

**The influence of the professional space on mathematics teachers' agency in the use of textbooks**

**A influência do espaço profissional sobre o poder de ação de professores de matemática no uso do livro didático**

**La influencia del entorno profesional sobre la agencia de los profesores de matemáticas en el uso del libro de texto**

**L'influence de l'environnement professionnel sur le pouvoir d'action des enseignants de mathématiques dans l'utilisation du manuel scolaire**

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**Abstract**

The aim of this article is to discuss how the professional environment limits or enhances the agency of mathematics teachers in the use of textbooks (TB), within the context of the New Secondary School curriculum. Agency is understood as a continuous process constructed by individuals through the interaction between their personal skills and the resources, opportunities, and limitations of the environments in which they operate. In this sense, the curriculum is part of this environment, influencing teachers' agency, which can be either bounded or contested depending on their interactions with the professional environment and their personal conceptions. This is a qualitative study in which two Secondary School teachers from the state of Espírito Santo were interviewed. The analyses were conducted based on the concepts of official and operational curriculum. The results indicate that the use of TB in Secondary School is directly conditioned by the dynamics and constraints of the professional environment, shaping a complex relationship between teachers, TB, and educational policies. In this context, TB tend to become obsolete, as they are not recognized as part of the official curriculum due to strong pressures from external assessments. However, this study also reveals

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that, despite these limitations, teachers still find ways to assert their agency, turning to TB when they identify its relevance to the intended curriculum.

**Keywords:** Agency, Official curriculum, Operational curriculum, New secondary school, Context.

### Resumen

El objetivo de este artículo es discutir de qué manera el entorno profesional limita o potencia el poder de acción de los profesores de Matemáticas en el uso de los libros de texto (LT), en el contexto del Nuevo Bachillerato. El poder de acción se entiende como un proceso continuo que los individuos construyen a partir de la interacción entre sus habilidades personales y los recursos, oportunidades y limitaciones de los entornos en los que actúan. En este sentido, el currículo forma parte de este entorno, influyendo en la agencia de los profesores, que puede verse limitada o cuestionada según sus interacciones con el entorno profesional y sus concepciones personales. Se trata de una investigación cualitativa en la que se entrevistó a dos profesoras del estado de Espírito Santo que trabajan en la Educación Secundaria. Los análisis se llevaron a cabo a partir de las concepciones de currículo oficial y operacional. Los resultados indican que el uso de los LT en la Educación Secundaria está directamente condicionado por las dinámicas e imposiciones del entorno profesional, configurando una relación compleja entre profesores, LT y políticas educativas. En este contexto, los LT tienden a volverse obsoletos, ya que no son reconocidos como parte del currículo oficial debido a las fuertes presiones de las evaluaciones externas. Sin embargo, la investigación también revela que, a pesar de estas limitaciones, los profesores todavía encuentran formas de afirmar su agencia, recurriendo a los LT cuando identifican su relevancia para el currículo previsto.

**Palabras clave:** Agencia, Currículo oficial, Currículo operacional, Nuevo bachillerato, Contexto.

### Résumé

L'objectif de cet article est discuté de la manière dont l'environnement professionnel limite ou renforce le pouvoir d'action des enseignants de mathématiques dans l'utilisation des manuels scolaires (MS), dans le contexte du Nouveau Lycée. Le pouvoir d'agir est compris comme un processus continu que les individus construisent à travers l'interaction entre leurs capacités personnelles et les ressources, opportunités et contraintes présentes dans leur environnement. Dans ce sens, le curriculum fait partie de cet environnement, influençant l'agence des enseignants, qui peut être limitée ou contestée en fonction de leurs interactions avec

l'environnement professionnel et leurs conceptions personnelles. Il s'agit d'une recherche qualitative dans laquelle deux enseignantes de l'État de l'Espírito Santo travaillant dans l'enseignement secondaire ont été interrogées. Les analyses ont été menées à partir des conceptions de curriculum officiel et opérationnel. Les résultats indiquent que l'utilisation des MS dans l'enseignement secondaire est directement conditionnée par les dynamiques et contraintes de l'environnement professionnel, configurant une relation complexe entre enseignants, MS et politiques éducatives. Dans ce contexte, les MS tendent à devenir obsolètes, car ils ne sont pas reconnus comme faisant partie du curriculum officiel en raison des fortes pressions des évaluations externes. Cependant, la recherche révèle également que, malgré ces limitations, les enseignants trouvent encore des moyens d'affirmer leur agence, en recourant aux MS lorsqu'ils identifient leur pertinence pour le curriculum prévu.

**Mots-clés :** Agence, Curriculum officiel, Curriculum opérationnel, Nouveau lycée, Contexte.

### **Resumo**

Nesse artigo, apresentam-se os resultados de uma pesquisa cujo objetivo é discutir de que forma o espaço profissional limita ou potencializa o poder de ação de professores de Matemática no uso dos livros didáticos (LD), tendo como contexto o Novo Ensino Médio. O poder de ação é compreendido como uma relação dinâmica e situada em que os indivíduos constroem a partir da interação entre suas habilidades pessoais e os recursos, oportunidades e limitações dos ambientes em que atuam. Nesse sentido, o currículo faz parte desse ambiente que influencia o poder de ação dos professores, que pode ser limitado ou contestado por eles a depender de suas interações com o espaço profissional. Trata-se de uma pesquisa qualitativa, na qual foram entrevistadas duas professoras do estado do Espírito Santo que atuam no Ensino Médio (EM). As análises foram conduzidas a partir das concepções de currículo oficial, currículo operacional e materiais instrucionais. Os resultados indicam que o uso dos LD no EM está diretamente condicionado pelas dinâmicas e imposições do espaço profissional, configurando uma relação complexa entre professores, LD e políticas educacionais. Nesse cenário, os LD tendem a se tornar obsoletos, uma vez que não são reconhecidos como parte do currículo oficial diante das fortes pressões das avaliações externas. No entanto, a pesquisa também revela que, apesar dessas limitações, os professores ainda encontram maneiras de afirmar seu poder de ação, recorrendo aos LD quando identificam sua relevância para o currículo pretendido.

**Palavras-chave:** Agency, Currículo oficial, Currículo operacional, Novo ensino médio, Contexto.

## **The influence of the professional space on the agency of mathematics teachers in the use of textbooks**

It is well known that the exercise of teaching is influenced by various factors that impact on the teacher's practice. With regard, for example, to the use of textbooks (TB), there is a need to evaluate/analyze/understand, in a more conceptual way, how these materials influence and impact the teacher's performance, since they are the curricular materials<sup>3</sup> most used by teachers (Valverde et al., 2002).

