

OPEN EDUCATIONAL RESOURCES IN HIGH SCHOOL: A THEMATIC ANALYSIS OF SCIENTIFIC LITERATURE IN THE LIGHT OF CURRICULAR JUSTICE

RECURSOS EDUCATIVOS ABIERTOS EN LA EDUCACIÓN SECUNDARIA: UN ANÁLISIS
TEMÁTICO DE LA PRODUCCIÓN CIENTÍFICA A LA LUZ DE LA JUSTICIA CURRICULAR

RECURSOS EDUCACIONAIS ABERTOS NO ENSINO MÉDIO: UMA ANÁLISE TEMÁTICA DA
PRODUÇÃO CIENTÍFICA À LUZ DA JUSTIÇA CURRICULAR

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Abstract

This article analyzes the national scientific production on Open Educational Resources (OER) in the context of Brazilian high school education, based on the principles of curricular justice. The research is qualitative and bibliographic, with articles published between 2014 and 2024 composing the corpus, aiming to examine the meanings attributed to OER and discuss their potential and limitations for building fairer curricular practices. Thematic analysis was adopted as the technique, allowing the identification of recurrent issues in the studies. The findings indicate that OER foster a culture of openness, favor (co)teaching authorship, connect with cyberculture, stimulate collaborative practices, and promote student protagonism, but lack deeper discussions on distributive justice and the fight against inequalities. It is concluded that the debate on OER needs to advance to incorporate broader social and political dimensions, moving beyond merely technical and instrumental approaches.

Keywords: Open Education; Cyberculture; Social Justice.

Resumen

Este artículo analiza la producción científica nacional sobre Recursos Educativos Abiertos (REA) en el contexto de la educación secundaria brasileña, a la luz de los principios de la justicia curricular. La investigación es cualitativa y bibliográfica, con artículos publicados entre 2014 y 2024 que componen el corpus, buscando examinar los significados atribuidos a los REA y discutir sus potencialidades y límites para la construcción de prácticas curriculares más justas. Se adoptó el análisis temático como técnica, lo que permitió identificar cuestiones recurrentes en los estudios. Los hallazgos indican que los REA fomentan una cultura de apertura, favorecen la (co)autoría docente, se articulan con la cibercultura, estimulan prácticas colaborativas y promueven el protagonismo estudiantil, pero carecen de discusiones más profundas sobre justicia distributiva y el combate a las desigualdades. Se concluye que el debate sobre los REA necesita avanzar para

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incorporar dimensiones sociales y políticas más amplias, superando enfoques meramente técnicos e instrumentalizadores.

Palabras clave: Educación Abierta; Cibercultura; Justicia Social.

Resumo

Este artigo analisa a produção científica nacional sobre Recursos Educacionais Abertos (REA) no contexto do Ensino Médio, à luz dos princípios da justiça curricular. A pesquisa é qualitativa e bibliográfica, com artigos publicados entre 2014 e 2024 compondo o corpus, buscando examinar os sentidos atribuídos aos REA e discutir suas potencialidades e limites para práticas curriculares mais justas. Adotou-se a análise temática como técnica, permitindo a identificação de questões recorrentes nos estudos. Os achados indicam que os REA fomentam uma cultura de abertura, favorecem a (co)autoria docente, articulam-se com a cibercultura, estimulam práticas colaborativas e promovem o protagonismo discente, mas carecem de discussões mais aprofundadas sobre justiça distributiva e combate às desigualdades. Conclui-se que o debate sobre REA precisa avançar para incorporar dimensões sociais e políticas mais amplas, superando abordagens meramente técnicas e instrumentalizastes.

Palavras-chave: Educação Aberta; Cibercultura; Justiça Social.

