Cost of Initial Quality Education per Student (CAQi) 2024: education with equity and quality conditions for all

Technical Note from the Brazilian Campaign for the Right to Education, Brazilian Association for Research in Education Financing (Fineduca) and Educational Data Laboratory

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Fineduca was created in 2011 and originated from the Brazilian Network of Researchers in Education Financing, a network that was formed in the late 1990s. It is a non-profit private law civil association whose objective is to help public authorities guarantee the realization of the right to free, secular, democratic and quality public education for all, through adequate funding, with the guarantee of monitoring and social control. Fineduca aims, among others: to create ways and channels for expressing positions assumed by the association; to organize and disseminate information regarding education financing; to encourage exchange and debate among researchers; to seek the constant theoretical and methodological improvement of researchers; to stimulate the consolidation of research groups; to promote international contact with researchers in education financing. It publishes an academic journal, Fineduca – Revista de Financiamento da Educação (Education Financing Journal), and holds annual national meetings, the twelfth edition of which will take place in 2024.

The Brazilian Campaign for the Right to Education (Campanha) was founded in 1999, driven by a group of civil society organizations that would participate in the World Education Summit in Dakar (Senegal) in 2000. The goal was to unite different political forces, prioritizing mobilization efforts, political advocacy, and social communication to defend and promote educational rights. Today, with over 300 members, it is considered the broadest and most diverse network in the field of education in Brazil. It connects hundreds of groups and organizations across the country, including school communities, social movements, labor unions, national and international NGOs, university groups, student and youth organizations, community groups, and thousands of citizens who believe in building a fair, democratic, and sustainable country through quality public education. The Brazilian Campaign's mission is to advocate for the implementation and expansion of education policies to ensure that everyone has the right to free, inclusive, secular, and quality public education in Brazil. Managed by a coordination team and guided by a national steering committee, the Campaign also has regional committees in all states and in the Federal District. The network is a co-founder of the Global Campaign for Education (GCE), the Latin American Campaign for the Right to Education (CLADE), and the Lusophone Network for the Right to Education (ReLus), which it also conceived and founded.

The Educational Data Laboratory (LDE) is an interdisciplinary and interinstitutional research group that brings together professors, technicians and students from the Department of Planning and School Administration of the Federal University of Paraná (DEPLAE/UFPR) and the School of Administration, Accounting and Economic Sciences of the Federal University of Goiás (FACE/UFG). It is responsible for the development of the Cost of Quality Education per Student Simulator (SimCAQ) [simcaq.ufg.br] - an online system that calculates the CAQ/CAQi mechanisms and enables the planning of public education systems under quality conditions.

Presentation

This Technical Note (NT) is a production of the Brazilian Campaign for the Right to Education (Campaign), of the Brazilian Association for Research in Education Financing (Fineduca) and of the Educational Data Laboratory (LDE) in an effort to facilitate the implementation of the Cost of Initial Quality Education per Student (CAQi) and the Cost of Quality Education per Student mechanisms – CAQi-CAQ system[1] – registered in the Brazilian legal framework.

CAQi and CAQ aim to fulfill the constitutional mission of education, enshrined in Article 205 of the 1988 Constitution of the Federative Republic, which is the "full development of the person, their preparation for the exercise of citizenship and qualification for work"; they also seek to comply with the constitutional principles established in Article 206, in particular the "equality of conditions for access to and permanence in school" (item I) and the "guarantee of quality standards" (item VII). It is expected that the combination of the Fund for Maintenance and Development of Basic Education and Valuing Education Professionals (Fundeb) – CAQi will represent a safe path towards federal justice, equality and quality in Brazilian basic education.

The Brazilian Campaign, the Educational Data Laboratory and Fineduca publish this Technical Note in which the values of the Cost of Initial Quality Education per Student (CAQi) for the year 2024 are presented, in continuation of the publication of the annual CAQi estimates initiated in the Technical Note published on 10/30/2023, which presented the CAQi values for the year 2023[2].

This document is structured in a synthetic way, presenting the monthly and annual CAQi values for 2024, by stages, modalities, location (urban and rural) and daily teaching hours (partial and full-time). It also presents the Union supplementation values necessary to guarantee the CAQi, taking into account the region, the federation units, population size of the municipalities and the socioeconomic level of the students. Other historical and methodological information on the efforts of Brazilian civil society to construct the concepts of CAQi and CAQ can be obtained in the 2023 Technical Note.

[1]About the CAQi -CAQ System, see Cara; Pellanda (2021), available at: https://download.inep.gov.br/publicacoes/diversas/financiamento_da_educacao/custo_aluno_qualidade_caq.pdf.

[2]Available at: https://fineduca.org.br/fundeb-com-caq-fineduca-e-campanha-divulgam-nota-tecnica-sobre-as-estimativas-do - caqi/.

Introduction

After a long trajectory of formulation, political advocacy, public communication and social struggle, the Cost of Quality Education per Student (CAQ) was established in the permanent body of the Federal Constitution (FC).

The legal demand for the provision of adequate financial resources to guarantee quality education gained, for the first time, constitutional status with the wording given by Constitutional Amendment (CA) No. 14/1996, the same one that approved the Fund for the Maintenance and Development of Elementary Education and the Appreciation of the Teaching Profession (Fundef), to paragraph 1 of Art. 211 of the FC, which better explained the redistributive and supplementary function of the Union in order to **"guarantee equalization of educational opportunities and a minimum standard of quality in education** through technical and financial assistance to the States, the Federal District and the Municipalities". (Brazil, 1996, our emphasis).

The same CA nº 14/1996 established a five-year deadline to define the value per student that would guarantee a minimum standard of teaching quality (Art. 60 of the ADCT, § 4º). This deadline expired on December 31, 2001. Given the federal government's omission, the Brazilian Campaign for the Right to Education, in a broadly participatory manner, developed the concepts of Cost of Initial Quality Education per Student (CAQi) and Cost of Quality Education per Student (CAQ), published in book form in 2007 (Carreira; Pinto, 2007), with an update in 2018 (Pinto; Nascimento; Cara; Pellanda, 2018).

