

The (In)visibility of motherhood in São Paulo curriculum documents: an analysis using the IRaMuTeQ software

Abstract: The research in this paper aims to investigate the representation of motherhood in curriculum documents, focusing on science and math classes. Methodologically, the IRaMuTeQ software enabled a detailed analysis of language patterns for the lexical and grammatical analysis of curriculum texts for Early Childhood Education, Elementary, Middle and High School, identifying recurring terms and their association with biological and reproductive concepts. The results show a predominance of a reductionist view of motherhood, confined to the biological field, in which the female body is addressed almost exclusively in reproductive terms. In relation to Mathematics, the absence of direct references to motherhood or parental care is notable, suggesting an invisibility of these themes in areas traditionally considered gender-neutral.

Keywords: Gender. Science Teaching. Mathematics Teaching. Curriculum.

La (In)visibilidad de la maternidad en los documentos curriculares del estado de São Paulo: un análisis con el software IRaMuTeQ

Resumen: Este artículo tiene como objetivo investigar la representación de la maternidad en los documentos curriculares, centrándose en las asignaturas de Ciencias y Matemáticas. Metodológicamente, IRaMuTeQ permitió un análisis detallado de los patrones de lenguaje para el examen léxico y gramatical de los textos curriculares de Educación Infantil, Educación Primaria y Secundaria, identificando términos recurrentes y su asociación con conceptos biológicos y reproductivos. Los resultados evidencian la predominancia de una visión de la maternidad confinada al ámbito biológico, donde el cuerpo femenino es abordado casi exclusivamente en términos reproductivos. En relación con las Matemáticas, la ausencia de referencias directas a la maternidad o al cuidado parental sugiere una invisibilidad de estos temas en áreas tradicionalmente consideradas *neutras* en cuanto al género.


Palabras clave: Género. Enseñanza de Ciencias. Enseñanza de Matemáticas. Currículo.

A (In)visibilidade da maternidade nos documentos curriculares paulistas: uma análise com o software IRaMuTeQ


Resumo: A pesquisa deste artigo tem como objetivo investigar a representação da maternidade em documentos curriculares, com foco nas disciplinas de Ciências e Matemática. Metodologicamente, o software IRaMuTeQ possibilitou uma análise detalhada dos padrões de linguagem para a análise lexical e gramatical dos textos curriculares da Educação Infantil, Ensinos Fundamental e Médio, identificando termos recorrentes e sua associação com conceitos biológicos e reprodutivos. Os resultados evidenciam predominância de uma visão reducionista da maternidade, confinada ao campo biológico, em que o corpo feminino é abordado quase exclusivamente em termos reprodutivos. Em relação à Matemática, a ausência de referências diretas à maternidade ou ao cuidado parental é notável, sugerindo uma invisibilidade desses temas em áreas tradicionalmente consideradas *neutras* em relação a gênero.

Palavras-chave: Gênero. Ensino de Ciências. Ensino de Matemática. Currículo.

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Received • 12/21/2024

Accepted • 03/10/2025

Published • 08/10/2025

Editor • Janine Freitas Mota 

ARTICLE

1 Introduction

The intersection between curriculum studies and gender studies can take various forms and approaches, such as historical reconstructions of content typically studied by boys or girls (Tambara, 1998), representations of gender in school content (Carvalhar, 2009), past and present statistics access to schooling at various levels associated with gender (Carvalho, 2004), or even the influence of gender on the choice of professions in higher education (Luz, 2009).

This paper aims to discuss how motherhood is represented in curriculum documents¹ in the state of São Paulo, as a sample of formal curriculum approaches, despite understanding that the curriculum goes beyond documents and takes place in everyday school life.

While recognizing that an analysis focused solely on the content of official curriculum documents is limited, this is an important approach to reveal the institutional commitment, recognized in documents, to gender equity practices, in this specific case, to overcoming the sexual division of labor, which assigns women care work through fixed roles and ideals of motherhood (Federici, 2019, 2021; Fraser, 2023). By investigating whether or not this content is mandatory, it is possible to understand and discuss how these relationships and roles appear in other spaces and moments of school life, even if informally or tangentially to official content.

In this context, with the support of the theories of Lopes and Macedo (2011), who understand the curriculum in a broad and multifaceted way, it is understood in everyday school life as something diverse, encompassing the curriculum guidelines proposed by school systems, such as those analyzed in this study, everyday life in classrooms, the list of subjects, syllabi, proposed and lived experiences, and the entire context of prior or unplanned organization of learning experiences. It is a concept that includes formal, hidden, and lived aspects.

With regard to girls in school contexts, Sarat (2018) provides a historical reconstruction that dates back to the period when the content taught to girls in schools focused on home care and child rearing, prioritizing domestic work over scientific content, which was taught to boys. In this way, school education functioned as a complement to the learning already expressed in private spaces, where women socialized for care, food preparation, clothing making, among other strategies for family management and protection.

This type of gender-based division of content is no longer present in an institutionalized form, even though most care work and related professions are still occupied by women today. However, when constructing a *gender-equitable* curriculum, what happened was not an integration of content historically associated with males and females, but rather the elimination of content related to work assigned to women. Thus, socialization for work in the home and childcare was transferred to the domestic sphere, perpetuating the naturalization of the association between the female gender and responsibility for these tasks.

Therefore, this study seeks to understand the content related to reproduction present in the formal curriculum, regardless of the approach — whether biological or social. Thus, the general objective of this paper is to identify and analyze how motherhood is represented in the São Paulo state curriculum guidelines for Science and Mathematics Education.