Introduction

In this study we aim to analyze, through a thematic approach, national scientific articles that address Open Educational Resources (OER) in the context of Brazilian High School Education using the principles of curricular justice. For this purpose, we propose to map the main articles published between 2014 and 2024 that address this topic, considering that 2014 was the year in which OER were mentioned in the National Education Plan (Law No. 13.005/2014 – Brasil, 2014) as strategic tools for improving learning outcomes. Based on this survey, we seek to examine the meanings attributed to OER in the selected studies using the theoretical framework of Curricular Justice, and, finally, to discuss the potential and limitations of these resources for building fairer curricular practices in High School Education.

To understand the integration of OER into the educational landscape, it is necessary to revisit their historical trajectory – from the international forums where the concept was initially discussed, as noted by Bliss and Smith (2017), to their incorporation into Brazilian public policies. This trajectory requires, first and foremost, an engagement with the philosophical foundations of Open Education, as discussed by Ferreira and Corrêa (2019). It is in this context that the term "Open Educational Resources" emerges, as outlined by Mallmann and Nobre (2015), taking shape as the material expression of Open Education principles.

The choice to analyze OER through the lens of curricular justice stems from the understanding that the adoption of such resources in a country like Brazil, characterized by structural inequalities, shows us possible pathways for expanding access to knowledge. In this regard, Jacques, Mallmann and Mazzardo (2021) highlight that OER contribute to curriculum democratization and to emancipatory pedagogical practices. Wiley (2014), in turn, by proposing the 5Rs philosophy – retain, reuse, revise, remix, and redistribute – offers a practical framework to guide the use and dissemination of these resources.

In this context, it becomes essential to consider the current situation of High School Education in Brazil. In order to understand this stage, it is required an acknowledging of the historical conflicts that permeate the educational field, as analyzed by Arroyo (2013). In this regard, Araújo and Frigotto (2015) advocate for overcoming models that, still today, deny critical thinking and autonomy to students from working-class backgrounds.

It is equally important to consider the recent educational reforms, which have intensified disputes surrounding the curriculum and have had a direct impact on High School Education. Piolli and Sala (2021) offer a critical reading of the New High School law (Brasil, 2017) and how it contributes to curricular fragmentation. Along similar lines, Freitas (2018) warns against the neoliberal logic that distorts the social function of the school.

As previously mentioned, curricular justice serves us as the guiding framework for the thematic analysis developed in this study. To that end, it is necessary to understand it through the multiple dimensions that comprise it. Connell (1992) contributes to this perspective by stating that justice should not be conceived as a final goal, but rather as a continuous process, marked by choices that (re)define the meaning of equality within school institutions.

Ponce and Araújo (2019) proposes an approach that articulates three fundamental axes: the dimension of knowledge, democratic coexistence, and care. In convergence, Santomé (2013) endorses the notion of curricular justice by emphasizing that it requires an attentive gaze toward present-day demands and a sensitivity to students' realities.

Within this debate, Machado and Silva (2017) reinforce the importance of a counter-hegemonic curriculum, committed to breaking with educational paradigms that primarily serve the interests of the elite. Fraser (2002), in turn, argues that redistribution, recognition, and participation are essential pillars of curricular justice. According to the

author, disregarding these principles entails the perpetuation of educational inequalities. Similarly, Silva (2018) understands curricular justice as a collective construction whose implementation requires the engagement of multiple actors and institutional levels involved in the formulation of educational policies.

Methodologically, this research was conducted through a bibliographic review carried out on the CAPES (Coordination for the Improvement of Higher Education Personnel) Journal Portal. We chose to select national scientific articles to understand how the topic has been discussed within the Brazilian context.

After applying the relevant filters, we arrived at a corpus composed of seven (07) studies, which were duly coded in accordance with the principles of thematic analysis. This method guided our identification of recurrences, tensions, and the meanings attributed to OER. From this process, we were able to organize the information around three main themes: “Teacher (Co)authorship and a Culture of Openness: Resistance to Curricular Homogenization,” “Cyberculture and Technological-Pedagogical Fluency as Axes for the Democratization of School Knowledge,” and “Curriculum in Motion: OER as Instruments for Constructing Student Agency”.

