COMPLEX GOVERNANCE NETWORK ANALYSIS BETWEEN BRAZILIAN PUBLIC POLICIES

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ABSTRACT

Objective: The objective of this article is to create a Complex Governance Network Analysis Framework between two public policies. To prove the predictions of this study, the Theoretical Framework proposed here was applied between the National School Feeding Program (PNAE) and the School Health Program (PSE) in two locations.

Theoretical Framework: To discuss the objective of this article, the approaches of Complex Governance Network (Morçöl, 2023) and Individual and Social Learning (Habermas, 1984, 1987; Lankester, 2013; Maarleveld and Dangbenonpag, 1999) were used.

Method: This research is of a qualitative-descriptive nature and abductive logic, using as a strategy a study of multiple embedded cases and collection of primary and secondary data.

Results and Discussion: By proposing a complex governance network analysis framework between two public policies, this study made a theoretical contribution by adding more dimensions to this theoretical lens. The study of learning contributes to understanding the cognitive evolution of the population, including adult learning, a responsible individual active in public policies.

Research Implications: As practical contributions, this research helps in monitoring and structuring strategies in public management. Because, by understanding the learning level of each public servant, it is possible to observe the creativity of each actor involved in solving problems.

Originality/Value: The study of learning contributes to understanding the cognitive evolution of the population, including adult learning, a responsible individual active in public policies.

Keywords: Network Governance, Learning Level, School Community, PNAE, PSE.

ANÁLISE DE REDE DE GOVERNANÇA COMPLEXA ENTRE POLÍTICAS PÚBLICAS BRASILEIRAS

RESUMO

Objetivo: O objetivo deste artigo é criar um Framework de análise de rede de governança complexa entre duas políticas públicas. Para comprovar a viabilidade deste estudo, aplicou-se o Framework teórico aqui proposto entre o Programa Nacional de Alimentação Escolar (PNAE) e o Programa Saúde na Escola (PSE) em duas localidades.

Referencial Teórico: Par se discutir o objetivo deste artigo utilizou-se as abordagens de Rede de Governança Complexa (Morçöl, 2023) e Aprendizagem Individual e Social (Habermas, 1984, 1987; Lankester, 2013; Maarleveld e Dangbenonpag, 1999).

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Método: Esta pesquisa é de natureza qualitativa-descritiva e lógica abdutiva, utilizando-se como estratégia um estudo múltiplos casos incorporados e coleta de dados primários e secundários.

Resultados e Discussão: Ao propor um Framework de análise de rede de governança complexa entre duas políticas públicas, este estudo fez uma contribuição teórica agregando mais dimensões à essa lente teórica. O estudo das aprendizagens contribui para compreender a evolução cognitiva da população, inclusive o aprendizado adulto, indivíduo responsável e atuante nas políticas públicas.

Implicações da Pesquisa: Como contribuições práticas, esta pesquisa ajuda no acompanhamento e estruturação de estratégias na gestão pública. Pois, ao compreender o nível de aprendizagem de cada servidor público é possível observar a criatividade de cada ator envolvido para resolver problemas.

Originalidade/Valor: O estudo das aprendizagens contribui para compreender a evolução cognitiva da população, inclusive o aprendizado adulto, indivíduo responsável e atuante nas políticas públicas.

Palavras-chave: Governança de Rede, Nível de Aprendizagem, Comunidade Escolar, PNAE, PSE.
innovations. Everyone is subject to rules, meanings and systems of authority and needs to have intensified communication and interaction. Gradually, the learning arising from this communicative activity results in the emergence of new collaborations between actors and organizations working towards common goals.

There is a formation of a network of relationships subject to the governance of a public or private institution. In the case of this study, public governance was chosen. So terms like “network governance” are increasingly common. But they are still not insufficient given the complexity of sociological systems. To improve the analysis, Göktuğ Morçöl (2023), introduces complex governance networks, which take into account the relevance of the micro-macro problem. Micro-macro problems are understood as those that are related to the properties and relationships between the actors of a network (micro level) that affect the macro-level structures of the system.

Thus, we arrive at the research question of this article: How do the actions of individual actors (microunits) generate collective results (macrostructures)? To help answer this question, in addition to what was proposed by Morçöl (2023), theoretical references on individual and collective learning were introduced (Habermas, 1984, 1987; Lankester, 2013; Maarleveld & Dangbegnonpag, 1999; Mezirow, 1991) to analyze microunits. Therefore, the objective of this article is to create a Complex Governance Network Analysis Framework between two public policies.

But why analyze two public policies? In Brazil, there are public policies that act in an intersectoral and interinstitutional manner and that often act in a complementary manner, being developed by the same managers and impacting the same network of actors. This occurs in the National School Food Program (PNAE) and in the School Health Program (PSE), the first related to food and the second related to the health of the school community. Studying this reality allows us to understand how individuals self-organize in public governance.