Fan (2013), when reviewing research on TB in various countries, pointed out that this area of research was still relatively recent compared to others within Mathematics Education. He therefore pointed to a vast field of possibilities for new studies, including those specifically dedicated to the teacher's relationship with TB. This scenario highlighted the scarcity of research on the subject – an aspect also highlighted by Lima et al. (2022) in the Brazilian context.

From the author's perspective, the central question when investigating TB should not be limited to their composition or characteristics, but should also address how they influence other factors, such as the teaching process conducted by the teacher (Fan, 2013). Despite this influence, the teacher is not seen as an implementer or transmitter of the official curriculum that is prescribed by the government (Brown, 2009; Remillard, 2005). Teachers are considered active designers of this curriculum, which places them in a central position, showing the importance of understanding how teachers perceive, interpret and use curriculum materials (Lima, 2017).

The idea of curriculum, specifically mathematical curriculum, used in this research is “a plan for the experiences that learners will encounter, as well as the actual experiences they do encounter, that are designed to help them reach specified mathematics objectives” (Remillard & Heck, 2014, p. 707). The authors also highlight the use of the term “experiences” to emphasize that the curriculum is not restricted to defining topics to be covered or objectives to be achieved, but also encompasses the experiences that students should or do have in order to support their learning.

Thus, it can be seen that the curriculum encompasses an environment that involves the student's learning, whether it is presented by the official curriculum, prescribed by the government, which today is materialized at the national level through The Brazilian National

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<sup>3</sup> It should be noted that textbooks (TB) are understood as curricular materials (Januario, 2017), considering that these materials are characterized by being “instruments that provide references and criteria for teachers to make decisions related to planning, execution and evaluation” (Amaral et al., 2022, p. 26).

Common Curriculum Base – BNCC (2018); or by the operational curriculum, which involves the curriculum intended by the teacher, that is, the planning of their classes and when they actually put them into practice, the enacted curriculum (Remillard & Heck, 2014).

In this curricular dimension, then, TB are defined by Valverde et al. (2002) as mediators between what is prescribed by the official curriculum and what is implemented in class, functioning as a translator that can be used by teachers for their respective classrooms, in which it is possible to have different types of use. In this sense, identifying what motivates teachers to use the textbook in different ways allows us to understand the characteristics of their agency. According to Priestley et al. (2013, p. 188), the agency is conceived as “[...] something that is achieved through engagement with very specific contextual conditions” and is achieved by individuals through the interaction between their personal capacities and the resources, opportunities and limitations of the environment in which they operate.

The concept of agency, therefore, does not refer to a fixed or innate characteristic of the individual, but to a dynamic and situated construction. It is the ability to act intentionally and reflexively in the face of the concrete conditions of the context in which one is inserted. In the case of teachers, the agency is closely related to teacher autonomy, which comes about to the extent that teachers mobilize their professional knowledge, experiences and values in interaction with the available resources and the structural and cultural demands of the school environment. Thus, agency allows us to understand how teachers exercise their autonomy in the midst of real working conditions, negotiating between their pedagogical intentions and what is dictated by the context.

Given this scenario, the aim is to discuss how the professional space limits or enhances agency of mathematics teachers in the use of textbooks. According to Remillard (2005), curriculum changes highlight the importance of studying the relationship between teachers and curriculum materials, since these changes often require significant adaptations on the part of teachers. It was therefore decided to focus on the New Secondary School, due to the curricular reform that has taken place at this stage of education and the new textbooks introduced from this perspective.

As part of the process of producing data for this research, interviews were conducted with teachers from the state of Espírito Santo, where the presence of the official curriculum associated with the Basic Education Assessment Program (PAEBES) stands out, an external assessment applied on a large scale as a public educational policy since 2000 in the state, but which gained greater visibility in 2008 after a reformulation. According to the State Department

of Education's website, its aim is to assess the quality of basic education in the state's public school system and, by adherence, in municipal and private schools (SEDU, 2020).

Five characteristics are considered for this assessment: i) Reference matrix, documents composed of a set of descriptors that specify each skill to be assessed; ii) Item, questions designed to verify whether the student has developed certain skills, being multiple choice and based on the matrix; iii) Proficiency, measure of student performance; iv) Proficiency scale, the aim of which is to translate proficiency measures into qualitative diagnoses of school performance; and v) Performance standard, which consists of intervals for dividing the proficiency scale, grouping students according to their educational profile (Secretaria de Estado da Educação do Espírito Santo, 2022). We would like to highlight what the Program proposes as an alert for the Reference Matrix, by considering it a limited selection from the curriculum.

It is essential to realize that the reference matrix is only a "limited selection" of the curriculum and therefore does not exhaust the learning objectives to be worked on in the classroom. Only the skills considered basic, essential and measurable in the test model used for each area of knowledge and stage of schooling are assessed (Secretaria de Estado da Educação do Espírito Santo, 2022, p. 14).

Given the above scenario, it is understood that the teacher's agency in the use of the textbook does not occur in isolation, but rather in interaction with various factors in the school context. Thus, the curriculum present in this context can direct pedagogical practices and influence the way teachers interpret and use textbooks. Therefore, investigating the influences of the professional space on teachers' agency allows us not only to understand their pedagogical decisions, but also to contribute to the debate on educational policies, highlighting the need for a critical look at the processes that structure pedagogical practice.

### **Teachers' agency associated with their professional space**

What is "[...] something that is achieved by individuals, through the interplay of personal capacities and the resources, affordances and constraints of the environment by means of which individuals act" can be understood as agency (Priestley et al., 2015, p. 19). This understanding is based on an ecological view, emphasizing both the influence of personal factors and the context in shaping the teacher's agency.

In this ecological view, it is understood that human beings act *through* their environment, not only in their environment. In the specific case of a teacher, they act in their family environment, or with their work colleagues, with management or in the classrooms where they teach, for example. Priestley et al. (2015) point out that this action is rooted in past

experiences, oriented towards the future, but materialized in the present. Therefore, in a way, it always translates into unique and specific situations, depending on the influencing factors.

Thus, this way of understanding agency shows that teachers can be reflective and creative, acting in a way that goes against the restrictions imposed on them by the environment, but can also be both empowered and limited by the environment, be it in the specific context of each classroom or school, or in the broader context of public policies.