These studies, together with other technical and political materials prepared from then, supported the entire political, social mobilization and public communication process, which resulted in the standardization of CAQi by the Basic Education Chamber of the National Education Council (CNE/CEB Opinion No. 8/2010), later revoked; in the legalization of the CAQi-CAQ system in the National Education Plan (NEP - Strategies 20.6, 20.7, 20.8 and 20.10 of Law No. 13.005/2014); and in the constitutionalization of the CAQ, in the form of CA No. 108/2020. This framework is also referenced in the final documents approved by CONAEs/CONAPEs (2010, 2014, 2018, 2022, and 2024).

Thus, the minimum quality standard is a constitutional requirement, recognized as a principle since 1988 and an objective of federal government action in education since 1996. However, the legal implementation of CAQi has been delayed for at least 10 years (considering the 2014–2024 NEP as a benchmark), and the constitutional obligation to implement CAQ has been unmet for four years, since its constitutionalization in 2020 under Article 211, §7 of the Federal Constitution.

The estimation of educational costs to ensure a quality standard is a contested field, as each methodologies have different objectives, strengths and limitations (Silveira, Schneider, Alves, 2021). In the United States, there is extensive research on this topic, with cost studies developed as part of adequacy-based education reforms. These studies have mainly emerged in response to legal challenges to school funding formulas and follow two main approaches: one resource-based (input-focused) and another based on large-scale test results (Taylor, Baker, Vedlitz, 2005). However, state court rulings have reinforced the need to guarantee adequate resources for the proper functioning of schools.

Despite its limitations, data from the Organisation for Economic Co-operation and Development (OECD, 2023) indicate that countries with the best performance in the PISA exam have public spending per student in public schools that is three times higher (OECD average) to four times higher (such as South Korea) than in Brazil.

Brazilian education legislation defines the concept of quality (quality standard) in terms of the "minimum variety and quantity, per student, of essential resources for the development of the teaching-learning process, appropriate to the age and specific needs of each student, including the provision of suitable furniture, equipment, and pedagogical materials" (LDB, Article 4, Clause IX).

The CAQi concept aims to establish values that ensure the minimum material resources and working conditions necessary for teachers to teach and students to learn. It represents the minimum acceptable level, serving as a transition value between the current per-student Fundeb allocation (which is insufficient to ensure quality conditions, as it is based solely on financial resources allocated to education, without considering adequacy) and the CAQ value.

Initially inspired by the pioneering CAQi methodology developed by the Brazilian Campaign for the Right to Education (Carreira & Pinto, 2007), the Cost of Quality Education per Student Simulator (SimCAQ) was created by the Educational Data Laboratory. It is based on Thiago Alves' doctoral thesis (Alves, 2012) and further developed with contributions from researchers at UFPR and UFG, particularly Adriana Dragone Silveira and Gabriela Schneider, in addition to Thiago Alves himself.

Starting in 2018, the Brazilian Campaign adopted SimCAQ as a reference tool for studies and financial estimates in the fight for CAQi-CAQ.

SimCAQ is an online computational system, available for free at https://simcaq.ufg.br, that allows for the estimation of the cost of providing education under quality conditions. The estimation is based on a set of parameters related to inputs and financial resources, referred to as the Reference Quality Standard (PQR, in Portuguese).

The simulator applies the PQR to the number of enrollments in each Brazilian public school (as counted by the School Census/Inep) and estimates a CAQi for each educational stage, modality, school day length (partial or full-time), and location (urban or rural). For national-level analysis, the median of the distribution of values calculated for each school is used as a reference (Silveira, Schneider, and Alves, 2021).

The values calculated using SimCAQ were used as a reference for the construction of this Note, with some adjustments to the values advocated by Fineduca and the Campaign. A simplification of the weighting factors was also proposed to achieve a more balanced relationship in the federative pact between states and municipalities. This includes setting a weighting value of 1 for enrollments in elementary education (both early and final years), high school, and youth and adult education (EJA) in urban schools operating in a part-time schedule. These education stages, modalities, and segments show only minor differences in SimCAQ and account for 58.6% of total enrollments.

Another decision made by Fineduca and the Campaign—considering that SimCAQ has not yet calculated the CAQi values for Special Education from an Inclusive Perspective and Professional

(Technical Vocational) Education—was to adopt the weighting factors obtained from the Brazilian Campaign for the Right to Education's 2018 study (Campaign, 2018).

Reference Quality Parameters (PQR) 2024

Parameters related to inputs present in Brazilian legislation were considered, whether in the 1988 Federal Constitution, the LDB, the PNE Law (2014-2024), resolutions of the National Education Council (CNE), or empirical data on the Brazilian educational reality, as detailed in the tables below.

A. School days per week

	Daycare	Preschool	Elementary - Early Years	Elementary - Later Years	Secondary	Youth and Adult Education
Number of days	5	5	5	5	5	5

B. Daily teaching hours

Shift	Daycare	Preschool	Elementary - Early Years	Elementary - Later Years	Secondary	Youth and Adult Education
Partial daytime	4	4	4	4	5	4
Full-Time	10	10	7	7	7	
Nighttime						4

C. Class size

Location	Aspect	Daycare	Preschool	Elementary - Early Years	Elementary - Later Years	Secondary	Youth and Adult Education
Urban	Students per class	10	18	20	25	30	20
	Teachers per class	1	1	1	1	1	1
Rural	Students per class	8	13	15	15	20	15
	Teachers per class	1	1	1	1	1	1

D. Teacher Training, Workload, Career, and Salary

Level of education	Weekly working hours			Gross monthly salary (R$)
	Total	No interaction with students (%)	With interaction with students (%)	
Bachelor's Degree in Education	40 hours	33.40%	66.70%	5,868.00

E. School Staff Composition, Training, and Salary

Role / Field	Allocation criteria			Required level of education	Gross monthly remuneration (R$) (for 40 hours/week)	Reference month/year
	Minimum per enrollment/ Function	Staff per Enrollment	Maximum per school			
Principal	76		1	Higher Education	7,041.60	01/2024
Vice-principal	251	600	3	Higher Education	6,454.80	01/2024
Pedagogical Coord.	51	150		Higher Education	5,868.00	01/2024
Library staff	301		1	Higher Education	5,868.00	01/2024
School Secretary	26	150		Vocational High School	4,580.57	01/2024