To prove the feasibility of this study, the theoretical framework proposed here was applied in two municipalities. The first was Lucas do Rio Verde, located in the North of the state of Mato Grosso, Central-West region. And the second was Bento Gonçalves, located in the state of Rio Grande do Sul. These cities were chosen due to their interaction between the PNAE and the PSE, observed in two research projects in which they participated. Therefore, this study is qualitative-descriptive in nature (Kumar, Aaker & Day, 2018; Blater & Haverland, 2012; Kerr & Kendall, 2013; Sampieri, Callado & Lucio, 2013) and abductive logic (Charreire & Durieux, 2003; Cruz, 2007), using as a strategy a study of multiple embedded cases (Stake, 2011; Yin, 2018), collection of primary and secondary data and thematic content.
In addition to the theoretical contribution, it is expected to draw the attention of public managers to the integrative and participatory nature of public social policy, in addition to emphasizing the influence of individual and collective learning levels on its results. Highlighting the importance of employees and the population being aware of their reality to promote innovations.

To continue this discussion, the article is divided into 5 sessions, the introduction, discussed here, the theoretical framework, methodology, analysis and discussion of the results and final considerations.

2 THEORETICAL FRAMEWORK

2.1 COMPLEX GOVERNANCE NETWORK

The term governance is increasingly used together with the term networks, forming the expression “network governance”. From this new term, “governance” starts to refer to the process of collective problem solving in society, while “networks” refer to the structural relationships between the participants in this process (Morçöl, 2023).

Therefore, to connect these concepts and facilitate studies, Gökтуğ Morçöl (2023) proposes an understanding of the relevance of the micro-macro problem for the conceptualization of complex governance networks. For the author, studies on network theories and complexity theory challenge traditional ways of thinking about public policies and administration. Through this reflection, questions arise related to how political, administrative and autonomous actors work together effectively in public policy processes.

micro-macro problem is recognized explicitly or implicitly, by two analytical approaches, social network analysis and agent-based simulations. According to Morçöl (2023), in both approaches, researchers find links between the properties and actions of microunits, individual actors, and macrostructural properties. Therefore, the micro-macro problem is related to the properties and relationships between the actors of a network, that is, the micro level, which affect the macro-level structures (system). In the context of collective problem solving, this is the problem of how the actions and relationships of individual actors generate collective outcomes and how, in turn, collective outcomes, characterized by social institutions, systems of rules, affect individual actions and relationships.
The term “micro-macro problem” was first used by Coleman (1986), but Göktuğ Morçöl (2023), adopts the stance that the solution to the problem must adapt to the context of complex governance networks. To Göktuğ Morçöl (2023), there are three central questions. The first is related to microproperties, which are the characteristics of individual actors. The second question considers micro-macro processes, which encompass the actions of individual actors that generate macroprocesses and structures. Finally, the third question comprises macro-micro processes, which are processes that affect the beliefs, motivations and actions of individual actors.

These questions are important, but they are simplifications. The micro-macro and macro-micro processes are not two separate stages, they do not follow clear, linear paths. They occur simultaneously and in different combinations in real life. Therefore, it is important to unravel these combinations with their simplifications to make sense of complex realities (Morçöl, 2023).

Morçöl’s (2023) analysis, this article considers the laws, rules and technical standards that guide public policies as a macro sphere. While the micro sphere is characterized by social actors who participate in the management of public policy as well as those who benefit from it. The micro sphere, in turn, is characterized by individual and social learning.

Individual learning is understood as what Habermas (1984, 1987) describes as three major areas in which human interest generates knowledge: technical, practical and emancipatory. Instrumental learning involves empirical knowledge and is governed by technical rules. While communicative learning, characterized by practice, takes into account imagination to understand the unknown, in addition to generating alternative ways of seeing and interpreting. In addition to the technical and practical, Habermas identifies emancipatory learning as acquired through critical self-reflection (Boucher, 2021; Mezirow, 1991; O'Donnell, 1999; Silva, Pedrozo & Silva, 2023b; Lankester, 2013).

Through individual learning, people try to predict and control how their actions affect the natural and human domains (Maarleveld & Dangbegnonpag, 1999; Lankester, 2013). This, in turn, leads to social learning, which is considered as a process in which individuals and groups jointly exchange or develop knowledge, including skills and experiences, through human interaction (De Jaegher, Di Paolo & Gallagher, 2010). From a normative point of view, social learning provides a managed resource systems, basically depends on four questions: Who learns?; What can be learned?; How do you learn?; and Why do you learn? (Maarleveld & Dangbegnonpag, 1999; Silva, Pedrozo & Silva, 2023b).
The question “who learns” reveals the intentions and experiences of each individual, which influence their actions (Ajzen, 1991). Regarding “What is learned?”, it must be considered that what is socially learned can go in any direction (Schönfeld et al., 2020). Understanding “How do you learn?” is taking into account different learning cycles that can occur through experience, observation of the experience of others. The question “Why do we learn?” concerns the tendency to focus on external triggers as a basis for learning (Lankester, 2013; Maarleveld & Dangbegnonpag, 1999; Silva, Pedrozo & Silva, 2023b).