A curriculum analysis of the *Currículo Paulista* (São Paulo, 2019, 2020) was then carried out in subjects related to the field of Science and Mathematics Education. Examples of curriculum materials used in the state of São Paulo in the subjects of Science, Biology, and Mathematics were analyzed with the help of the lexical and grammatical analysis software

¹ The concept expressed in Taveira and Peralta (2020, p. 517) is assumed for *curriculum documents*, namely, “by curricular document, we mean a normative document that is central to the organization of the educational projects subordinate to it. Examples of curriculum documents include the National Common Curriculum Base, the legal guidelines that underpin initial and continuing teacher training, the curriculum matrices that cover the content to be taught, or any set of documents that serve as a reference for the establishment of policies and practices in an education system”.

Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires (IRaMuTeQ), according to the standards described by Souza et al. (2018).

Developed by Pierre Ratinaud in 2014, IRaMuTeQ performs statistical analysis of texts and functions as an interface for R. One of its features allows researchers to identify not only the frequency of a term, but also to observe words related to that topic through similarity analysis. In addition to this tool, others may be useful for further analysis of curriculum materials.

To perform the curriculum document analysis, two São Paulo state documents were selected: the *Currículo Paulista: Educação Infantil e Ensino Fundamental* [São Paulo Curriculum: Early Childhood Education, Elementary and Middle School] (São Paulo, 2019) and the *Currículo Paulista: Ensino Médio* [São Paulo Curriculum: High School] (São Paulo, 2020). Before formatting the textual corpus for reading in IRaMuTeQ, excerpts from each curriculum were selected, prioritizing more general content, such as introduction, presentation, and justifications, in addition to the curriculum content for Natural Sciences and Mathematics.

Content from the areas of Humanities and Languages, such as Portuguese Language, Arts, History, and related subjects, was excluded from the analysis, given that the focus of the analysis is on content related to motherhood in the subjects of Mathematics and Natural Sciences.

Although the work carried out so far offers clues as to how gender and motherhood issues are addressed in the curriculum, there are limitations that require further investigation. In this sense, we plan to conduct a more in-depth analysis of the materials used in the classroom, such as student notebooks and teacher notebooks, in a future study — which will be part of the thesis report of the first author of this paper. We believe that these materials contain more elaborate and in-depth terms, especially in the corresponding grades and bimesters.

A more detailed reading of these contents may provide indications about the perspectives from which gender and motherhood issues are addressed. This future study will seek not only to assess the frequency and context in which motherhood is mentioned in the documents, but also to analyze the discourses and gender representations associated with motherhood, contributing to a broader and more integrated understanding of the topic.

Understanding how these contents are addressed in schools is important for charting a possible path to emancipation, in line with the ideal of emancipation described by Allen (2015), and for writing about the connection between parental care and the possibilities for emancipation, especially in the field of gender relations. This horizon can only be outlined based on the results obtained in previous searches — a diagnosis of the current reality capable of indicating the paths to be followed. As an offshoot of this investigation, it is expected that specific recommendations will be formulated, based on school curriculum, with proposals for interventions and changes that can contribute to the emancipation process.

This paper is structured in four parts. After this introduction, the methodological procedures adopted are detailed, focusing on the selection and analysis of curriculum documents using the IRaMuTeQ software. Next, the results obtained are presented, highlighting the presence and/or absence of themes related to motherhood and gender in the curriculum analyzed. Finally, in the concluding remarks, the findings are summarized and possibilities for future research and curriculum reform that consider these issues more broadly are discussed.

2 Theoretical perspectives on gender, motherhood, and curriculum

The school curriculum is a space for political and social disputes, reflecting choices that determine which knowledge is valued and which is marginalized (Lopes ad Macedo, 2011).

Oliveira and Barbosa (2024), in a systematic review of the literature, demonstrated that issues related to sex education have been more widely researched and addressed in schools, particularly since the 1990s, with a focus on more biological and anatomical approaches. Issues related to sexual diversity and discussions about gender subjection have become more present in academic research since 2010.

However, topics such as motherhood remain underrepresented in school curriculum. Recognizing this gap, Santos, Barbosa, and Peralta (2024) report on a research agenda of the Interdisciplinary Center for Advanced Research in Curriculum (Nipac) that integrates motherhood as a central axis in discussions on Mathematics Education, seeking to broaden the scope of investigations beyond issues of gender and sexual diversity.

The relationship between curriculum and gender is the subject of extensive debate in the academic literature, revealing a field of tensions and disputes about what is taught and what is silenced in the school environment. Studies by Paraíso (1998, 2016a, 2016b) demonstrate how gender issues are systematically marginalized in school curriculum, either through the deliberate absence of approaches that problematize structural inequalities or through the construction of norms that reinforce historically crystallized stereotypes. As a result, instead of acting as a space for social transformation, schools often operate as a mechanism for reproducing gender hierarchies and the sexual division of labor.

Given this fundamental perspective, motherhood, as a fundamental dimension of social organization, is often reduced to a biological event, ignoring its social, economic, and political implications. This approach results in the crystallization of an educational model that not only neglects the challenges faced by students who experience motherhood during their school years, but also reinforces a conception of a neutral and universal curriculum that disregards the inequalities inherent in the experience of women and girls in the educational system.

The absence of motherhood as a relevant topic in the school curriculum cannot be dissociated from the advance of conservative movements that, in their attack on what they call *gender ideology*, have been making systematic efforts to ban any discussion that questions inequalities between men and women. These efforts impose a restrictive notion of education that excludes issues related to equity, diversity, and social justice from the educational debate.

