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STATE CAPACITIES AND MUNICIPAL EDUCATION POLICIES DURING THE COVID-19 PANDEMIC

Capacidades estatais e políticas municipais de educação durante a pandemia de COVID-19

Capacidades estatales y políticas municipales de educación durante la pandemia de Covid-19

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ABSTRACT

The development of pedagogical activities through remote teaching became common during the COVID-19 pandemic. A survey by the Brazilian National Confederation of Municipalities revealed that local governments throughout the country responded differently to the educational challenges that emerged due to the pandemic. This study uses data from this survey and examines the development of pedagogical activities in municipalities based on the concept of state capacities. The research aims to understand in depth the factors that contributed to the increase in the local governments' capacities to respond to the crisis. A regression was performed considering a set of variables linked to the local governments' characteristics. The findings indicate that variables related to technical-administrative and political-relational capacities – particularly the existence of participatory channels – were fundamental to the increase of municipalities' capacity to tackle the educational challenges posed by the COVID-19 pandemic.

Keywords: state capacities, education policies, federalism, COVID-19, federative coordination.

RESUMO

O desenvolvimento de atividades pedagógicas por meio do ensino remoto se tornou comum ao longo da pandemia. Em uma pesquisa realizada pela Confederação Nacional de Municípios, identificou-se um conjunto de heterogeneidades no que tange as ações adotadas na área da educação no Brasil. O objetivo deste estudo foi avançar na compreensão, com base no conceito de capacidades estatais, dos fatores que contribuíram para que municípios tivessem maior capacidade de resposta diante da crise. Para tal, realizou-se uma regressão mediante um conjunto de variáveis ligadas as características dos entes. Identificou-se que variáveis relacionadas as capacidades técnico-administrativas e as político-relacionais mais ligadas a existência de canais participativos foram fundamentais nesse processo.

Palavras-chave: capacidades estatais, políticas de educação, federalismo, Covid-19, coordenação federativa.

RESUMEN

El desarrollo de actividades pedagógicas a través de la enseñanza a distancia se ha vuelto común a lo largo de la pandemia. En una encuesta realizada por la Confederación Nacional de Municipios, se identificó un conjunto de heterogeneidades en relación con las acciones adoptadas en el área de la educación en Brasil. Con base en el concepto de capacidades estatales, el objetivo de este estudio fue avanzar en la comprensión, de los factores que contribuyeron a que los municipios tuvieran una mayor capacidad de respuesta ante la crisis. Para ello, se realizó una regresión a partir de un conjunto de variables ligadas a las características de las entidades. Se concluyó que variables relacionadas con las capacidades técnicoadministrativas y político-relacionales más vinculadas con la existencia de canales participativos fueron fundamentales en este proceso.

Palabras clave: capacidades estatales; políticas educativas, federalismo, COVID-19, coordinación federativa.

INTRODUCTION

In early March 2020, the World Health Organization declared COVID-19 a pandemic. During the administration of President Bolsonaro, the Brazilian government's response to this health crisis was marked by institutional conflicts, a lack of logical coherence between objectives and instruments, and omission in taking action to address the situation (Abrucio, Grin, Franzese, Segatto, & Couto, 2020). In Brazil, the responsibility for defining measures to combat the pandemic fell on states and municipalities, who made decisions such as the closure of non-essential activities, the establishment of field hospitals, and the procurement of supplies for testing the population and treating the infected. The actions of states and municipalities in healthcare and the implementation of restrictive measures without federal government approval were reinforced by the Supreme Court's ruling, based on the understanding that they are responsible for the implementation of most policies, sometimes sharing such a responsibility with the federal government. However, the lack of national coordination resulted in fragmented efforts and conflicting messages in the battle against the pandemic (Abrucio et al., 2020; Lui, Albert, Santos, & Vieira, 2021).

Also in March 2020, Brazilian states and municipalities implemented social distancing measures and closures of non-essential activities, including schools. In April, the National Education Council (CNE) approved CNE/CP Opinion 5/2020, determining the reorganization of the school calendar and the possibility of online activities to fulfill the minimum annual workload (CNE, 2020). Throughout the year, the council continued issuing new resolutions providing guidelines for conducting both in-person and online activities during the pandemic.

The declaration of the pandemic by the World Health Organization coincided with the beginning of the school term in most Brazilian municipalities. Due to limited testing capacity for the disease, state and local governments opted to implement social distancing measures, leading to the suspension of all in-person school activities. While some studies (Gotzinger et al., 2020; Lee et al., 2020) have indicated that children experience milder effects of virus infection with a low percentage of complications, the decision to suspend in-person classes was based on the understanding that children can transmit the virus to other population groups, particularly older individuals. However, the absence of technical and financial assistance mechanisms from the federal government to states and municipalities, coupled with conflicts between the different levels of government, hindered the coordination of actions at the local level. This lack of coordination was uncommon in the field of education in Brazil, where federal, state, and local governments typically work harmoniously together (Abrucio, 2010). Consequently, significant disparities emerged in the responses of national and subnational governments regarding the continuity of classes and the assurance of the right to education.

