LUMEN ET VIRTUS

Regional specificities of education in Pará: Between productivity and quality

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ABSTRACT

The article analyzes whether the conditions of development of education in Pará are homogeneous. Data from the FIRJAN Municipal Development Index were used to perform a spatial analysis of the results, which indicated that contextual differences did not contribute to homogeneous development. These strategies have not been successful in municipalities because needs and priorities differ. It is concluded that the application of spatial analysis is a good strategy to guide government actions to promote improvements in education in the state.

Keywords: Education Policy, Education Management, Pact for Education.

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INTRODUCTION

Over time, the development of education in Brazil has been used as a tool for social and political change. However, many of the changes resulted in the predominance of "productivist" practices, which prioritize quantitative performance and results to the detriment of a more comprehensive and humanistic view of education, impacting the quality of teaching (ARELARO, 2007; GADELHA, 2017; SAVIANI, 2021). Therefore, quality education is a fundamental right of all citizens and essential for the development of a country.

At this juncture, public policies in education must take into account not only productivity, but also the quality of education (APPLE et al., 2015; GADELHA, 2017; PORTELLA; BUSSMANN; OLIVEIRA, 2017), in order to balance the search for results with a broader and more comprehensive vision of education, which values the integral development of students. As well as citizenship education, inclusion, democratic participation and the appreciation of individual differences. In this way, they help to ensure an efficient and effective allocation of resources, improving the overall quality of education in a country.

By focusing on both productivity and quality, these policies can also prepare students for the workforce and contribute to the country's economic development by increasing overall productivity (LIBÂNEO, 2016; SOUSA; NIEDERLE, 2018). Additionally, by considering both productivity and quality of instruction, policies can ensure that students receive a comprehensive education that prepares them for life outside of the classroom, improving the overall quality of life in the country.

Ensuring this balance between productivity and quality is an important factor in states such as Pará that still have high illiteracy rates, 6.46%, age-grade distortion of 18.42%, and with low education development indexes, 0.6041 points in 2018 (ATLAS, 2023; FIRJAN., 2018; PARÁ, 2023). These data show the need to strike a balance between productivity and quality of education.

To this end, it is essential that efforts to increase productivity be accompanied by initiatives that improve the quality of educational processes. This requires inclusive policies that consider the specific needs of different communities and marginalized groups dispersed in different municipal contexts. Each municipality has unique characteristics in terms of resources, infrastructure, demography, economy, local culture, coordination structure (SILVA et al., 2021), school organization (RODRIGUES et al., 2017) among other elements that directly influence education.

Understanding this relationship is important for the effective implementation of educational policies (ALVES; SOARES, 2013). Understanding these specificities is essential to identify the specific educational needs and challenges in each municipality. In this sense, the use of spatial analysis techniques can be a promising way to facilitate and guide government decisions.

The techniques allow a better understanding of the geographical, demographic and socioeconomic characteristics of each municipality, including existing disparities. Spatial analysis

makes it possible to identify areas with more significant educational challenges, gaps in the provision of educational services, optimize the distribution of resources, and target interventions more efficiently (CÂMARA et al., 2002). In fact, spatial analysis helps to identify patterns and trends that affect the quality and access to education in specific areas (BOAT; Inspired by; SLIWIANY, 2010). This allows for the adaptation of educational policies to the specific needs of each location, considering the diversity of existing contexts.

In this sense, the objective of this article is to investigate the existence of disparities in the development of education in the state of Pará, seeking to understand whether the conditions for development are homogeneous throughout the territory. To this end, a spatial analysis of the Firjan Education Development Index of the State of Pará (IFDM-PA) will be carried out.

The spatial analysis of the IFDM indicators covers different aspects of education, such as the school attendance rate, the age-grade distortion rate, the average number of years of schooling in the adult population, and the rate of teachers with higher education (FIRJAN, 2018) which provide a comprehensive view of the development of education in the municipalities of the State of Pará, allowing a multidimensional analysis of the educational panorama.

This understanding can contribute to improving educational policies, identifying areas that require more attention, helping policy makers to allocate more effective efforts and resources. It will allow understanding the educational landscape of the state, identifying patterns, trends, and geographic disparities in educational indicators, such as quality, access, school dropout, and socioeconomic inequalities (BONAT; PAIVA; SLIWIANY, 2010; SILVA et al., 2023), helping policymakers to target their efforts and resources more effectively.

Understanding the spatial distribution of this phenomenon is challenging and requires a detailed analysis of regional characteristics for the efficiency of actions (CÂMARA et al., 2002). In this way, spatial analysis allows the identification of the regional particularities of the problem, which helps in decision-making, as it allows a better understanding of the causes of events and changes in the environment, in addition to assisting in the management of natural resources.

In this sense, authors such as Câmara et al., (2002) and Bonat; Paiva e Sliwiany, (2010) state that spatial data analysis is a fundamental tool for the definition of public policies, providing information that helps in the investigation of various problems and in government decisions. By using general and territory-specific information, the government can identify the needs of the population and determine how best to meet them. This includes identifying areas with a higher concentration of people who need specific services, such as the unemployed or children without access to complete secondary education.

This analysis allows the government to create public policies aligned with the local context, meeting the needs of these specific areas. For example, it is possible to define zones of social

exclusion to understand living conditions and the factors that influence them (BONAT; PAIVA; SLIWIANY, 2010; CÂMARA et al., 2002; SILVA et al., 2023). This enables a more comprehensive understanding of the social processes related to education, avoiding the separation or fragmentation of the environment (AGUIAR-SANTOS et al., 2023; SANTOS; PINTO, 2022), and providing a broader view of the determinants of education development. In addition to this discussion held in the introduction, the work has the methodology, the results and discussions and the final considerations.