Paraíso (2016b) analyzes how the rise of conservative political projects, such as *Escola sem Partido* (School without a Party), promotes a discourse that seeks to delegitimize discussions about gender and sexuality in schools, resorting to discursive strategies that distort the concept of gender and operate through intimidation and censorship, preventing teachers and students from accessing a critical education that enables the deconstruction of historically constructed norms and stereotypes.

The exclusion of motherhood from the São Paulo curriculum documents analyzed can thus be interpreted as part of this broader context of erasing debates about gender in the educational space, which reinforces the need to understand the curriculum not only as a set of guidelines and prescribed content, but as a field of political and symbolic disputes that define which knowledge is legitimized and which is silenced.

If, on the one hand, the school curriculum acts as a device for normalizing and regulating gender identities, establishing hierarchies and naturalizing the sexual division of labor, on the other hand, it is possible to observe how certain experiences are systematically excluded from the scope of educational discussions. Thus, when mentioned, motherhood is restricted to the field of biology and reproduction, without questioning the social conditions surrounding the exercise of motherhood in different contexts.

The study by Reis and Paraíso (2014) highlights how the school curriculum contributes

to the dichotomization of gender identities, positioning boys and girls in opposite fields and reinforcing different expectations for each group. Thus, content related to care, affection, and parenting is systematically associated with the female universe, while areas of knowledge considered neutral or prestigious remain detached from these discussions.

This curriculum normativity, by establishing gender roles in a rigid and exclusionary manner, has direct implications for how motherhood is perceived in school and, consequently, in society, since its absence from the formal curriculum prevents the challenges faced by student mothers from being addressed, reinforcing an educational structure that, by ignoring this reality, contributes to the perpetuation of inequalities in access to and retention in school.

This relationship between motherhood and schooling becomes even more complex when we look at how schools deal with student mothers, often shifting the sole responsibility for childcare onto them, without promoting institutional policies that guarantee adequate support to help them balance their academic careers with motherhood.

Research by Gaia, Menezes, and Silva (2020) points out that teenage mothers face significant difficulties in staying in school due to the absence of educational policies that recognize their specific needs and guarantee them support to continue their studies. This phenomenon, which manifests itself both in the lack of adequate infrastructure and in the exclusive responsibility of female students for preventing early pregnancy, reveals how schools, instead of operating as a space of support and welcome, end up reinforcing stigmas and barriers that make it difficult for these students to remain in the educational system.

This scenario is echoed in the study by Fernandes (2006), which demonstrates how early childhood education contributes to the construction of a normative ideal of motherhood, teaching girls values associated with care and domesticity from the earliest years of schooling. This reinforces the idea that motherhood is a natural destiny for women and establishes a model of femininity directly linked to the maternal role.

The erasure of motherhood as a relevant topic in the school curriculum can also be observed in the academic and professional context, where the experiences of women who are mothers are often invisible or treated as an obstacle to entry and progression in their careers. Araújo and Manzano (2020) highlight how motherhood in science is often perceived as an obstacle to academic production and professional recognition for female researchers, which translates into institutional barriers that hinder women's advancement in the academic sphere.

This process, which normalizes the underrepresentation of women in certain spaces and reinforces asymmetrical expectations regarding the professional performance of men and women, is paralleled by the invisibility of motherhood in school curriculum. Both phenomena follow the same logic of devaluing and silencing women's experiences in institutional contexts.

Given this scenario, the analysis of São Paulo curriculum documents in light of these discussions highlights the urgent need to rethink the conceptions of curriculum and gender that structure educational guidelines, in order to expand the inclusion of themes that consider the different realities of school subjects and problematize the structural inequalities that permeate the educational experience.

Studies such as those by França and Felipe (2017) and Reis, Macêdo, and Aguiar (2021) emphasize that the dispute over the curriculum does not occur only in the field of educational policies, but also involves pedagogical practices and the processes of subjectivation that operate in everyday school life. As these studies point out, the curriculum is not restricted to normative documents, but is also manifested in the lived curriculum — in what is actually taught, discussed, and reinforced in the relationships between teachers and students.

Thus, overcoming the invisibility of motherhood in the curriculum requires a review of

formal guidelines, as well as the strengthening of pedagogical practices that promote gender equality and social justice as structuring principles of education.

3 Methodology

The first stage consisted of selecting which sections of the two documents would be analyzed. With regard to the Early Childhood Education, Elementary and Middle School curriculum (São Paulo, 2019), the entire content related to Early Childhood Education was retained, since Science and Mathematics are inherent to this stage of schooling, even though there is no explicit separation between the subjects. The presentation, introduction, fundamentals, identity, and purpose of Early Childhood Education, pedagogical aspects, curriculum organizer, Elementary and Middle Education, and the areas of Mathematics and Natural Sciences were analyzed.

A total of 164 pages out of 526 were selected and analyzed. In the High School stage (São Paulo, 2020), the presentation, introduction, pedagogical foundations of the São Paulo curriculum, the curriculum organization of High School, the area of Mathematics and its Technologies, the area of Natural Sciences and its Technologies, in addition to the training itineraries that included one or more of the major areas mentioned, and the Technical and Professional Training itinerary. In the end, 163 pages were selected and analyzed from a 301-page material (São Paulo, 2020).

Once the excerpts were selected, the data had to be prepared for analysis in the IRaMuTeQ software, which included preparing the textual *corpus* in accordance with the standards that ensure the file is read correctly, available on the IRaMuTeQ² website.