Multimedia resources	101	150		Vocational High School	4,580.57	01/2024
School infrastructure	1	80		Basic Education	2,748.34	01/2024
Food services	20	100		Basic Education	2,748.34	01/2024

F. Additional Pay for Rural School Teachers

Item	Value
Additional salary for teachers in rural schools	15%

G. School Maintenance, Continuing Education, Teaching Materials, and Other Expenses

Item	Value
Expenses with teaching materials and pedagogical actions in schools	3.0%
Continuing education for education professionals	2.5%
Operation and maintenance of school infrastructure, equipment and furniture	7.0%
Expenses for administrative areas (Department of Education, administrative units, support agencies) and school transportation	7.5%
Total	20.0%

H. Social charges

Item	Value
Social charges	20.0%

These are, therefore, the minimum quality parameters defined in the PQR and applied to the supply diagnosis of each school (2023 enrollments), which results in the CAQi 2024 values for each stage/modality, daily school shift, and location.

It is important to highlight that capital expenses corresponding to the cost of school buildings, such as new classrooms and other building facilities, are not included in the CAQi calculation. However, the capital expenses necessary for infrastructure adjustments are provided for in the PQR. Thus, the purchase of new desks and chairs, computers, locker rooms, and roof repairs, among other minor expenses considered capital expenditures, are included in the CAQi 2024.

As is known, the current Fundeb provides for a minimum of 23% federal supplementation in three modalities, each composed of a minimum percentage based on the total contribution of states, municipalities, and the Federal District to the state and district funds: VAAF = 10%; VAAT (minimum of 10.5% until 2026), and VAAR (2.5% until 2026).

The calculations presented in this Technical Note, fully aligned with the Brazilian legal framework, seek to ensure the minimum quality standard required by the Union since 1996 by the Federal Constitution (CA No. 14/1996), whose enforceability was strengthened in 2020 with CA No. 108 (which included paragraph 7 to Article 211 of the Constitution). To achieve this, it proposes an increase in federal supplementation to Fundeb so that the country can move from the minimum VAAT (VAATmin)

to CAQi. Thus, financing will no longer operate under the "logic of available resources" of the current system but will function under the "logic of necessary resources."

CAQi values - 2024

Table 1 below presents the monthly and annual CAQi values for each stage, modality, location of the educational institution, and daily school shift for the year 2024, in addition to the respective weighting factors and the number of enrollments in each category.

TABLE 1 (IN PORTUGUESE; IN REAIS) – CAQi 2024 values, weighting factors, number of enrollments by category (2023), Brazil

Etapa	Área da localidade	Turno	CAQi 2024*		Fator de ponderação 2024**	Número de matrículas - 2023	
			(R$) valor/mês	(R$) valor/ano		N	%
Creche	Urbana	Parcial	1.022	12.264	1,53	926.665	2,5%
		Integral	2.104	25.250	3,15	1.500.228	4,0%
	Rural	Parcial	1.456	17.475	2,18	230.073	0,6%
		Integral	2.973	35.671	4,45	91.705	0,2%
Pré-Escola	Urbana	Parcial	728	8.737	1,09	2.930.775	7,9%
		Integral	1.570	18.838	2,35	499.548	1,3%
	Rural	Parcial	1.269	15.230	1,90	610.987	1,6%
		Integral	2.411	28.938	3,61	71.640	0,2%
Ensino Fundamental - anos iniciais	Urbana	Parcial	668	8.016	1,00	8.215.106	22,2%
		Integral	1.009	12.104	1,51	1.505.587	4,1%
	Rural	Parcial	1.169	14.028	1,75	1.565.022	4,2%
		Integral	1.496	17.956	2,24	351.662	0,9%
Ensino Fundamental - anos finais	Urbana	Parcial	668	8.016	1,00	6.836.108	18,5%
		Integral	868	10.421	1,30	1.624.687	4,4%
	Rural	Parcial	962	11.543	1,44	1.039.297	2,8%
		Integral	1.389	16.673	2,08	256.407	0,7%
Ensino Médio	Urbana	Parcial	668	8.016	1,00	4.813.568	13,0%
		Integral	768	9.218	1,15	1.233.491	3,3%
	Rural	Parcial	935	11.222	1,40	312.491	0,8%
		Integral	1.102	13.226	1,65	55.476	0,1%
EJA	Urbana	Parcial	668	8.016	1,00	1.845.399	5,0%
	Rural	Parcial	975	11.703	1,46	534.890	1,4%
						37.050.812	100,0%
Educação Profissional***			1.089	13.066	1,63	806.978	2,2%
Educação Especial (Atendimento Educacional Especializado)****			1.830	21.964	2,74	560.339	1,5%

TABLE 1 (IN ENGLISH; USING US DOLLARS) – CAQi 2024 values, weighting factors, number of enrollments by category (2023), Brazil

Stage	Locality	Shift	CAQi 2024* (USD/month)	CAQi 2024* (USD/year)	Weighting Factor 2024**	Number of Enrollments N	Number of Enrollments %
Daycare	Urban	Partial	150.3	1,803.5	1.53	926,665	2.5%
		Full	309.4	3,713.2	3.15	1,500,228	4.0%
	Rural	Partial	256.6	3,038.9	2.18	230,073	0.6%
		Full	437.2	5,245.7	4.45	91,705	0.2%
Preschool	Urban	Partial	107.1	1,287.2	01.09	2,930,775	7.9%
		Full	231.5	2,770.3	2.35	499,548	1.3%
	Rural	Partial	186.7	2,240.1	1.90	610,947	1.6%
		Full	354.6	4,230.9	3.61	71,640	0.2%
Elementary School - Early Years	Urban	Partial	98.2	1,178.8	1.00	8,215,508	22.2%
		Full	148.4	1,772.9	1.51	1,505,587	4.1%
	Rural	Partial	171.9	2,064.1	1.75	1,565,587	4.2%
		Full	219.7	2,641.8	2.24	351,662	0.9%
Elementary School - Final Years	Urban	Partial	98.2	1,178.8	1.00	6,836,165	18.5%
		Full	127.6	1,875.6	1.30	1,624,875	4.4%
	Rural	Partial	204.3	2,448.5	1.44	1,039,146	2.8%
		Full	173.6	2,451.9	02.08	256,407	0.7%
High School	Urban	Partial	98.2	1,178.8	1.00	4,813,585	13.0%
		Full	112.9	1,355.6	1.15	1,233,491	3.3%
	Rural	Partial	137.5	1,975.3	1.40	312,491	0.8%
		Full	162.1	1,945	1.65	55,476	0.1%
EJA (Youth and Adult Education)	Urban	Partial	98.2	1,178.8	1.00	1,845,399	5.0%
	Rural	Partial	143.4	1,722.5	1.46	534,389	1.4%
						37,050,812	100%
Professional Education**			160.1	1,920.0	1.63	806,978	2.2%
Special Education (Specialized Support)***			269.1	3,230.3	2.74	560,339	1.5%