METHODOLOGY

The present work has a descriptive method, which is used to describe a reality offering means to identify trends, patterns and relationships between the variables studied. At this juncture, the Municipal Education Development Index, developed by the Industrial Federation of Rio de Janeiro (FIRJAN), is the indicator that brings together a set of variables that explain the development of municipal education.

The FIRJAN Index is based on some indicators that evaluate the attendance to early childhood education, causes of school dropout, age-grade distortion of elementary school, average daily class hours, training of teachers with higher education in elementary school, because with higher education of teachers greater quality in the Educational System will be obtained (FIRJAN., 2018). Therefore, this index allows the evaluation of the quality of education in Pará, becoming an important means to analyze the performance of schools and different municipalities in Pará.

Secondary data were used to perform the analyses. The index values for the municipalities of Pará were collected on the FIRJAN website for the year 2018, the last year available (FIRJAN., 2018). While the data on the variables that constitute the index were collected through the National Institute of Educational Studies and Research Anísio Teixeira (INEP) of the Ministry of Education.

For analysis, the calculation of mean and variance was initially applied. The calculation of mean and variance plays a key role in an education development study, as it allows you to summarize and analyze the data collected. The mean is used to determine the core value of educational indicators, providing a measure of core tendency. It helps to identify the average performance of schools, regions or groups of students in relation to specific indicators.

In turn, variance is a measure of data dispersion around the mean. It allows us to understand the variability of educational indicators, indicating how different or similar the observed values are. A low variance indicates greater uniformity in the results, while a high variance suggests greater heterogeneity in the indicators. descriptive analysis.

Next, the spatial homogeneity tests, Moran's index and LISA MAP (Local Indicators of Spatial Association) test were applied to identify the municipalities with the highest probability of occurrence of stagnation or development of education. Moran's index is a statistical measure used to

assess the presence of spatial autocorrelation in the data. It allows you to identify whether the values of educational indicators are spatially grouped (positive autocorrelation) or dispersed (negative autocorrelation) (BOAT; Inspired by; SLIWIANY, 2010). This calculation provides information on the existence of spatial patterns and the dependence between observations, indicating whether there is a tendency for nearby regions to present similar or different values in educational indicators.

The LISA MAP test is a technique that complements the Moran index, allowing the identification of specific local spatial patterns. It helps to identify clusters or clusters of municipalities or regions with similar educational indicators (CÂMARA et al., 2002). Through the LISA MAP test, it is possible to identify which areas are showing high levels of education development (High-High clusters) or low levels of development (Low-Low clusters), as well as transition areas (High-Low and Low-High clusters).

These spatial analysis techniques allow us to understand the geographical distribution of educational indicators and identify areas with differentiated performance. They are important to guide public policies and targeted interventions, contributing to the improvement of the quality of education in different regions.

Finally, Tukey's posterior ANOVA test was performed to compare the means of the educational indicators between the clusters and identify significant differences. In the context of clusters, the ANOVA test is used to assess whether there are statistically significant differences in educational indicators between the groups (High-High, Low-Low, High-Low, Low-High). It allows you to determine whether the averages of the indicators vary significantly between clusters, providing information on educational disparities between regions.

After performing the ANOVA test and confirming significant differences between the groups, Tukey's test is applied as a multiple comparison procedure. It allows you to identify which clusters differ statistically from each other, providing information on which groups have significantly higher or lower educational indicators (HAIR et al., 2013).

Thus, Tukey's posteriori ANOVA test provides a comprehensive statistical analysis of the educational indicators in the clusters, allowing the identification of significant differences between the groups. This information is valuable to understand educational disparities and to direct specific interventions and public policies for each cluster, aiming to improve the quality of education in each region.