Three fundamental dimensions are considered in order to achieve agency: i) iterative dimension: always informed by past experience, encompassing professional experience, including training and personal experiences; ii) projective dimension: oriented towards the future, based on a combination of objectives, values and aspirations, both short and long term; and iii) practical-evaluative dimension: agency is always achieved in concrete and specific situations. This dimension highlights, on the one hand, the practical aspect, shaped by the possibilities and restrictions of the context and, on the other, the evaluative aspect, related to the analysis of risks in a given situation (Priestley et al., 2013).

Obtaining agency in a specific situation thus depends not only on the actor, but also on the availability of resources that can be used in the situation, be they cultural, material or structural resources. These resources are often not under the teachers' control, so their agency (or lack of it) is strongly influenced by these factors.

Considering the material resource, Januario (2017) points out that, when interacting with curriculum materials and designing learning situations, teachers activate their beliefs and conceptions about mathematics, its teaching and the curriculum. However, these beliefs, combined with agency, can either favor or hinder the use of curriculum materials and the adoption of new approaches in the teaching and learning of mathematics.

According to the author, the teacher's agency in the use of curriculum materials does not ensure that their interventions in them will always expand or reinforce the meanings set out in the prescriptions, and may in many cases result in practices that diverge from or even contradict what is proposed in the official curriculum. Teachers are therefore considered to be curriculum-making agents, since they intervene, adapt or improvise materials in response to students' learning needs (Januario, 2017).

In this way, the materials influence agency of the teacher who, in the practical-evaluative dimension, decides on their use (Priestley et al., 2013). Just as teachers influence the practice of these materials, demonstrating the dynamic relationship between teacher and curriculum material, the material affects pedagogical choices, and teachers also recontextualize these materials according to their needs and contexts (Aguar & Oliveira, 2017).

As Aguiar and Oliveira (2017) point out, teachers modify the texts of curriculum materials when implementing them in teaching practices, since they identify principles that are interwoven in school contexts and influence teaching practices. In other words, the school context is another point highlighted that has an effect on teachers' agency and, consequently, on their autonomy.

In this context, Oolbekkink-Marchand et al. (2017) highlight the restrictions imposed by the excessive focus on external assessments. For the authors, this focus threatens teachers' professionalism, which tends to reduce their professional autonomy and, consequently, their agency. It is therefore important to understand the teacher's interpretation of their own professional space, understood as the degree of influence that a teacher exerts over their own practice, and therefore closely linked to obtaining the agency.

In their professional work, teachers are faced with a set of rules, exemplified by normative documents such as the BNCC or the New Secondary School, as well as the specific rules of each school. This context is a characteristic of teachers' professional space, characterized by guidelines and regulations of a political nature. However, teachers are seen as active interpreters of the school context in which they work, exercising their agency to achieve their own goals (Oolbekkink-Marchand et al., 2017).

The authors point out that perceptions of the professional space can have a greater influence on teachers' agency than the facts themselves. Thus, these perceptions mediate the effects of the professional space on each teacher, but it is the exploration of this environment that concretizes their agency, that is, how they act based on their own perceptions of themselves within it.

With this in mind, Oolbekkink-Marchand et al. (2017) propose two types of agency. The first is bounded agency, in which the context in which teachers work defines the professional space they are able to explore in their practice. Their actions never go beyond the established limits, and their agency is therefore shaped by contextual constraints, guiding them to act toward their goals within predefined boundaries. The second type is contested agency, in which teachers are characterized by persistence and resilience, leading them to defend their values – even when constrained by contextual factors. Professionals following this trajectory may even experience conflict.

Therefore, the human being acts on the context, but the context also acts on the human being, as Priestley et al. (2013) point out. However, these perceptions of the context can be difficult to recognize. In this sense, Konopasky and Sheridan (2016) explore the use of linguistic cues to analyze teachers' agency in educational contexts. The authors investigate how the



language used by teachers can reveal levels of autonomy and control over their pedagogical practices.

Some of these linguistic cues are: i) identifying oneself as a member of a generalized group can frame the action as collective, reducing individual autonomy; ii) the use of expressions that indicate obligation or necessity, such as 'having to' or 'needing to', reduces personal control and, consequently, autonomy; iii) when attributing the action to an external cause can indicate a reduction in autonomy; and iv) removing oneself from the structure of the sentence through generic statements can indicate a reduction in autonomy (Konopasky & Sheridan, 2016).

Thus, in the analysis that will be presented in the following section, we will highlight such suggestions that may indicate an increase or decrease in teacher autonomy and, consequently, their agency, emphasizing what Priestley et al. (2013) state: any attempt to promote teacher agency needs to engage with this wide range of dimensions and factors, so as not to make the mistake of placing the burden entirely on teachers in isolation.

In order to give the right focus when analyzing the influences on teachers' agency, the scheme proposed by Remillard and Heck (2014) will be used. The authors consider that there are two types of curriculum: the official curriculum, those that are officially sanctioned; and the operational curriculum, which are enacted through practice (Figure 1).

The official curriculum is defined by what is specified by government bodies and influences the operational curriculum, which encompasses the designated curriculum, curriculum objectives and goals, and the contents of curriculum assessments. The operational curriculum includes the curriculum intended by the teacher, the curriculum actually implemented with the students and the student results. Each of these parts, including the outline, will be presented below.

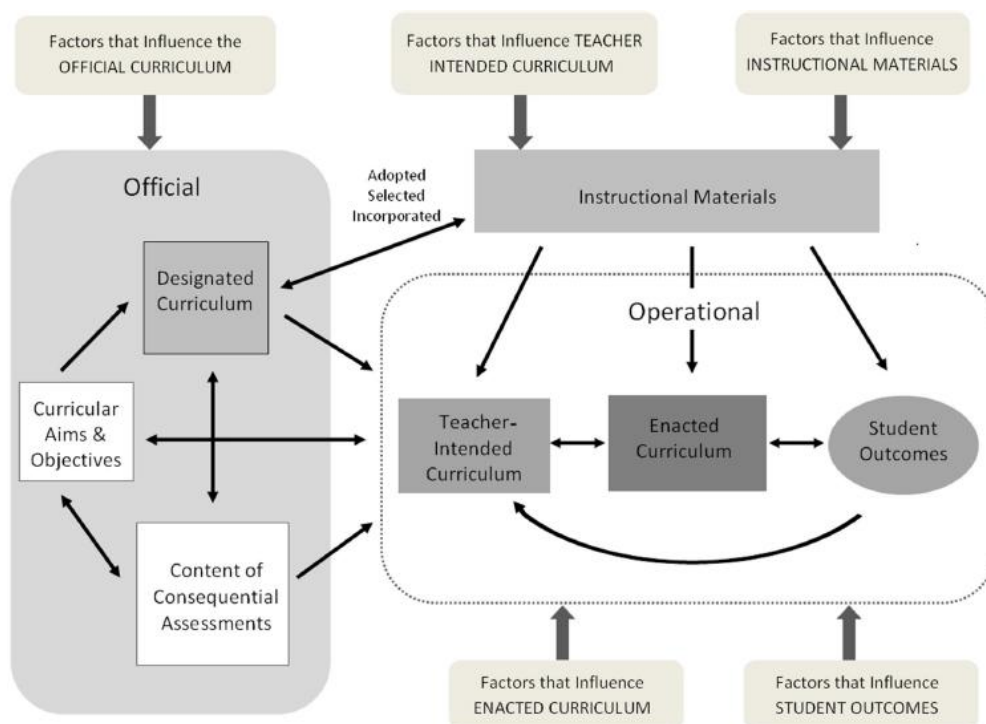


Figure 1.