Source: Prepared based on the results of SimCAQ projections (simcaq.ufg.br). The number of enrollments is sourced from the 2023 School Census/Inep.

Notes: (*) The CAQi 2024 values are the median of the values calculated by SimCAQ for each public school in the country in each category considered. The median only considers schools that have at least 3 enrollments in each category.
(**) The weighting factors are calculated by the ratio of the CAQi values of each category to the CAQi value of the Partial Urban Elementary School (USD 98 per month or USD 1,178 per year).
(***) Professional education enrollments include those related to Integrated Technical Course (Integrated High School), Normal High School/Teaching, Concomitant Technical Course, Subsequent Technical Course, Technical Course (High School), Integrated with Youth and Adult Education. Integrated enrollments are also considered in high school, with the professional education part being additional, considering the specificities of this modality.
(****) To calculate the number of enrollments in Specialized Educational Services, the total number of enrollments in inclusive special education reported in the 2023 School Census microdata in each municipality was used and the percentage of enrollments in AEE from 2020 was applied to it.
Translation note: The values in Brazilian reais were converted to U.S. dollars using the exchange rate of R$ 6.80, applicable for that period in 2024.

These numbers highlight that ensuring quality conditions for daycare has higher costs compared to other stages. This is mainly due to the need for a lower student-to-class ratio and the guarantee of the same level of education and salary for all teachers. Thus, the weighting factors for daycare range from 1.53 (R$ 1,022 per student per month) in the urban partial category to 4.45 in the rural full-time category (R$ 2,973 per student per month).

The costs for preschool are lower than those for daycare but significantly higher than those observed for elementary and high school stages. In preschool, the weighting factors range from 1.09 (R$ 728 per student per month) in the urban partial category to 3.61 in the rural full-time category (R$ 2,411 per student per month).

The CAQi values for Elementary School, Secondary School, and Youth and Adult Education (EJA) are closer to each other. The variations arise from class sizes and the characteristics of actual schools, which can result in greater scale efficiency (spreading fixed costs) for schools with a higher number of enrollments (a common feature in urban high schools).

It is worth noting that, based on the PQR parameters adopted, the CAQi for EJA is equal to that of the early years of elementary school (R$ 668 per month) and has a significant variation for rural contexts (R$ 975 per month).

Overall, the CAQi values are significantly higher than the estimated per-student annual value for Fundeb 2024 (VAAF). Another main point is that the CAQi reflects the differences in quality conditions required for each stage/modality, locality, and daily shift (partial or full-time), as established by law.

Three key points stand out regarding the CAQi 2024 values:

1. The need to consider costs and weighting factors with differentiation for urban and rural schools, taking into account the higher cost of the latter, especially due to economies of scale (which occur in schools with a higher number of enrollments) and the need to account for specific costs for this locality (additional compensation for teachers).

2. The costs of daycare and preschool present a weighting factor higher than that of other stages, which puts pressure on the current weighting factors of Fundeb. This characteristic results from the lower student-to-class ratio at this stage and the guarantee of the same level of education and salary for all teachers.

3. The concentration of enrollments in elementary education and the need to consider expanding access to schools, particularly in daycare, and in the case of high school, ensuring student retention.

Based on these CAQi values and considering enrollments by stage and modality for each educational institution, the revenue allocated to education, as well as the actual expenditure of each entity, both for the year 2022, Table 2 presents the estimated expenditure necessary to implement CAQi and the respective Federal Government Supplementation required to make it feasible.

TABLE 2 (IN PORTUGUESE; IN REAIS) – values of education-linked revenue (2022), actual expenditure (2022), estimated necessary CAQi expenditure (2024), and Federal Government Supplementation VAAT-CAQi (2024) by administrative dependence, Brazil

Indicador	Estados		Municípios		TOTAL
	redes	R$	redes	R$	R$
Receita potencial mínima vinculada à Educação Básica (RPEB)*	27	165.341.798.096	5.568	249.452.127.215	**414.793.925.311**
Despesa realizada (liquidada)**	27	158.697.895.462	5.384	249.415.603.933	**408.113.499.395**
Estimativa da despesa para financiar o CAQi	27	131.857.318.800	5.568	269.504.355.593	**401.361.674.393**
Complementação VAAT-CAQi***	1	152.633.966	4.430	49.702.977.260	**49.855.611.226**

TABLE 2 (IN ENGLISH; USING US DOLLARS) - values of education-linked revenue (2022), actual expenditure (2022), estimated necessary CAQi expenditure (2024), and Federal Government Supplementation VAAT-CAQi (2024) by administrative dependence, Brazil

Indicator	States		Municipalities		TOTAL
	Systems	USD	Systems	USD	USD
Minimum Potential Revenue Linked to Basic Education (RPEB)*	27	24,315,852,688	5,568	36,689,136,355	61,004,989,043
Realized (Liquidated) Expense	27	23,338,073,745	5,384	36,678,765,873	60,016,839,618
Estimated Expense to Finance CAQi**	27	19,391,667,471	5,568	39,632,993,469	59,024,660,940
VAAT-CAQi Complementation***	1	22,710,876	4,43	7,309,261,956	7,331,972,832

Source: Prepared based on the results of expenditure projections required to finance the CAQi 2024, the settled expenditures from the RREO/Finbra/STN 2022, the nominal revenue data from 2022 disaggregated by federative entity, and the revenue data from the assessment of universal distribution programs and state and municipal shares of the Salary-Education fund for 2022, which make up the VAAT 2024 calculation (Articles 11, 12, and 13, § 3, I, II, and IV).

