PUBLIC POLICIES, AEE, AND FULL-TIME EDUCATION: INTERFACES WITH THE TEACHING OF MATHEMATICS AND CHEMISTRY IN BRAZIL

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Abstract

This chapter analyzes the interfaces between public educational policies, Specialized Educational Assistance (AEE), and Full-Time Education in Brazil, focusing on their implications for Mathematics and Chemistry teaching. The objective is to understand how these policies contribute to equity, inclusion, and meaningful learning in the fields of Mathematics and Natural Sciences. The methodology is based on a bibliographic review and documentary analysis of regulatory frameworks, including the National Policy

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on Special Education from the Perspective of Inclusive Education and the National Common Curricular Base, as well as academic studies on inclusive pedagogical practices. The results indicate that the articulation between AEE and Full-Time Education enhances differentiated teaching strategies, the use of assistive technologies, and interdisciplinary practices, fostering the participation of students with special educational needs. However, challenges remain regarding teacher training, school infrastructure, and curriculum integration. It is concluded that strengthening these policies requires continuous investment, collaborative planning, and the consolidation of an inclusive culture, particularly in Mathematics and Chemistry, areas historically associated with high levels of exclusion and learning difficulties.

Keywords: Full-Time Education, Mathematics Teaching, Public educational policies, Specialized Educational Assistance, Chemistry Teaching.

INTRODUCTION

The consolidation of educational public policies aimed at inclusion and equity has assumed a central role in the Brazilian educational landscape in recent decades. The 1988 Federal Constitution established education as a fundamental social right, subsequently regulated by the National Education Guidelines and Framework Law—LDB No. 9,394/1996—which sets forth equal conditions for access to and permanence in school (Brazil, 1996). In this context, Specialized Educational Assistance (AEE) and Full-Time Education are configured as essential strategies for making an inclusive school effective. The National Policy on Special Education from the Perspective of Inclusive Education defines AEE as a complementary and supplementary service to schooling, ensuring pedagogical and accessibility resources for students who are the target audience of special education (Brazil, 2008). In an articulated manner, the National Common Core Curriculum—BNCC guides integral formation, emphasizing the development of cognitive, scientific, and socioemotional competencies (Brazil, 2018).

Despite these normative advances, the materialization of these guidelines in school practices still faces challenges, especially in the teaching of Mathematics and Chemistry—areas historically associated

with high rates of failure and conceptual difficulties. In view of this, the research problem is delimited by the following question: in what ways have public policies aimed at AEE and Full-Time Education contributed to inclusive pedagogical practices in the teaching of Mathematics and Chemistry in Brazil? The premise adopted is that the effectiveness of these policies requires not only legal support but also structural changes in school culture.

The general objective of this chapter is to analyze the interfaces among public policies, AEE, and Full-Time Education, highlighting their implications for the teaching of Mathematics and Chemistry. As specific objectives, it is intended to: (a) examine the main legal frameworks that underpin AEE and Full-Time Education; (b) discuss theoretical contributions on inclusive education and the teaching of Science and Mathematics; and (c) identify challenges and possibilities for consolidating inclusive pedagogical practices in these areas.

The justification for this study is grounded in the need to deepen the debate on inclusion in scientific disciplines, which have traditionally been marked by transmissive and selective pedagogical practices. School inclusion requires a structural transformation of educational organization, overcoming homogeneous models of teaching (Mantoan, 2015). In the field of Mathematics, the importance of recognizing different forms of knowledge production stands out, valuing diverse sociocultural contexts (D'Ambrosio, 1996). Regarding the teaching of Chemistry, the construction of scientific meanings depends on discursive interactions mediated by the teacher (Mortimer; Scott, 2002).

Furthermore, the concept of Full-Time Education goes beyond the extension of school time, encompassing the multidimensional formation of the subject in their cognitive, cultural, and social dimensions (Cavaliere, 2007). From this perspective, the articulation between AEE and Full-Time Education can enhance differentiated didactic strategies, the use of assistive technologies, and interdisciplinary approaches. However, its effectiveness demands continuous teacher education, collaborative planning, and the strengthening of democratic management—elements indispensable for consolidating inclusive scientific education in the Brazilian context.