*The process of conceptualizing the enacted curriculum (Remillard & Heck, 2014, p. 709)*

The designated curriculum refers to the set of instructional plans defined by government entities, such as the Ministry of Education or State Departments of Education. Curricular goals and objectives correspond to learning expectations and outcomes, usually defined by a national or state entity or school system. These elements constitute statements about what students should ideally achieve as a result of teaching. Finally, the content of official assessments, such as PAEBES, rarely covers all of the established curricular objectives, which creates a limited view of the desired competences. Whether intentionally or not, this sends out the message that the competences that are not assessed are less important than those that are actually considered.

It is important to note that official assessments are generally not addressed in the context of the official curriculum. They do, however, indirectly specify the competencies that students are expected to acquire and, as such, represent the intended outcomes. Accordingly, there is a mutual influence among these three dimensions within the official curriculum (Designated curriculum, Curriculum objectives and targets, and Content of official assessments).

A second important point of this structure in Figure 1 is the placement of instructional materials, including TB, outside the official and operational curricula. This allows instructional materials to be ready to be incorporated into either, depending on the particular circumstances. This point of view highlights the diverse roles that instructional materials can take on, often

being integrated into the official curriculum, but also functioning as a crucial tool for teachers throughout the implementation process.

When the official curriculum is handed over to teachers, it begins to transform itself from being just a description of instructional objectives and methods for achieving them, to being concretized in pedagogical practice, where the operational curriculum comes into play, as highlighted earlier with its three dimensions: the curriculum intended by teachers, the curriculum enacted and student outcomes.

When developing the intended curriculum, teachers use the designated curriculum to plan teaching and learning processes, along with other resources, and often use instructional materials to do so. Consequently, the enacted curriculum is strongly influenced by the teacher's intended curriculum, the instructional resources employed, student characteristics, contextual factors and the teacher's ongoing responses to these variables.

Finally, within the operational curriculum, there is the student outcome, which is the variable that Remillard and Heck (2014) consider to be largely shaped by the enacted curriculum. Instructional materials, in turn, play a central role by providing tasks, practical examples, representations, explanations and guidelines on expectations for student work.

Moreover, the components of the official curriculum and the operational curriculum are influenced by various mediating factors. These factors can be social, political, cultural, structural or cognitive, and their influence can be manifested through formal and informal policies, collectively shared beliefs or perspectives, institutional constraints or support, as well as the individual skills and commitments of those involved. These factors, represented by rectangles around the structure, act as forces exerting pressure on the curriculum system.

Thus, in the midst of multiple influences, this text focuses on the professional space, strongly conditioned by the official curriculum, and the teacher's agency in New Secondary School. Wermke and Höstfält (2013) point out that this agency manifests itself in teachers' ability to assess and adapt to the context, making informed decisions about their instructional practices based on professional judgment.

### **Methodology**

This qualitative research (Bogdan & Biklen, 1994; Borba, 2004) aims to discuss how the professional space limits or enhances the agency of mathematics teachers in the use of textbooks, in the context of the New Secondary School. The study was based on interviews with two mathematics teachers from the state school system of Espírito Santo, who work at the secondary education level.

The participants were selected because they work in a context that has access to textbooks, even though it is strongly regulated by public educational policies that are manifested through instruments such as PAEBES, which has a direct impact on teaching practices. In the case of the state of São Paulo, where the authors live, public schools use their own teaching materials and do not adopt the textbooks from the Brazilian National Textbook and Teaching Materials Program (PNLD) as their primary instructional reference.

From the outset, the research was based on the Teorema System (Amaral et al., 2022), which comprises three interrelated stages: planning, exploring the material and processing the data. In the planning stage, we took a contextual view, understanding the teachers' professional space as a central element for constructing the data. The materials exploration stage was not carried out in this research because there was no focus on the materials the teachers used themselves. In the treatment of the data, the analysis of daily life was adopted, which made it possible to identify significant elements in the participants' statements, connecting their experiences to institutional conditions and school practices, and articulating a constant dialog with the theoretical framework.

Data analysis was developed based on five main steps, which are summarized in Figure 2. The first stage consisted of two semi-structured interviews with Secondary School teachers, in which they were asked about their views on textbooks, their potential and limitations in using TB, whether textbooks are the main source of support for lessons, whether there have been changes in the way they are used over time, how public policies influence this use, and the relationship between students and TB, as well as questions related to New Secondary School.

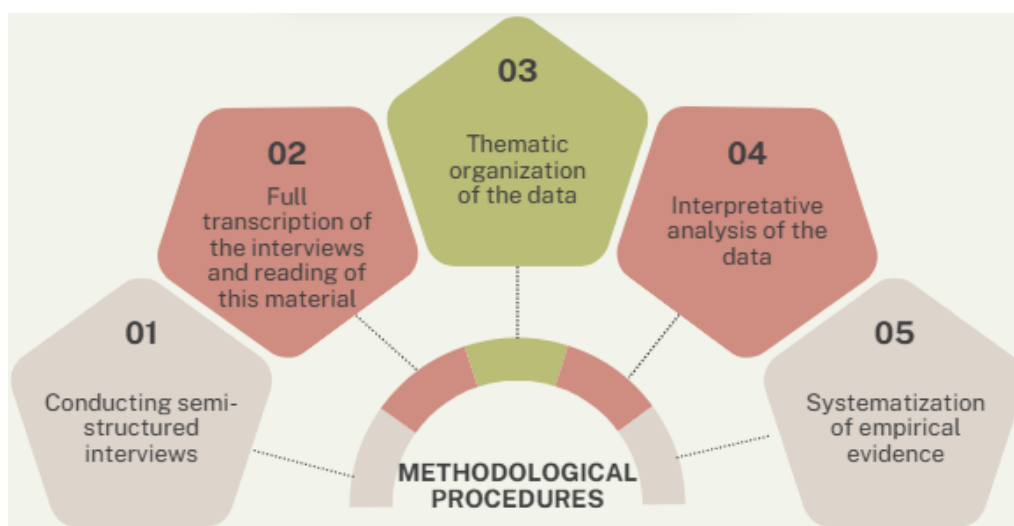


Figure 2.

