São Caetano do Sul - SP - Brazil. Full Professor in the Department of Education. Coordinator of the Education Observatory of Greater ABC. PhD in Education from the Faculty of Education, University of São Paulo (2011). ORCID: <https://orcid.org/0000-0003-4840-391X>. E-mail: paulo.garcia@prof.uscs.edu.br

<sup>2</sup> Municipal University of São Caetano do Sul (USCS), São Caetano do Sul - SP - Brazil. Manager of the Professional Master's Program in Innovation in Higher Education in Health (PPGMIES). Professor of PPGE (Graduate Professional Master's Program in Education). Undergraduate Professor - School of Health - Physical Education. PhD in Physical Education from the State University of Campinas (2005). ORCID: <http://orcid.org/0000-0002-0060-8644>. E-mail: carlos.brito@prof.uscs.edu.br

*especialistas que atuavam nas secretarias de educação. Os resultados mostraram, por um lado, que existiam professores não habilitados, ministrando aulas em disciplinas para as quais não foram formados e com alto esforço docente. Os dados foram mais desfavoráveis na sub-região Sudeste. Por outro, que os profissionais que atuavam nas secretarias de educação, aqueles que induzem à formação dos professores e às políticas educacionais locais, desconheciam alguns indicadores e suas implicações para a educação. O indicador mais utilizado para fazer gestão da educação municipal era o Índice de Desenvolvimento da Educação Básica, o que demonstra certa falta de formação profissional. Os dados deste estudo podem promover discussões no contexto das secretarias de educação e nas universidades públicas.*

**PALAVRAS-CHAVE:** *Indicadores educacionais. Políticas educacionais. Ensino fundamental anos finais. Professores.*

**RESUMEN:** *Este estudio analiza, en municipios de la región metropolitana de São Paulo, algunos indicadores vinculados al profesor, en particular, la educación superior, la adecuación y el esfuerzo docente. Al mismo tiempo, se busca entender cómo son tratados en el ámbito de la gestión que realizan los departamentos de educación con enfoque en Educación Primaria, últimos años. Se utilizó la metodología mixta, con recolección de datos en la página web del Instituto Nacional de Estudios e Investigaciones. Paralelamente, se realizaron entrevistas con especialistas que trabajaban en los departamentos de educación. Los resultados mostraron, por un lado, que existían profesores no calificados, impartiendo clases en materias no capacitadas y con un alto esfuerzo docente. Los datos fueron más desfavorables en la subregión sureste. Por otro lado, los profesionales que laboraban en los departamentos de educación, quienes inducen la formación de profesores y las políticas educativas locales, desconocían algunos indicadores y sus implicaciones para la educación. El indicador más utilizado para la gestión de la educación municipal fue el Índice de Desarrollo de la Educación Básica, que evidencia cierta falta de formación profesional. Los datos de este estudio pueden promover discusiones en el contexto de los departamentos de educación y en las universidades públicas.*

**PALABRAS CLAVE:** *Indicadores educativos. Políticas educativas. Últimos años de educación primaria. Profesores.*

## Introduction

This study analyzes, in municipalities of the metropolitan region of São Paulo, some indicators related to the teacher, in particular, higher education, adequacy and teaching effort. At the same time, it seeks to understand how they are treated in the context of the management carried out by the secretaries of education focusing on Primary Education, final years.

The presence of indicators in the most diverse domains, not unaccompanied by abundant controversies, has been a recurring phenomenon, especially in recent decades, since they express elements that may favor the understanding of particularities, among others, of social areas.

For Jannuzzi (2009), an indicator can be considered a measure, generally quantitative, endowed with social meaning. For Hadji (1994, p. 187), it is a "particular characteristic that is a testimony of the existence of a predetermined phenomenon. It is a sign in which the presence of an expected effect is recognized".

In education, educational indicators have been used to monitor, make decisions about, and evaluate programs or projects. They are also used for monitoring goals to be achieved (National Education Plan) or paths to be followed (performance improvement), making it possible to understand the historical evolution of rates, for example, on an annual or monthly basis.

An indicator presents specific information, which can be a representative category or knowledge of reality. It can also be the materialization of a set of criteria, based on quantitative and qualitative evidence, which, when grouped together, reveal particularities of the social reality.

These particularities, revealed by the indicator, help in the understanding of the social reality, but do not end the possibilities of understanding the educational phenomena. The indicators present limitations, among others, in relation to the criteria selected for their creation and their forms of use, social or political.

Despite the relevance of indicators to understand part of the complexity of school quality, they are not comprehensive enough to prove it. This is the case of the Basic Education Development Index (IDEB), a well-known, valued and widely used indicator. The results of this indicator enable, among other issues, the reorganization of school work, however, it cannot be the only element for such activity. Despite, on the one hand, its importance in the analysis of reading skills, interpretation and problem solving and "basic knowledge for the acquisition of other curriculum components, such as history, chemistry, etc., and therefore integral to the idea of educational quality, on the other hand, by themselves they also do not synthesize this concept in its entirety" (ALAVARCE; CHAPPAZ; FREITAS, 2021). Despite revealing some attention to quality, the phenomenon goes far beyond and requires the presence of other elements of qualitative order.

It would be simplistic to try to understand quality only from an indicator, such as the Ideb, and, in this sense, others, for example, the cost-pupil quality, are necessary, as indicated Oliveira (2011), to verify the realization of the right to quality education. In fact, to broaden the understanding of school quality, other more sensitive elements should also be considered. It seems unavoidable the understanding about the training and work of teachers, namely, higher education, adequacy of training and teaching effort, relevant categories because they deal with

the most important professional in the student learning process (KLEIN; FONTANIVE, 2010; SCARTEZINI; VIANA, 2012).

In the case of higher education, Garcia, Malacarne and Bizzo (2009) signaled some implications of the absence of credentials (bachelor's degree) for teaching science, such as the low learning of the contents of this discipline. Mello (2009) reinforced the relevance of teacher training for the quality of Basic Education, and Carvalho (2018) showed that training is related to student performance, evaluated in school averages.