The so-called *text cleaning* initially presents challenges for using this tool in the analysis of extensive documents, as in the case of the São Paulo curriculum. In addition to the software not being able to read documents in PDF or .DOC format, accepting only TXT, some specific requirements had to be met, such as not using special characters — quotation marks ("), apostrophes ('), hyphens (-), dollar signs (\$), percent signs (%) or asterisks (*), which are only used to identify subcorpora. The text also cannot contain formatting such as italics, bold, or underlining, which are common in academic and institutional documents.

The manual application of these and other formatting rules would require significant time and multiple full readings of the material, making it difficult to analyze a large number of documents. This may be one of the reasons why most research using IRaMuTeQ focuses on the analysis of interviews, summaries, comments on social networks, and other relatively short data sets, even though the software does not impose size limitations on the documents analyzed.

This problem was overcome with the help of the Python programming language and the collaboration of another researcher who shared an interest in the methodology of the research. A base code was generated which, when run on the Google Colab platform, reads and cleans the text, automating this process and transforming the original file into a format compatible with IRaMuTeQ. After a brief review to correct any errors, the file is ready for use.

A detailed description of this methodology, as well as the presentation of IRaMuTeQ as a tool for document analysis and bibliographic reviews, is being prepared in a paper with the other researchers involved in the process of developing the method, who are refining the steps involved.

Nevertheless, Table 1 shows the code used to clean up the text of the Elementary and

² Available at: <http://www.IRaMuTeQ.org/documentation/fichiers/tutoriel-en-portugais>; accessed on April 15, 2024.

Middle School curriculum to illustrate its application³.

Table 1: Text cleaning code in *Python*

```
import re
from pdfminer.high_level import extract_text
from google.colab import files
def limpar_texto(texto):
    # Remove special characters that IRAMUTEQ does not handle well
    text = re.sub(r'["'\'`]', '', text) # Quotation marks
    text = re.sub(r'[- ]', ' ', text) # Replace hyphens with spaces
    text = re.sub(r'(\w+)-(\w+)', r'\1_\2', text) # Join hyphenated words with
    underline
    text = re.sub(r'\b(\w+)-me\b', r'me \1', text) # Converts pronouns to
    proclisis
    # Removes all line breaks and replaces them with single spaces
    text = re.sub(r'\n+', ' ', text)
    # Adds the command line "**** *text1" only at the beginning of the text
    followed by a line break.
    text = text.strip()
    text = '**** *text1\n' + text # Put the command line followed by the
    running text
    return text

def extract_text_pdf(file_pdf):
    # Extract text from PDF
    text = extract_text(file_pdf)
    # Cleans the extracted text
    text_clean = clean_text(text)
    return text_clean

# Name of the PDF file manually uploaded to Google Colab
filename = 'Sao_Paulo_elementar_school_curriculum.pdf'
# Extract and clean the text
text_clean = extract_text_pdf(filename)
# Save the cleaned text in a new file
with open('text_clean.txt', 'w', encoding='utf-8') as f:
    f.write(text_clean)
# Download the output file automatically
files.download('text_clean.txt')
print("Text extracted and cleaned saved in 'clean_text.txt' and download
started.")
```

Source: Own elaboration

After performing the initial treatment of the textual data, the generated content was reviewed to ensure that it followed the rules for constructing a textual *corpus*. In addition, command lines were created to differentiate each section of the document, facilitating the reading of the analyses and the search for excerpts in the official documents.

Next, the analyses were performed in IRaMuTeQ and points of interest were selected for the present analysis. Although the focus is on the absolute frequency of the terms of interest,

³ To use the same code in other materials, you need to modify the lines that name the input and output files, install the *pdfminer* extension, and upload the file to be cleaned to *Google Colab*.

as described below, the software generates several other statistical and graphical analyses, which may be useful for complementary studies and for analyzing other documents in the final text of the thesis.

4 Results: description and analysis

This text presents a sample of statistical data generated by IRaMuTeQ in the analysis of curriculum materials (São Paulo, 2019, 2020), in particular statistical data generated during the analysis. Tables were generated for each of the curriculum, showing the absolute frequency of active forms of vocabulary, as illustrated in Figure 1. The software allows users to search for specific terms, and this tool was used to identify topics related to motherhood and reproduction.

Summary	Actives forms	Supplementary forms	Total
Form	Freq.	Types	
knowledge	354	name	
student	347	name	
as	281	adv	
to	232	adv	
problem	228	name	
process	220	name	
area	216	name	
teaching	214	name	
life	204	name	
scientific	198	adj	
social	197	adj	
technology	197	name	
different	191	adj	
project	191	name	
use	187	verb	
science	185	name	
nature	185	name	
language	177	name	

Figure 1: Example of absolute frequency data table for active forms (Own elaboration)

For this study, 12 terms related to the topic investigated were selected, and the following terms were searched in both tables: *motherhood*, *mother*, *fatherhood*, *father*, *woman*, *gender*, *pregnancy*, *gestation*, *fertilization*, *reproduction*, *breastfeeding*, and *sexuality*. When searching for terms in the table above, the software allows the researcher to select the terms and view the excerpts of the documents in which they appear. Figure 2 shows an example of the screen resulting from this search.

Based on these results, the original curriculum document was consulted for correct referencing in this study.

No results were found for the search terms *maternity*, *paternity*, *pregnancy*, and *breastfeeding* in either curriculum. This is a first indication that the topic is rarely addressed in the formal curriculum.

This absence resonates with the analysis by Paraíso (2016), which demonstrates how the curriculum acts to reproduce gender norms by systematically excluding discussions about

motherhood and parental care. The silencing of these topics contributes to the maintenance of an educational structure that reinforces the sexual division of labor, since by not problematizing motherhood, schools naturalize its exclusive attribution to women.