*The stages of the methodological procedure adopted in this research (Prepared by the authors)*

Next, the interviews were transcribed in full and the material was read, with the aim of capturing initial impressions and possible thematic recurrences, using highlighting. The third step was the thematic organization of the data, guided by the analytical categories of Remillard and Heck's model (2014), namely: official curriculum, operational curriculum and instructional materials.

In the fourth step, an interpretative analysis was conducted on the data, which had been categorized, aiming to understand how different forms of agency (bounded or contested) are manifested by the teachers in response to institutional constraints. Finally, the fifth step consisted of systematizing the empirical evidence based on the dimensions of agency proposed by Priestley et al. (2013), linking the teachers' statements with the theoretical references mobilized.

This methodological path made it possible to interpret, in greater depth, how the teachers construct their intended curriculum and operationalize their practices based on the tensions between the official curriculum, the available materials and the professional space in which they respectively work, in view of agency to act in this context.

### **Data analysis**

In the context of the official curriculum, the teachers commented several times on the PAEBES, the pedagogical routine and the review of descriptors, demonstrating a concern with this assessment Program that is carried out by the students at the end of the educational cycles. These pedagogical routines are organized on a weekly basis, presenting what the teachers should be working on with their classes during that period, with the aim of covering the skills set out in the official curriculum of Espírito Santo<sup>4</sup>, correlating them to the weakest descriptors of PAEBES in the last 3 editions and to the matrices of the Diagnostic Assessment and the Basic Education Assessment System (Saeb) (SEDU, 2024).

The teachers then report on the lack of freedom to work with the textbook, given the number of requirements they must meet in order to ensure the promulgation of the official curriculum, in which the book is not totally related. Also, in the first year of Secondary

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<sup>4</sup> The weekly teaching routines for Secondary School can be found here:

- 1st grade <https://curriculo.sedu.es.gov.br/curriculo/wp-content/uploads/2025/07/CALENDARIO-RPE-MAT-1-EM-04-07-25.pdf>
- 2nd grade <https://curriculo.sedu.es.gov.br/curriculo/wp-content/uploads/2025/07/CALENDARIO-RPE-MAT-2-EM-04-07-25.pdf>
- 3rd grade <https://curriculo.sedu.es.gov.br/curriculo/wp-content/uploads/2025/07/CALENDARIO-RPE-MAT-3-EM-04-07-25.pdf>

Education there are five math classes, as opposed to three in the third year, which influences the lack of freedom:

ANA: *So... 1st grade still has five classes. You can get out of the [pedagogical] routine a bit, but 3rd grade, for example, has three classes a week, so you can't do much. And there's PAEBES, there's the revision of descriptors, so it's not feasible to use the textbook.*

LÍVIA: [...] *The following year, in 9th grade, I had the A Conquista da Matemática [The Conquest of Mathematics] textbook, which was my main source. [...] In Secondary School, I used the internet a lot. Because the book wasn't an accompaniment.*

It is important to note that, according to the PNLD, the TB must be aligned with the BNCC (Fundo Nacional de Desenvolvimento da Educação, 2019; Ministério da Educação, 2018). However, teacher Livia reports that the book does not accompany her pedagogical practice. This is because the teaching routines adopted by the state end up becoming the official curriculum for her, in the face of the BNCC. Although these routines are based on national guidelines, they follow different orders and approaches, which leads to the perception that the textbook does not meet the teaching expectations set for the students.

In the teacher's specific case, the textbook didn't follow the weekly structure that she had to follow, as teacher Ana also reported when she said that: "*if the textbook was within the curriculum that I have to follow [...], it would be very ideal*". Thus, in both cases, the textbook is not seen as part of the official curriculum, but potentially as part of the operational curriculum, and is only used if the teachers choose or manage to integrate it into the planning and conduct of their lessons.

This scenario reveals the limitation of the teacher's agency, since, by emphasizing pedagogical routines, the textbook ends up becoming obsolete in the face of the demands of the official curriculum. As a result, it can be seen that when textbooks are excluded from what is recognized as the official curriculum, their use becomes more limited by teachers.

This is also evident in the focus given to the contents of the PAEBES and Brazilian National Secondary School Exam (ENEM) assessments, revealing a tension between the official curriculum and teacher autonomy. Teacher Livia's account strongly expresses the influence of these external assessments on the way she uses, or stops using, the TB. When she says that the "style" of the book "*didn't fit*", Livia is referring not only to the format and language of the work, but also to a way of organizing content and pedagogical proposals that does not align with the demands of external assessments centered on training descriptors and question-solving. Thus, the book, as it was conceived, becomes incompatible with this focus on assessment-

oriented practices. In the same vein, teacher Ana reinforces the priority of complying with teaching routines to the detriment of using the TB.

LÍVIA: *Last year I had [...] two 3rd years of Secondary School. But if I tell you that I used [the textbook] once, I'm lying. **I didn't use the textbook once. It's a graduating class that does PAEBES, right?** [...] So I followed the curriculum, but I also had to follow the PAEBES matrix [...] **And our main focus was the PAEBES matrix.** And then it was all about exercise lists, reviewing descriptors, reviewing descriptors, then ENEM, so... **the book, in that style of book, didn't fit me.** It was a lot of solving questions with them all the time. Revising content, solving questions... sometimes I tried to bring in ENEM questions, right? So the book... it doesn't fit. [...] Everything has to be focused on that, on that test, right? [...] Oh, I have to teach matrix... let's say it's in the curriculum. But I can't spend too much time! Wait a minute... **what was on the matrix in PAEBES? Then you look at it the way it is. Oh, just analyze it, oh so that's what I'm going to do because I need time. I need time for the next one.***

ANA: *I really like the textbook, I really do. I have nothing to say. I use it, even if I don't use everything. But that's the thing... since the New Secondary School and this pedagogical routine, [she seems to be explaining why she doesn't use the textbook as much] [...] And I don't even know if all schools do it. My school follows this routine. **Because all the external assessments are based on this routine, so there's no way not to comply.***

The influence of external assessments on teaching practices and school activities is recognized (Pereira & Cunha, 2022). Bonamino and Sousa (2012) highlight the need to pay attention to the risks associated with narrowing the curriculum, especially when the results of external evaluations take on an expanded and often disproportionate pedagogical significance. In these cases, the curriculum practiced in the classroom tends to be molded to what is being assessed, to the detriment of other formative dimensions that are not covered by these tests. This excessive alignment reduces the space for teacher autonomy, as it imposes a teaching logic guided primarily by the criteria of large-scale assessments.