Kubota (2020) highlights that private schools, despite being a diverse group, quickly adopted remote teaching, allowing the school calendar to proceed without interruption. Conversely, in public schools, pre-existing inequalities affected the accessibility and quality of education, particularly for students from low-income and vulnerable families. The lack of adequate space

for studies and equipment at home, the variation in the offer of remote classes, and the scarce online materials made available by the state and municipal education departments represented enormous challenges to conducting classes effectively and complying with the school calendar (Conjuve, 2020; Kubota, 2020; Skeptic, 2021). Other studies, such as Parolin and Lee (2021), have shown that many countries experienced this challenge, where school closures and remote teaching disproportionately affected students from marginalized backgrounds and ethnic and racial minorities.

The Brazilian National Confederation of Municipalities (CNM) conducted a survey throughout 2020 to assess the actions taken by local governments in the field of education during the pandemic (Lui, 2021). According to the survey, certain municipalities managed to address the educational challenges posed by the health crisis, while others showed limited performance in this regard. This research aimed to explore the factors that contributed to the success of some municipalities in implementing changes in their education policies, such as adopting remote teaching, resource allocation, and adaptation of pedagogical practices. Specifically, the study aimed to investigate whether the state capacities of the municipal education departments influenced the different actions taken in adopting remote teaching methods.

This analysis aligns with previous studies on the role of local governments in addressing the pandemic, highlighting the significance of municipalities in promoting changes and creating policies to respond to inequalities (Dzigbede, Gehl, & Willoughby, 2020; Wright, 2020). Moreover, building on the premise that state capacities influence public policies and their outcomes (Grin, 2016; Marenco, Strohschoen, & Joner, 2017; Satyro & Cunha, 2018; Grin & Abrucio, 2019; Lavalle et al., 2020; Bichir, Simoni Junior, & Pereira, 2020; Lima-Silva & Loureiro, 2020; Grin, Demarco, & Abrucio, 2021; Segatto, Euclides, & Abrucio, 2021), this research contribute to the literature by examining the effects of state capacities on education policies, which remains a relatively underexplored topic.

THE RESPONSES OF LOCAL GOVERNMENTS TO THE PANDEMIC IN UNEQUAL FEDERATIONS

In many countries that have adopted the federal model, local governments have played a crucial role during the pandemic in addressing the inequalities and vulnerabilities manifested in their particular context. Several studies have documented the actions taken by local governments to tackle the challenges posed by the pandemic. These actions include providing shelter for homeless individuals, distributing essential supplies like diapers and food to vulnerable populations, offering loans to local businesses, providing financial aid to families, and hiring “community agents” to disseminate information to diverse ethnic and linguistic groups (Dzigbede et al., 2020).

In Brazil, local governments have adapted and formulated policies to address the inequalities aggravated by the pandemic (Segatto, Santos, Bichir, & Morandi, 2022). However, municipalities presented different capacities in terms of available resources – both before and after the pandemic’s impact – to effectively implement such policies. Additionally, their performance was influenced

by their prior experience in responding to disasters and crises (Dzigbede et al., 2020; Segatto et al., 2022).

Little is known about local responses to the pandemic, particularly regarding the degree of homogeneity in these responses within federal countries. While federations allow subnational governments to adapt more flexibly to their specific contexts, which was crucial during the COVID-19 pandemic, variations in state capacities and the actions of subnational governments, coupled with regional socioeconomic inequalities, presented challenges in addressing the pandemic, particularly in countries with significant disparities, such as Brazil. Furthermore, some federations experienced a significant lack of coordination both vertically among different levels of government and horizontally between neighboring jurisdictions. Brazil faced a lack of national coordination, resulting in a lack of alignment among subnational governments and, in some cases, intergovernmental conflicts, such as those related to the procurement of respirators and vaccines. Despite efforts by state governments to align with local governments, the overall coordination was hindered (Abrucio et al., 2020).

The absence of national coordination in this context contrasts with the previous trajectory of enhancing the federal government's role as a coordinator, which had been a prominent feature of most policies since the second half of the 1990s. The literature has highlighted this strengthening of national coordination as crucial for reducing regional inequalities in public policies (Arretche, 2012). Since the second half of the 1990s, significant changes have taken place in the field of education, including the implementation of national regulations and the redistribution of resources. These changes were central to establishing minimum access and quality standards in Brazilian states and municipalities, aiming to overcome the dual and fragmented approach that previously characterized educational policies (Cury, 2008).

Given the lack of national coordination, this study aims to advance the discussion on local government responses to the pandemic, specifically focusing on how state capacities have influenced these responses. While there may be differing perspectives on the concept of state capacity (Gomide, Pereira, & Machado, 2017; Souza & Fontanelli, 2020), there is a consensus that state capacities play a significant role in shaping policy implementation and outcomes (Marenco et al., 2017; Wu, Howlett, & Ramesh, 2017).