It is worth highlighting that both individual learning and social learning function as micro-macro processes, which shape public policies. In turn, public policies return with macro-micro processes, which are actions to meet the needs of the population. Interaction may also occur with other public policies that share micro-macro and macro-micro processes, forming a field of interaction influenced by spheres of public power, federal, state and municipal. Thus, this complex governance network can be represented according to the Framework proposed in Figure 1.

**Figure 1**

*Framework analyzing the complex governance network between two public policies*

Figure 1 shows the individuals who make up the network of relationships within a public policy. These individuals have a level of individual learning, which can be instrumental, communicative and emancipatory. From their initial perception, their learning evolves into social learning, at this level, some people can share a common social learning, and from this interaction micro-macro processes emerge. Micro-macro processes are initiatives by social...
actors to adapt public policy to their reality. In contrast to micro-macro processes, public policy can return implementations through decrees, resolutions or ordinances, this characterizes macro-micro processes.

Relationship networks can go beyond the limits of a public policy, as there are actors who can participate in two public policies, whether in managing them or receiving their benefits. And in most cases, these public policies can become complementary, forming a changing field of interaction that is driven by micro-macro and macro-micro processes in different directions.

At first, the proposed Framework can be considered abstract, but when applied, it becomes an important source of analysis and decision-making. In the following topic, two important policies in school management will be presented, the National School Meal Program (PNAE) and the School Health Program (PSE).

2.2 THE PNAE AND PSE AS COMPLEMENTARY PUBLIC POLICIES

The National School Meal Program (PNAE) serves students distributed across 5,568 municipalities, offering at least one meal per day, to meet at least 15% of the student's daily nutritional needs. Furthermore, its guidelines, Law No. 11,947 and complementary resolutions, allow, in addition to psychosocial support for students' development, preparing them for a better future, an opportunity for the productive, economic and social organization of family farmers (Silva, Pedrozo & Silva, 2022; Silva, Pedrozo & Silva, 2023a; Silva, Pedrozo & Silva, 2023b).

Its origins date back to the 1940s, but it was only in 1976 that it became known as the National School Feeding Program (Peixinho, 2013). It went through several changes, such as the process of decentralization and municipalization between the end of the 1980s and the 90s. And in 1997, it began to be managed by the National Education Development Fund (FNDE).

From 2003 onwards, actions related to food and nutritional security were placed as a priority on the country's development agenda. During this process, several policies related to the topic were developed or strengthened, such as the Zero Hunger strategy. Therefore, the PNAE was included as a priority. That same year, the Food Acquisition Program (PAA) was established, created by art. 19 of Law No. 10,696, of July 2, 2003, whose basic purposes are to promote access to food and encourage family farming. It was from the PAA that purchasing by family farming was consolidated, resolving the impasse in Law No. 8,666 on the implementation of local purchasing (Schwartzman et al., 2017).
Law No. 11,947 of June 16, 2009, was the result of an intersectoral process in the Federal Government and the participation of civil society through the National Council for Food and Nutritional Security (CONSEA) (Peixinho, 2013), in addition to the efforts of union mobilizations like Grito da Terra Brasil. The union movement organized by the National Confederation of Agricultural Workers (CONTAG) and Federations of Agricultural Workers (FETAGs), from May 13 to 27, 2009, through 52 hearings, which involved more than 30 government bodies, 14 ministers and several executive secretaries, ensured that Provisional Measure No. 455/09 (MP 455/09) was approved by the Federal Senate. This MP determined that at least 30% of food for school lunches should be purchased from family farmers (Broch, 2009; Silva et al., 2022; Silva et al., 2023a; Silva et al., 2023b).

This Law universalized the PNAE for all basic education, that is, from kindergarten to secondary education, in addition to young people and adults. Defending food and nutritional education as a priority axis, thus strengthening community participation in the social control of actions developed by States, DF and Municipalities. It provides support for sustainable development, with incentives for purchasing diversified foodstuffs, produced locally, respecting seasonality, culture and food tradition. In addition to prioritizing organic and/or agroecological foods on school food menus (Peixinho, 2013).

For Maluf and Luz (2016), to have a better understanding of the PNAE, it is necessary to start from an approach to Decentralized Food Systems (SAD) and its implications in terms of local food supply strategies and policies, guided by the norms of the food and nutritional sovereignty and security (SSAN) and the Human Right to Adequate and Healthy Food (DHA). Marques and Triches (2022), highlight the importance of the State in formulating and strengthening public policies that guarantee changes in dietary patterns and the rearrangement of the food system. This articulation dialogues with the precepts of intersectorality and interinstitutionality, which are inherent to the success of SSAN policies.

And to understand all this intersectorality, especially when it comes to health and food security, health promotion must be taken into account as a redirecting element of the policies of the Unified Health System (SUS). This realignment culminated in the National Health Promotion Policy (PNPS), which aims to promote quality of life and reduce vulnerability and health risks related to their determinants and conditions (Rumor et al., 2022).

With the PNPS, there was a need to systematize intersectoral proposals with the aim of overcoming the fragmentation of knowledge and social structures, in order to produce more significant effects on the health of individuals and their communities. In an attempt to reduce the vulnerabilities to which children are exposed, initiatives aimed at the school environment...
have gained prominence (Rumor et al., 2022). Therefore, on December 5, 2007, decree No. 6,286 was approved, which established the School Health Program.