Notes:
(*) Minimum Potential Revenue linked to Basic Education (RPEb) = [RLI x 25% - revenues allocated to Fundeb + revenues received from Fundeb + Union's supplementation to Fundeb + Salary-Education (state/municipal share) + Revenues from FNDE Programs (PNATE + PDDE + PNLD) + Petroleum and Gas Royalties]. RLI is the "revenue derived from taxes, including those from transfers," which serves as the calculation base for the constitutional allocation of resources for education (Article 212 of the Federal Constitution). PNAE resources were not considered because School Feeding expenses are not included in the expenditure projections of SimCAQ.

(**) Result of Settled Expenditures on Basic Education = [Expenditure in the Education Function] - [Expenditure in the 'Professional Education' subfunction] - [Expenditure in the 'Higher Education' subfunction], calculated from the Summary Report of Budget Execution (RREO) / Annex 02 - Statement of Expenditures by Function/Subfunction.
(***) The supplementation amounts were calculated for each federative entity by multiplying the CAQi 2024 values by the number of enrollments from the 2023 School Census/Inep, followed by subtracting the values of the Minimum Potential Revenue linked to Basic Education 2022 (in locations where projected expenditure exceeded revenue).
Translation note: The values in Brazilian reais were converted to U.S. dollars using the exchange rate of R$ 6.80, applicable for that period in 2024.

The results in Table 2 indicate the need for an additional federal supplementation of approximately R$ 49.9 billion, in addition to the R$ 29.9 billion provided in 2022 (set at 15%, with 10% from VAAF + 5% from VAAT, based on the total contribution of states and municipalities to Fundeb). The CAQi additional amount represents 0.5% of Brazil's GDP in 2022, which was calculated at R$ 9.9 trillion.

Thus, the federal supplementation, including the additional amount to finance the CAQi (R$ 79.8 billion), would represent 35.6% of the total revenue collected by Fundeb in 2022 (R$ 224.3 billion) and 32.8% of the estimated Fundeb revenue for 2024 (R$ 243 billion)(Brazil, 2024). It is evident, therefore, that the current structure of federal supplementation to Fundeb, even considering the growth of VAAT until 2026, is insufficient to ensure the CAQi values for all Brazilian schools. It is important to emphasize that CAQi aims to guarantee a minimum quality standard in education.

Table 3 presents, for each state, the potential revenue allocated to education and the necessary supplementation required to implement the established CAQi 2024 values. The data suggest that 58.7% of the total CAQi supplementation, estimated at R$ 49.9 billion, should be allocated to the Northeast states; 15.2% to the North; 13.8% to the Southeast; 8.9% to the South; and 3.4% to the Central-West region. In states such as AL, BA, MA, and PI, the supplementation funds would represent an increase of at least 30% in revenues allocated to Basic Education.

In absolute terms, the highest supplementation amounts would go to Bahia (R$ 8.2 billion), followed by Maranhão (R$ 5.1 billion) and Ceará (R$ 4.8 billion). In relative terms, the greatest impact (38.1%) would be in Piauí, followed by Maranhão (34.7%) and Alagoas (34.5%). The Federal District (DF) would be the only unit not to receive any supplementation.

TABLE 3 (IN PORTUGUESE; IN REAIS) – Potential linked revenue (2022), necessary Union supplementation (2024) by region and federative unit, Brazil (2024)

REGIAO	UF	Receita Potencial* 2022 (R$)	Complementação** (R$) 2024		
			R$	% da receita da UF	% da complementação nacional (total)
Norte	AC	2.478.872.855	227.445.341	9,2%	0,5%
	AM	8.800.632.256	1.721.450.467	19,6%	3,5%
	AP	2.171.280.875	93.402.707	4,3%	0,2%
	PA	17.163.756.324	4.938.698.365	28,8%	9,9%
	RO	3.660.615.874	109.796.735	3,0%	0,2%
	RR	1.820.506.917	97.832.140	5,4%	0,2%
	TO	4.069.461.623	375.784.556	9,2%	0,8%
Nordeste	AL	6.547.127.403	2.257.735.391	34,5%	4,5%
	BA	26.663.200.345	8.164.832.178	30,6%	16,4%
	CE	16.353.169.958	4.779.148.507	29,2%	9,6%
	MA	14.802.866.110	5.135.077.113	34,7%	10,3%
	PB	7.248.009.231	1.984.667.210	27,4%	4,0%
	PE	14.802.501.343	2.673.741.142	18,1%	5,4%
	PI	6.580.401.949	2.506.591.789	38,1%	5,0%
	RN	5.782.348.905	889.372.060	15,4%	1,8%
	SE	4.310.902.090	855.131.223	19,8%	1,7%
Sudeste	ES	7.498.926.355	880.447.900	11,7%	1,8%
	MG	38.284.472.347	2.381.923.861	6,2%	4,8%
	RJ	31.423.281.207	1.396.354.005	4,4%	2,8%
	SP	100.729.298.456	2.245.235.776	2,2%	4,5%
Sul	PR	21.821.567.776	1.887.112.089	8,6%	3,8%
	RS	21.180.349.218	1.097.400.052	5,2%	2,2%
	SC	15.992.027.349	1.453.776.568	9,1%	2,9%
Centro-Oeste	DF	6.490.767.136		0,0%	0,0%
	GO	12.575.358.921	903.711.299	7,2%	1,8%
	MS	6.588.066.501	383.236.723	5,8%	0,8%
	MT	8.954.155.989	415.706.028	4,6%	0,8%
BRASIL		**414.793.925.311**	**49.855.611.226**	**12%**	**100,0%**

TABLE 3 (IN ENGLISH; IN US DOLLARS) – Potential linked revenue (2022), necessary Union supplementation (2024) by region and federative unit, Brazil (2024)