This dynamic directly affects teachers' agency, as the centrality of external assessments compromises their autonomy and threatens their professionalism (Oolbekkink-Marchand et al., 2017). In the projective dimension of teachers' agency, in which teachers anticipate possibilities and plan their future actions (Priestley et al, 2013, 2015), this pressure for results limits curricular choices and makes it difficult to build practices in line with their educational intentions. Large-scale tests end up determining teaching practices aimed at preparing students to be tested and graded (Peralta, 2012) and, consequently, condition the decisions made in the practical-evaluative dimension, often compromising the coherence between the teacher's pedagogical intentions and the curriculum practiced.

In this context, the use of TB is also impacted, often being relegated to a secondary role in the face of demands and pressures for results in external assessments, as teacher Ana points out. Her statement, *“there’s no way not to comply”*, shows that she perceives institutional demands as unavoidable, revealing how she is inserted in an environment marked by control and demands for results. The teacher does not see herself outside the logic imposed by her professional space, which points to a limited agency, in which the possibilities for pedagogical exploration are strongly conditioned by external factors (Oolbekkink-Marchand et al., 2017). Thus, the context ceases to be just a scenario and starts to act as a determining force on teaching choices, restricting autonomy and the ability to act intentionally.

In the same vein, teacher Lívia emphasizes that, when developing the curriculum, she considers most appropriate, she bases her planning on the content required by PAEBES. She makes this idea explicit when she says: *“Then you look at it the way it is. Oh, just analyze it, oh so that’s what I’m going to do”*. She also mentions her frustration at never being able to complete certain content, such as Arithmetic Progression, due to lack of time and the pressure to focus on what is required in these assessments. As a result, she ends up approaching the content in a more superficial way, without the desired depth, which goes against his pedagogical intentions, reducing her autonomy and, consequently, her agency.

Along with the pressures stemming from external assessments—especially in the context of the third year of Secondary School—teachers also highlight the difference they feel when working in the final years of Elementary Education versus Secondary School. They report having greater autonomy in the former, which results in more frequent use of textbooks in this stage compared to Secondary School. Additionally, logistical factors also played a role in shaping how textbooks were used in each context.

LÍVIA: *In the schools where I worked, the textbook always stayed at the school. This one, for example, from secondary school... in elementary school there were a lot of books. You took it into the classroom and there was one book per pupil. In secondary school, there were very few... you even had to group the students together in class to keep the books, right?*

This is an important complaint from teacher Lívia in the practical-evaluative dimension of her agency. Spending on the 2021 PNLD for secondary education amounted to almost two billion reais on books and teaching materials for thousands of students in the country’s public schools (Fundo Nacional de Desenvolvimento da Educação, 2022). With such a significant outlay, the lack of textbooks for students is unacceptable, as the teacher describes, directly influencing her agency in not using textbooks to teach her classes, due to a limitation of her



professional space (Priestley et al., 2013). It is important to highlight the role of teachers having a professional space at their disposal that favors their agency in the decisions they make to enact the curriculum.

Finally, within the official curriculum, it is also possible to perceive the influence of curricular objectives and goals on the use of TB through external assessment indices. Both teachers emphasized the pressure to increase their students' scores in the PAEBES.

**LÍVIA:** ***Girl, the business of this government is to increase the PAEBES scores. It's about making it look like these kids are learning more. But it's so rigid, so rigid — you have no idea! Like I said about arithmetic progression — that's all they learn. You know? Totally rigid! And with equations, it's exactly the way it shows up on the test, so that's exactly the way we drill it. So they learn just that and get good at just that. [...] And then sometimes the teacher ends up not using the textbook much at all.***

**ANA:** *... And these external assessments, **these numbers the system is so fixated on**, sometimes make it hard for us to even do our jobs, you know? It just gets harder, so...*

In teacher Livia's speech, we can see that she ends by talking in the 3rd person singular about how the teacher may be stopping using the TB because of the pressure to increase external assessment scores. Teacher Ana also talks about how these results make it difficult for "us" to work. It can be seen that they see themselves as members of a generalized group of teachers, which may indicate a reduction in their autonomy (Konopasky & Sheridan, 2016) and, consequently, their agency. This is because they see the external pressure as framed for everyone, not just themselves, and it does not make it easier for them to go against this pressure and thus in favor of their own personal conceptions, in a contested agency (Oolbekkink-Marchand et al., 2017).

Now in the context of the operational curriculum, it became clear how the environment also influenced the way the teachers used the textbook in the curriculum they wanted. The lack of textbooks in secondary education has already been pointed out, making it difficult to use them in this segment, unlike in primary education. In addition, the limitation in the practical-evaluative dimension of TB not being able to be taken home was also a reason for the school to press for the printing of exercise lists.

**LÍVIA:** *[...] Nowadays, students want a lot... they don't have much patience. It's different, isn't it? Everything has become so immediate, so fast. I used to bring a lot of ready-made things, a lot of pre-made lists. Sometimes printed... **the school also encourages us to do this to save time. Because students don't take the book home. The materials, yes...** we just hand out the lists, right?! The school reproduces them and they take them home.*

Thus, we can see another logistical issue that reduces the teacher's agency in the school when using TB, and this use is even treated as a waste of time. Here, the school also appears as a key point, by pushing for the printing of these lists. "School", in the context of school management, comes up at times to point out this influence on the use of TB. They pointed out the superiority of the lists to the detriment of the activities in the book, and the lack of feedback from the management to the teachers:

LÍVIA: [...] I'll tell you... these [New] Secondary School books, I've never seen anyone with them. [...] **there's a lot that I don't think the school passes on.** I remember a school... [...]. At the end of the year, we had no students and the principal needed to take a lot of books from one place and put them in another. She asked us to help. So, we went to carry these books. That's when I saw a lot of these Secondary School books, with what you're telling me... with this kind of material. I: "Wow, it's not just math, Portuguese, and... there's also, right? For these subjects... [referring to the books for the Integrating Projects]" that's how I got in touch, and I was like "wow, there's this, there's a direction for this" and nobody comments on it.