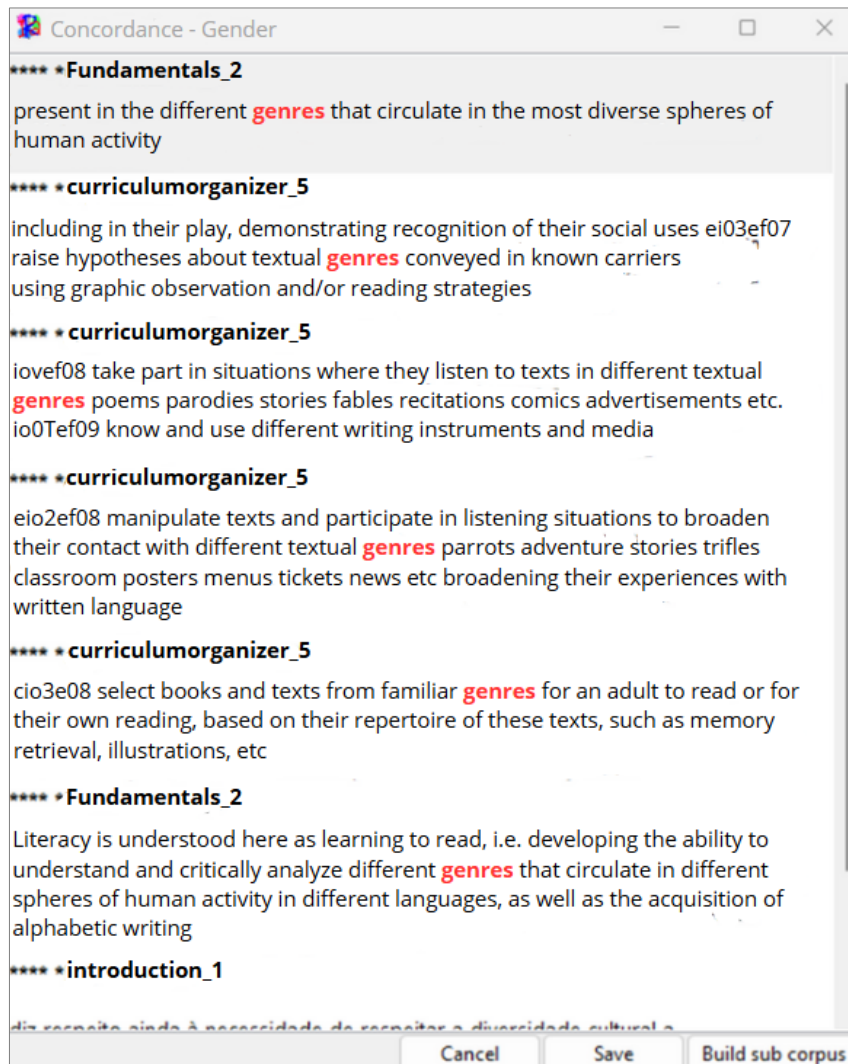


Figure 2: Example of shapes displayed, shown in red (Own elaboration)

The terms *mother* and *father* did not appear in the search for the High School curriculum, but both appear twice in the Early Childhood Education, Elementary and Middle School curriculum (São Paulo, 2019). Regarding the context in which these themes appear, the term *mother* appears in the chapter on the fundamentals of early childhood education, on two consecutive pages.

The first mention, when providing a history of early childhood education, refers to a state meeting held by the Secretariat of Social Welfare, which presents daycare centers as institutions capable of serving working mothers. The second mention occurs in the citation of Law No. 5,692, of 1971, paper 61, which defines that companies that have female employees with children under the age of 7 must organize and maintain, independently or in partnership with the government, preschool education (São Paulo, 2019).

The term *father* appears in another context. In fact, the term found is *parents or guardians*, when discussing the pedagogical aspects of the curriculum. In one case, there is the following explanation:

The National Quality Parameters for Early Childhood Education (BRASIL, 2006) explain that

experiences in individual and collective contexts provide important information about children, their development, learning, interests, strengths, and needs, and must be documented, reflected upon, and shared with parents or guardians. (São Paulo, 2019, p. 63).

Two pages later, the term *parents* appears again: “In this sense, it is necessary for the family and the school to get to know each other. To this end, specific meetings with new parents/guardians and/or individual interviews can be used” (São Paulo, 2019, p. 65).

It is curious to note that the term *mother*, when it appears, refers to working mothers, that is, it places early childhood education in favor of capitalist production. This view demonstrates that, at least in the period mentioned in that context (the 1960s and 1970s), women were seen as primarily responsible for the care of children, since there is no direct mention of fathers. The fact that the term *parents* appears alongside *guardians* may indicate a change in social perception, since the term *parents* usually corresponds to both parents or primary caregivers.

This data corroborates the analysis of Fernandes (2006), which demonstrates how early childhood education reinforces the association between femininity and motherhood, teaching children from an early age values linked to care and domesticity as associated with women and mothers. The author (2006) points out that by establishing the mother as primarily responsible for the well-being of children, schools perpetuate a normative model of femininity that impacts how women are inserted into educational and professional spaces throughout their lives.

The results of the search for the term *mulher* (woman) contribute to this analysis, as it appears in two forms, *mulher* and *mulheres* (women), in the document on Early Childhood Education, Elementary and Middle School (São Paulo, 2019), in the same section where the term *mãe* (mother) appeared earlier:

In São Paulo, the 1980s were marked by pro-daycare movements that, influenced by the women's struggle, presented various demands to public authorities. Representing a struggle for social rights and citizenship, these movements resulted in the achievement of daycare as a right for children and working women. (MERISSE, 1997) (São Paulo, 2019, p. 49).