The concept of state capacities was developed to analyze the role of the state in promoting development (Aguilar & Lima, 2019). The concept intended to explain why some states are more efficient and effective in this pursuit compared to others. According to Aguilar and Lima (2019), the concept recognizes that while certain social attributes, such as high levels of education, progressive elites, or modern infrastructure, are necessary, they are not sufficient to generate development on their own. Therefore, it is crucial to establish mechanisms that enable the state to achieve its objectives. The characteristics that grant states the ability to implement objectives through public policies are commonly referred to as state capacities.

According to Aguilar and Lima (2019), recent studies exploring the concept of state capacity have made progress in developing analytical categories that can be observed empirically and reflect the significance of a professionalized bureaucracy with a certain

degree of autonomy, as well as the relationships between state and non-state actors. These analytical categories are: technical-administrative capacities and political-relational capacities (Pires & Gomide, 2016).

Pires and Gomide (2016) define technical-administrative capacities as the presence of a professional bureaucracy equipped with the necessary resources to effectively carry out government actions in a coordinated manner. They define political-relational capacities as the ability to articulate processes by establishing connections, building minimum consensus, and forming supportive coalitions for the policies developed. This capacity is particularly related to the relationships between individuals and organizations, i.e., to negotiation and communication through both formal and informal mechanisms. Thus, there is a direct relationship between the definitions proposed by Evans (2004) and those presented by Pires and Gomide (2016). Furthermore, these two types of capacity are interdependent, as the state's ability to engage with social actors without the risk of being influenced by particularistic interests depends on the quality of its bureaucracy.

More recently, the literature has explored the connection between state capacity and public policies at the subnational level, particularly in relation to their implementation and outcomes in various policy areas, including education. Studies on subnational governments' capacities indicate that they have been gradually strengthened in Brazilian municipalities over time, largely due to efforts to enhance national coordination. However, this process has not been uniform across the country (Arretche, 2012; Grin, 2016; Bichir, Brettas, & Canato, 2017; Marengo et al., 2017; Satyro & Cunha, 2018; Grin & Abrucio, 2019; Lavalle et al., 2020; Bichir et al., 2020; Loureiro et al., 2020; Grin et al., 2021; Segatto et al., 2021).

Marengo et al. (2017) examined the impact of bureaucracy quality in Brazilian municipalities on the expansion of urban property and territorial tax collection (IPTU). They utilized the proportion of "statutory employees with higher education" in the municipal civil service to measure bureaucracy quality. The findings revealed that municipalities with more professionalized administrations were more likely to increase IPTU collection. The study highlighted the importance of the type of bureaucracy recruitment (appointment or statutory) and the level of qualification within the bureaucracy for effective policy implementation.

Other studies, including Bichir et al. (2017) and Lima-Silva and Loureiro (2020), have demonstrated that various capacity-related factors can influence policy implementation and outcomes. These factors encompass bureaucracy professionalization, the profile and ideological position of political leaders and municipal managers, as well as other elements such as policy prioritization on the government agenda and policy legacies. In the context of education, Segatto et al. (2021) emphasized the significance of leaders' profiles, highlighting that the connections between pedagogical and administrative-financial domains and between schools and municipal education departments impact local education policies and their outcomes. Furthermore, the presence of a governing body and its autonomy in decision-making regarding expenditures are essential for activating capacities.

This article aims to enhance our understanding of the actions taken by local governments during the pandemic, specifically in terms of policy changes to secure resources and adapt processes and practices. Such understanding is crucial for assessing the long-term effects of these policies on educational outcomes. The research also aimed to determine whether there is a correlation between municipalities' responses to education and their state capacity. In this study, we utilized a set of municipal data that has been widely recognized in the specialized literature as a proxy for capacities. The primary objective was to identify which types of state capacity are crucial for the successful implementation of municipal public policies. This analysis provides strategies to strengthen municipal public administration and improve public management.

RESEARCH METHODOLOGY AND DESIGN

CNM conducted a survey between August and October 2020, aiming to reach all 5,568 Brazilian municipalities. The objective of the survey was to understand the measures these municipalities took to combat the COVID-19 pandemic. As the largest municipal association in Brazil, CNM is a non-profit, non-partisan entity that serves mayors from various municipalities. Its extensive reach and network make it well-suited for large-scale data collection. [Lui et al. \(2021\)](#) and [Souza Santos et al. \(2021\)](#) have also utilized data from CNM to analyze the actions of local governments. We used the CNM survey database publicly available in [Lui \(2021\)](#). For our study, we cross-referenced the information on education policies implemented during the pandemic with municipal data (such as bureaucracy schooling and the existence of participatory channels) provided by the Brazilian Institute of Geography and Statistics (IBGE).

Out of 5,568 mayors, CNM interviewed 4,061 (72.3%) regarding the financing policies and the non-pharmacological measures implemented to combat the pandemic. The response rates varied across different regions of Brazil: 29.1% in the North, 50.5% in the Northeast, 73,2% in the Central-West, 90.8% in the Southeast, and 98.1% in the South. These variations can be attributed to the differences in municipal infrastructure and the ability of the CNM to engage municipalities to participate in the survey.