METHODOLOGY

This chapter is characterized as a qualitative study of an exploratory and descriptive nature, grounded in a literature review and documentary analysis. The choice of this approach is justified by the need to understand, in depth, the interfaces among public policies, Specialized Educational Assistance (AEE), and Full-Time Education, especially with regard to their implications for the teaching of Mathematics and Chemistry in the Brazilian context. Qualitative research makes it possible to interpret educational phenomena in their historical, social, and normative complexity, considering multiple dimensions of analysis (Minayo, 2014).

TYPE OF RESEARCH

This is a theoretical-analytical study, supported by a narrative review of the literature and the analysis of official documents. The bibliographic review enabled the survey and systematization of academic productions related to inclusive education, AEE, Full-Time Education, and the teaching of Science and Mathematics. According to Gil (2019), bibliographic research is developed on the basis of previously produced material, constituting an essential stage for constructing the theoretical framework and delimiting the investigated problem.

The documentary analysis included legislation, guidelines, and educational public policies, such as the National Education Guidelines and Framework Law (Brazil, 1996), the National Policy on Special Education from the Perspective of Inclusive Education (Brazil, 2008), and the National Common Core Curriculum (Brazil, 2018). The analysis of these documents made it possible to understand the legal and pedagogical foundations that guide the organization of AEE and Full-Time Education in the country.

TECHNIQUES AND INSTRUMENTS FOR COLLECTION AND ANALYSIS

The techniques used involved a bibliographic survey in academic databases, selection of scientific articles, books, and official documents, as well as analytical note-taking (fichamento) of the selected

material. Data analysis was carried out through the content analysis technique, which makes it possible to identify thematic categories and interpret meanings present in the examined texts (Bardin, 2011).

The following were established as analytical categories: (a) legal foundations of public policies; (b) conceptions of inclusion and Full-Time Education; (c) pedagogical practices in the teaching of Mathematics and Chemistry; and (d) challenges for implementing AEE. These categories guided the organization and interpretation of the analyzed corpus, enabling the construction of a discussion articulated between theory and educational norms.

DELIMITATION OF THE CORPUS AND DOCUMENTARY SAMPLE

The research corpus consisted of national normative documents and academic productions published predominantly from the 2000s onward—a period marked by significant advances in policies of educational inclusion in Brazil. The documentary sample was defined by criteria of thematic relevance, timeliness, and academic recognition of the selected authors, prioritizing works that discuss inclusive education, integral formation, and the teaching of Science and Mathematics.

METHODOLOGICAL DISCUSSION AND GROUNDING

The choice for a qualitative and documentary approach is grounded in the understanding that educational public policies constitute historical and social constructions, whose analysis requires contextualized interpretation. According to Minayo (2014), qualitative research allows one to apprehend meanings, values, and intentions present in social practices. Likewise, documentary analysis makes it possible to examine institutional discourses and official guidelines, identifying convergences and gaps between what is prescribed in regulations and its effectiveness in everyday school life.

Thus, the adopted methodology favors a critical understanding of the interfaces among public policies, AEE, and Full-Time Education, especially with regard to the teaching of Mathematics and

Chemistry, contributing to theoretical deepening and reflection on inclusive pedagogical practices in the Brazilian educational context

RESULTS AND DISCUSSION

The analysis of normative documents and the literature evidenced significant advances in consolidating Specialized Educational Assistance (AEE) and Full-Time Education as instruments for promoting educational equity. However, the results indicate that the implementation of these policies in the teaching of Mathematics and Chemistry still presents asymmetries related to teacher education, infrastructure, and curricular organization (Brazil, 2008; Brazil, 2018).

The findings were organized into analytical categories, as presented in Table 1.

Table 1

Summary of the main research findings

Category of Analysis	Main Results	Identified Challenges
Legal Foundations	Consistent normative framework for inclusion and AEE	Gap between legislation and school practice
Practices in Mathematics	Use of contextualized methodologies and adapted resources	Difficulties in curricular flexibility
Practices in Chemistry	Dialogic mediation and guided experimentation	Lack of laboratories and accessible materials
Full-Time Education	Expansion of interdisciplinary opportunities	Reduction of the proposal to merely extending school time