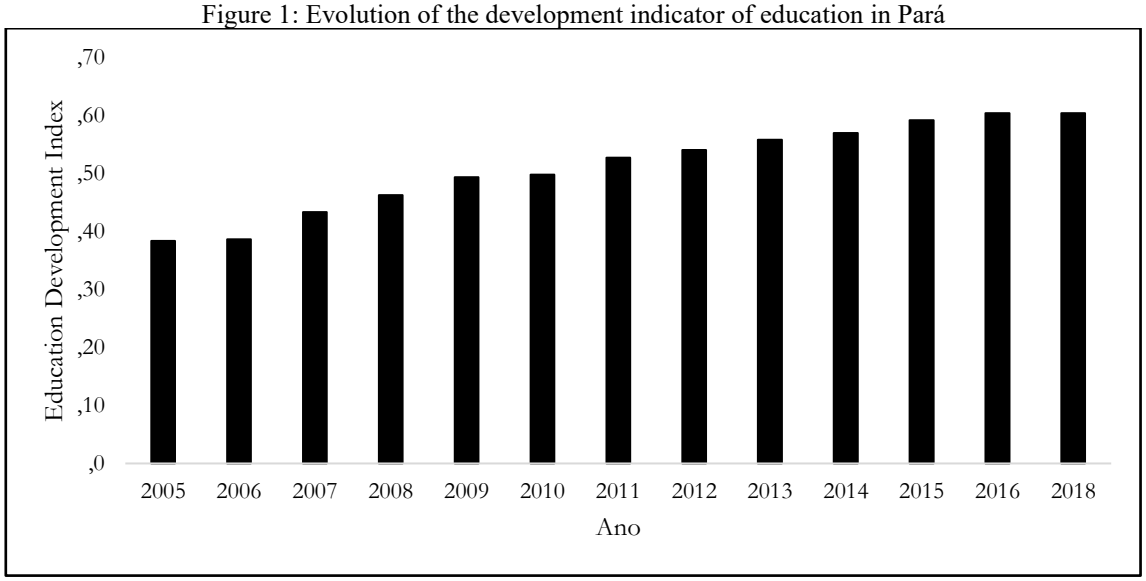
RESULTS AND DISCUSSIONS

THE CONTEXT OF EDUCATION IN PARÁ

The government of the state of Pará has made significant efforts to promote the development of education, which has resulted in a remarkable advance in the educational development index. In

the period from 2005 to 2018, the education development index in the state increased from 0.38 to 0.60 points, demonstrating considerable progress over this period (FIRJAN., 2018), as can be seen in Figure 1.

Figure 1: Evolution of the development indicator of education in Pará



Source: Adapted from Firjan (2018)

This improvement in the educational development index reflects the state government's investment in policies and programs aimed at education. Several measures were implemented with the aim of expanding access to education, promoting equity and improving educational outcomes.

The government of the state of Pará has adopted several measures, including the establishment of partnerships with educational institutions, civil society organizations, and local communities, to strengthen the participation and engagement of society in the educational process (PARÁ, 2019). A notable example of these partnerships is the Pact for Education of Pará, whose mission was to transform the state into a national reference in the quality of Public Basic Education.

The Pact for Education in Pará was based on fundamental guidelines, such as improving the quality of education, democratizing access to education, developing social inclusion programs, increasing investment in education, improving the quality of education, investing in teacher training, and guaranteeing the educational rights of all students (QUEIROZ, 2018; QUEIROZ; VALLEY; SANTOS, 2018; SYNERGOS, 2017). To this end, the pact established specific goals to reduce school dropout and improve the quality of educational services offered by the State.

However The pact failed to promote the improvement of students' school performance (OLIVEIRA GOMES et al., 2019), and aligned itself with the designs of the capitalist mode of production, aimed at the reproduction of the subaltern labor force, the children of the working class, through the precariousness of the social quality of school education (QUEIROZ, 2018; QUEIROZ; VALLEY; SANTOS, 2018). Therefore, despite the commitment to provide quality education for all

students, the state of Pará has faced difficulties in the effectiveness of education development policies.

In this sense, the Firjan Education Index, with its relatively low average, shows the existence of obstacles in the quality of teaching and learning, signaling the need for interventions that promote improvements in these fundamental aspects. It is important to highlight that this scenario can be directly related to how the average workload of 4.29 class hours is used (BRAZIL, 2020), which can compromise the depth and scope of the content taught in schools, thus limiting the learning potential of students.

The class hour is defined by the law of guidelines and bases, and is a unit of measurement commonly used to determine the amount of time allocated to classroom instruction. The quality of education depends directly on the way this time is used, taking into account factors such as the coordination structure (SILVA et al., 2021), adequate planning, effective teaching strategies, student engagement, effective teacher time in the classroom and the organization of school time, such as workloads concentrated on a few days of the week, extensive blocks of the same subject (RODRIGUES et al., 2017; SAVIANI, 2021) among other elements can harm student learning.

The misuse of the workload makes it difficult to assimilate the contents and develop essential skills of the student (GADELHA, 2017; RODRIGUES et al., 2017). It compromises the quality of teaching, as teachers have less time to prepare classes and create learning activities, which generates demotivation and disinterest in learning (UNESCO, 2022). Therefore, the quality of teaching is compromised and student development opportunities are limited.

The reflection of these elements can be observed in the Basic Education Development Index (IDEB), whose average of 4.25 points to the need to improve student performance in order to achieve the established goals (BRAZIL, 2020). In this sense, teacher training plays a crucial role in ensuring the quality of teaching.

However, even with a considerable percentage of 71.50% of teachers with higher education, which is a positive fact, it is essential to seek an equitable increase in the proportion of teachers with this level of training throughout the state (BRAZIL, 2020). The presence of teachers with higher education demonstrates a commitment to the quality of teaching and the appreciation of education as a whole. However, it is necessary to go further and seek a more equitable distribution of these professionals in all schools and regions, in order to ensure that all students have access to quality education.

Furthermore, it is crucial to ensure that these professionals have access to continuing education and are adequately prepared to face the state's educational challenges. Thus, the qualification of teachers is an essential factor to provide an excellent education. Well-prepared teachers have the ability to create a stimulating and effective learning environment by developing

pedagogical strategies that are appropriate to the needs of students (APPLE et al., 2015; FERREIRA, 2017). In fact, quality continuing education allows teachers to update themselves in relation to the best educational practices, promoting the constant improvement of their skills.

Through continuing education, teachers have the opportunity to stay up-to-date with new educational approaches, methodologies, and technologies. This is essential to prepare classes and create activities that are motivating and arouse students' interest in learning (UNESCO, 2022). In addition, continuing education contributes to the reduction of school dropout and age-grade distortion, which are significant challenges in the educational system.