Among the objectives of the PSE, the following stand out: the promotion of health and the culture of peace; articulation of SUS actions with the actions of public basic education networks, in order to expand the reach and impact of their actions relating to students and their families, optimizing the use of available spaces, equipment and resources; construction of a social care system, focusing on promoting citizenship and human rights; strengthening the confrontation of vulnerabilities, in the field of health, that could compromise full school development; promoting communication between schools and health units, ensuring the exchange of information about students' health conditions; and strengthening community participation in basic education and health policies, at the three levels of government (Brasil, 2007).

These two public policies, both the PNAE and the PSE, in addition to being regulated by federal laws and decrees, are also adapted by municipalities, which, in a complementary manner, implement structures and actions to meet their local needs. The two programs, as they involve intersectoral and interinstitutional actions within the school community, act complementarily, in some cases, establishing a complex governance network. The next topic presents the methodological procedures for analyzing the complex governance network of 2 Brazilian municipalities.

3 METHODOLOGY

This research is qualitative-descriptive in nature (Kumar et al., 2018; Blater & Haverland, 2012; Kerr & Kendall, 2013; Sampieri, et al., 2013) and abductive logic (Charreire & Durieux, 2003; Cruz, 2007) , using as a strategy a study of multiple incorporated cases (Stake, 2011; Yin, 2018) and collection of primary and secondary data.

The cities selected for the application of the “Complex governance network framework between two public policies” were Lucas do Rio Verde, in the state of Mato Grosso and Bento Gonçalves, in the state of Rio Grande do Sul. The municipalities chosen were part of the research “Learning for sustainable development: Cases of the Brazilian PNAE (National School Meal Program) (2018-2022)” and “National School Meal Program (PNAE) Gaúcho: an evaluative study in search of learning for sustainable development in Rio Grande do Sul (2019-2023)”. 
Although the research projects were aimed at the PNAE, when analyzing the data, similarities were identified in relation to the PSE. Hence the need for a new theoretical lens, such as the “Framework of the complex governance network between two public policies”, highlighting the abductive nature of the research (Charreire & Durieux, 2003; Cruz, 2007).

The approach occurred according to Silva et al. (2022, 2023a, 2023b). In total, 19 people were interviewed, totaling 10 hours of interview recordings, in addition to 13 hours and 30 minutes of observations. Figure 2 shows the characterization of the interviewees and the dates on which the interviews took place.

**Figure 2**

*Characterization of interviewees in the municipalities visited*

<table>
<thead>
<tr>
<th>Institution</th>
<th>Respondent code</th>
<th>Characteristics of respondents</th>
<th>Interview dates</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Municipality of Lucas do Rio Verde-MT</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SME - Municipal Department of Education School Lunch Division</td>
<td>ESME01LRV</td>
<td>01. Nutritionist responsible for PNAE</td>
<td>08/16/2021</td>
</tr>
<tr>
<td></td>
<td>ESME02LRV</td>
<td>02. Secretary of Education</td>
<td>08/17/2021</td>
</tr>
<tr>
<td></td>
<td>ESME03LRV</td>
<td>03. Coordinator</td>
<td>08/16/2021</td>
</tr>
<tr>
<td></td>
<td>ESME04LRV</td>
<td>04. Coordinator</td>
<td>08/16/2021</td>
</tr>
<tr>
<td>Municipal Nursery Nursery to Pre -III with 479 students</td>
<td>EMCMJ01LRV</td>
<td>05. Director</td>
<td>08/16/2021</td>
</tr>
<tr>
<td></td>
<td>EMCMJ02LRV</td>
<td>06. Director</td>
<td>08/16/2021</td>
</tr>
<tr>
<td>Municipal Elementary School with 284 students</td>
<td>EMEV01LRV</td>
<td>07. Coordinator</td>
<td>08/16/2021</td>
</tr>
<tr>
<td></td>
<td>EMEMD01LRV</td>
<td>08. President</td>
<td>08/17/2021</td>
</tr>
<tr>
<td>Municipal Health Department - PSE</td>
<td>EPSE01BG</td>
<td>17. Nutritionist</td>
<td>07/25/2022</td>
</tr>
<tr>
<td></td>
<td>EEMEIMC01BG</td>
<td>18. Deputy director</td>
<td>07/26/2022</td>
</tr>
</tbody>
</table>

The interviews were semi-structured (Bishop, 2005), established as “conversations” to build mutual understanding through the sharing of experiences and meanings. Thus, the interviews, as well as the observation process, were documented through the use of field notes (Lofland, 1974; Lofland & Lofland, 1995). After the transcriptions, a content analysis was
carried out (Bardin, 2011). Although the locations present differences in the management of public policies presented here, there were common points, which were analyzed in the research results.