The CNM conducted the survey by contacting the mayors through their call center, which operates independently. The survey was carried out over the phone, gathering information on local policies and actions related to COVID-19. Mayors could choose to receive a secure password to complete the questionnaire online afterward. When mayors could not answer the questions themselves, they could delegate the task to the municipal health and education departments.

The questionnaire used in the survey consisted of a set of questions covering various areas, including regulations, measures implemented at the municipal level in the field of education, and the receipt of transfers from the federal government, among others. Specifically regarding education policy, the CNM asked municipalities about the topics listed in Table 1.

Table 1. Dimensions of the topics in the questionnaire

Measures the municipalities adopted to develop online pedagogical activities during the pandemic	<ul style="list-style-type: none"> • Classes/activities through digital media • Classes/activities through TV educational programs • Classes/activities through radio educational programs • Educational activities sent via instant message apps • Distribution of printed pedagogical material • Training teachers for remote teaching
Development of a plan to resume in-person classes	<ul style="list-style-type: none"> • There is a plan to resume the classes, indicated by the existence of an interdisciplinary committee or working group with education and health professionals to design activities, flows, and protocols.

Source: Elaborated by the authors

The data utilized in this study is derived from a secondary source, which is publicly accessible on the Internet. Consequently, obtaining approval from a Research Ethics Committee was deemed unnecessary. It is worth noting that the information collected by the CNM pertains to public data and actions undertaken by public officials in their capacity as administrators. To examine the correlation between the implementation of these strategies during the pandemic and the state capacities of municipalities, the following variables were employed as indicators of technical-administrative capacities:

- Characterization of the managing body to gauge institutionalization and autonomy
- Educational background of the managing body's administrator
- Educational background of elementary school teachers
- Completion of an educational management training course within the last five years
- Ratio of statutory civil servants and the total number of civil servants in the area of education

As an indicator of political-relational capacity, the following factors were considered:

- Establishment or formation of a permanent education forum.
- Existence of an education council. It can be advisory, deliberative, normative, or supervisory.

We reinforce that the use of this type of proxy and regression model to examine state capacities is consolidated in the literature (Marenco et al., 2017; Grin, Nascimento, Abrucio, & Fernandes, 2018; Grin et al., 2021).

To conduct the analysis, the first step involved dividing the data into four categories based on the municipal human development index (MHDI) of each municipality. This categorization aimed to reduce the heterogeneity within the Brazilian federation and create clusters of municipalities with a certain degree of comparability, as seen in other studies (Przeybilowicz, Cunha, & Meirelles, 2018). Logistic regression was then applied to each of these categories,

using the adoption or non-adoption of measures during the pandemic as the response variable and the aforementioned variables as explanatory variables. This approach allowed for a more focused analysis within comparable groups of municipalities. The study coordinated by Grin et al. (2021) also utilized the concept of state capacities and employed cluster analysis to organize municipalities with similar characteristics for comparison

The analysis is divided into two parts. The first part examines the measures adopted by local governments to facilitate online pedagogical activities during the pandemic, including the existence of a plan to resume in-person classes and the specific activities planned in this context, presented by regions of the country. The second part of the analysis focuses on online pedagogical activities and the plans to resume in-person classes, considering the state capacities of the municipalities and the logistic regressions conducted.

THE RESPONSES OF BRAZILIAN MUNICIPALITIES TO THE PANDEMIC IN EDUCATION

The analysis of measures adopted by municipalities regarding schools' pedagogical activities during the pandemic (Tables 2 and 3) reveals that the distribution of printed materials was the most commonly adopted practice across different regions. While this data highlights the limitations of widespread remote teaching throughout the country, it also indicates that municipal education departments made efforts to develop strategies to address the challenges associated with remote teaching and ensure access for all students, particularly those from low-income and vulnerable families.

Furthermore, it is noteworthy that digital media have become a valuable resource utilized by schools across all regions of the country. However, some regional variations persist, such as the percentage differences observed in the North Region for all activities involving digital media, as well as in the North, Northeast, and Central West Regions (70%, 80%, and 90%, respectively) regarding the use of instant messaging applications as a measure for the development of pedagogical activities. These regional disparities further align with the findings of the ICT Education 2020 survey conducted with school managers, which highlighted regional discrepancies in the utilization of information and communication technologies (ICT) by schools (Cetic, 2021)

Regarding the use of digital media to facilitate activities, particularly online meeting platforms and platforms specifically designed for teaching purposes, a significant percentage of usage was observed across all regions. However, in certain instances, it was found that the adoption of instant messaging applications exceeded that of other digital tools.

Regarding the question of training activities for remote teaching, it was found that 80% of teachers in the South Region received training. In the other regions, the percentage was approximately 60%. This means that in all Brazilian regions except the South, 40% of teachers did not participate in training programs to develop skills for using remote teaching tools. This situation highlights the fragility of local governments in adequately supporting their teachers.

It indicates that a significant percentage of education departments were unable to facilitate comprehensive changes, despite their initial response to the external shock of the pandemic through the adoption of remote teaching methods.