On the adequacy of teacher training, a survey (CARMO et al., 2014) showed that young people who study with teachers who teach the subjects in which they have training performed better than their peers who take classes with professionals not qualified for what they teach.

As for teacher effort, studies have revealed that this phenomenon affects the quality of work in the classroom (KRASILCHIK, 2000; SOUZA *et al.*, 2017), student performance (PASSADOR; CALHADO, 2012; PALERMO; SILVA; NOVELINO; 2014), teacher health (ASSUNÇÃO; OLIVEIRA, 2009; CEBALLOS; SANTOS, 2015; CODO, 1999; GASPARINI et al., 2005; SANTANA; NEVES, 2017), among others.

### **Educational indicators and their implications for Brazilian education**

The development of indicators and their uses are linked, among other issues, to the advances in information technology and the internet, globalization and democracy (MELLO; SOUZA, 2005). The same authors understand them as measurement methodologies, with the objective of portraying, in some way, the social reality being researched. For Jannuzzi (2002; 2009), they constitute methodological resources, qualitative or quantitative, which reveal meanings, results, attributes, performances of a group or a service. They can also acquire a social diagnostic function and, in this sense, help in the elaboration of public policies.

According to Jannuzzi (2009), indicators can be distributed in the demographic, economic and financial, political, and social categories. They can be used to measure the magnitude of a phenomenon over time, observe the behavior of regional differences or between social groups, among other issues. However, their isolated use presents limitations, considering the complexity of social phenomena.

Educational indicators have made it possible, among other issues, to understand, in greater detail, education, the distribution of resources, school failure, and the quality of education. Those related to the teacher, higher education, the adequacy and effort of teachers, make it possible to broaden the understanding of the quality of an education system.

In the case of higher education, Cunha (2006) pointed out that it is during this period that the future teacher formulates, in a more solid way, a conception of teaching, incorporates knowledge related to the content of the subject and pedagogical practice, learns about knowledge inherent to research, among other issues. In this sense, the Law of Directives and Bases for National Education (LDBEN/96), art. 62, established that the "training of teachers to work in basic education must be done at a higher level, in a full degree course, although it admits that it is offered at a medium level, in the Normal modality, as minimum training". In fact, this training is essential, since the teacher, as Klein and Fontanive (2010) and Scartezini and Viana (2012) have pointed out, is the most important professional for student learning and performance.

In the case of the adequacy of training to performance, this indicator is important, considering that it reveals the number of teachers who work in subjects in which they were not trained. The 2018 School Census revealed that one in three subjects was taught by an unqualified teacher. In Primary Education, the signs reveal that approximately 60% of subjects are taught by professionals with training in the same area, but not in the same subject (INEP, 2019).

A 2019 study by the Greater ABC Education Observatory showed that in one of the richest regions of the country there are still teachers without higher education and working in subjects without credentials to do so. However, it is noteworthy that young people who study with teachers who teach the subject of training have higher performance (CARMO *et al.*, 2014).

As for the teaching effort, studies show that this phenomenon affects the precariousness of the teaching work, the quality of work in class, student performance, and teacher health. In the first case, studies, from different angles (APPLE, 1995; DRUCK, 2011; ENGUITA, 2004; FRANCH, 1995; MARONEZE, 2011; OLIVEIRA, 2003), have shown that, in recent decades, the precariousness of teachers' working conditions has been constant and growing.

The precariousness of working conditions is, above all, linked to the salary issue, which induces teachers to extend their workloads, a situation that has consequences, among others, on the teacher's free time to continue their studies, on the teaching reforms, on the appreciation of teaching, and also on the professional's self-image, which subsists with a feeling of dissatisfaction and anxiety (FRANCH, 1995; GARCIA; MALACARNE; BIZZO, 2009; among others). In this context, opportunities for professional development are fewer due to the scarcity of time.

The high workloads intensify the teaching work (APPLE, 1995). For many professionals, time is scarce even to keep up with their work. According to Garcia, Malacarne

and Bizzo (2009), the issue of teachers having to arrive earlier at school or, often, spending a lot of time at their homes to perform and develop professional activities, are just some indications of the phenomenon that can have an even greater effect on the quality of work.

In the second case, the quality of the lesson, some authors (KRASILCHIK, 2000; SOUZA *et al.*, 2017) have shown its relationship with teaching effort. Krasilchik (2000), for example, pointed out that the worsening and disregard of employment conditions directly affect the quality of the work done in the classroom. The author also pointed out that it is common for science teachers to live with high workloads and a lack of resources to deliver their lessons.

In the third case, the issue of student performance, several researchers have already revealed its relationship with teaching effort (PASSADOR; CALHADO, 2012; PALERMO; SILVA; NOVELINO; 2014). Data from the Teacher Training Center of the city of São Caetano do Sul (CECAPE, 2015) revealed that schools with higher Ideb scores were also those in which teachers had lower teaching effort.

In the fourth case, teacher health, several scholars have shown the relationship with teaching effort (ASSUNÇÃO; OLIVEIRA, 2009; CEBALLOS; SANTOS, 2015; CODO, 1999; GASPARINI *et al.*, 2005; SANTANA; NEVES, 2017; SOUZA; SANTOS; ALMEIDA, 2016). The work overload requires emotional and intellectual efforts, and such situation can lead professionals to a state of weakness, which has generated an increase in the rate of requests for time off work (GASPARINI *et al.*, 2005).

### **Some studies about the indicators**

Ribeiro, Ribeiro and Gusmão (2005) analyzed educational indicators, signaling the need for the engagement of the community itself to improve the quality of education. The analysis system proposed by the authors had seven dimensions (Educational Environment, Pedagogical Practice, Evaluation, Democratic School Management, Training and working conditions of school professionals, among others), understood as elements of school quality.