- Open Education and Open Educational Resources: Conceptual Foundations and Historical Trajectory

Before delving into the discussion on Open Educational Resources (OER), it is essential to first appropriate the concept of Open Education (OE), of which OER are part of. According to Ferreira and Corrêa (2019), Open Education should not be understood as the merely use of Open Educational Resources, but as a set of practices shaped by the specific context and by the teaching and learning processes in which they are embedded.

In the context of cyberculture, Santaella (2014) proposes the concept of ubiquitous learning as a manifestation of Open Education. For the author, this modality expands the horizons of education, challenges traditional models, and calls on educators to rethink their practices considering subjects who are increasingly connected and immersed in continuous flows of information. In this regard, the perspective presented by Beviláqua et al. (2023) aligns with this conception by highlighting the potential of OER in the

contemporary digital environment, stating that: “[...] open licensing and the adaptation of OER, with the inclusion of resources such as texts, images, videos, hyperlinks, etc., in their various modules, currently also allow the incorporation of other tools within them” (Beviláqua *et al.*, 2023, p. 13).

Within the scope of the transformations driven by digital technologies, Mallmann and Nobre (2015) emphasize that the idea of disseminating freely accessible educational content emerged from discussions on Learning Objects (LO). Although these objects exhibit characteristics such as accessibility and autonomy, they are not considered open, since most of them do not permit (co)authorship. Thus, the need for educational materials that were openly accessible, adaptable, and shareable without legal restrictions gave rise to the emergence of OER.

Given the legal and pedagogical limitations to openness imposed by Learning Objects (LO), Bliss and Smith (2017) highlight that the term Open Educational Resources (OER) was officially used for the first time in July 2002 during a United Nations Educational, Scientific and Cultural Organization (UNESCO) meeting with developing countries. From that point on, other international initiatives and declarations began to emerge, aiming to deepen the debate, strengthen public policies, and promote the culture of open education on a global scale. The main milestones of this trajectory are presented in the following board:

Board 1 – Main Milestones in Open Education and Open Educational Resources.

N	Event	Year	Description
1	UNESCO: UNIVERSAL DECLARATION ON CULTURAL DIVERSITY	2002	The term Open Educational Resources (OER) was coined. The event marked the consolidation of the concept of educational openness by defining OER as not only teaching and learning materials but also research resources, made available under open licenses. These licenses enable use, adaptation, and redistribution, supported by information and communication technologies.
2	CAPE TOWN OPEN EDUCATION DECLARATION	2007	Regarded as a seminal document for strengthening the global movement in favor of OER, the declaration calls upon governments, educational institutions, and school boards to prioritize the production and adoption of Open Educational Resources. Among other points, it advocates that materials produced with public funding should preferably be made available as OER, and that repositories should provide visibility to such content in order to democratize access to knowledge.
3	UNESCO: WORLD OER CONGRESS (PARIS DECLARATION)	2012	It reaffirms the commitment to expanding access to knowledge by encouraging Member States to adopt public policies that promote the use and creation of OER, highlighting the role of these resources in improving the quality of education and strengthening equity. The declaration emphasizes the promotion of research, teacher training, and the development of open repositories as key strategies for enhancing international cooperation in the field.

4	NATIONAL EDUCATION PLAN (BRASIL) – GOAL 7.12	2014	Goal 7.12 of the National Education Plan (PNE) established that education systems should encourage the use of free software and Open Educational Resources, as well as promote innovative pedagogical practices aimed at enhancing learning and methodological diversity. This official recognition consolidated OER as a public policy guideline oriented toward the promotion of educational justice.
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Source: The authors, based on UNESCO (2002, 2012), Cape Town Declaration (2007), and Brazil (2014).

These events mark important moments in the trajectory of the open education movement, establishing essential principles and commitments for the development of OER. In this regard, Jacques, Mallmann and Mazzardo (2021) emphasize that the recognition of Open Educational Resources (OER) in public policies contributes to emancipatory pedagogical practices by fostering authorship and co-authorship among teachers and students, provided that open licenses are guaranteed to enable the use, adaptation, and sharing of materials.