4 ANALYSIS AND DISCUSSION OF RESULTS

4.1 MUNICIPALITY OF LUCAS DO RIO VERDE-MT

The municipality of Lucas do Rio Verde is located in the North of Mato Grosso, Central-West region, 350 kilometers from the state capital, Cuiabá. It has 83,798 inhabitants (IBGE, 2022), and its economic base is agriculture. There are family farming production areas in places close to the city, which produce milk and dairy products, vegetables and fruits, honey and fish. These farmers sell their products at the producer's fair and provide school meals in the municipality. While medium and large properties produce grains and fibers such as soy, corn and cotton (Lucas do Rio Verde, 2022).

Its agricultural and agro-industrial vocation is due to the fact that the municipality was a settlement in the 1980s. At the time, the federal government settled families from Ronda Alta, in the state of Rio Grande do Sul, and families from the state of São Paulo (Camargo, 2020). However, its biggest population increase occurred between 2000 and 2010, when the population grew due to the creation of agro-industries related to pig breeding and slaughtering infrastructure. During this period, the city received immigrants from states in the North and Northeast of the country, such as Pará and Maranhão (Camargo, 2020).

It is precisely to serve these families from other states that the municipality started to invest in the municipal public school network. It is worth mentioning that the management of resources from the National Education Development Fund (FNDE) for the management of the PNAE, and consequently, the PSE, is centralized. In this case, the financial resources are transferred to a bank account managed by the executing entity (Municipal Education Department). It is responsible for carrying out the bidding process and the public call, in addition to purchasing foodstuffs, which are supplied to school units for the preparation and distribution of school meals. The delivery of foodstuffs by suppliers can be carried out directly to school units and there may be central depots to intermediate the supply (Brasil, 2020, Silva et al., 2023b).

To manage the PNAE, the Municipal Department of Education has a team from the School Lunch Division, made up of 2 nutritionists, 2 employees in the administrative sector, 1
driver who delivers school meals, 4 bakers and 1 cleaning assistant. Team responsible for approximately 11,261 students distributed across 19 schools, 17 urban and 2 rural. In the urban area there are 4,320 students in early childhood education and 6,412 students in elementary education. While in rural areas there are 110 students in early childhood education and 529 in primary education.

The School Lunch Division team is located in the Municipal Bakery building, which is where the food warehouse is located and where family farming products are received. This building began to be built in 1997, with resources from Municipal Law nº 11 of March 10, 1997. Later, in 2019, the site underwent an expansion, allowing the School Lunch Division team to change. The building also has an office area, an experimental kitchen for training lunch ladies and a laundry room.

When observing this structure, and the work demand required regarding the role of nutritionists in the PNAE, it was questioned how the PSE was carried out. And that was how we came to the Anjos da Escola Specialized Multidisciplinary Service Program. The program began as a project in 2014, but with Municipal Decree No. 4,385 of July 8, 2019, it was made official and began to have its own headquarters. Anjos da Escola, as it is known informally, is a specialized multidisciplinary service program between the Department of Education, Department of Health, Department of Social Assistance and Department of Safety and Traffic. Its team is made up of 2 psychologists, 2 nutritionists, 1 speech therapist and 2 social workers. One of its objectives is to identify, together with teachers, children and adults who have some biopsychosocial difficulty, which can compromise their quality of life. After identifying vulnerable individuals, professionals refer them for treatment at the headquarters. This treatment is then monitored to verify the improvement in the learning process.

From this, a complex governance network emerged, as one of the nutritionists from the School Lunch Division works in the School Angels Program. Furthermore, there is a virtual platform that stores all student history and this information is shared between departments, allowing individual student monitoring. And this information serves as the basis for decision-making by public managers. It is noted that the PSE, which is linked to the PNAE, is no longer implemented and is replaced by Anjos na Escola, that is, a way of interaction is created between public policies, in this case, federal and municipal, which have individuals operating in both, and which benefit the same school education network.

It was noticed that there is individual learning for public servants when implementing the two public policies. This learning can be instrumental, that is, compliance with standards and laws, both from PNAE and Anjos da Escola, is taken into account. There were episodes of
communicative individual learning, which evolved into social learning for actors related to the complex governance network. These individuals sought out their representatives in the city council, through micro-macro actions, and managed to build and expand the Municipal Bakery, in addition to making the School Angels program official, macro-micro actions carried out by the municipal government.

Cases of emancipatory individual learning were identified, which are in a common learning phase, at least among a group of employees, which could lead to micro-macro action.

Figure 3 is a summary of the main dialogues and analyzes within the proposed dimensions that served as the basis for this conclusion.