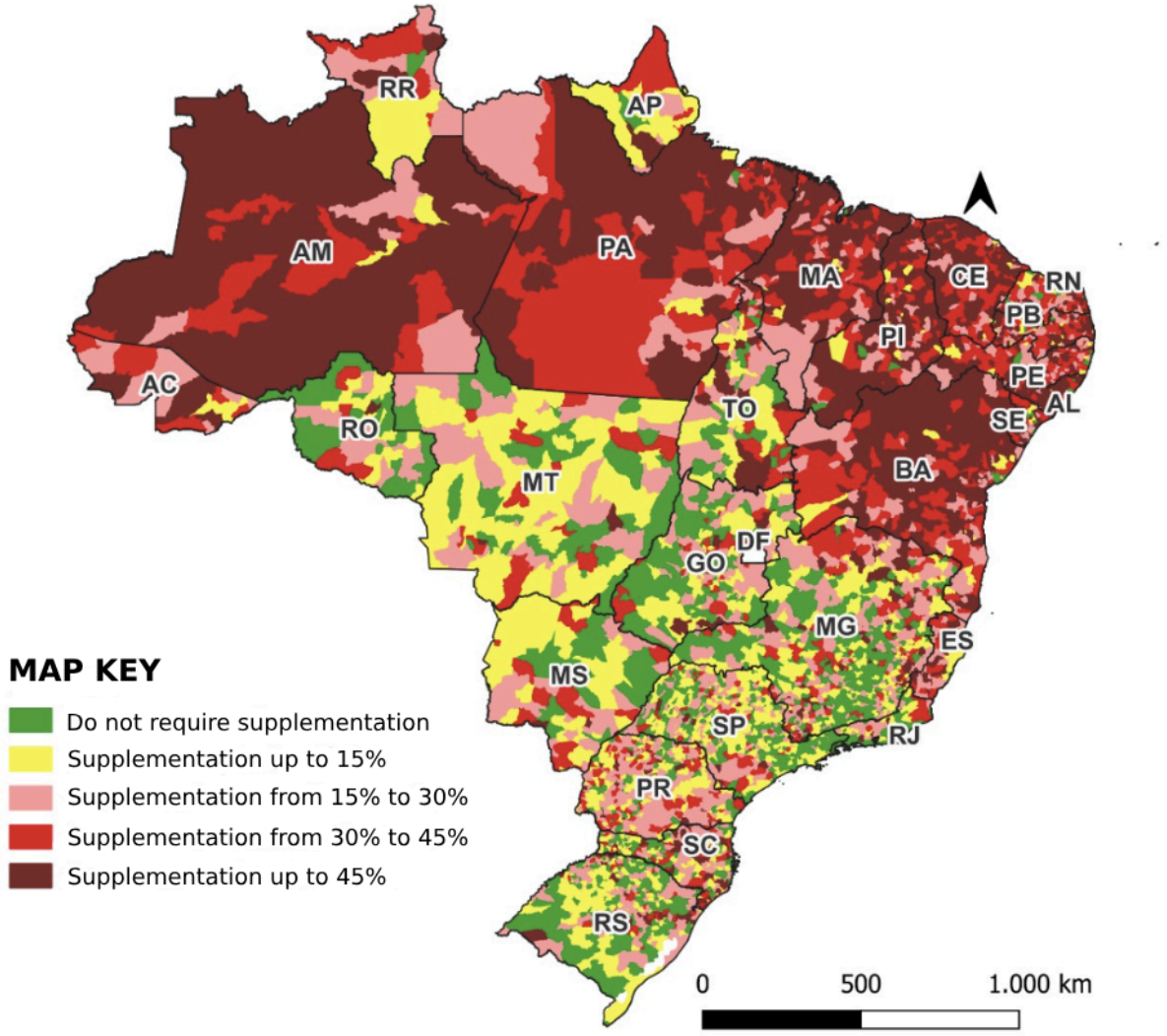
REGION	FEDERATIVE UNIT (FU)	Potential Revenue* 2022 (USD)	Union's Supplementation**		
			USD	% of FU Revenue	% of National Supplementation (Total)
North	AC	364,540,125.74	33,447,844.26	9.2%	0.5%
	AM	1,294,210,625.88	253,154,480.44	19.6%	3.5%
	AP	319,305,996.32	13,735,692.21	4.3%	0.2%
	PA	2,524,081,812.35	726,279,171.32	28.8%	9.9%
	RO	538,325,863.82	16,146,578.38	3.0%	0.2%
	RR	267,721,605.44	14,387,079.41	5.4%	0.2%
	TO	598,450,238.68	55,262,434.71	9.2%	0.8%
Northeast	AL	962,812,853.38	332,019,910.44	34.5%	4.5%
	BA	3,921,058,874.26	1,200,710,614.4	30.6%	16.4%
	CE	2,404,877,934.99	702,815,956.91	29.2%	9.6%
	MA	2,176,892,075.00	755,158,399.00	34.7%	10.3%
	PB	1,065,883,710.44	291,862,825.00	27.4%	4.0%
	PE	2,176,838,432.79	393,197,341.62	18.1%	5.4%
	PI	967,706,169.00	368,616,440.88	38.1%	5.0%
	RN	850,345,427.21	130,789,999.99	15.4%	1.8%
	SE	633,956,190.00	125,754,591.62	19.8%	1.7%
Southeast	ES	1,101,900,934.56	129,477,513.24	11.7%	1.8%
	MG	5,629,922,403.97	350,282,920.74	6.2%	4.8%
	RJ	4,621,070,765.74	205,346,184.11	4.4%	2.8%
	SP	14,813,132,125.88	330,181,731.76	2.2%	4.5%
South	PR	3,209,054,084.71	277,516,483.68	8.6%	3.8%
	RS	3,114,757,237.94	161,382,359.11	5.2%	2.2%
	SC	2,351,768,727.79	213,790,671.76	9.1%	2.9%
Central-West	DF	954,524,578.82		0.0%	0.0%
	GO	1,849,317,488.38	132,900,191.03	7.2%	1.8%
	MS	968,538,242.79	56,358,341.62	5.8%	0.8%
	MT	1,316,787,645.44	61,133,239.41	4.6%	0.8%
BRAZIL		**60,999,106,663.38**	**7,331,707,533.2**	**12.0%**	**100.0%**

Source: Prepared based on the results of projections of the expenditure necessary to finance CAQi 2024 and data on nominal revenues for 2022, disaggregated by federative entity, as well as data from the assessment of revenues from universal distribution programs and state and municipal quotas of the 2022 Salary-Education, which make up the VAAT 2024 calculation (Articles 11, 12, and 13, § 3, I, II, and IV).