As a result of these commitments to openness and access to education, Wiley (2014), a researcher and advocate of Open Education, proposed the 5Rs philosophy regarding Open Educational Resources. He has played a key role in promoting open access to educational knowledge. The 5Rs refer to a set of permissions associated with OER, granting users the right to: Retain, Reuse, Revise, Remix, and Redistribute educational materials (Wiley, 2014).

Building on Wiley's (2014) conception, we understand that the core idea promoted by OER is that knowledge is not a private commodity, but a resource that can be shared, exchanged, and improved by teachers and students across the globe. This aligns with the principles of Curricular Justice, as, according to Ponce and Araújo (2019, p. 795), a just curriculum should be one that "[...] values the diverse knowledge of different cultures, commits to an inclusive, fair, and democratic world, and does not accept a 'single story' as the version of any fact".

Based on this premise, Jacques, Mallmann e Mazzardo (2021, p. 138) point out that "[...] OER can overcome this unequal distribution between social and economic classes," thus contributing to the reduction of social inequalities by promoting democratic access to knowledge. It is important to stress, however, that although the proposal of openness and sharing inherent to OER can indeed expand pedagogical possibilities, their emancipatory potential is only realized when articulated with contextualized educational practices.

- High School Education: between prescriptions and disputes

To understand the context in which we propose to investigate Open Educational Resources (OER), it is essential to consider the current state of Brazilian high school education, marked by reforms that have intensified historical tensions surrounding the social function of schooling, such as the right to education, the valorization of diverse forms of knowledge, persistent inequalities, and the silencing of historically marginalized groups. It is within this scenario of disputes and contradictions that this investigation is situated, aiming to explore whether and how OER may challenge such logics and contribute to the dissemination of more equitable and emancipatory educational practices.

In this context, Arroyo's (2013) contribution stands out by offering a critical perspective on the power relations, territorialities, and forms of resistance that shape curriculum construction processes. Arroyo's (2013) reflection extends to the very structure of curricula, questioning whether they were designed to address the specific needs and concerns of youth. The answers to these questions lie in the urgent need to revise educational and curricular paradigms to more effectively respond to the emerging demands of students.

These inquiries into the (in)adequacy of curricula in meeting youth needs resonate with critiques such as that of Araújo and Frigotto (2015), who argue for breaking with educational models that continue to reduce schooling to mere technical training. Such models disregard the importance of fostering students' capacities for reflection, creativity, and autonomy in participating in the social and political processes that shape their lives.

When discussing the structure of the school system, it is essential to address educational reforms in Brazil, which are often grounded in discourses of democratization. However, according to Saviani (2008), such discourses mask a reality marked by exclusion and selectivity. The author exposes this contradiction by stating:

[...] today we already know, with some certainty, whom this democracy served and who benefited from it, who actually experienced these democratic procedures within the new schools. It was not the people, not the workers, not the proletariat. These experiences were limited to small groups and, in this sense, generally constituted privileges for the already privileged, legitimizing differences. (Saviani, 2008, p. 39)

By disguising inequalities under the rhetoric of autonomy, Saviani (2008) reiterates that certain pedagogical models conceal the power relations that regulate access to knowledge.

In the context of deepening inequalities, Piolli and Sala (2021) offer a critical perspective on the New High School reform, established by Law No. 13.415/2017 (Brasil, 2017), which divided the curriculum into two components: the General Basic Education (*Formação Geral Básica – FGB*) and the Elective Tracks (*Itinerários Formativos – IF*), the latter being more oriented toward technical and vocational training. However, the authors warn against the assumption that this division aims at a better integration between Basic Education and professional training. In fact, the reform merely exposes the “[...] structural duality by replacing part of the general basic education of a portion of the youth with vocational training” (Piolli; Sala, 2021, p. 5).