**Figure 3**

*Analysis components of the complex governance network between two policies in the municipality of Lucas do Rio Verde-MT*

<table>
<thead>
<tr>
<th>Social learning</th>
<th>Instrumental</th>
<th>Communicative</th>
<th>Emancipatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who learns?</td>
<td>Tutors of students, students, public and school managers and teachers.</td>
<td>Tutors of students, students, public and school managers and teachers.</td>
<td>Employees of the Angels at School Program.</td>
</tr>
<tr>
<td>Why do you learn?</td>
<td>Interaction between PNAE and PSE.</td>
<td>Actions of the School Angels Program.</td>
<td>Improve your performance in the program.</td>
</tr>
</tbody>
</table>

**Macro-micro processes**

So, the nutritional assessment happens because it is part of the Health at School Program, the PSE of the Ministry of Health. So the Ministry of Health has this program and we as education embrace it. So the nutritionist goes along with the PSE health assistants, right? At the health centers, they do the weight, measurement, BMI calculation, right? Then she will check if this child is malnourished, she will refer him to Anjos da Escola. If this child is overweight, he is also

<table>
<thead>
<tr>
<th>Micro-macro processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Decree No. 6,286/2007, which establishes the PSE.</td>
</tr>
<tr>
<td>Federal Law No. 13,005/2014, which established the National Education Plan</td>
</tr>
<tr>
<td>Municipal Decree No. 4,385/2019, which creates the specialized multidisciplinary</td>
</tr>
<tr>
<td>So, the school identifies that the child has a huge learning gap, if the child cannot keep up with the class. She forwards it to the Anjos da Escola team. Then we arrived at the screening process with the psychopedagogue. Then the educational psychologist will carry out an analysis with the family, understand the entire process of this child's history and begin to carry out some tests, some pedagogical interventions. And then she sees if the child has any psychological problems, she sends them to a psychologist, any</td>
</tr>
<tr>
<td>So, we have already had 319 (children), and we have already closed practically 100 appointments because we and the child, the service, will only be concluded when they complete all the procedures, that is, either with the speech therapist, In other words, sometimes it is not something that is quick anymore. The active search is to go there and identify the family and get this child to return to school, right? So this is faster and more punctual service. Now when it comes to learning or monitoring, the service is much longer, right? [...]</td>
</tr>
</tbody>
</table>
care program - Anjos da Escola

- obese and he will be referred to a nutritionist to monitor him. The Anjos da Escola nutritionist, in addition to carrying out this screening at the school, also monitors the family here in the program. (Interviewee EPAE01LRV).

- nutritional problems, she sends them to a nutritionist and any speech problems, they go to a speech therapist and then we work together (Interviewee EPAE01LRV).

- Yes. I think so, that we change a lot, right? With intention. Exactly, I am a teacher and I am now the coordinator of the program. So today, as a teacher, I have a different vision, you know, of what the program is and how the program affects various areas, it's not just the issue of learning. Learning will only develop completely if a child has the physical, emotional aspects, all well taken care of, very OK, very coherent, right? (Interviewee EPAE01LRV)

### Individual learning

<table>
<thead>
<tr>
<th>Social learning</th>
<th>Instrumental</th>
<th>Communicative</th>
<th>Emancipatory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who learns?</td>
<td>Teachers, school managers, public managers and lunch ladies.</td>
<td>Teachers, school managers, public managers, lunch ladies, students and student tutors.</td>
<td>Law No. 11,947 and concern for children's teaching and learning.</td>
</tr>
<tr>
<td>How do you learn?</td>
<td>Observing children's performance at school.</td>
<td>Set up a bakery, train lunch ladies and teachers, and offer breakfast to students.</td>
<td>The transversal learning process that occurs in school feeding.</td>
</tr>
<tr>
<td>What do you learn?</td>
<td>The idea for the bakery started because it was made for breakfast. You always offered breakfast to the students, right? So, it was before class time, okay. It was an optional thing, the student went to school, got there fifteen minutes early, had bread and milk, right? So let's build a bakery to make bread production cheaper, because it's not used as a snack, it's not during class hours, right? So what did you think about creating this bakery? There were a lot of children who went to school and the teachers said that at eight o'clock they were hungry. Huh? And so the performance there in learning was very low. So, the idea was to provide this</td>
<td>Education is what transforms a society, right? And a good education is not just learning to write, read, it is all social interaction. Children have the opportunity at school to go beyond the knowledge that we talk about as transversal, right? The cultural aspect develops in her diet, when she learns from other cultures at school. [...] it is difficult for us to live in isolation, so this opportunity happens at school and mealtime is also a time of opportunity to grow, to develop these skills. There are a lot of people from the Northeast, North and South, right? These three regions. And there are also a lot of people who were born here, right? So this mix of cultures, of knowledge,</td>
<td></td>
</tr>
</tbody>
</table>

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**Macro-micro processes**

- Municipal Law No. 11 of March 10, 1997 for the implementation of the municipal bakery
- Federal Law No. 11,947 of June 16, 2009
This analysis of the complex governance network serves to detect different management formats in the integration of public policies. What happens in the municipality of Lucas do Rio Verde is not repeated in the municipality of Bento Gonçalves. In the following topic, some similarities and differences will be highlighted.

4.2 MUNICIPALITY OF BENTO GONÇALVES RS

The municipality of Bento Gonçalves, located in the state of Rio Grande do Sul, 123 km from the capital Porto Alegre, has an estimated population of 123,151 (IBGE, 2022). In 2017, there were 10,351 companies in operation, 43% in the services sector, 18% in commerce, 14% self-employed workers, 7% in industry and 18% in other sectors. In addition, the municipality has 4,222 individual microentrepreneurs. Based on this, the participation of sectors in the municipality's economy is led by industry, with 65.8%, followed by commerce, with 20.1%, and the services sector, with 14.1% of revenue (Bento Gonçalves, 2022; Silva et al., 2023b).