Table 2. Measures the municipalities adopted to develop online pedagogical activities during the pandemic, by region

REGION	DISTRIBUTION OF PRINTED PEDAGOGICAL MATERIAL	CLASSES/ ACTIVITIES THROUGH DIGITAL MEDIA	CLASSES/ ACTIVITIES THROUGH TV EDUCATIONAL PROGRAMS	CLASSES/ ACTIVITIES THROUGH RADIO EDUCATIONAL PROGRAMS	EDUCATIONAL ACTIVITIES SENT VIA INSTANT MESSAGE APPS	TRAINING TEACHERS FOR REMOTE TEACHING
North	93.3	64.6	3.1	4.6	71.8	64.6
Northeast	88.3	80.2	4.3	6.3	80	63.6
Central-West	97	83.3	4.2	1.5	90.4	63.9
Southeast	98.1	78.8	8.5	2.4	83.5	64.7
South	98.4	79.8	6.4	2.8	88.8	80

Source: Elaborated by the authors based on data collected in 2020 for the CNM's survey (Lui, 2021).

Table 3. Development of plans to resume in-person classes, by region

REGION	DID THE MUNICIPALITY DEVELOP A PLAN TO RESUME IN-PERSON CLASSES?			ACTIVITIES PLANNED				
	IN PROGRESS	YES	NO	GRADUAL RETURN TO IN-PERSON CLASSES, STARTING WITH ELEMENTARY SCHOOL	GRADUAL RETURN TO IN-PERSON CLASSES, STARTING WITH EARLY CHILDHOOD EDUCATION	RETURN TO IN-PERSON CLASSES ON A ROTATING BASES OR WITH ALTERNATE DAYS OF THE WEEK FOR DIFFERENT GROUPS OR PART OF THE GROUPS	ADOPTION OF HYBRID LEARNING, WITH THE COMBINED USE OF IN-PERSON AND ONLINE ACTIVITIES	INTERSECTORAL ACTIONS BETWEEN THE EDUCATION AND HEALTH AREAS TO DEFINE THE RETURN TO IN-PERSON CLASSES
North	39.7	32.3	28	51.9	15.9	50.8	56.1	59.3
Northeast	48.8	29.5	21.7	60.8	14.8	59.8	65	68.4
Central-West	43.1	31.2	25.7	54.7	20.5	57.5	59.6	62.7
Southeast	45.1	20	34.9	41.9	11.7	42.7	48	55.7
South	50.9	23.6	25.6	55.2	11.1	51.7	58.7	63.2

Source: Elaborated by the authors based on data collected in 2020 for the CNM's survey (Lui, 2021).

Regarding the planning of in-person classes, it was observed that in most municipalities across all regions, there was a preference for planning the return of elementary school classes before early childhood education. This decision may have been influenced by the aim to minimize learning losses, particularly in the crucial area of literacy. Another noteworthy aspect is that many municipalities were considering the implementation of a hybrid teaching model, which combines both in-person and remote learning. This further underscores the importance of providing adequate training for teachers in the effective use of ICT in education.

THE RELATIONSHIP BETWEEN STATE CAPACITIES AND RESPONSES TO THE PANDEMIC IN EDUCATION

Five regressions were conducted to examine the relationship between state capacities and responses to the pandemic in the field of education. The results of these regressions are presented in Tables 4, 5, 6, 7, and 8. Due to their significance in the analysis, only the p-values are provided. The first regression included all respondent municipalities, while the subsequent regressions divided the municipalities into quartiles based on their Municipal Human Development Index (MHDI), namely very low, low, high, and very high. This division allowed for the examination of the impact of socioeconomic variables on the responses to the pandemic. The selection of independent variables was based on the existing literature on the state capacity of municipalities.

In the first regression, the data collected by the CNM regarding whether the municipality maintained distance learning classes and pedagogical activities through radio or TV educational programs after suspending the in-person activities in 2020 were analyzed in conjunction with the state capacity variables. The findings revealed that two variables significantly impacted municipalities that implemented this measure. These variables were the “ratio of statutory civil servants and the total number of civil servants in the area of education” and the “educational background of the managing body’s administrator.” When the data was analyzed based on MHDI quartiles, it was observed that the “existence of an education council” was the only significant variable for municipalities with a very low MHDI. The significant variable for municipalities with a high MHDI was the “completion of an educational management training course within the last five years.” However, no variables were found significant for municipalities with low and very high MHDI for the question about maintaining distance learning classes and pedagogical activities.

These results confirm the importance of variables related to technical-administrative capacities, as suggested in previous studies (Marenco et al., 2017), in influencing the adoption of responses during the pandemic. The findings of this study align with the existing literature and reinforce the established knowledge in this field (Marenco et al., 2017). Additionally, for municipalities with weaker technical-administrative capacities, the variable associated with political-relational capacity had a more significant impact on the adoption of strategies. This suggests that the political-relational capacity is crucial in contexts lacking technical-administrative capacity when it comes to explaining policy implementation and its outcomes.