In the same perspective, Freitas (2018) questions the neoliberal tendency to reduce the role of school, particularly high schools, to the teaching of subjects that corporate-oriented education labels as “basic” (Portuguese and mathematics). According to the author, this movement seeks to serve the traditional interests of the elites, who fear a critical education for the working class, as it restricts access to knowledge and suppresses potential processes of emancipation. For these reasons, the corporate reform defends:

professionalization in high school (implemented by the current high school reform under the pretext that it is ‘unattractive’) creates an exclusionary track leading from high school to the labor market (early professionalization of the poor), to the detriment of an inclusionary track leading from high school to higher education (reserved for the elite of high school students. (Freitas, 2018, p. 84)

In response to the instrumentalizing approach of the reform established by Law No. 13.415/2017 (Brasil, 2017), which divided high school education into segmented tracks, Law No. 14.945/2024 was enacted. It resulted from a public consultation process involving students, teachers, and school administrators regarding the New High School. The text notes that “Teachers want to teach the subjects for which they were trained” (Brasil, 2024). Accordingly, the new legislation reaffirmed the restructuring of the curriculum by expanding the instructional time allocated to General Basic Education and reserving approximately 20% of the total for the Elective Tracks.

Considering the power relations that shape the curriculum, Freitas’ (2018) critique highlights the elite’s fear of a comprehensive education for students from working class

backgrounds. He argues that the status quo appears “[...] frightened by the possibility that work processes, now inevitably based on greater use of technology, might require more instruction, and thus end up ‘overeducating the labor force’” (Freitas, 2018, p. 83).

In this regard, we understand, following Mallmann and Nobre (2015), that Open Educational Resources (OER) have the potential to challenge traditional ways of representing the world within the curriculum. They create space for a more pluralistic, contextualized, and democratic construction of school knowledge, thereby confronting the power structures that have historically shaped the production and circulation of educational content.

- Curricular Justice: theoretical assumptions and implications for analysis

The discussion on curricular justice has gained increasing relevance in educational field, especially considering the challenges posed by contexts marked by social, cultural, and economic inequalities. Thinking about curricular justice therefore implies overcoming a meritocratic logic and fostering practices that are genuinely humanizing. Understanding this concept in depth is essential, as it guided us throughout the thematic analysis of the articles that comprise this research. In this scenario, the contributions of authors such as Connell (1992), Fraser (2002), Santomé (2013), Machado and Silva (2017), Silva (2018) and Ponce and Araújo (2019) stand out, as their reflections ground the understanding of the curriculum as a space of political struggle and emancipation.

As a starting point, we highlight Connell’s (1992) contribution, which proposes three principles that should not be overlooked in discussions on the curriculum: common participation and schooling, the interests of the least advantaged and the production of equality. By situating the curriculum as a central instrument in the struggle for social justice, Connell (1992) argues for the need to rethink the role of the school and of school knowledge in building a more democratic and plural society.

Fraser (2002), in turn, proposes a multidimensional conception of social justice, one that can articulate the axes of redistribution, recognition and participation. For the author, a fair approach cannot be limited to the equitable distribution of resources or the recognition of cultural identities, it must also ensure real conditions for interaction among individuals in social life. According to the author, it is necessary to consider:

A conception of justice that should encompass the traditional concerns of distributive justice theories, especially poverty, exploitation, inequality, and class differentials. At the same time, it should also encompass the concerns recently highlighted by the philosophies of recognition, especially disrespect, cultural imperialism, and status hierarchy. (Fraser, 2002, p. 11)

Expanding this discussion, Santomé (2013) states that such a conception requires close attention to the demands of the present, which implies not only selecting content and methodologies critically, but also considering the subjects to whom the educational process is directed. For the author, educating new generations and preparing them for life means, above all, committing to social transformation. Thus, curricular justice becomes inseparable from the empowerment of historically disadvantaged groups, serving as a fundamental pathway toward building a more equitable and democratic society.