Notes: (*) Minimum Potential Revenue Linked to Basic Education (RPEb) = [RLI x 25% - revenues allocated to Fundeb + revenues received from Fundeb + Union supplementation to Fundeb + Salary-Education (state/municipal quota) + Revenues from FNDE Programs (PNATE + PDDE + PNLD) + Oil and Gas Royalties]. The RLI is the "revenue resulting from taxes, including that from transfers," which serves as the basis for calculating the constitutional allocation of resources for education (Article 212 of the Federal Constitution). PNAE resources were not considered because expenses with School Meals are not included in the SimCAQ expenditure projection.
(**) The supplementation amounts were calculated for each federative entity by multiplying the CAQi 2024 values by the number of enrollments from the 2022 School Census/INEP, followed by subtracting the values of the Minimum Potential Revenue Linked to Basic Education 2022 (in locations where the projected expenditure exceeded revenue).
Translation note: The values in Brazilian reais were converted to U.S. dollars using the exchange rate of R$ 6.80, applicable for that period in 2024.

Figure 1 presents on the map the 4,431 federated entities (79.2% of the total) that require supplementation to finance CAQi (one state system and 4,430 municipalities), categorized by the level of supplementation needed in relation to the available revenue in 2022. Note that they are spread across all five regions of the country and 26 states of the federation. In other words, this CAQi proposal has a significant capillary effect, bringing more resources to the most remote corners of the country.

Figure 1 – Percentage of Union supplementation required to finance the CAQi in relation to the Minimum Potential Revenue linked to Basic Education in each municipality, Brazil (2024).



Source: Prepared based on the results of projections of the expenditure required to finance CAQi 2024 [3].

It is also observed that 39.4% of the entities will experience an increase of more than 30% in the resources currently available, and for 22.3% of them, this increase exceeds 45%. The map highlights that the additional CAQi supplementation would provide the greatest support to municipalities in the

[3]Map prepared by Dhaiene de Jesus Bruno.

North and Northeast regions. However, in every state, there are at least some federative entities where the additional amount would represent more than 30% of the currently allocated revenue. The complete list of entities and the VAAT-CAQi supplementation values is available at: https://drive.google.com/file/d/12khT2FWnUdCBLDIuiqOq5aoEScwPQ3mL/view?usp=sharing.

To better understand the characteristics of the 4,431 systems receiving CAQi supplementation funds, they were categorized according to the population size of the municipalities (based on IBGE classification). Additionally, systems from capital cities and state systems, including the Federal District, were highlighted. The results are presented in Table 4.

TABLE 4 (IN PORTUGUESE; IN REAIS) – VAAT-CAQi Union Supplementation values Required (2024) by Municipality Population Size and System Type, Brazil (2024)

Tipo da rede de ensino por porte populacional do município e outras características *	Número de redes	Número de matrículas (2023)	Complementação necessária (R$) 2024		
	N	N	N redes	R$	% do total
<= 5.000	1.257	586.761	691	1.135.847.503	2,3%
> 5.000 <= 10.000	1.203	1.252.026	1.002	3.661.646.919	7,3%
> 10.000 <= 20.000	1.348	2.963.198	1.231	10.374.709.801	20,8%
> 20.000 <= 50.000	1.096	5.067.083	1.014	16.215.192.789	32,5%
> 50.000 <= 100.000	349	3.273.047	291	8.622.874.267	17,3%
> 100.000 <= 500.000	265	5.702.682	185	7.959.058.905	16,0%
> 500.000	25	1.408.530	10	980.076.472	2,0%
Redes das Capitais	26	3.404.214	6	753.570.603	1,5%
Redes estaduais e DF	27	14.760.587	1	152.633.966	0,3%
TOTAL	**5.596**	**38.418.129**	**4.431**	**49.855.611.226**	**100%**

TABLE 4 (IN ENGLISH; IN US DOLLARS) – VAAT-CAQi Union Supplementation values Required (2024) by Municipality Population Size and System Type, Brazil (2024)

Type of school system by municipality population size and other characteristics*	Number of systems	Enrollments number (2023)	Supplementation needed (USD) 2024		
	N	N	N systems	USD	% total
<= 5.000	1.257	586.761	691	166,007,000.44	2,3%
> 5.000 <= 10.000	1.203	1.252.026	1.002	538,477,488.09	7,3%
> 10.000 <= 20.000	1.348	2.963.198	1.231	1,525,692,617.79	20,8%
> 20.000 <= 50.000	1.096	5.067.083	1.014	2,384,587,174.85	32,5%
> 50.000 <= 100.000	349	3.273.047	291	1,268,069,745.15	17,3%
> 100.000 <= 500.000	265	5.702.682	185	1,169,900,000.74	16,0%
> 500.000	25	1.408.530	10	144,128,892.94	2,0%
Capitals systems	26	3.404.214	6	110,819,206.32	1,5%
State systems and FD	27	14.760.587	1	22,446,171.47	0,3%
TOTAL	**5.596**	**38.418.129**	**4.431**	7,331,707,533.24	**100%**

Source: Prepared based on the results of projections of the expenditure required to finance CAQi 2023 and population data from IBGE.

Notes: (*) The population size was defined based on the number of inhabitants in the municipalities and the categories (levels) proposed by IBGE.
Translation note: The values in Brazilian reais were converted to U.S. dollars using the exchange rate of R$ 6.80, applicable for that period in 2024.