Serra Gaúcha, the region where Bento Gonçalves is located, was one of the destinations chosen by European immigrants, mainly Italians, from 1870 onwards (Silveira & Eckert, 2023). Current immigration is characterized by the granting of temporary visas and residence permits for Haitian and Venezuelan citizens (SPGG-RS, 2021).

To meet this population demand, the municipal public school network has approximately 12,875 students, distributed across 45 schools, 20 of which are early childhood education schools, 2 philanthropic schools, 1 high school and 2 full-time schools created in partnership with the University of Caxias do Sul (UCS) (Silva et al., 2023b).

The school food sector is made up of three nutritionists and an administrative assistant. It was found that the position of nutritionist has existed in the municipality since the 1990s, long before Law 11,947 made it mandatory. Another relevant aspect is the fact that the municipality has already won the award for good practices in family farming from the FNDE, as there are projects at the Municipal Department of Education to promote work with family farmers. In 2017, they also won the FNDE award (Silva et al., 2023b).

Like the municipality of Lucas do Rio Verde, Bento Gonçalves has centralized FNDE resource management. This, as previously stated, allows the Department of Education greater
autonomy in managing the PNAE and PSE. However, there is a peculiarity: to manage the PSE, nutritionists receive support from the Municipal Health Department. Within this department there is a team to work with the PSE, made up of a nutritionist, 1 nurse and a nursing technician. This partnership between the Municipal Departments of Education and Health has been occurring since 2011, and is even facilitated by the location, as one is next to the other.

When analyzing this complex governance network, we can see a strong influence of instrumental individual learning, as a ready-made structure already existed, with standards and rules previously established even before federal laws made certain actions mandatory, such as hiring employees. Nutritionist to be technically responsible for the PNAE, or the fact that there is a department dedicated to the PSE in the Municipal Health Department, even before the current coordinator took over.

Servers are concerned about following the rules, as they believe in their efficiency. Eventually communicative learning occurs, which seeks to improve and perfect processes. In Bento Gonçalves, there are not many micro-macro processes due to the levels of individual and social learning. This may have occurred in past periods during the implementation of the innovations observed here, but currently, what we see are macro-micro processes, originating from the municipal government, which direct the actions of both the PNAE and the PSE.

Another interesting aspect is that there is no participation of a public servant in both public policies, there are two different teams that interact with each other, exchanging information and experiences. Unfortunately, there is no integrated platform to facilitate this flow of information.

Regarding emancipatory individual and social learning, it can be seen that the team of nutritionists is at the beginning of this level, moving from a process of continuous improvement to a level of restructuring to promote equity and students’ access to healthy eating and living.

Figure 4 brings together the main statements of the interviewees, as well as their analysis using the dimensions established by the theoretical Framework.
<table>
<thead>
<tr>
<th>Why do you learn?</th>
<th>PSE regulations.</th>
<th>PSE regulations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>How do you learn?</td>
<td>Following PSE regulations.</td>
<td>Following PSE regulations and maintaining the structure established by the city hall in the Health Department.</td>
</tr>
<tr>
<td>What do you learn?</td>
<td>Monitor students to identify health problems and prevention campaigns.</td>
<td>Carry out PSE procedures.</td>
</tr>
<tr>
<td><strong>Macro-micro processes</strong></td>
<td><strong>Micro-macro processes</strong></td>
<td></td>
</tr>
<tr>
<td>During this visit, the first thing is just the hearing screening, then the school is advised, if a student has any difficulty speaking, they are sent to the health unit to be referred to a speech therapist. But then, of course, we follow the PSE themes, which we also have, right? Hearing screening and oral health also have a sector that performs fluoride applications, right? Here in management, there are three, four, now, with this nurse who is arriving. So, there is a nutritionist, then, forty hours, a nurse, twenty hours, who will start, a nursing technician and an administrative woman (Interviwee EPSE01BG).</td>
<td>In fact, today I work in management, right? In coordination. So the School Health and Child and Adolescent Health programs where there is nutrition are also part of the package, right? So we carry out evaluations of the Health at School Program, clinical evaluations. Look, you manage the other priority themes that the program requires, right? That the topics for health education be worked on as education and carry out referrals [...] So blood pressure, weight, visual acuity, hearing screening, is also done annually, we send them to the health unit, right? [...] When I started in 2013, we already had this delimited structure and then we just maintained it, right? (Interviwee EPSE01BG).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Social learning</strong></th>
<th><strong>Instrumental</strong></th>
<th><strong>Communicative</strong></th>
<th><strong>Emancipatory</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Who learns?</td>
<td>Nutritionists from the Education and Health Departments.</td>
<td>School manager</td>
<td>Nutritionists, school managers, public managers, lunch ladies, students and student tutors.</td>
</tr>
<tr>
<td>Why do you learn?</td>
<td>Student health.</td>
<td>Needs of children in the community.</td>
<td>Law No. 11,947</td>
</tr>
<tr>
<td>How do you learn?</td>
<td>Division of activities between nutritionists from the Education and Health Departments.</td>
<td>Practical experience.</td>
<td>Observing children in the cafeteria and practical experience.</td>
</tr>
<tr>
<td>What do you learn?</td>
<td>Execution of the PSE.</td>
<td>Understand students’ dietary needs.</td>
<td>The importance of healthy eating and collective thinking.</td>
</tr>
<tr>
<td><strong>Macro-micro processes</strong></td>
<td><strong>Micro-macro processes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes, this year we are doing the weigh-ins, so the physical educator is doing</td>
<td>They eat a lot, we have it freely, of course we know, right? And balance too, but</td>
<td>And the National School Food Program is not just for bad realities, it is for</td>
<td></td>
</tr>
</tbody>
</table>
Federal Law No. 11,947 of June 16, 2009