Werle, Koetz, and Martins (2015) indicated that the school can be a place for the development and use of educational indicators. The authors systematized information, tracing a profile of approval and failure of elementary school students, and indicated that teachers, in their practices, can produce important data and indicators for the school community to have a new vision about the teaching work.

Matos and Rodrigues (2016), in a study on educational indicators and the school context, analyzing the Ideb targets, found that in the early years of elementary education, the variable



with the greatest impact on the probability of the school reaching the indicator's target was infrastructure. In the final years, the variables were socioeconomic status and infrastructure.

Fonseca (2010) analyzed, based on foreign educational indicators (released by OECD and NCES) and national indicators (released by INEP), the attendance and performance rate (approval, failure and dropout) and the Ideb. The research concluded that educational indicators are increasingly being used in the Brazilian context, with objectives of impact and accountability; that the relevance acquired by the indicators has highlighted their importance and attracted the attention of politicians and those who work in the development of educational policies.

Fritsch, Rocha, and Vitelli (2014) analyzed educational indicators with an emphasis on the age-grade gap rates in high school, revealing that this gap widens as the public is segmented, that there are differences when comparing results between schools, shifts, grades, and students' conditions, and that educational policies have been ineffective, mainly because they do not consider the differences between the realities of young people.

Vitelli, Fritsch, and Corsetti (2018) analyzed INEP context evaluation indicators (socioeconomic level, complexity of school management, effort, adequacy, and teacher regularity) and their applications in public schools to identify possible implications with school flow. Among the conclusions of the research is that the higher the age-grade gap rate, the higher the tendency to fail in high school.

### **São Paulo Metropolitan Region**

The Metropolitan Region of São Paulo is formed by 39 municipalities. It is considered to have the highest concentration of wealth in the country. The region was created in 1973 and its reorganization occurred in 2011, through Complementary Law No. 1,139 of June 16, 2011, establishing the Development Council and grouping its municipalities into sub-regions.

It is formed by five sub-regions: North, West, East, Southeast, and Southwest. Chart 1 shows some characteristics of the municipalities analyzed:

**Chart 1** - Some characteristics of the analyzed municipalities

Sub Region	Municipalities	Area	Pop. (2019)	Infant Mortality rate <sup>3</sup> (2017)	GDP (2016)	HDI-M	Average monthly salary of formal workers (2017)	School enrollment rate, ages 6 to 14 (2010)
North	Cajamar	131,386	76.801	13,52	178.670,47	0,728	3,5	96,5
	Francisco Morato	132,775	154.489	14,24	16.661,58	0,731	2,7	95,7%
Southeast	Mauá	61,909	472.912	9,08	30.509,00	0,766	3,3	97,4
	São Caetano	15,331	161.127	6,54	83.656,30	0,862	3,6	97,4
	Ribeirão Pires	99,075	123.393	9,15	24.947,07	0,784	2,6	97,4

F Source: Authors' elaboration adapted from IBGE (2016)

In the North, Mairiporã has the largest area, Francisco Morato the largest population and Cajamar the highest GDP. In the Southeast, the municipality of São Bernardo has the largest area, population and GDP, and São Caetano do Sul has the highest Municipal Human Development Index.

The municipalities in the Northern sub-region, Cajamar and Franco da Rocha, present, in general, the lowest indexes (HDI-M, GDP, schooling rate). Those located in the Southeast sub-region had the highest indicators.

Table 1 summarizes data from the North and Southeast sub-regions in relation to education:

<sup>3</sup> Deaths per thousand live births.



**Table 1** – Education data from the municipalities - 2018.

Region	Municípios								
	Cajamar			Franco da Rocha					
North	Schools	Enrollments	IDEB	Schools			Enrollments		IDEB
	12	3.964	4,3	1			58		-
Southeast	Mauá			Ribeirão Pires			São Caetano do Sul		
	Schools	Enrollments	IDEB	Schools	Enrollments	IDEB	Schools	Enrollments	IDEB
	1	253	4,3	3	845	5,7	14	5.232	6,6

Source: Authors' elaboration according to the 2018 School Census

Cajamar, in the North subregion, and São Caetano do Sul, in the Southeast, were the municipalities with the largest number of schools and enrollments in final year elementary school. Mauá had only one school and the lowest number of young people in this level of education.

## Methodology

Two sub-regions of the São Paulo metropolitan region were selected because they present contrasts in relation to socioeconomic and educational issues. With this selection, we have a differentiated and revealing representation of the analyzed phenomenon.

In these sub-regions, we selected the municipalities that attend final-year elementary school students in the municipal sphere. In the Northern sub-region, the cities of Cajamar and Franco da Rocha; in the Southeastern, Mauá, São Caetano do Sul and Ribeirão Pires.

To meet the objectives of the study, the mixed methodology was used, combining the quantitative and qualitative approaches with the purpose of, among other issues, broadening the understanding and knowledge about the analyzed phenomenon (JOHNSON; ONWUEGBUZIE, 2004). In this case, it is considered that each approach contributes with its characteristics, and the integration of their possibilities allows exploring perspectives with more depth (TASHAKKORI; TEDDLIE, 2010), from the detailing of the problem, the use of open and closed views and the use of multiple forms of data analysis, such as textual and statistical appreciation (CRESWELL; CLARK, 2010).

The data from the interviews were initially assessed from a thematic inquiry, enabling the gathering of common and central themes. A careful examination of this material, detailing

the differences, regularities and similarities, allowed the creation of categories, according to the indications of content analysis (BARDIN, 2007).

### The teacher-related indicators

INEP provides (INEP, 2019) a set of indicators from the Basic Education Evaluation System and the Basic Education School Census. Among them, those related to teachers: training, adequacy, and teaching effort.