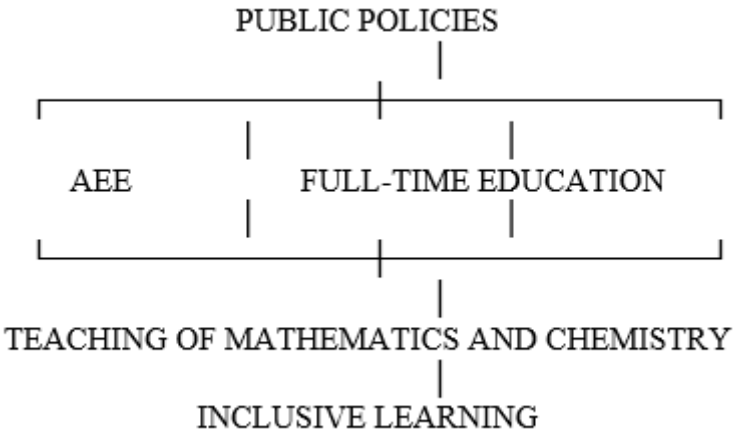
Source: Authors (2026).

In the teaching of Mathematics, it was found that contextualized and culturally situated approaches contribute to greater engagement and conceptual understanding, in line with the perspective of valuing diverse forms of knowledge (D'Ambrosio, 1996). Nevertheless, traditional practices centered on mechanical repetition of exercises still predominate, which hinders the effective inclusion of students with specific needs.

In Chemistry, it was observed that mediated experimentation and scientific dialogue favor the construction of meanings, especially when associated with inclusive strategies (Mortimer; Scott, 2002). However, the limitation of physical and technological resources compromises the expansion of these practices.

Figure 1

Interface between Public Policies, AEE, and Science Teaching



Source: Authors (2026).

Figure 1 illustrates the interrelationship among the structuring axes analyzed. It is observed that AEE and Full-Time Education function as mediators of public policies, directly impacting pedagogical practices in scientific areas.

In addition, the qualitative analysis made it possible to organize the identified impacts, as presented in Table 2.

Table 2

Impacts of public policies on the teaching of Mathematics and Chemistry

Dimension	Positive Impacts	Limitations
Pedagogical	Methodological differentiation	Insufficient teacher education
Structural	Extension of school time	Inadequate infrastructure
Curricular	Possibility of interdisciplinarity	Rigidity in content organization
Inclusive	Greater student participation	Persistent attitudinal barriers

Source: Authors (2026).

The discussion of the results shows that, although there is normative coherence with the principles of inclusive education (Mantoan, 2015), the effectiveness of policies depends on continuous investment, collaborative planning, and strengthening an inclusive school culture. Full-Time Education, when understood as multidimensional formation (Cavaliere, 2007), expands possibilities for curricular integration and fosters more meaningful learning.

Thus, the results indicate that consolidating the interfaces among public policies, AEE, and the teaching of Mathematics and Chemistry requires overcoming structural and pedagogical challenges, reaffirming the need for articulated and sustainable policies in the Brazilian educational context.

CONCLUSION

This chapter aimed to analyze the interfaces among educational public policies, Specialized Educational Assistance (AEE), and Full-Time Education, highlighting their implications for the teaching of Mathematics and Chemistry in Brazil. The investigation sought to understand how normative frameworks and inclusive pedagogical conceptions have guided educational practices aimed at promoting equity, participation, and meaningful learning in scientific areas.

The results demonstrate that the Brazilian legal framework provides consistent bases for consolidating an inclusive and integral education. It was observed that the articulation between AEE and Full-Time Education can foster methodological diversification, the use of accessible pedagogical resources, the extension of time and opportunities for learning, as well as the strengthening of interdisciplinary practices in the teaching of Mathematics and Chemistry. However, challenges persist related to initial and continuing teacher education, school infrastructure, curricular organization, and overcoming traditional pedagogical practices that hinder the full inclusion of students.

As a contribution, this study reinforces the importance of integrating public policies, school management, and teaching practices in a collaborative perspective, emphasizing that making inclusion effective in the areas of Natural Sciences and Mathematics requires systematic planning, continuous investment, and institutional commitment. The proposed reflection broadens the debate on the need for contextualized practices, qualified pedagogical mediation, and curricular reorganization that take into account the diversity of subjects.

For future research, it is suggested to develop empirical studies in specific school contexts in order to analyze concrete experiences of implementing AEE in Mathematics and Chemistry classes. Further, investigations on teacher education, inclusive assessment, and the use of assistive technologies are recommended, contributing to the improvement of educational policies and to the consolidation of a more equitable and socially committed scientific education.

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