In this context, a high rate of age-grade distortion is observed, estimated at 32.21% (BRAZIL, 2020). This data reveals a worrying reality in which many students are behind the expected grade for their age group. The school dropout rate, reaching 4.24% (BRAZIL, 2020), shows that there are students who leave school prematurely, without completing their studies, resulting in educational gaps and negative effects on their academic and professional future.

These problems are usually related to family, economic and social issues, as well as issues related to the quality of education (PORTELLA; BUSSMANN; OLIVEIRA, 2017). Specifically in Pará there is a marked socioeconomic diversity, with regions that have high rates of poverty and social inequality (PARÁ, 2023), which forces many children to have to leave school to help support the family, creates difficulties related to access to school and adequate educational resources.

In addition, access to school is limited, since the child attendance index, with an average of 0.44 points, indicates an insufficient supply of places in daycare centers and preschools, which implies restrictions in access to early childhood education, a crucial period for children's development (BRAZIL, 2020). The lack of vacancies in daycare centers and preschools represents a significant barrier, especially for families in situations of socioeconomic vulnerability.

When analyzing the educational indicators in the municipalities of Pará, the presence of significant challenges is evident. The variance in the indicators of the Firjan Municipal Development Index (IFDM) suggests a certain homogeneity in educational development among these locations, but it is extremely important to identify and address the underlying factors that contribute to the discrepancies found.

In addition, there is a considerable variation in teaching hours, teacher training, age-grade distortion and student performance, which clearly points to significant disparities between municipalities. These divergences can directly affect the quality of education in several regions, influencing the time available for teaching and learning. Therefore, it is imperative to understand and address these discrepancies to ensure an equitable distribution of resources and promote the provision of quality education in all localities.

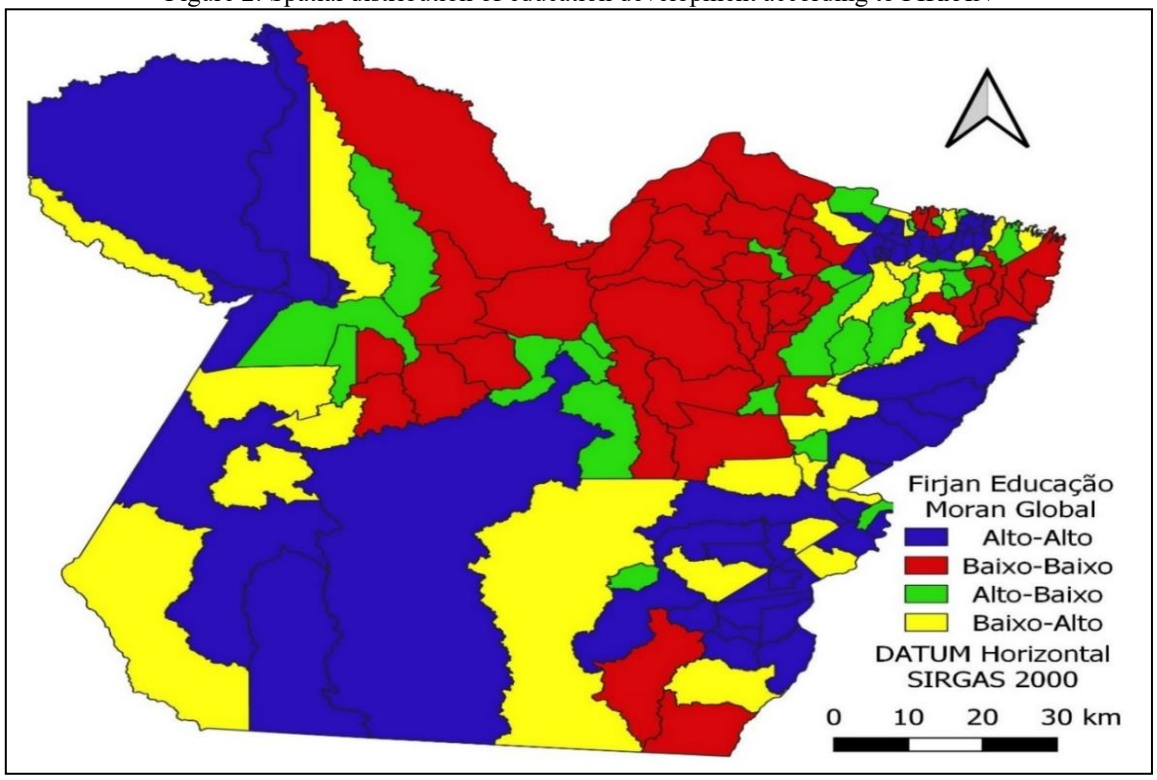
The analysis of the variation in the IDEB indicators also reveals significant differences between municipalities, which requires a meticulous investigation of the underlying causes, aiming to direct efforts and resources more effectively. In summary, the variation in educational indicators among the municipalities of Pará highlights inequalities in the quality and availability of educational resources, making it essential to deepen the understanding of the underlying causes and implement policies and actions aimed at promoting quality education in all regions.

THE SPATIALITY OF THE DEVELOPMENT OF EDUCATION IN PARÁ

This educational heterogeneity was captured by the calculations of the spatial analysis. The spatial analysis revealed the existence of heterogeneity in the quality of education in Pará, as evidenced by the results obtained. The calculation of the Moran index, based on 99 permutations and a p-value of 0.05, indicated a measure of spatial autocorrelation of 0.20249 points of inequality in the region. This result indicates that there is a similarity in the educational reality between some of the municipalities studied, which is reflected in a spatial heterogeneity that can be identified through the formation of clusters, that is, groupings with similar characteristics.