Once again, teacher Lívia makes an important complaint about the lack of textbook distribution to teachers. With the changes to the New Secondary Education, new textbooks were created to meet the standards, including the Integrating Projects textbook, which aims to organize knowledge in an integrated and complementary way around contextualized situations (Ministério da Educação, 2020). The Training Itineraries subjects, which are based on these Integrating Projects textbooks, can be taught by teachers from different areas. Due to the strong interdisciplinarity, the teacher commented on the difficulty faced by colleagues who taught these subjects, as they didn't know what or how to approach the content, since they had to teach topics outside their areas of expertise.

It is regrettable that there are materials available to support these teachers, who have been taken out of their habitual teaching practices, and these materials are not presented to them, which makes it difficult for them to teach, since one of the functions of the textbooks is to be a curriculum reference and a source of theoretical and methodological knowledge (Amaral et al., 2022). This shows that the way teachers use textbooks is regulated by principles that operate selectively in the pedagogical context (Aguilar & Oliveira, 2014).

In addition to the difficulties faced in the professional space, the teachers' personal conceptions have been highlighted, influencing their use of textbooks (Brown, 2009; Carvalho & Amaral, 2025; Januario, 2017; Remillard, 2005). The teachers say they like the books very much, including some specific collections, but they make it clear that they don't use them as often, as indicated by the past tense verbs in their speeches.

LÍVIA: *It's hard to ask math teachers these kinds of questions, isn't it? Because I actually like [the math textbook]! I've always really enjoyed using textbooks — especially with my Elementary School classes. In Secondary Education, though, I didn't use them as much, and I'm not sure why. **But there were books like A Conquista da Matemática [The Conquest of Mathematics], which I thought were really good — very practical, with simple language that worked well with students. I used it a lot.***

ANA: *So, I used to use it a lot more, and I really liked it. [...]. Nowadays, the state of Espírito Santo follows a standardized pedagogical routine. So, the textbook is the same across the board for 1st, 2nd, and 3rd year of Secondary Education, which I didn't really agree with... **I wasn't a fan of this "New Secondary Education" model, and even less so of how the textbook is being used.** Every year, they use the same book, depending on what the teacher happens to be covering. That approach didn't work very well for me.*

In the first excerpt, teacher Livia points out that she uses textbooks more in elementary school than in secondary education, but says she doesn't know why she couldn't use them as much in the latter segment. This excerpt shows that the teacher has been under pressure that reduces her agency, but she doesn't know where it comes from, as she has difficulty explaining the reasons behind her own decisions, which again exemplifies an agency bounded by the professional environment (Oolbekkink-Marchand et al., 2017; Priestley et al., 2015).

On the other hand, Ana's speech reveals her dissatisfaction with the new format of the TB used at New Secondary Education, which led her to significantly reduce their use. In this case, the teacher's agency is contested (Oolbekkink-Marchand et al., 2017), since, since it doesn't meet what she believes as a teacher, she decides not to use them in this new format, as a decision of her own that challenges what is set.

Thus, we see TB outside the scope of the operational curriculum in the context of the Secondary Education, and especially the New Secondary Education. A rejection of the official curriculum, then, implies a rejection of the TB when it is understood that they are translators of the official curriculum (Valverde et al., 2002). As a result, personal conceptions can be a major factor in the teacher's agency. In addition, experiences are also taken into account in the curriculum intended by the teachers, since they can shape their personal conceptions of how to look at the TB in a dynamic relationship with the present context (Aguiar & Oliveira, 2017).

LÍVIA: *It's so much easier... Just having a textbook for each grade. [...] So much more practical. It kind of makes you want to use it more. I don't know, I'm not sure why. **Maybe it's just habit, you know? I grew up with it in school.***

ANA: *[...] and students too, they're very different. The students I have today aren't anything like the ones from 20 years ago. The kind of student you were back then... they're just not the same anymore. Today's students have so many advantages, so much*

*working in their favor. **Back in my day, when I was in school, things were completely different.***

These past experiences are part of the iterative dimension of agency, as they relate to the memories, experiences and knowledge accumulated throughout the teachers' lives. They directly influence the way these teachers perceive and use the TB in their daily practice. This manifests itself in the practical-evaluative dimension (Priestley et al., 2013, 2015), that is, in the present, when these experiences are articulated in the current context, informing decisions, justifying choices and limiting or expanding the possibilities for action. In this way, we can see how the past is part of the teachers' agency in the use of TB, being mobilized in a continuous and situated way in their pedagogical practices.

Still in the operational curriculum, but now considering the students' results, it is possible to see how the students interact with the textbooks. Teacher Livia points out that her students generally like the books because it means they won't have to copy lessons into their notebooks, but she makes an important point:

*LÍVIA: Oh, nowadays students want everything to be tech-based, right?! But they don't actually mind it that much. Sometimes, if I handed out the textbook and said, "We're going to do exercises from this page to that one," as long as they didn't have to copy it all down, they were fine with it, they actually preferred it [laughs]. [...] There were even cases of really good students who wanted to take the book home, but the school wouldn't allow it... there were those kinds of limitations too. **Withholding that material wasn't great.***

Here we see a limitation in the format of how these TB were designed to be used in their respective classroom contexts. The books for the final years of elementary and secondary education are all reusable and non-consumable, but they can be taken to students' homes for study. However, the school where this teacher worked did not allow this, which implies a limitation for the students and, consequently, for the teacher's agency (Priestley et al., 2015), which goes against what the teacher would like.

At the end of the operational curriculum is the enacted curriculum, which will not be discussed in this text because no classroom research was carried out with these teachers (this is the next step in the research, which is already underway). Given that the intended curriculum can and often does differ substantially from the enacted curriculum, it is understood that we are not in a position to discuss this topic at this time.

Finally, based on Remillard and Heck's (2014) discussion of instructional materials, in which TB fit, which are not plastered in the context of the official and operational curriculum, it was possible to understand both positions, as the authors brought up. Teacher Ana emphasizes

using the textbook as a basis, in this case functioning as the official curriculum. In addition, with a focus on the operational curriculum, Lívia recalls her early days as a 6th grade teacher, when she found herself in a difficult situation because she hadn't seen that content for a long time.