The context indicators are summarized in Chart 2:

**Chart 2** – Educational Context Indicators

Indicator	Objectives
<b>Professors with higher education (DSU)</b>	The indicator reveals the percentage of teachers with higher education degrees.
<b>Adequacy of Teacher Education (AFD)</b>	The indicator shows the adequacy of the initial training of basic education teachers, according to the legislations.
<b>Teaching Effort (IED)</b>	The indicator evaluates the effort used by basic education teachers in the exercise of their profession.

Source: Prepared by the authors

The first indicator deals with the percentage of teachers with higher education. Having higher education to work in Basic Education is, in fact, the appropriate demand, according to Article 62 of the Law of Directives and Bases of National Education (LDBEN/96), which indicated that "the training of teachers to work in basic education will be done in higher education, in a full degree course, admitted as minimum training for the exercise of teaching in early childhood education and the first five years of elementary school, the one offered at the high school level, in the normal mode" (Redaction given by law No. 13.415, 2017).

The second indicator is the adequacy of teacher training, which analyzes the adjustment of initial training according to legal guidelines. According to technical note No. 20/2014 of MEC/INEP, it captures information from the Basic Education School Census on teacher training, the classes and subjects in which these professionals teach and, at the same time, data on students and schools (BRAZIL, 2014a).

O indicador faz uma análise das docências concedidas pelas escolas e a formação do corpo docente. Para cada disciplina analisada foi averiguada a formação do professor com base

nos dados do Censo Escolar. A legislação direcionou a apreciação dos dados, permitindo a identificação de cinco perfis de regência das disciplinas.

Chart 3 summarizes the information.

**Chart 3** – Categories of teacher adequacy training in relation to the subject they teach

Group	Description
1	In this group are the teachers with higher education (degree) in the same subject they teach. Or they have a bachelor's degree with a completed pedagogical complementation course.
2	In this group are teachers with a bachelor's degree in the corresponding subject, but without a bachelor's degree or pedagogical complementation.
3	In this group are teachers with a degree in a field different from the one they teach. Or they have a bachelor's degree in the subjects of the common curricular base and pedagogical complementation completed in a field different from the one they teach.
4	In this group are the teachers with other higher education that was not considered in the previous categories.
5	In this group are teachers who have not completed higher education.

Source: Brazil (2014b)

The third indicator is the teacher effort indicator (Technical Note No. 39/2014), which measures the effort made by teachers in their teaching activities (BRAZIL, 2014b). Elements, among others, that contribute to the overload in the exercise of the profession. To compose the indicator, the number of schools in which the teacher works, shifts, students served, and the number of stages in which he or she teaches were considered. The variables constructed to represent the effort are ordinal and, thus, higher categories indicate greater teaching effort.

This indicator has five levels, where the higher the level, the greater the effort of the teacher. Chart 4 summarizes the levels:

**Chart 4** – Description of the levels of teaching effort.

Levels	Description*
Level 1	At this level are teachers with up to 25 students who work in a single shift, school, and stage.
Level 2	At this level are teachers with between 25 and 150 students who work in a single shift, school, and grade level.
Level 3	At this level are teachers with between 25 and 300 students who work in one or two shifts in a single school and stage. They also work in two shifts, in one or two schools, and in two stages.
Level 4	At this level are teachers who have between 50 and 400 students and work in two shifts, in one or two schools, and on two stages.

<b>Level 5</b>	At this level are teachers with more than 300 students who work in all three shifts, in two or three schools, and in two or three stages.
<b>Level 6</b>	At this level are teachers with more than 400 students who work in three shifts, in two or three schools, and in two or three stages.

\*Note: Characteristics presented by at least two-thirds of the teachers  
Source: Brazil (2015)

## Results and discussions: the indicators in question

This section presents the analysis of the data from the indicators and interviews. The discussions arising from the reflections on results and the literature review on the subject are also situated.

### Higher Education: demand that is mandatory, but not fulfilled

This indicator presents the percentage of teachers with a college degree by municipality in the two sub-regions of the São Paulo metropolitan region. Through it, it is possible to understand whether young people are being taught by duly qualified professionals, that is, in accordance with the law. The data are from the Elementary School, final years.

Table 2 reveals the data on higher education in the municipalities in 2018:

**Table 2** – Percentage of Teaching Roles with a College Degree by municipality - 2018

	<b>Municipality</b>	<b>Elementary School Final Years (%)</b>
<b>Southeast Region</b>	São Caetano do Sul	97,9
	Mauá	100
	Ribeirão Pires	100
<b>North Region</b>	Cajamar Urban	96
	Cajamar Rural	95
	Franco da Rocha	87,5

Source: Prepared by the authors from Inep (2018)

The data shows that the municipality of Franco da Rocha and Cajamar, in the northern sub-region, showed the most unfavorable results, with more than 10% of the teachers in the former not having a college degree. In the Southeastern sub-region, only in the municipality of São Caetano do Sul did a group of teachers, around 2%, not have a higher education degree to

teach in the final years of elementary school. These data are in line with others (CODES *et al.*, 2017), which revealed that the percentages of teachers with higher education are lower in less favored municipalities.

In this context, it can be verified that there are still teachers without higher education working in Brazilian schools, which goes against what is established in article 62 of the Law of Directives and Bases of National Education (LDBEN/96), as amended by law no. 13,415, of 2017. The data are more negative for the North sub-region, the one with lower socioeconomic and educational indices.

It is necessary to consider that higher education, in undergraduate courses, constitutes one of the central pillars of the formal and systematized process of learning the profession. It is an important period, as it is the basis for the consolidation and reconstruction of knowledge, skills and practices about teaching and the teaching profession.

According to Cunha (2006), it is during initial training that teachers formulate or reformulate their conceptions of teaching and evaluation, among others, learn about the knowledge of the subject and pedagogical practice, and start to develop an ethical posture towards the profession. Other researchers (CARVALHO, 2018; GARCIA; MALACARNE; BIZZO, 2009; MELLO, 2009) have shown that training is fundamental for the quality of Basic Education, for learning, and for student performance.