The claims mentioned correspond to a discussion by Fraser (2009) on the norm of the two-earner family that flourished in the neoliberal state during the second wave of feminism. In the author's words, “the dream of women's emancipation is subordinated to the capitalist accumulation machine” (Fraser, 2009, p. 26).

In the documents for secondary education (São Paulo, 2020), the term *woman* appears in the context of the Curriculum Organizer for the integrated training program between the areas of Applied Social Sciences and Humanities and Natural Sciences and their Technologies, i.e., it is not mandatory curriculum content for all students, only for those who choose this training program. When presenting the methodologies proposed for a work axis that seeks to develop students' ability to access, select, process, and critically, reflectively, and productively analyze data on Natural Sciences and Human and Social Sciences, the issue of women in science is mentioned as one of the 23 examples to be addressed (São Paulo, 2020).

This systematic exclusion of motherhood as a relevant topic in the school curriculum finds parallels in the analysis by Araújo and Manzano (2020), who demonstrate how motherhood is also marginalized in the academic and scientific sphere, being treated as an obstacle to women's progression in academic careers. Just as science has traditionally excluded female experiences, the school curriculum reproduces this logic by not recognizing motherhood as a legitimate dimension of life, worthy of mention in the student experience.

This indicates that issues inherent to gender and female subordination can be addressed in the curriculum, but their inclusion is not mandatory. Furthermore, when they are mentioned, they appear in a peripheral and marginal way, as just one example among more than twenty.

The invisibility of these issues in the formal curriculum confirms the argument by França and Felipe (2017) that contemporary curriculum disputes are not limited to the inclusion of progressive themes, but also involve deliberate efforts to censor and exclude issues related to gender equality. This scenario reflects the political tensions that permeate the construction of curriculum and highlights how educational policies are still far from incorporating a critical and transformative approach to gender and motherhood.

This is confirmed by observing how the term gender appears in the curriculum. Although seven mentions of the term are found in each of the curriculum analyzed, the analysis reveals that, in the Early Childhood Education, Elementary and Middle School curriculum (São Paulo, 2019), only one of the mentions refers to the concept of gender adopted in this study, while the others are related to classifications, such as literary genres.

The perspective of gender as sexual differentiation and expression of identity is observed in the general presentation of the document, when discussing and defining the issue of equity, which involves respect for cultural, ethnic-racial, socioeconomic, sociocultural, and gender diversity present in the state (São Paulo, 2019). However, even with this definition in the introduction of the document, the theme does not appear in an organized manner in the curriculum content.

An identical excerpt is found in the High School document (São Paulo, 2020), in which, of the seven results for the search term *gender* in the analyzed excerpt, four refer to the understanding of gender adopted in this study. Two of these results appear in the introduction of the document, in a historical reconstruction of secondary education in Brazil, which indicates that lyceums were geared towards males, while normal schools were intended for females.

This mention refers to the historical and curriculum separation of knowledge considered masculine and feminine, as discussed by Sarat (2018). The author points out that, in the last century, school and domestic education emphasized teaching home and child care, prioritizing the preparation of girls for the domestic sphere. Sarat (2018) also explains that several home care manuals were part of the libraries of normal schools for women, mentioned in the documents analyzed (São Paulo, 2020).

Reflecting on this historical separation raises the question of why, when universalizing curriculum, content traditionally considered feminine was simply excluded rather than integrated. This reflection is based on Sarat's (2018) analysis, which discusses how the exclusion of content related to care and motherhood from school curriculum reflects a historical process of valuing male and techno-scientific knowledge to the detriment of knowledge traditionally attributed to women.

Similarly, Fraser (2023) argues that this exclusion is part of a neoliberal logic that focuses exclusively on production, neglecting social reproduction relations, even though these are essential for the maintenance of the economic system itself.

The third mention of the term gender occurs in a footnote in the section on pedagogical foundations of the curriculum, explaining why the group of High School students is not homogeneous. In other words, it is not a matter of curriculum content per se, but rather a recognition that gender intersections impact schooling (São Paulo, 2020).

Finally, the fourth mention appears in the methodological assumptions of the Curriculum Organizer for the integrated training itinerary between the areas of Applied Social and Human Sciences and Mathematics and its Technologies, in which, in line with the

perspective of this study, the curriculum document explains:

The epistemological procedures and concepts of the field of Applied Humanities and Social Sciences can find a significant ally in mathematical models of representation for the further investigation of the topics to be studied. On the other hand, mathematical language finds in the phenomena and processes of the field of Applied Humanities and Social Sciences a feasible context for the concrete explanation of abstract concepts, such as mathematical functions that can be visualized in the multiple areas addressed by the field of Applied Humanities and Social Sciences, through economic models, in political processes, in social, cultural, generational, ethnic, and gender diversity and inequalities, as well as in the relationships between production, consumption, and environmental sustainability. (São Paulo, 2020, p. 258).

Although Mathematics is recognized as a tool for understanding gender inequalities, in practice, the curriculum does not articulate this knowledge. Upon further analysis of the topic of work, it is noted that the term *pregnancy* appears once in each curriculum document. In Elementary and Middle School, it appears in the science document, addressing the subject of *reproductive processes and sexuality*, in the eighth grade content, in relation to skill EF08CI09:

Identify and compare the mode of action and effectiveness of various contraceptive methods and justify the need to share responsibility in choosing and using the appropriate method for preventing teenage pregnancy and Sexually Transmitted Infections — STI. (São Paulo, 2019, p. 391).