The clusters gave rise to four clusters. The clusters in red, (Low-Low), indicate municipalities with precarious conditions of educational development. On the other hand, the clusters in blue, (Alto-Alto), group municipalities with better educational development indexes, driven by favorable economic indicators and the presence of private companies that contribute to the progress of these regions. The clusters in yellow (Low-High) and green (High-Low) represent municipalities in transition, undergoing positive or negative changes that affect the area of education, figure 2.

Figure 2: Spatial distribution of education development according to FIRJAN



Source: Survey Result

The analysis of the Moran Index reveals a significant spatial relationship between the educational indicators studied, indicating the presence of patterns and dependence between the municipalities. This means that the results are not randomly distributed in space, but rather have a spatial structure related to the proximity and similarity between the municipalities.

This spatial analysis highlights the importance of considering the geographic dimension in the understanding of educational indicators (BOAT; Inspired by; SLIWIANY, 2010). The spatial patterns and the dependence between municipalities highlight the need for public policies and actions directed to regions with similar characteristics. In this way, it is possible to address the challenges and inequalities in the quality of education in a more precise and effective way, taking into account the geographical distribution of the indicators and the particularities of each region.

The heterogeneity in educational indicators among the municipalities of Pará discards the hypothesis of spatial homogeneity. The provision of early childhood education, the causes of school dropout, the age-grade distortion in elementary school, the average daily class hours and the qualification of teachers with higher education vary according to the municipal context, as shown in table 1.

Table 1: Characterization of the clusters

Variable	High-High	Low-Low	High-Low	Low -High
No. of Municipalities	52,00	39,00	25,00	27,00
IFDM Education	0,66	0,53	0,65	0,56
Average daily class hours	4,34	4,30	4,25	4,23

Teachers with higher education	79,24	62,37	76,48	65,18
Age-grade distortion	27,51	38,59	29,65	34,44
IDEB Result	4,62	3,76	4,42	4,07
Attendance to early childhood education	0,50	0,38	0,49	0,38
Abandonment	3,07	5,89	3,85	4,50

Source: Survey Result

When analyzing the clusters from the extremes, best and worst, as well as the clusters in transition, differences are observed. Regarding the number of municipalities, the "Alto-Alto" cluster covers, on average, 52 municipalities, while the "Low-Low" cluster has an average of 39 municipalities, resulting in a difference of 13 municipalities. This suggests that the "High-High" cluster encompasses a larger geographic area than the "Low-Low" cluster. The "High-Low" and "Low-High" clusters have similar averages, with only a difference of 2 municipalities between them.

Regarding educational indicators, the "High-High" cluster has an average of 0.66 in the "IFDM Education" indicator, while the "Low-Low" cluster has an average of 0.53. In the "High-Low" and "Low-High" clusters, the difference is 0.09, revealing a discrepancy in educational indicators, with the "High-Low" cluster obtaining better results, despite some deficiencies.

With regard to the proportion of professors with higher education, significant differences were found between the clusters. The "High-High" cluster has an average of 79.24%, while the "Low-Low" cluster has an average of 62.37%, a difference of 16.87%. This indicates a considerable disparity in the qualification of teachers between these clusters, with the "High-High" cluster presenting a higher proportion of teachers with higher education. Similarly, in the "High-Low" and "Low-High" clusters, the difference is 11.3%, revealing a discrepancy in the proportion of professors with higher education, with the "High-Low" cluster presenting a higher proportion.

Regarding the age-grade distortion, significant differences were also observed between the clusters. The "High-High" cluster has an average of 27.51, while the "Low-Low" cluster has an average of 38.59, a difference of 11.08. This indicates a considerable disparity in the proportion of students outside the appropriate age range for each grade between these clusters, with the "High-High" cluster showing a lower rate of age-grade distortion. Similarly, in the "High-Low" and "Low-High" clusters, the difference is 4.79, suggesting a discrepancy in the age-grade distortion, with the "High-Low" cluster presenting a relatively lower rate of students outside the appropriate age range for each grade.

Regarding the IDEB results, significant differences were also found in the clusters. The "High-High" cluster has an average of 4.62, while the "Low-Low" cluster has an average of 3.76, a difference of 0.86. This indicates a considerable disparity in overall educational performance between these clusters, with the "High-High" cluster performing better. Similarly, in the "High-Low" and "Low-High" clusters, the difference is 0.35, indicating a discrepancy in the IDEB results, with the "High-Low" cluster achieving relatively better overall educational performance.

Regarding early childhood education, significant differences were found in the clusters. The "High-High" cluster has an average of 0.50, while the "Low-Low" cluster has an average of 0.38, a difference of 0.12. This indicates a relevant disparity in access to early childhood education between these clusters, with the "High-High" cluster offering greater access. Similarly, in the "High-Low" and "Low-High" clusters, the difference is 0.11, suggesting a discrepancy in early childhood education attendance, with the "High-Low" cluster presenting greater access.

Finally, in relation to the school dropout rate, significant differences were also observed in the clusters. The "High-High" cluster has an average of 3.07, while the "Low-Low" cluster has an average of 5.89, a difference of 2.82. This indicates a significant disparity in the abandonment rate between these clusters, with the "High-High" cluster recording a lower rate. Similarly, in the "High-Low" and "Low-High" clusters, the difference is 0.65, indicating a discrepancy in the dropout rate, with the "High-Low" cluster presenting a relatively lower rate.