the initial years. The nutritionists from the PSE and the health team are doing the weigh-ins for the final years and then they take the opportunity to take a look at the blood pressure. They see that there are a lot of teenagers with altered blood pressure. So that’s why they took the weigh-ins to take advantage and take a look at the pressure. And then the PSE coordinator is a nutritionist (Interviewee ESME01BG)

we like to really give them food, they have it. So, half past seven is snack time, nine o’clock for coffee, nine o’clock plus a snack, half past ten, eleven o’clock lunch, when they wake up they have another snack, right? Soup, food, right? Food there and then at four too and before they leave we always offer them something. They never leave, or stay up to six hours without anything. So, we will always offer, but in the end a fruit so as not to go too long without eating, right? Anyway, we always pay a lot of attention to ensure they are well. Here they need to be well fed, because children who are not well fed won’t be able to play, interact, right? To learn, they need to be well fed and I take great care of that (Interviewee EEMEIMC01BG)

everyone. So we always think about the collective. Just because you have access to food does not mean you have access to healthy foods. We are seeing him in a situation where on the one hand we have children suffering from hunger and malnutrition and on the other hand we see children who have access to bad foods and he is pre-diabetic, he is obese. Both realities are incorrect diets, right? So it’s important to provide this model, this eating pattern. You have to start from the basic principle of healthy eating for everyone. Make them understand why they need to eat fruits, vegetables, meat, milk, right? Not using ultra-processed foods is often easier for mothers who work all day and is also cheaper whether they want it or not. Unfortunately, we are living this reality. (Interviewee ESME02BG).

After analyzing the two case studies presented here, differences were found in the level of learning in each municipality, and how each strategy was constructed to integrate the PNAE and PSE. In the next topic, the conclusion, the results, contributions and limitations of the study will be discussed, as well as suggestions for future studies.

5 CONCLUSION

By proposing a complex governance network analysis framework between two public policies, this study made a theoretical contribution by adding more dimensions to Göktuğ ’s proposal Morçöl (2023). The study of learning contributes to understanding the cognitive evolution of the population, including adult learning, a responsible individual active in public policies. To detail the microunits proposed by Morçöl (2023), authors such as Habermas (1984, 1987), Lankester (2013), Maarleveld and Dangbeynonpag (1999) and Mezirow (1991) were brought in.

But the Framework also has practical contributions, such as helping to monitor and structure strategies in public management. Because, by understanding the learning level of each
public servant, it is possible to observe the creativity of each actor involved in solving problems. For example, individuals and groups in which the instrumental level of learning prevails tend to follow norms without questioning, that is, micro-macro processes are unlikely to occur to provoke or actually change management. In situations where management is organized, as is the case with Bento Gonçalves, this stance is not harmful. In fact, it helps maintain what is being implemented. However, in unstable environments, this is not very good.

The group at the communicative level of learning tends to be more critical in relation to public policy, in addition to seeking constant improvements. This behavior triggers micro-macro processes. This was observed in Lucas do Rio Verde, whether in the creation and expansion of the municipal bakery or in the creation of the Anjos da Escola program. In this case, there were pressures that forced the municipal government to implement these changes, a macro-micro process.

Learning at the emancipatory level is more difficult to occur, but it was observed in both cases, in employees who have restricted power of action, but who are able to influence other actors in the network through common social learning. If this group grows or its power of action increases, disruptive innovations in public policies may emerge.

The limitation of this study was due to the fact that the research projects “Learning for sustainable development: Cases of the Brazilian PNAE (National School Meal Program) (2018-2022)” and “National School Meal Program (PNAE) Gaúcho: a study evaluation in search of learning for sustainable development in Rio Grande do Sul (2019-2023)”, focus only on the PNAE. Therefore, the same attention was not given to the PSE in the other municipalities visited, which could provide more information for the elaboration of the theoretical framework.

As a suggestion for future studies, it is recommended to use the proposed Framework in other public policies. A theoretical deepening between the complex governance network and the learning levels, adding theories on value co-creation or power analysis.

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REFERENCES


Instituto Brasileiro de Geografia e Estatística (IBGE). Estimativas de População Enviadas ao TCU. 2022. Disponível online: https://www.ibge.gov.br/estatisticas/sociais/popolacao/9103 -estimativas- de-