In fact, the teacher's higher education is a central issue, since this professional acts directly in the education of Brazilian children and young people. As some researchers have already signaled, the teacher is the most important professional element for student learning and performance (KLEIN; FONTANIVE, 2010; SCARTEZINI; VIANA, 2012).

### **Adequate teaching: performance in the discipline in which they were trained**

Not all teachers working in Basic Education have adequate academic training for the subjects they teach. It is not uncommon to find teachers without adequate training working in Brazilian schools (OBEDUCABC, 2019).

The data provide elements to understand the percentage of teachers by adequacy group for the curricular component they teach. Table 3 shows the data:

**Table 3** – Percentage of teachers in Elementary Education by education adequacy group for the subject they teach – 2018

	Municipality	Final years					Sum of columns 3, 4 and 5
		Group	Group	Group	Group	Group	
		1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	
Southeast Region	São Caetano do Sul	80,6	0,0	14,0	3,1	2,3	19,4
	Mauá	56,3	0,0	40,5	3,2	0,0	43,7
	Ribeirão Pires	67,7	0,0	32,3	0,0	0,0	32,3
North Region	Cajamar (urban)	80,8	0,0	13,3	2,1	3,8	19,2
	Cajamar (rural)	83,7	0,0	7,7	3,8	4,8	16,3
	Franco da Rocha	87,5	0,0	0,0	0,0	12,5	12,5

Source: Prepared by the authors adapted from Inep (2018)

In the data, the third, fourth, and fifth levels are the least desirable, since, as indicated by Carmo *et al.* (2014), students who have classes with teachers trained in the curriculum component they teach perform better than those who study with professionals trained in other areas or without training.

Vitelli, Fritsch, and Corsetti (2018) also signaled that the adequacy of the teaching staff has an influence on dropout rates and those of age-grade mismatch. Therefore, policies to match the training to the subject that the teacher teaches produce positive results in student achievement.

Individualizing the data in Table 04, in Primary Education, final years, São Caetano do Sul, in 2018, had, approximately, 20% of its teachers in levels three, four and five. Mauá had 43.7% and Ribeirão Pires had 32.3%. In the other subregion, Cajamar had 19.2% in urban schools and 16.3% in rural ones, and Franco da Rocha 12.5%.

Data from the 2018 School Census revealed that, in general, one in three subjects in Brazilian schools was taught by a teacher without specific training. In Primary Education, data from Inep (2019) indicated that almost 60% of curricular components were taught by professionals with degrees in the same area, not the same subject.

In both sub-regions, in all municipalities, there were many professionals with inadequate training to teach children and youth in schools. A very worrisome fact is centered in the municipality of Mauá, where almost 50% of its teachers had inadequate training.

In this context, the quality of the classes may be compromised, since these teachers may not master the ways of planning the subject, its times, the creation of projects and, above all, the content to work with the students. This lack of knowledge can compromise all student learning.

### Teacher Effort: the overload that interferes with the quality of work

The indicator for teaching effort measures the energy made by the teacher in his or her performance in the teaching profession (BRAZIL, 2014b). The effort contributes to the overload in the exercise of the profession. Table 4 reveals the percentage of teachers by levels of the 2018 indicator:

**Table 4** – Percentage of faculty by levels of the faculty effort indicator – 2018

Municipality		Final years (%)						
		Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	
Southeast Region	São Caetano do Sul	1,8	27,3	18,1	41,0	8,9	2,9	
	Mauá	0,0	27,3	13,6	27,3	22,7	9,1	
	Ribeirão Pires	0,0	15,9	28,9	34,2	18,4	2,6	
North Region	Cajamar	Urban	0,5	10,6	26,7	43,5	13,7	5,0
		Rural	0,0	0,0	42,1	47,4	0,0	10,5
	Franco da Rocha	0,0	12,5	0,0	62,5	25,0	0,0	

Source: Prepared by the authors adapted from Inep (2018)

Analyzing levels 5 and 6, those where the level of effort is higher, of the municipalities in the Southeast sub-region, São Caetano had 11.8% of its teachers at these levels, Mauá 31.8% and Ribeirão Pires 21%. In the Northern sub-region, Cajamar had 14.2% in urban schools and 10.5% in rural ones. Franco da Rocha had 25% of its teachers.

An analysis of this indicator revealed that the municipalities in the two sub-regions had many teachers with a high level of effort. They were professionals who served many students, in several shifts and schools. This situation has repercussions, among others, on the



precariousness of the teaching work, the quality of the class, student performance, and teacher health.

Apple (1995), Oliveira (2003), and Garcia, Malacarne, and Bizzo (2009), among others, have already revealed the growing precariousness of the conditions of teachers' work, a phenomenon that became more present especially after the 1970s, when the last great growth of the education system took place, a fact that reverberated, among other issues, in the operation of schools and teachers' salaries. However, reforms in the 1980s and 1990s, organized and subsidized by international agencies, also had an impact on the conditions of teachers' work.

This precariousness is related to salary issues. Teachers increase their workload, seeking to improve their income, and thus increase their working hours, which affects their time to study and dedicate to teaching, also increasing their feelings of dissatisfaction and anxiety (FRANCH, 1995; HARGREAVES, 1998). Thus, for many teachers, service time becomes the only way to advance in their careers. With high working hours, many of them have no time to develop activities and classes for students (GARCIA; MALACARNE; BIZZO, 2009), which further worsens the quality of the teaching work.

The quality of the class is influenced by working conditions (KRASILCHIK, 2000), i.e., by the overload resulting from the higher number of activities that must be performed, among other issues. This same author indicated that science teachers, for some decades, have lived with the phenomenon of high overload, resulting from the search for better salaries.

On the issue of student performance, data from the Teacher Training Center of the city of São Caetano do Sul (CECAPE, 2015) revealed that the schools with the highest performance in the IDEB were exactly those where teachers had less teaching effort, revealing a non-causal association between these two issues. Other studies have also indicated the relationship between performance and teaching effort (PASSADOR; CALHADO, 2012; PALERMO; SILVA; NOVELINO; 2014).