The statistical analysis, using Tukey's posterior ANOVA test, reinforced the significant differences between the variables studied in the clusters, with the exception of the average class hours. In the "High-High" cluster, a positive average is observed in the IFDM Education, indicating a good educational performance. In addition, there is a high proportion of professors with higher education, contributing to the quality of teaching.

The age-grade distortion rate is low, indicating that students are following the appropriate path. The IDEB result is also positive, demonstrating a good level of learning. However, the service to early childhood education still needs to be improved, as it serves only half of the children in this age group. On the other hand, the school dropout rate is relatively low, favoring the continuity of studies. The number of municipalities included in the cluster indicates a representative sample of different educational contexts.

On the other hand, the "Low-Low" cluster presents less favorable results in all variables when compared to the "High-High" cluster. Indicators such as the IFDM Education, the average daily class hours, the number of teachers with higher education, the IDEB result and the number of municipalities are lower, while the age-grade distortion, the dropout rate and the attendance to early childhood education are higher. This reveals educational challenges and the need for investments and improvements in the quality of education in these municipalities.

In the "High-Low" cluster, the means are higher than the "Low-Low" cluster in all variables, except for the age-grade distortion and early childhood education attendance. This indicates a better educational performance, but there are still challenges in relation to the age-grade gap and access to early childhood education.

In turn, the "Low-High" cluster has intermediate averages in most variables compared to the other clusters. However, the dropout rate is relatively high, posing a significant challenge. Therefore,

measures to reduce school dropout and improve the quality of education are necessary for these municipalities.

In summary, the statistical analysis of the cluster means reveals significant differences in educational indicators. The "High-High" cluster presents the best results, while the "Low-Low" cluster registers the worst indicators. The "High-Low" and "Low-High" clusters are in intermediate positions in this analysis. This information is essential to identify areas for improvement and support specific educational decisions and policies for each cluster.

In view of these results, it is evident the need for educational policies and strategies that consider the differences between the clusters, with the aim of reducing the existing educational disparities. It is essential that the government develops strategies to combat school dropout, with a special focus on the municipalities that make up the "Low-Low" cluster. These strategies should address issues related to teacher qualification, age-grade adequacy, and improvement of educational service. The goal is to promote a more egalitarian and quality education for all students.

In addition, the statistical analysis of the clusters reveals significant differences in relation to the number of municipalities. The High-High cluster covers a larger geographic area compared to the Low-Low, High-Low, and Low-High clusters, which have a more limited geographic coverage. This finding highlights the importance of considering the geographic dimension when implementing educational policies, taking into account the particularities of each cluster.

For the "Low-Low" Cluster, it is possible to adopt several measures aimed at strengthening and improving the educational infrastructure. An effective strategy would be to increase investments in the construction and improvement of schools, with the aim of providing adequate learning environments. In addition, it is essential to implement quality continuing education programs for teachers, aiming to improve their qualifications and pedagogical skills.

To ensure a more comprehensive approach, it would be beneficial to establish partnerships with higher education institutions and civil society organizations. These partnerships would allow the promotion of pedagogical support actions, tutorials and extracurricular activities, further enriching the educational process.

Another important issue is the fight against school dropout. To face this challenge, it is necessary to develop specific programs, using strategies that engage students and offer socio-emotional support. In addition, incentives to stay in school should be implemented to ensure that students remain in formal education.

By adopting these measures, it will be possible to promote a more efficient and inclusive education for the "Low-Low" Cluster. Investment in infrastructure, teacher qualification, institutional partnerships and programs to combat school dropout are fundamental pillars for improving educational quality and the full development of students.

For the "Alto-Alto" Cluster, it is necessary to strengthen and expand the successful educational programs and policies already implemented in these regions, in order to keep them in constant evolution. In addition, it is essential to invest in initiatives that promote equity in access to education, such as scholarships, school transportation, and adequate food for students.

An effective strategy is to stimulate partnerships between schools and private companies, creating opportunities for internships, practical learning and insertion of students in the labor market. In this way, students will have contact with the professional reality and develop skills relevant to their future career.

Another crucial aspect is the implementation of comprehensive education programs, which offer complementary activities, sports, culture and art. These programs aim to provide an integral development of students, broadening their horizons and stimulating their creativity and talents.

By adopting these measures, it will be possible to further strengthen the "Alto-Alto" Cluster in the educational field. The expansion of successful programs, the promotion of equity, partnerships with private companies, and comprehensive education programs will contribute to the consolidation of a complete and high-quality education system in these regions, preparing students for a promising future.

Finally, for the "Low-High" and "High-Low" clusters, which are formed by municipalities in transition, it is recommended to carry out specific diagnoses in order to identify the main barriers and challenges faced by each municipality. Based on this information, it will be possible to develop customized action plans that meet the specific needs of each region.

A crucial aspect is the investment in teacher qualification programs and pedagogical training, seeking to increase the proportion of teachers with higher education in all municipalities. This improvement will contribute to raising the quality of teaching and providing a more efficient education aligned with the needs of students.

In addition, it is essential to implement actions aimed at reducing age-grade distortion. Learning acceleration programs, individualized monitoring, and pedagogical support for students who are behind are effective strategies in this regard, helping to overcome difficulties and ensuring that all students have adequate learning opportunities.