In the second regression, the analysis focused on the relationship between teacher training during the pandemic and variables related to state capacities. The findings revealed that the “ratio of statutory civil servants to the total number of civil servants in the area of education” and the “educational background of the managing body’s administrator” were both significant variables for municipalities that conducted teacher training. This underscores the importance of strong technical-administrative capacities in implementing such measures. When considering the MHDI quartiles, the variable “existence of an education council” was significant in municipalities with very low MHDI, while the variable “completion of an educational management training course within the last five years” was significant in municipalities with a high MHDI. No variables were found significant for municipalities with low and very high MHDI regarding teacher training.

The third regression focused on the distribution of printed materials to students during the pandemic. When considering the total count of municipalities, several variables showed significance: “characterization of the managing body to gauge institutionalization and autonomy,” the “existence of an education council,” “educational background of elementary school teachers,” and the “establishment or formation of a permanent education forum.” When examining the division of municipalities by MHDI quartiles, it was found that no variable was significant in municipalities with very low MHDI. However, in municipalities with low MHDI, the “characterization of the managing body to gauge institutionalization and autonomy” emerged as a significant variable. For municipalities with high and very high MHDI, the variable “establishment or formation of a permanent education forum” was significant. It is worth noting that most of the municipalities adopted the strategy of distributing printed materials, except those with extremely low technical-administrative capacity.

The focus of the fourth regression was on the establishment of an interdisciplinary committee or collegiate comprising professionals from the education and health policy sectors to design activities, flows, and protocols during the pandemic. The regression analysis revealed that three variables were significant when considering the total count of municipalities: “educational background of the managing body’s administrator,” “establishment or formation of a permanent education forum,” and the “existence of an education council – normative.”

In the analysis by quartile, the fourth regression revealed that no variable was significant for municipalities with very low MHDI. For municipalities with a low MHDI, two showed significance: “educational background of the managing body’s administrator” and the “existence of an education council – normative.” For municipalities with a high MHDI the significant variables were “establishment or formation of a permanent education forum” and the “existence of an education council – normative.” Finally, the significant variable in the municipalities with very high MHDI was “establishment or formation of a permanent education forum.” This finding is particularly interesting since the establishment of an interdisciplinary committee or collegiate is a strategy of coordination among different sectors, with collaborative decision-making. The data suggest that municipalities with a culture of participation and institutionalized decision-making were more likely to have adopted this strategy during the pandemic.

The last regression analyzes the relationship between the elaboration of plans to resume in-person classes during the pandemic and state capacity variables. The following variables were

significant when considering the total count of municipalities: “educational background of the managing body’s administrator,” “completion of an educational management training course within the last five years,” “establishment or formation of a permanent education forum,” and the “existence of an education council – advisory and normative.” Analyzing municipalities based on their MHDI classification, those with a very low MHDI found “completion of an educational management training course within the last five years” and the “existence of an education council – normative” to be significant variables. In municipalities with a low MHDI, significant variables were “educational background of the managing body’s administrator,” “establishment or formation of a permanent education forum,” and the “existence of an education council.” Significant variables for municipalities with a high MHDI were the “characterization of the managing body to gauge institutionalization and autonomy” and “establishment or formation of a permanent education forum.” In municipalities with a very high MHDI, the sole significant variable was the “establishment or formation of a permanent education forum.” These findings suggest that the preparation of plans to resume in-person classes primarily occurred in municipalities with greater capacities.

Table 4. Maintenance of classes/pedagogical activities at a distance during the lockdown, through radio or TV educational programs or digital media, by MHDI and MHDI quartiles

COEFFICIENTS	MHDI				
	MHDI	VERY LOW	LOW	HIGH	VERY HIGH
	PR (> Z)				
(Intercept)	0.1428	0.8593	0.418	0.45375	0.1609
Statutory civil servants/total civil servants in the area of education	0.0180*	0.9595	0.393	0.29779	0.5670
Characterization of the managing body to gauge institutionalization and autonomy	0.5035	0.8629	0.680	0.62567	0.0844*
Educational background of the managing body’s administrator	0.0256*	0.1951	0.450	0.75098	0.8418
Completion of an educational management training course within the last five years	0.1142	0.2350	0.451	0.00752**	0.0621*
Establishment or formation of a permanent education forum	0.7216	0.1185	0.204	0.78994	0.8166
Educational background of elementary school teachers	0.0818	0.9895	0.556	0.58293	0.0958*
Existence of an education council	0.1030	0.0285*	0.726	0.43770	0.6414
Advisory	0.2919	0.2225	0.189	0.92083	0.5525

COEFFICIENTS	MHDl				
	MHDl	VERY LOW	LOW	HIGH	VERY HIGH
	PR (> Z)				
Deliberative	0.3950	0.4600	0.122	0.83180	0.7158
Normative	0.3140	0.3882	0.454	0.96894	0.3638
Supervisory	0.9329	0.6234	0.425	0.67289	0.2495

MHDl: Municipal human development index.

* (5%), ** (1%), and *** (0.1%)

Source: Elaborated by the authors based on data collected in 2020 for the CNM's survey (Lui, 2021).