Corroborating this perspective, Machado and Silva (2017, p. 91) defend the idea of a counter-hegemonic curriculum, stating that “[...] there are students with diverse cultural heritages, which oblige schools to engage in differentiated processes of distributing and providing access to knowledge.” Curricular justice, in this sense, requires that schools foster individuals’ ability to act in transforming social reality, which demands curricula that value the plurality of knowledge. Critical education thus becomes a fundamental condition for confronting inequalities and promoting social justice in schools.

Silva (2018), in turn, advocates a proposal grounded in the principles of social justice articulated by Fraser (2002). From this perspective, it becomes possible to understand how curricular justice constitutes a fundamental collective instrument for rethinking educational policies and addressing educational inequalities in Brazil. In this regard, curricular justice goes beyond the mere technical selection of content, positioning itself as an approach to communal life capable of fostering social inclusion, valuing cultural diversity, and amplifying the voices of school actors.

In this field, Ponce and Araújo (2019) proposes a conception that articulates diversity, equity and inclusion. According to the author, a fair curriculum must recognize and value different forms of knowledge and cultures, thereby challenging single and hegemonic versions of reality. For the author, curricular justice, like the three-dimensional space in which we live. can only be fully conceived through the articulation of three interdependent dimensions:

the dimension of knowledge, understood as a strategy for producing a dignified existence, which will guide the selection of curriculum content; the dimension of democratic and supportive school coexistence, which acknowledges conflicts and divergences so as to consolidate humanitarian values and foster a culture of debate and respect for others; and the dimension of care for all curriculum actors to ensure access to the full right to socially relevant quality education. (Ponce; Araújo, 2019, p. 1056)

Thus, we can synthesize our conception of curricular justice from the varied perspectives of the theorists addressed here. Ponce and Araújo (2019) emphasizes the dimensions of knowledge, democratic coexistence and care for all curriculum actors. Santomé (2013) underscores the need to address present-day demands, the commitment to social transformation and the empowerment of historically disadvantaged groups. Machado and Silva (2017), in turn, advocate the construction of a counter-hegemonic curriculum and the recognition of students' cultural heritages. Fraser (2002) calls for justice based on redistribution, recognition, and parity of participation. Silva (2018) argues for confronting educational inequalities and amplifying the voices of educational actors. Finally, Connell (1992) highlights participation, the interests of the least advantaged, the historical production of equality as an ongoing process and the curriculum as a political tool for transformation.

Methodological Pathways

The methodological approach we adopted in this investigation is characterized as qualitative research, of a bibliographic and exploratory nature. The exploratory approach, according to Severino (2013, p. 107), "[...] seeks only to gather information about a given object, thereby defining a field of work and mapping the conditions under which this object manifests," making it possible to identify and organize relevant studies. The choice of bibliographic research is justified by its purpose of "[...] placing the researcher in direct contact with everything that has been written, said, or filmed on a given subject" (Marconi; Lakatos, 2003, p. 183), allowing for a critical examination of the available material and providing a solid foundation for the proposed analysis.

Thus, we comprehend the literature review as a fundamental step in building the corpus of analysis, since, as Santos (2025, p. 4) states, it enables the collection of arguments to support the theoretical foundation of the study, "[...] with the purpose of

defending constructed hypotheses, selecting methodology and procedures, as well as identifying agreements and disagreements between theories and theorists.” In the present study, we chose this method due to our intention to understand the meanings attributed to OER through the lens of researchers from different locations of the national territory, not merely from a specific context.

Accordingly, “[...] bibliographic research allows the researcher to understand the path already taken by their peers, around their focus of interest” (Guimarães *et al.*, 2023, p. 6). In this way, we sought to identify the findings already produced on OER, selecting those with the potential to be analyzed from the perspective of curricular justice.