Another important measure is the expansion of the offer of vacancies in daycare centers and preschools, ensuring access to early childhood education in all regions. This can be achieved by building new units and establishing partnerships with private institutions in order to meet the demand for quality early childhood education.

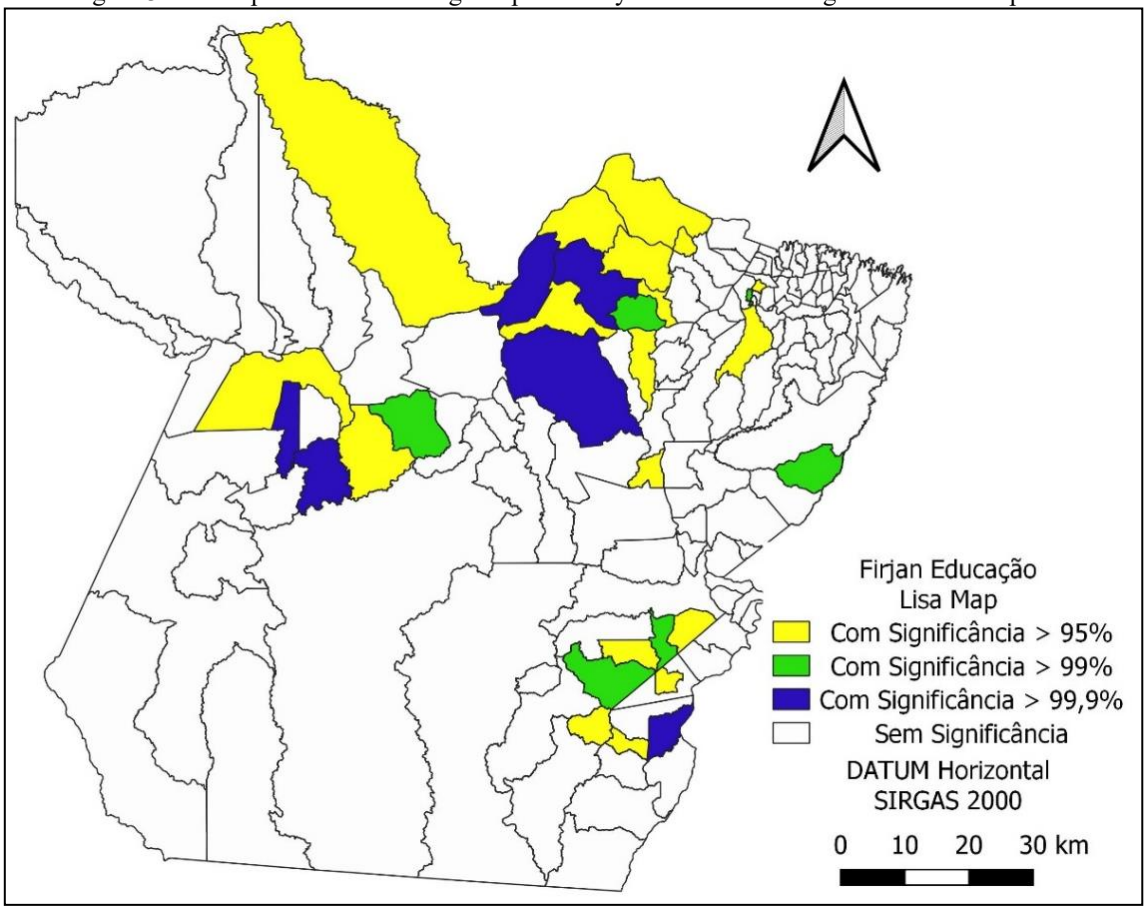
By adopting these actions, the "Low-High" and "High-Low" Clusters will have the opportunity to boost their educational development. Specific diagnoses, teacher qualification, reduction of age-grade distortion and expansion of the offer of early childhood education are

fundamental strategies to promote inclusive and excellent education, ensuring a promising future for students in these regions in transition.

In this sense, the LISA MAP test was carried out to identify the municipalities with greater and lesser probabilities of education development. This analytical tool allowed for a more accurate understanding of the educational landscape, highlighting municipalities with the greatest potential for advancement and those facing greater challenges.

The municipalities in the cluster in yellow showed 95% reliability of finding elements that explain the reasons for the worst and best indicators of education development. While those in the cluster in blue have 99.9% reliability of finding these indicators, figure 3.

Figure 3: Municipalities with the highest probability of educational stagnation or development



Source: Survey Result

In the municipalities identified with greater probabilities of development, it is essential to take advantage of this advantage to further strengthen educational initiatives. In these places, it is possible to direct resources and strategic investments to further boost educational progress, promoting excellence and equal opportunities for all students.

In municipalities with lower development probabilities, an even greater focus is needed on the implementation of actions and policies that can overcome existing barriers. These regions require a personalised and targeted action plan, with specific measures to address the identified difficulties. It

is essential to invest in teacher training programs, improve school infrastructure, and create partnerships with local institutions and organizations to promote a more conducive educational environment for learning.

By using this approach, educational managers can make decisions based on concrete data, promoting more equitable and quality educational development. For example, the worst development indicators were observed in the regions of Baixo Amazonas and Marajó, with the cities of Almeirim and Anajás revealing the disparities in the social inequality gap in the state of Pará (QUEIROZ; VALLEY; SANTOS, 2018).

Specifically, the integration region of Marajó has the highest rate of age-grade distortion, 36.4% due to the unfavorable social conditions faced by some families (PARÁ, 2023). On the other hand, specifically in the surroundings of Parauapebas, in the Carajás region, the highest growth rates in education are observed.