Table 5. Municipalities that promoted teacher training for distance learning, by MHDl and MHDl quartiles

COEFFICIENTS	MHDl				
	MHDl	VERY LOW	LOW	HIGH	VERY HIGH
	PR (> Z)				
(Intercept)	0.1428	0.8593	0.418	0.45375	0.1609
Statutory civil servants/total civil servants in the area of education	0.0180*	0.9595	0.393	0.29779	0.5670
Characterization of the managing body to gauge institutionalization and autonomy	0.5035	0.8629	0.680	0.62567	0.0844*
Educational background of the managing body's administrator	0.0256*	0.1951	0.450	0.75098	0.8418
Completion of an educational management training course within the last five years	0.1142	0.2350	0.451	0.00752**	0.0621*
Establishment or formation of a permanent education forum	0.7216	0.1185	0.204	0.78994	0.8166
Educational background of elementary school teachers	0.0818	0.9895	0.556	0.58293	0.0958*
Existence of an education council	0.1030	0.0285*	0.726	0.43770	0.6414
Advisory	0.2919	0.2225	0.189	0.92083	0.5525
Deliberative	0.3950	0.4600	0.122	0.83180	0.7158
Normative	0.3140	0.3882	0.454	0.96894	0.3638
Supervisory	0.9329	0.6234	0.425	0.67289	0.2495

MHDl: Municipal human development index.

* (5%), ** (1%), and *** (0.1%)

Source: Elaborated by the authors based on data collected in 2020 for the CNM's survey (Lui, 2021).

Table 6. Distribution of pedagogical materials during the COVID-19 pandemic by municipalities, by MHDl and MHDl quartiles

COEFFICIENTS	MHDl				
	MHDl	VERY LOW	LOW	HIGH	VERY HIGH
	PR (> Z)	PR (> Z)	PR (> Z)	PR (> Z)	PR (> Z)
(Intercept)	0.00183**	0.4767	0.4318	0.9925	0.985
Statutory civil servants/total civil servants in the area of education	0.24869	0.0677*	0.4797	0.4625	0.702
Characterization of the managing body to gauge institutionalization and autonomy	0.00077***	0.0935*	0.0108*	0.6264	0.843
Educational background of the managing body's administrator	0.81136	0.4271	0.0779*	0.3481	0.362
Completion of an educational management training course within the last five years	0.49180	0.4076	0.1838	0.4977	0.588
Establishment or formation of a permanent education forum	0.00217**	0.2755	0.6422	0.0465*	0.012*
Educational background of elementary school teachers	5.88e-07***	0.0988*	0.7926	0.3690	0.912
Existence of an education council	0.39810	0.1885	0.3215	0.9910	0.989
Advisory	0.69066	0.3389	0.7332	0.4241	0.639
Deliberative	0.83572	0.3146	0.4447	0.9503	0.221
Normative	0.04935*	0.3812	0.0570*	0.7850	0.224
Supervisory	0.00183**	0.5756	0.0778*	0.1960	0.416

MHDl: Municipal human development index.

* (5%), ** (1%), and *** (0.1%)

Source: Elaborated by the authors based on data collected in 2020 for the CNM's survey (Lui, 2021).

Table 7. Establishment of an interdisciplinary committee or collegiate comprising professionals from the education and health policy sectors to design activities, flows, and protocols during the pandemic, by MHDl and MHDl quartiles

COEFFICIENTS	MHDl				
	MHDl	VERY LOW	LOW	HIGH	VERY HIGH
	PR (> Z)				
(Intercept)	0.23754	0.139	0.4023	0.51517	0.921737
Statutory civil servants/total civil servants in the area of education	0.07825*	0.237	0.3039	0.62497	0.792263

COEFFICIENTS	MHDl				
	MHDl	VERY LOW	LOW	HIGH	VERY HIGH
	PR (> Z)	PR (> Z)	PR (> Z)	PR (> Z)	PR (> Z)
Characterization of the managing body to gauge institutionalization and autonomy	0.83184	0.533	0.5148	0.87674	0.294508
Educational background of the managing body's administrator	0.01886*	0.860	0.0110*	0.06893*	0.153550
Completion of an educational management training course within the last five years	0.13475	0.996	0.9678	0.07983*	0.829856
Establishment or formation of a permanent education forum	1.23e-05***	0.859	0.1531	0.00363**	0.000389***
Educational background of elementary school teachers	0.18304	0.206	0.4737	0.47938	0.782406
Existence of an education council	0.36680	0.294	0.5542	0.83788	0.714265
Advisory	0.17121	0.390	0.8485	0.99014	0.157657
Deliberative	0.46272	0.359	0.5541	0.89860	0.974421
Normative	0.00721**	0.358	0.0365*	0.04577*	0.169761
Supervisory	0.88151	0.565	0.5517	0.56518	0.946551

MHDl: Municipal human development index.

* (5%), ** (1%), and *** (0.1%)

Source: Elaborated by the authors based on data collected in 2020 for the CNM's survey (Lui, 2021).