*ANA: And I treated [the textbook] as the curriculum, you know, as a kind of foundation, and I would use it, or not use it. So, I had the choice to use it or not.*

*LÍVIA: [...] I actually did use [the textbook] to help guide me, because, you know, when we finish (I did my undergraduate degree, then a master's, which was academic, right?! I even taught at university...), and then when I ended up in the public school system, girl, I was assigned to a 6th grade class... and it was like, teaching really basic stuff, right?! And the textbook, whether I liked it or not, I'd read through it to figure out where I needed to start. [...] We go so long without looking at the basics. [...] So it really helped me in preparing content in that sense.*

In Lívia's speech, it's clear that the TB served as an operational curriculum, guiding the teacher in her decisions about where to start and how to prepare content she hadn't had contact with for a long time, in other words, collaborating in the construction of her intended curriculum. In the iterative dimension, the teacher's insecurity is evident, given the distance she has had, throughout her academic career, from the contents of elementary education, which directly influences her perception and performance in the present.

In this context, the textbook plays an important role in the practical-evaluative dimension, supporting the organization of pedagogical practice by offering references on where to start and how to structure the content to be taught, according to the demands and dynamics of the school context. The potential of the textbook as a learning tool for teacher training is also highlighted, contributing to the teacher's continuous professional development (Carvalho & Amaral, 2025; Perovano & Januario, 2024). This is also forcefully pointed out by teacher Ana when asked if she has ever learned anything from the textbook in order to teach.

*ANA: Certainly. Not recently, but I've learned methods that I'd never seen in the textbook back in Secondary Education. Funny enough, I started working with the 3rd-year class this... last month, covering the equation of a circle. While I was teaching, I remembered a method from an old 3rd-year textbook. I searched so much for that book to review it but couldn't find it. But then I remembered, I researched... and I used that method, which was much easier than completing the square. I used a different method because I recalled the textbook.*

It's interesting to note that this learning, which apparently took place years ago, still lives on in her mind. Through the textbooks, then, the teacher exercises her agency, not bound by the explanations of the equation of the circle present around her in the practical-evaluative

dimension. However, because of her learning from the textbooks, she exercises this agency in the development of the curriculum she intended and apparently enacted: *“I used that method”*.

Thus, it was possible to observe the various influences of the professional space on the teachers’ agency in the use of mathematics textbooks. This space, in which the teachers are inserted, exerts a pressure that bounds their agency, although it still offers possibilities for contestation through their personal beliefs and conceptions.

### Conclusions

After analyzing the data, it was possible to see the strong influence of the professional space on the teachers’ agency, compared to their personal conceptions. On this first point, we observed attempts to limit the teachers’ agency, whether due to external or internal pressures at the school where they teach.

The strong focus on pedagogical routines, reference matrices, and PAEBES showed how TB become obsolete, since they are not seen as part of the official curriculum in this context. This pressure in the professional space affects the way teachers use the textbooks, making it difficult to fit them into the intended curriculum and prioritizing preparation for these external assessments. Thus, it can be concluded that when textbooks are disregarded as part of the official curriculum, their use by teachers becomes more restricted, or even completely useless, to the detriment of external evaluations that end up standardizing the practiced curriculum (Peralta, 2012).

We can see how external assessments have acted as a central actor in the official curriculum, influencing the way teachers incorporate the textbooks. In addition, this pressure on the professional space has been shown to bound the teachers’ agency in relation to her personal conceptions, since they are forced to approach certain content in a superficial way, compromising the desired depth and reducing teaching autonomy. On the other hand, it was also possible to perceive personal conceptions as protagonists for a teacher’s agency that is contested and not limited by this professional space, especially in the context of New Secondary Education (Oolbekkink-Marchand et al., 2017; Priestley et al., 2015).

The substantial difference in the use of TB in Elementary Education compared to Secondary Education was also highlighted. The teachers emphasize that, in Elementary

Education, they feel greater freedom to use the TB, both because of the structure of the segment, which has a more extensive workload for the development of content, and because of the lesser pressure related to external assessments and entrance exams. In Secondary Education, on the other hand, the intense focus on preparing for these tests ends up directing pedagogical practices, reducing the space for in-depth use of TB. In addition, the curriculum guidelines and the requirements imposed by the New Secondary Education reinforce this difference, making the use of TB less recurrent.

Now focusing on the internal professional space, there was tension from the school management over the printing of activity lists to the detriment of the use of TB, as well as a complaint about a school that forbade students to take these books home, which again limited the teacher's agency, as well as hindering the learning process of students who would like to use these materials for their studies.

Moreover, two complaints were made regarding the lack of communication from the school management about the Integrated Projects books and the absence of textbooks for all students in the high school classes. These problems have a direct impact on teachers' work and on the teaching and learning processes, compromising pedagogical practices. Both complaints are alarming, considering the high investment allocated to the PNLD to ensure that these books reach schools, guaranteeing a copy for every student and teacher. The lack of efficient distribution not only wastes public resources but also undermines equity in access to this educational material, harming both teachers' planning and students' learning. It is unacceptable that failures in the management of these materials bound the teacher's agency.

Despite this, the teachers stressed the importance of the textbooks for their agency, especially as a support for organizing their teaching practices, especially as a curriculum reference (Amaral et al., 2022). In addition to serving as teaching support, the TB also functioned as learning tools, favoring the construction of practices aligned with their educational intentions, highlighting their potential for teacher training. This process contributed to a greater agency in the curriculum they intended to implement and, consequently, in the curriculum enacted in the classroom.

Thus, the amount of time allocated to math classes, coupled with the internal and external pressures experienced in the professional environment, implies a limitation on teachers' agency in the use of textbooks, even when these align with their personal beliefs and preferences. In this way, even though the TB are part of the PNLD and aligned with the BNCC, they can be marginalized in practice due to the demands and pressures of the educational system, revealing tensions between educational policies, personal conceptions and the reality of the classroom.

Given these considerations, it can be seen that the use of textbooks in Secondary Education is directly conditioned by the dynamics and impositions of the professional space, resulting in a complex relationship between teachers, textbooks and educational policies. Although textbooks are recognized as important materials, their use is subject to various restrictions that limit teachers' agency, rendering them secondary to the demands of external assessments and the official curriculum.

However, it is also evident that, despite these limitations, teachers still find ways to assert their agency, turning to textbooks when they recognize their relevance to the intended curriculum. Thus, the way books are used reflects not only the pressures of the professional environment but also the strategies teachers develop to cope with these influences, reaffirming the need to discuss educational policies that value teachers' agency.

### **Acknowledgements**

Thanks are due to the support of the São Paulo State Research Foundation (FAPESP), under process no. 2023/14582-3, and to the research group teorEMa – Interlocutions between Geometry and Mathematics Education, whose contributions were invaluable to the discussion of this text.

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