These elements indicate that education development policies tend to behave differently depending on the environment in which they are being implemented. Thus, it is crucial to consider these differences and adapt educational strategies according to the municipal context, aiming to achieve an effective development of education in each region. In this sense, it is important to orient education development policies based on surrounding relationships, that is, on the similarities of contexts.

By taking into account the relationships of the surrounding area, a policy that considers contextual similarities can generate radiating effects (BOAT; Inspired by; SLIWIANY, 2010), where one-point improvements in education development indicators in one municipality have the potential to increase education development in neighboring municipalities by 0.20249. Therefore, by considering the similarities of contexts and the relationships of the surrounding area, education development policies can be directed more effectively, seeking not only the individual progress of each municipality, but also the collective strengthening of the entire region.

Thus, it is evident that the municipal context has a strong influence on public policies, as they must consider the particularities and the inability of some territories to build a governance structure capable of minimizing weaknesses in the development of education. These particularities will be decisive for the success of these policies, since must be adapted to the characteristics of the environment in which they are being implemented (SANTOS; PINTO, 2022; SANTOS, 2019). Therefore, the municipal context for public policies is critical to their success.

By considering the particularities of the territory, it is possible to create public policies that aim to improve the quality of life of the population, meeting the various local needs. This broadens the understanding of the economic, social, cultural and environmental conditions of the municipalities that affect the development of education, allowing us to understand why policies have

not been able to boost the development of education in an egalitarian way in the state (GONÇALVES ARANTES GENNARI; BAZAN BLANCO; NEGRÃO DE ARAÚJO, 2022; OLIVEIRA GOMES et al., 2019; POZIOMYCK; GUILHERME, 2022). In fact, aligning itself with the designs of the capitalist mode of production, aimed at the reproduction of the subaltern labor force, to the children of the working class, through the precariousness of the social quality of school education (GONÇALVES ARANTES GENNARI; BAZAN BLANCO; NEGRÃO DE ARAÚJO, 2022; QUEIROZ, 2018; QUEIROZ; VALLEY; SANTOS, 2018), as well as other political strategies may be failing.

However, it is necessary to understand the constraints in terms of investment in capacity to attend early childhood education, the causes of school dropout, the age-grade distortion of elementary school, the average daily class hours, the training of teachers with higher education in elementary education in these municipalities indicated by the LISA MAP test in order to deepen the knowledge of the conditioning factors of the development or educational stagnation of the state. This is because these municipalities have unique characteristics that can describe the best strategies and practices that induce the delay and success of state education.

Thus, by further investigating the local contexts, based on this analysis, effective measures to improve the quality of teaching can be taken, through actions aimed at improving the quality of teaching, systematic evaluation of the quality of teaching, training of teachers and school principals, investment in school infrastructure, among others.

FINAL CONSIDERATIONS

The present research aimed to investigate the existence of disparities in the development of education in the state of Pará, seeking to understand whether the development conditions are homogeneous throughout the territory. The results obtained indicated the presence of contextual differences that constitute obstacles to the equitable advancement of education in all municipalities of Pará. It was found that the lack of consideration for local contexts ends up restricting the success of educational development policies implemented in the state.

The analysis revealed that several contextual factors significantly influence educational performance in the different regions of Pará. Among these factors, socioeconomic conditions, infrastructure disparities, the availability of educational resources, and the training of education professionals stand out. These contextual particularities generate specific challenges that affect the development of education in each municipality, demanding strategic actions and policies adapted to local needs.

By not considering these local contexts, education policymakers risk adopting widespread and ineffective approaches. In view of this, it is necessary that public policies be adapted to

municipal contexts, considering local specificities, so that the right to quality education for all can be guaranteed. In this way, the implementation of policies focused on the specific needs of each cluster can contribute to reducing inequalities and promoting educational development in a more equitable way throughout the state.

This study, by applying spatial analysis techniques, plays a fundamental role as a guide for public managers with regard to the development of education in the State of Pará. By showing that local contexts need to be investigated to understand why strategies work in some regions and not in others, it offers valuable insights for the formulation of more effective educational policies adapted to the specific needs of each municipality.

It is evident that the government's actions must be continuously monitored in order to identify possible errors and improve public policies for education. Spatial analysis allows you to identify patterns and trends in different geographical areas, enabling a more accurate assessment of educational gaps and the factors that influence them. This allows public managers to adjust their strategies and allocate resources more efficiently, seeking an equitable distribution of educational investments.

For academia, this study offers a broad and grounded view on the subject, providing a solid basis for the production of knowledge and new research. By understanding the local dynamics that determine the success or failure of education development policies in the state, academia can contribute with recommendations and solutions that are more appropriate to the specific realities found in each municipality.

It is concluded, therefore, that the adaptation of education development policies in Pará should be carried out based on the understanding of the needs of each municipality and planning aligned with local particularities. By coordinating education more efficiently, considering the specificities of each region, the state government will be able to manage public resources more effectively, maximizing the impact of the educational policies implemented. In addition, the continuity of research is essential for an in-depth understanding of local dynamics, allowing the government to coordinate education in a more informed and assertive way.

However, it is necessary to deepen the understanding of the local contexts that impact the educational system. This requires additional research that looks not only at educational outcomes, but also at the socioeconomic, cultural, and geographic factors that influence student achievement and the functioning of schools in each region.

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