Finally, on the issue of teacher health, the teaching work requires emotional and intellectual efforts for performance in the school context, and the overload can lead professionals to a state of exhaustion and burnout (CODO, 1999) or physical problems (CEBALLOS; SANTOS, 2015; SANTANA; NEVES, 2017; SOUZA; SANTOS; ALMEIDA, 2016).

## The interviews' analysis: the word of the experts

Five specialists in education from five municipalities in the metropolitan region of São Paulo participated in this study. All of them were women, 35 years old on average (SD - 11.3), graduated in pedagogy, with some kind of specialization in education in the management area, and two had a master's degree in education. These participants had experience in education of, on average, 17 years (SD - 9.78), and a weekly workload of 40 hours.

For this group, who worked in education departments, the indicator most often used to perform quality management of elementary schools, final years, was the Ideb. One participant indicated that "the Ideb gives us a direction because through it we can see the weaknesses of our segments" (SPECIALIST\_05). This same professional pointed out that in her municipality an indicator of age/grade distortion and school dropout was used. The data were collected in an open internet portal (Qedu: <https://qedu.org.br/>). For her, this indicator helped in monitoring the "[...] students who were lagging behind, those who were constantly repeating grades" (SPECIALIST\_5).

Another professional (SPECIALIST\_02) indicated that an attendance indicator, created by themselves, was used in their city to control and monitor students' absences and, at the same time, create channels of conversation between school management and families.

Another specialist (SPECIALIST\_03) pointed out that the secretariat used failure and approval indicators generated by the schools themselves. It was a tool used to control the performance of the education network and create projects and goals for school units and teachers. The central idea was to prevent the school failure of young people.

It is noteworthy that the educational indicators linked to the teacher were virtually unknown and disregarded by the professionals, which possibly brought some kind of consequence for the quality of the system management, because the teacher is, in fact, the main professional who contributes to student learning (SCARTEZINI; VIANA, 2012).

The five participants were aware of the issue of higher education and claimed that all their teachers in the final years of elementary school already had such credentials; however, the data from INEP pointed in another direction.

All participants were unaware of the indicators of adequacy and teaching effort. One professional indicated that the teaching effort "was important to value the work of teachers in schools and education networks" (SPECIALIST\_02). Another pointed out that the effort "is linked to the teacher's merit" (SPECIALIST\_01), statements that clearly denote a lack of understanding on the subject.

As the indicators tied to the teacher were unknown to the professionals, so were their implications for education. At the time of data collection, no work was being done by the secretaries of education to monitor these data in the municipal management of the final-year elementary schools.

Finally, it should be noted that the five participants were mistaken about the concepts of external or large-scale evaluation and indicators. For them it was the same thing. They used them interchangeably, sometimes even as a synonym. For example, some referred to Saesp and Idesp as indicators, and other times as evaluation. This situation had already been indicated by the Education Observatory of Greater ABC (2017).

### **Final considerations**

The analyses of the indicators revealed that the professionals who work in the education secretariats, those who induce teacher training and local educational policies, had little knowledge about some indicators (adequacy of training and teacher effort) and were unaware of their implications for the implementation of municipal school quality management. A situation that possibly indicates lack of training in relation to the theme.

Training and adequacy of performance are fundamental for the improvement of the quality of education, in general, and for the training and development of children and young people, in particular. The first and the second have an impact on how the teacher plans, manages the class, uses didactics appropriately, conducts general projects and those related to the subject, and mobilizes his or her knowledge in the daily school routine. The reflexes also affect the guarantee of the content taught to the students, since this knowledge may have been removed from the teacher's qualification because, for example, the teacher is working on another curricular component, about which he does not have a deep knowledge. There are also the issues of student feedback and assessment, subjects that will be depreciated if the teacher has no knowledge of the subject content.

High teacher effort presents an unfavorable conjuncture for improving school quality. The overload of work, the effort, is related, among some issues, to the quality of the teacher's performance and, consequently, to the learning and development of Brazilian children and young people. This phenomenon also hinders the creation of more consistent ties with the school, the knowledge about colleagues and the performance in collaborative projects, the knowledge about young people and their needs, interests and, above all, their difficulties. Being in school for a short period of time, since they work in several institutions, deprives the teacher

of an essential part of the understanding of the school's daily routine and, at the same time, of the possibilities of helping to improve the quality of education.

The high teaching effort contributes to the precariousness of teachers' working conditions. Such precariousness has an unfavorable impact on the professional's free time, affecting the quality of their projects and their classes, on their self-image and their professional development opportunities, and on their health, due to the great efforts made, among others.

The data from this study serve as a warning to the municipal educational authorities. The investment in continued training is valid for the improvement of the quality of education. But there is an urgent need for the development of new public policies to address issues related to untrained teachers, working in subjects they were not trained for and with great effort.

## REFERENCES

ALAVARSE, O. M.; CHAPPAZ, R. O.; FREITAS, P. F. Avaliações da aprendizagem externas em larga escala e gestores escolares: características, controvérsias e alternativas. **Cadernos de Pesquisa**, São Luís, v. 28, n. 1, jan./mar. 2021.

APPLE, M. W. **Trabalho docente e textos**: economia política das relações de classe e de gênero em educação. Porto alegre: Artmed, 1995.

ASSUNÇÃO, A. A.; OLIVEIRA, D. A. Intensificação do trabalho e saúde dos professores. **Revista Educação & Sociedade**, v. 30, n. 107, maio/ago. 2009.

BRAZIL. **Lei n. 9.394, de 20 de dezembro de 1996**. Estabelece as Diretrizes e Bases da Educação Nacional. Brasília, DF, 23 dez. 1996. Available at: [http://www.planalto.gov.br/ccivil\\_03/leis/L9394.htm](http://www.planalto.gov.br/ccivil_03/leis/L9394.htm). Access on: 15 Oct. 2011.