In High School, the term appears as part of a subject related to biology in the Curriculum Organizer for Natural Sciences and Technology. The document states: “Human physiology (endocrine, reproductive, nervous, and digestive systems). Adolescent health and well-being (STIs, teenage pregnancy, obesity/malnutrition, alcohol, and drugs)” (São Paulo, 2020, p. 160).

It is possible to affirm, then, that pregnancy is represented in the curriculum documents analyzed alongside sexually transmitted infections as something to be prevented. Although teenage pregnancy is indeed a serious social problem, it is noteworthy that an important process of human reproduction is reduced to this perspective alone.

This approach is in line with what Reis and Paraíso (2014) identify as the tendency of the curriculum to reinforce a gender normativity that places girls and boys in different places, without questioning the social implications of these differences. By treating pregnancy exclusively as a problem to be avoided, the curriculum documents analyzed contribute to the invisibility of motherhood as a social and educational experience, failing to recognize the need for support for students who experience this reality.

As this is content related to sexuality, a search for this term was also carried out in the curriculum. In the High School document (São Paulo, 2020), the word appears once in the Curriculum Organizer for the Technical and Professional Training program, in the methodological assumptions related to the skill of *Mediation and Sociocultural Intervention*, mentioned as an example: “As an example, awareness-raising actions, health and sexuality campaigns, discussion activities, and the integration of religious values and beliefs, among other possibilities, can be created” (São Paulo, 2020, p. 246-247).

In Elementary and Middle School (São Paulo, 2019), the term sexuality appears six times. In five of these instances, it refers to objects of knowledge, always in the eighth-grade content, as mentioned above. The sixth occurrence appears as curriculum content in the description of skill EF08CI11:

Recognize human sexuality in its entirety, selecting arguments that highlight its biological, sociocultural, emotional, and ethical dimensions, valuing and respecting the diversity of manifestations and expressions of human identity, and understanding prejudice and discrimination as a social construct. (São Paulo, 2019, p. 391).

This search was fundamental in determining the next steps in the research, which should now focus on how these skills appear in the materials used in the classroom and in student and teacher notebooks. Considering that the theme of parental care may appear indirectly in the content mapped here, this stage will allow us to identify whether and how these aspects are incorporated into educational practice.

Regarding the term *fertilization*, no results were found in the High School document, and only one in the Elementary and Middle School document, referring to content on heredity in discussions of Mendel's ideas (São Paulo, 2019, p. 393). This is repeated with the term *reproduction*, which appears only once in the Elementary and Middle School document, again in the third-year content, but cited comprehensively in skill EF03CI04: "Identify characteristics of the way of life (eating habits, reproduction, locomotion, among others) of animals in your daily life, comparing them to those in other environments" (São Paulo, 2019, p. 381).

In general, the results indicate that topics related to motherhood are rarely present in the curriculum content, being restricted mainly to biological aspects. Even the most general issues related to gender equality appear in a marginal and discreet manner, without being explicitly mentioned or made mandatory in the curriculum.

However, curriculum documents from other school systems address this theme in different states of Brazil. An example of this is analyzed by Borba and Guizzo (2020), who investigate representations of motherhood and fatherhood in teaching materials used in the final years of Elementary and Middle School by the municipal education system of Porto Alegre, Rio Grande do Sul.

The results of the authors' research suggest the predominance of normative language that reinforces discriminatory gender roles, with an idealized view of the experience of motherhood. In addition to placing the physical and moral obligation of pregnancy entirely on women, female responsibility for childcare is intensified. This analysis corroborates the conclusions of Vazquez (2014), who discusses how the medical character enters the field of motherhood, consolidating itself as a norm and factor of female responsibility.

Borba and Guizzo (2020) also observe that the document analyzed — organized in comic strips — seeks to promote contraception, attributing to young women sole responsibility for the choices and consequences of unprotected sex. This is certainly not the best way to address motherhood as a necessary topic in the education of future generations, as it undermines the possibility of reflection on issues related to gender, equality, and diversity of family experiences.

Furthermore, the inclusion of discussions about motherhood, parental care, and gender equality in school curriculum can have profound impacts not only on how girls and women perceive their role in society, but also on the construction of a generation that is more aware of the social complexities surrounding care and reproduction.

This need for a curriculum that broadly addresses motherhood is highlighted by Gaia, Menezes, and Silva (2020), who analyze the difficulties faced by teenage mothers in staying in school, often without access to support policies that guarantee their educational continuity. The authors' research shows that when schools do not recognize motherhood as a legitimate experience in the educational space, they reinforce inequalities. This silencing makes it difficult for student mothers to remain in school, directly impacting their academic and professional

trajectories.

This awareness can, in turn, contribute to the creation of a society in which parental responsibilities are more equitably distributed and gender inequalities are gradually overcome.

5 Final thoughts

An analysis of São Paulo curriculum documents reveals a significant gap in the treatment of the topic of *motherhood*, which is mainly limited to a biological approach to human reproduction. This absence of a broader discussion not only reflects a reductionist view of the reproductive process, but also ignores the social and cultural aspects deeply rooted in motherhood, such as parental care and the sexual division of labor.

The responsibility historically assigned to women to care for and educate young children reinforces an overload perpetuated by social institutions, including schools. Given this, schools, as spaces for social and cultural formation, have a crucial role to play in promoting change. They can and should act as agents of change, critically and equitably addressing parental care in their curriculum, including not only the biological aspects but also the social dimensions of reproduction.