The results suggest that municipalities with up to 5,000 inhabitants (691), as well as those with more than 500,000 inhabitants (10), capitals (6), and the state system (1), would receive the least resources from the supplementation. These four categories would account for only 6.1% of the total additional CAQi supplementation. Municipalities with populations between 10,000 and 20,000 inhabitants (1,231) would receive 20.8% of the supplementation amount, while municipalities with populations between 20,000 and 50,000 inhabitants (1,014) would receive 32.5% of the R$ 49.9 billion.

Table 5 presents the number of municipal systems eligible to receive supplementation to finance CAQi based on the socioeconomic level (SEL) of students in each locality, as well as the corresponding supplementation amounts. The data indicate that 80% of the supplementation resources would be allocated to municipal systems with a higher proportion of students from lower SEL categories (low, medium-low, and medium). This highlights the equalizing nature of CAQi, as in the current system, municipalities with students from higher SEL backgrounds generally have greater financial capacity.

TABLE 5 (IN PORTUGUESE; IN REAIS) – Required Supplementation Amounts (2024) by Socioeconomic Level of Students (2021), Brazil (2024)

Nível Socioeconômico*	Número de redes	Número de matrículas (2023)	Complementação necessária (R$) 2024		
	N	N	N redes	R$	% do total
Nível não identificado	182	141.942	95	305.484.573	0,6%
Nível 1 - baixo	174	1.026.661	174	4.645.433.282	9,3%
Nível 2 - médio / baixo	1.565	8.684.110	1.506	22.783.778.922	45,7%
Nível 3 - médio	1.258	9.026.718	998	12.433.862.059	24,9%
Nível 4 - médio / alto	1.800	14.550.758	1.231	7.160.642.125	14,4%
Nível 5 - alto	617	4.987.941	427	2.526.410.265	5,1%
TOTAL	**5.596**	**38.418.129**	**4.431**	**49.855.611.226**	**100%**

TABLE 5 (IN ENGLISH; IN US DOLLARS) – Required Supplementation Amounts (2024) by Socioeconomic Level of Students (2021), Brazil (2024)

Socioeconomic level*	Number of systems	Number of enrollments (2023)	Necessary Supplementation (USD) 2024		
	N	N	N systems	USD	% total
Unidentified level	182	141.942	95	44,924,201	0,6%
Level 1 - low	174	1.026.661	174	683,151,953	9,3%
Level 2 - Medium / Low	1.565	8.684.110	1.506	3,350,555,723	45,7%
Level 3 - Medium	1.258	9.026.718	998	1,828,509,126	24,9%
Level 4 - Medium / High	1.800	14.550.758	1.231	1,053,035,606	14,4%
Level 5 - High	617	4.987.941	427	371,530,921	5,1%
TOTAL	**5.596**	**38.418.129**	**4.431**	**7,331,707,533**	**100,0%**

Source: Prepared based on the results of projections of the expenditure required to finance CAQi 2024 and data from INSE / INEP 2021.

Note: (*) *The socioeconomic level categories were created using a scale from zero to 10, based on the weighted INSE calculation using the following formula: INSE_weighted = ((PC_LEVEL_11) + (PC_LEVEL_22) + (PC_LEVEL_33) + (PC_LEVEL_44) + (PC_LEVEL_55) +* (PC_LEVEL_66) *+ (PC_LEVEL_77)* + (PC_LEVEL_8*8))/8/10. Subsequently, federative entities were grouped into the following levels: Level 1 (≤ 3.5); Level 2 (> 3.5 ≤ 4.5); Level 3 (> 4.5 ≤ 5.5); Level 4 (> 5.5 ≤ 6.5) e Level 5 (> 6.5).
Translation note: The values in Brazilian reais were converted to U.S. dollars using the exchange rate of R$ 6.80, applicable for that period in 2024.

Final Considerations

With this publication, the Brazilian Campaign for the Right to Education, the Educational Data Laboratory and Fineduca reaffirm their commitment to CAQi, a constitutional duty since 2001, which remains unregulated and, even less, implemented by the federal government.

There is an urgent need to implement a minimum quality standard in education, as established in the Federal Constitution (CF), the Law of Guidelines and Bases of National Education (LDB), and the National Education Plan (PNE), to ensure the equalization of opportunities and a minimum standard of education quality in every school in the country. Therefore, each year, we will publish the CAQi values and the necessary federal supplementation to make it viable, contributing effectively to the development of a CAQ to be implemented nationwide.

When analyzing this year's results, we observe a small real increase (below inflation) in CAQi values compared to 2023 and a reduction in the amount of federal supplementation required for its implementation in every school in the country. This phenomenon can be explained by the real growth in state and municipal tax revenues and the implementation of the permanent Fundeb, with the progressive increase of the VAAT supplementation. However, there are concerning factors.

The first is the continuous decline in public basic education enrollment. With fewer students, per-student funding automatically tends to increase, reducing the need for federal supplementation. For a country without Brazil's educational demands, this would not be an issue. However, we are in the penultimate year of the 2014-2024 PNE, which has been extended to 2025, with many of its enrollment expansion targets (early childhood education and high school), the expansion of education modalities (vocational education, youth and adult education, adult literacy, and rural education), and the extension of school hours still unfulfilled.

The second concern is that teacher salaries, the main component of CAQi, have remained practically frozen, with a real increase of only R$ 250 (5%) between 2012 and 2023. As all research on the subject indicates, teachers are the key factor in ensuring education quality.

The CAQi values presented here aim to ensure equal conditions for access and retention in education systems, as established in Article 206, Item I of the Federal Constitution. Nevertheless, as the data show, this proposal already represents significant progress in terms of equity. Further studies will be conducted to incorporate additional equity factors, such as race-ethnicity considerations and the Amazonian CAQi, among others that may be necessary. Additionally, future simulations will address the challenges of analyzing the costs of implementing the PNE attendance targets within the CAQi standard.

In pursuit of regulation to comply with the provisions of Constitutional Amendment No. 108/2020 and Law No. 14.113/2020, we publish this study to contribute to advancing education financing in Brazil. Our approach is based on the necessary inputs to ensure quality standards in Brazilian basic education, as mandated by the Federal Constitution and the Law of Guidelines and Bases of National Education.

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