BRAZIL. Ministério da Educação. Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira – INEP. **Nota técnica n. 20/2014, de 21 de novembro de 2014**. Brasília, DF: INEP, 2014a. Available at: [http://download.inep.gov.br/educacao\\_basica/enem/enem\\_por\\_escola/2014/nota\\_tecnica\\_indicador\\_adequa%C3%A7%C3%A3o\\_formacao\\_docente.pdf](http://download.inep.gov.br/educacao_basica/enem/enem_por_escola/2014/nota_tecnica_indicador_adequa%C3%A7%C3%A3o_formacao_docente.pdf). Access on: 14 Jan. 2019.

BRAZIL. Ministério da Educação. Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira – INEP. **Nota técnica n. 39/2014, de 17 de dezembro de 2014**. Brasília, DF: INEP, 2014b. Available at: [http://download.inep.gov.br/informacoes\\_estatisticas/indicadores\\_educacionais/2014/docente\\_esforco/nota\\_tecnica\\_indicador\\_docente\\_esforco.pdf](http://download.inep.gov.br/informacoes_estatisticas/indicadores_educacionais/2014/docente_esforco/nota_tecnica_indicador_docente_esforco.pdf). Access on: 14 Jan. 2019.

BRAZIL. Ministério da Educação. Instituto Nacional de Estudos e Pesquisas Educacionais Anísio Teixeira – INEP. **Nota técnica CGCQTI/DEED/INEP n. 11/2015, de 25 de junho de 2015**. Brasília, DF: INEP, 2015. Available at: [http://download.inep.gov.br/informacoes\\_estatisticas/indicadores\\_educacionais/2014/docente](http://download.inep.gov.br/informacoes_estatisticas/indicadores_educacionais/2014/docente)

\_regularidade\_vinculo/nota\_tecnica\_indicador\_regularidade\_2015.pdf. Access on: 14 Jan. 2019.

CARMO, E. F. *et al.* Um estudo da relação entre a adequação na formação docente e o desempenho escolar no Ensino Médio regular. **Educação e Fronteiras**, Dourados, v. 4, n. 12, p. 24-37, set./dez. 2014.

CARVALHO, M. R. V. **Formação docente e desempenho discente na Educação Básica**. 2018. 205 f. Dissertação (Mestrado Profissional em Administração) – Universidade de Brasília, Brasília, 2018.

CEBALLOS, A. G. C.; SANTOS, G. B. Fatores associados à dor musculoesquelética em professores: Aspectos sociodemográficos, saúde geral e bem-estar no trabalho. **Rev. Bras. Epidemiol.**, v. 18, n. 3, p. 702-715, 2015.

CECAPE. Centro de Formação de Professores de São Caetano do Sul. **Relatório do terceiro trimestre**: escolas municipais. São Caetano do Sul, SP, 2015.

CODES, A. *et al.* **Uma leitura do Plano Nacional de Educação (PNE) e uma proposta para seu monitoramento**. Brasília, DF: Instituto de Pesquisa Econômica Aplicada, 2017.

CODO, W. (org.). **Educação**: carinho e trabalho. Petrópolis, RJ: Vozes, 1999.

CRESWELL, J. W.; PLANO CLARK, V. L. **Designing and conducting mixed methods research**. 2. ed. Thousand Oaks, CA: Sage, 2010.

CUNHA, M. I. DA. Docência na universidade, cultura e avaliação institucional: saberes silenciados em questão. **Revista Brasileira de Educação**, v. 11, n. 32, p. 258-271, 2006.

DRUCK, G. Trabalho, precarização e resistências: novos e velhos desafios? **Cad. CRH**, v. 24, n. 1, 2011.

ENGUITA, M. F. **Educar em tempos incertos**. Porto Alegre: Artmed, 2004.

FONSECA, G. L. B. **Qualidade dos Indicadores Educacionais para Avaliação de Escolas e Redes Públicas de Ensino Básico no Brasil**. Dissertação (Mestrado em Educação) – Faculdade de Educação, Universidade Federal de Juiz de Fora, Juiz de Fora, 2010.

FRANCH E. P. A insatisfação dos professores. Consequências para a profissionalização. *In*: FRACHI, E. P. (org.). **A causa dos professores**. Campinas, SP: Papirus, 1995. p. 17-90.

FRITSCH, R.; ROCHA, C. S.; VITELLI, R. F. Defasagem idade-série em escolas estaduais de ensino médio do Rio Grande do Sul. **Revista Brasileira de Estudos Pedagógicos**, Brasília, v. 95, n. 239, p. 218-236, jan./abr. 2014.

GARCIA, P. S.; MALACARNE, V.; BIZZO, N. O Percurso Formativo, a Atuação e Condições de Trabalho de Professores de Ciências de Duas Regiões Brasileiras. **ACTA SCIENTIAE (ULBRA)**, v. 11, p. 119-140, 2009.

GASPARINI, S. M.; BARRETO, S. M.; ASSUNÇÃO, A. A. O professor, as condições de trabalho e os efeitos sobre sua saúde. **Educação e Pesquisa**. São Paulo, v. 31, n. 2, p. 189-199, 2005.

HADJI, C. **A avaliação, regras do jogo**: das intenções aos instrumentos. Porto: Porto Editora, 1994.

IBGE. Instituto Brasileiro de Geografia e Estatística. **Pesquisa Nacional por Amostra de Domicílios**. Rio de Janeiro, 2016. Available at: [https://ww2.ibge.gov.br/home/estatistica/pesquisas/pesquisa\\_resultados.php?id\\_pesquisa=40](https://ww2.ibge.gov.br/home/estatistica/pesquisas/pesquisa_resultados.php?id_pesquisa=40). Access on: 14 Mar. 2019.