By incorporating notions of shared care and equitable division of responsibilities between genders, education can contribute to the deconstruction of stereotypes that confine women to the role of exclusive caregivers. Ignoring this educational responsibility, leaving the issue of care and parenting solely within the family and cultural sphere, can perpetuate gender inequalities, crystallizing the figure of the mother as the primary (or sole) caregiver for children.

Furthermore, it is necessary to consider that the official curriculum is not limited to the content formally prescribed in so-called curriculum documents. It also involves the lived curriculum, that which is actually manifested in everyday school life, in interpersonal relationships, and in the way topics are addressed implicitly or explicitly in pedagogical practices.

Interactions between teachers, students, and the school community play an essential role in shaping perceptions of motherhood, gender, and care, and these everyday practices can reinforce or challenge traditional gender roles. However, it should be noted that “curriculum documents materialize the intentions set out in official curriculum and are used as a tool for curriculum policies, which are normatively established as a means of expression” (Taveira and Peralta, 2020, p. 517).

Therefore, what is or is not present is indicative of the meanings and directions of these intentions present in the curriculum — and their materialization in curriculum documents — referring to the political and normative decisions that underlie the construction of these official texts. In other words, curriculum documents are, in themselves, expressions of the ideological, social, and political directions that the educational system intends to follow.

These intentions, however, reveal more than just the explicit content addressed in the curriculum. What is present, or absent, in these documents is indicative of the values and priorities that guide the educational process. In the case of motherhood, for example, the absence of broader discussions about parental care and the sexual division of labor is not a simple omission; it reflects a deliberate choice to prioritize certain content over others.

When the curriculum emphasizes only the biological aspects of motherhood, ignoring its social and cultural dimensions, it reinforces a reductionist view, aligned with a structure that perpetuates women's exclusive responsibility for childcare.

Thus, what is included or excluded from the curriculum carries profound meanings and directs the formation of students, influencing how they will understand gender issues and their

relationship to care. Curriculum documents, as instruments of educational policy, have the power to define the boundaries of what is discussed and learned in schools. However, it is crucial that this normative intentionality be constantly reviewed so that curriculum reflect the social reality of students and promote a more critical and transformative education.

In addition, the daily practices of educators and their interactions with students also play a fundamental role in the construction of the *lived* curriculum, which often goes beyond the *prescriptions* in official documents. The intentions expressed in these documents can be reinforced or subverted by teachers' daily pedagogical choices. For example, an educator who approaches motherhood in a critical manner, questioning traditional gender roles, can significantly influence students' perceptions, even if the official curriculum does not address these issues in depth.

In this sense, the intentions contained in curriculum documents not only reflect political choices, but also serve as indicators of the meanings and directions that the educational system wishes to impose or encourage. What is present or absent in the curriculum is not neutral; it is a manifestation of what students are expected to learn and internalize. If motherhood is treated in a narrow and biological way, and issues of parental care and gender equity are neglected, then these omissions reinforce existing social structures, such as the sexual division of labor.

Beyond the structure of the official curriculum, what happens in the daily life of schools — relationships, dialogues, and pedagogical practices — also shapes students' perceptions of motherhood and gender.

Although research on motherhood in the educational context is still limited, studies on gender in the curriculum have expanded significantly, revealing a field of ideological and normative disputes that directly impact choices about what is taught and what is silenced. As Reis, Macêdo, and Aguiar (2021) demonstrate, the relationship between gender and curriculum remains strained by educational policies that sometimes promote advances in gender equality and sometimes establish constraints and restrictions that result in the exclusion of certain topics, such as motherhood.

In adding to this, Paraíso (2016) highlights that, amid these disputes, curriculum guidelines often operate by standardizing certain types of knowledge, establishing boundaries between what is considered legitimate knowledge and what is relegated to the realm of individual or family experience. This dynamic can be observed in the documents analyzed, in which motherhood is mentioned marginally and almost exclusively associated with the biological field, without a critical approach to its relationship with the sexual division of labor and the organization of society.

Therefore, when analyzing the results of a study that points to the absence of a critical approach to motherhood and caregiving in school curriculum, this absence should be considered a political and social choice. The challenge, then, is to use this finding to promote intentional change so that future curriculum reforms incorporate a broader and more inclusive vision that takes into account the social and cultural realities of students and questions the gender inequalities that permeate society. This reformulation should not be restricted to official documents, but should be reflected in everyday teaching practices, making schools a true space for social transformation.

The results presented in this study represent a preliminary snapshot of a broader investigation, which is part of an ongoing doctoral thesis. The main objective of the research is to deepen the theoretical and philosophical discussion on the education of girls and women about motherhood, exploring the memories of their school experiences and how these experiences impacted their perceptions of gender, care, and parenting.

By analyzing these memories, we hope to contribute to a deeper understanding of how schools can play a role in shaping more just and egalitarian identities and, consequently, to the development of educational policies that effectively and transformatively integrate discussions about motherhood and gender equality.

Acknowledgments

This paper was supported by the Brazilian Federal Agency for Support and Evaluation of Graduate Education (Capes) — Funding Code 001.

Conflicts of Interest

The authors declare no conflicts of interest that could influence the results of the study presented in the article.

Data Availability Statement

The data collected and analyzed in the article will be made available upon request to the authors.

Note

The textual revision (grammatical, syntactic, and spelling corrections) of this paper was funded by the *Minas Gerais State Research Foundation* [Fundação de Amparo à Pesquisa do Estado de Minas Gerais — Fapemig], under Call for Proposals 8/2023.

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