Table 8. Elaboration of a plan to resume in-person classes during the pandemic, per MHDl and MHDl quartile

COEFFICIENTS	MHDl				
	MHDl	VERY LOW	LOW	HIGH	VERY HIGH
	PR (> Z)				
(Intercept)	0.43737	0.71204	0.05536*	0.71398	0.488472
Statutory civil servants/total civil servants in the area of education	0.20969	0.40793	0.06987*	0.24584	0.179710
Characterization of the managing body to gauge institutionalization and autonomy	0.67340	0.14822	0.57506	0.02337*	0.063891

COEFFICIENTS	MHDl				
	MHDl	VERY LOW	LOW	HIGH	VERY HIGH
	PR (> Z)	PR (> Z)	PR (> Z)	PR (> Z)	PR (> Z)
Educational background of the managing body's administrator	0.00108**	0.12249	0.02387*	0.31051	0.573270
Completion of an educational management training course within the last five years	0.03289*	0.00812**	0.63842	0.14217	0.310089
Establishment or formation of a permanent education forum	3.7e-09***	0.89670	2.8205***	0.00865**	0.000778***
Educational background of elementary school teachers	0.32558	0.40632	0.05351*	0.64683	0.392575
Existence of an education council	0.10873	0.07718*	0.00297**	0.81990	0.401296
Advisory	0.02366*	0.52905	0.89163	0.15767	0.081758*
Deliberative	0.21569	0.38112	0.22287	0.50942	0.643776
Normative	0.00451**	0.01565*	0.11182	0.11972	0.671373
Supervisory	0.60348	0.35193	0.29868	0.30190	0.423830

MHDl: Municipal human development index.

* (5%), ** (1%), and *** (0.1%)

Source: Elaborated by the authors based on data collected in 2020 for the CNM's survey (Lui, 2021).

FINAL CONSIDERATIONS

The pandemic brought about an unprecedented challenge for public administration in Brazil. Alongside the health crisis and the pressing issues of vaccination and hospital bed management, subnational governments were tasked with responding to the pandemic in various sectors, including education. However, due to the lack of national coordination in implementing policies, the responses were often disjointed and influenced by existing inequalities among different subnational contexts. This article does not focus on the specific actions taken by municipalities but rather delves into the determinants that shaped their responses in the field of education during this crisis. It seeks to deepen our understanding of how inequalities in municipal state capacities influenced the strategies adopted for remote teaching.

Furthermore, this study aimed to contribute to the ongoing discussion on state capacities at the municipal level, specifically focusing on the field of education, which has received limited analysis in Brazil. The analysis was grounded in the two dimensions of state capacities widely recognized in the literature: technical-administrative and political-relational capacities.

The analysis revealed significant variations in the responses of Brazilian municipalities concerning remote teaching. It was evident that a considerable number of municipalities had

not implemented remote teaching strategies or provided training to their teachers on the use of information and communication technologies (ICT) as of 2020. However, it is worth noting that many municipalities made efforts to ensure access to education by distributing printed materials. These heterogeneities underscore the lack of coordination between the federal government and subnational entities during the pandemic. Furthermore, the study highlights the importance of future investments in enhancing the quality of municipal bureaucracy and promoting the development of a participatory governance model.

The analysis pointed out that the variables used as a proxy for state capacities proved relevant for explaining how municipalities implemented actions in the area of education to mitigate the effects of the suspension of in-person activities due to the pandemic. The most relevant variables for the study were: “ratio of statutory civil servants and the total number of civil servants in the area of education,” “educational background of the managing body’s administrator,” “educational background of elementary school teachers,” the “existence of an education council,” and “establishment or formation of a permanent education forum.” These variables were statistically significant when observing the responses given by municipalities to the health crisis in the area of education.

The findings of the study highlight the significance of both technical-administrative capacities, such as having professional and competent personnel, and political-relational capacities, including collaboration with stakeholders. These capacities play essential roles in municipal governance, especially in the context of education. While technical-administrative capacities ensure the effective implementation of policies, political-relational capacities facilitate partnerships, participation channels, and social consultation, enabling the successful execution of pedagogical activities. The study also highlights the importance of municipalities with a strong culture of participation and institutionalized collaborative approaches. These municipalities have adopted committees to facilitate decision-making during the pandemic. This further emphasizes the significance of the state’s capacity to connect with and involve society’s interest groups. By actively engaging with diverse stakeholders, municipalities can effectively respond to crises and address social demands in a more inclusive and comprehensive manner. Furthermore, the research emphasizes the need to address the challenges faced by municipalities with technical, financial, and administrative weaknesses, particularly those with low MHDI. It is crucial to develop and implement policies that specifically target these areas, aiming to reduce territorial inequalities.

The analysis showed that variables related to the quality of the bureaucracy and the state’s connection with civil society were decisive in determining the responses and strategies in the area of education in Brazilian municipalities. Future research, primarily qualitative and comparative studies, are crucial to deepen the understanding of the adoption of remote teaching by municipal education departments and the effects of state capacities in formulating public policies.

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CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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Lizandro Lui: Conceptualization, data curation, formal analysis; Research; Methodology; Validation; Visualization; Writing – original draft; Writing – revision and editing.

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