INEP. Instituto Nacional de Estudos e Pesquisas. **Indicadores Educacionais**. 2018. Available at: <https://www.gov.br/inep/pt-br/aceso-a-informacao/dados-abertos/indicadores-educacionais>. Access on: 21 Mar. 2019.

JANNUZZI, P. M. Considerações sobre o uso, mau uso e abuso dos indicadores sociais na formulação e avaliação de políticas públicas municipais. **Revista de Administração Pública**, Rio de Janeiro, v. 36, n. 1, p. 51-72, jan./fev. 2002.

JANNUZZI, P. M. **Indicadores sociais no Brasil**: conceitos, fontes de dados e aplicações. 4. ed. Campinas, SP: Editora Alínea, 2009.

JOHNSON, R. B.; ONWUEGBUZIE, A. J. Mixed methods research: a research paradigm whose time has come. **Educational Researcher**, v. 33, n. 7, p. 14-26, 2004.

KLEIN, R.; FONTATIVE, N. S. Gestão de resultados e de aprendizagem. *In*: ENCONTRO NACIONAL DE DIRETORES DA FUNDAÇÃO BRADESCO, 14., 2010, São Paulo. **Anais [...]**. São Paulo, 2010. Tema: Gestão escolar: as articulações do diretor.

KRASILCHIK, M. Reformas e realidade: o caso do ensino das ciências. **Perspectivas**, São Paulo, v. 14, n. 1, p. 85-93, 2000.

MARONEZE, L. F. Z. **A precarização do trabalho docente na rede estadual de educação básica do Paraná (1995-2002)**. 2011. 210 f. Dissertação (Mestrado em Educação) – Universidade Estadual de Maringá, Maringá, 2010.

MATOS, D. A. S.; RODRIGUES, E. C. Indicadores educacionais e contexto escolar: uma análise das metas do Ideb. **Est. Aval. Educ.**, São Paulo, v. 27, n. 66, p. 662-688, set./dez. 2016.

MELLO E SOUZA, A. (org.). **Dimensões da avaliação educacional**. Petrópolis: Vozes, 2005.

OBEDUCABC. Observatório da Educação do Grande ABC. **Relatório do primeiro trimestre de 2019**. São Caetano do Sul, SP: Universidade Municipal de São Caetano do Sul, 2019.



OLIVEIRA, D. A. As reformas educacionais e suas repercussões sobre o trabalho docente. *In: OLIVEIRA, D. A. (org.). Reformas educacionais na América Latina e os trabalhadores docentes*. Belo Horizonte: Autêntica, 2003. p. 13-35.

PALERMO, G. A.; SILVA, D. B. N.; NOVELLINO, M. S. F. Fatores associados ao desempenho escolar: uma análise da proficiência em matemática dos alunos do 5º ano do ensino fundamental da rede municipal do Rio de Janeiro. **Revista Brasileira de Estudos de População**, v. 31, n. 2, p. 367-394, 2014.

PASSADOR, C. S.; CALHADO, G. C. Infraestrutura escolar, perfil socioeconômico dos alunos e qualidade da educação pública em Ribeirão Preto/SP. **Revista de Administração, Contabilidade e Economia da FUNDACE**, v. 3, n. 2, p. 1-10, 2012.

RIBEIRO, V. M.; RIBEIRO, V. M.; GUSMAO, J. B. Indicadores de qualidade para a mobilização da escola. **Cad. Pesqui.**, São Paulo, v. 35, n. 124, p. 227-251, 2005.

SANTANA, F. A.; NEVES, I. L. Saúde do trabalhador em educação: gestão da saúde de professores de escolas públicas. **Saúde e Sociedade**, v. 26, n. 3, p. 786-797, 2017.

SANTOS, O. J. Fundamentos da relação trabalho e educação. **Trabalho & Educação**, n. 9, p. 27-36, jul./dez. 2001.

SCARTEZINI, R. A.; VIANA, T. C. O efeito professor e sua transmissibilidade. *In: COLÓQUIO DO LEPSI IP/FE-USP*, 8., 2010, São Paulo. **Anais [...]**. São Paulo: USP, 2010. Available at: <http://www.proceedings.scielo.br/pdf/lepsi/n8/a58n8.pdf>. Access on: 30 Sep. 2013.

SOUZA, D. G. *et al.* Desafios da Prática Docente. **Educação Pública**, 2017.

TASHAKKORI, A.; TEDDLIE, C. Putting the human back in “Human Research Methodology”: The researcher in mixed. **Journal of Mixed Methods Research**, v. 4, n. 4, p. 271-277, 2010.

TRIVINOS, A. N. S. **Introdução à pesquisa em ciências sociais**: a pesquisa qualitativa em educação. São Paulo: Atlas, 1987.

VITELLI, R. F.; FRITSCH, R.; CORSETTI, B. Indicadores educacionais na avaliação da educação básica e possíveis impactos em escolas de Ensino Médio no município de Porto Alegre, Rio Grande do Sul. **Rev. Bras. Educ.**, Rio de Janeiro, v. 23, 2018.

WERLE, F. O. C.; KOETZ, C. M. MARTINS; T. F. K. Escola pública e a utilização de indicadores educacionais. **Educação**, Porto Alegre, v. 38, n. 1, p. 99-112, jan./abr. 2015.



## **How to reference this article**

GARCIA, P. S.; BRITO, C. A. F. Educational indicators associated to the teacher: Lack of professional education or neglect. **Revista Ibero-Americana de Estudos em Educação**, Araraquara, v. 17, n. 1, p. 0493-0515, Jan./Mar. 2022. e-ISSN: 1982-5587. DOI: <https://doi.org/10.21723/riaee.v17i1.14052>

**Submitted:** 13/08/2020

**Revisions requested:** 26/09/2021

**Approved:** 18/11/2021

**Published:** 02/01/2022

Management of translations and versions: Editora Ibero-Americana de Educação

Translator: Thiago Faquim Bittencourt

Translation reviewer: Alexander Vinícius Leite da Silva