Our aim in this study is not to refute ideas or criticize practices, but to understand the research object in depth, identifying gaps and potentialities that may foster future investigations. Macedo (2024) provides a basis in this regard by clarifying that:

[...] the exploration is not intended to deconstruct the concept or to signal one option over another, but rather, in an organized way, to provide theoretical clarification on the subject that can serve as methodological and epistemological support for subsequent research. (Macedo, 2024, p. 3)

In this sense, the literature review “[...] makes it possible to systematize an area of knowledge, understand the main results of studies, and identify prominent and emerging themes and approaches” (Santos, 2025). Thus, at the end of this research, we aim to point out the convergences and divergences between OER and the principles of curricular justice, and, for this purpose, we consider the bibliographic review to be the most suitable method for composing a solid corpus for thematic analysis.

Furthermore, the bibliographic review enabled us to identify relevant works from a wide variety of contexts, facilitating the thematic analysis process outlined in this research. In this regard, conducting a comprehensive mapping of studies related to the research object proved essential, since it “[...] helps researchers identify the scope, scale, gaps, overlaps, and inconsistencies in the existing literature in a given field” (Guimarães *et al.*, 2023, p.11).

To carry out a consistent mapping of national scientific articles on Open Educational Resources (OER) in the context of Brazilian high school education, we selected the CAPES Journal Portal as our database, given its credibility as a platform, providing access to

national and international academic production. The time frame of 2014 to 2024 is justified by the fact that this period marks the institutionalization of OER in Brazilian public policies, beginning with the inclusion of the term in the National Education Plan (PNE) in 2014, as mentioned in the section on OER in this article.

In the initial stage of our mapping, we sought works that directly addressed high school education. To this end, we used the descriptor “*Recursos Educacionais Abertos*” (“Open Educational Resources”) in the title field, adding the operator AND followed by the term “*Ensino Médio*” (“High School”). The filters applied included: open access, Portuguese language, publication period from 2014 to 2024 and national production. We also chose to include non-peer-reviewed articles, since, in preliminary searches, we identified that many potentially relevant works on the topic of this research were not indexed in peer-reviewed journals. As a result, we identified four (04) articles addressing OER in the context of high school education.

In the next stage, we carried out a broader search using only the descriptor “*Recursos Educacionais Abertos*” (“Open Educational Resources”) in the title field, applying the same filters used in the previous search. This configuration resulted in forty-four (44) articles with OER as their central theme, although not all addressed high school education. However, we chose to conduct this broader survey to avoid prematurely excluding any potentially relevant articles.

In the final stage of the mapping, we performed a full reading of the forty-four (44) pre-selected articles. After this reading, we found that only three (03) addressed the high school context in a significant way. These three articles were therefore included in the corpus of this research, together with the works identified in the previous stage, totaling seven (07) articles, as detailed in Table 2, which presents the complete list of analyzed works.

Board 2 – Corpus of Analyzed Scientific Articles.

N	Authors (Year)	Titles
1	Zuleika de Paula Bueno, Fagner Carniel (2015)	Free Resources, Closed Books: An Analysis of the Interactive Dimension of Digital Educational Objects in Sociology Teaching
2	Elena Maria Mallmann, Juliana Sales Jacques, Mara Denize Mazzardo (2017)	Open Educational Resources for Mother Tongue Teaching in High School

3	Emmerson Santos, F.E. Montero de Oliveira, Alex Sandro Gomes, Julio Toscano (2017)	Systematic Mapping of Teaching Practices Using Open Educational Resources
4	Mara Denize Mazzardo, Ana Nobre, Elena Maria Mallmann (2017)	Open Educational Resources: Free Access to Knowledge?
5	Giana Somavilla, Karla Marques da Rocha, Mara Denize Mazzardo (2022)	Open Educational Resources in the Teaching Practices of Biology Teachers
6	Hellen Boton Gandin, Ana Paula Teixeira Porto (2022)	Development of Digital Open Educational Resources for Reading Education in High School: Possible Pathways for Teacher Authorship
7	Milene Graciele de Almeida, Marcelo Maia Cirino (2023)	Adaptation of the “Flipped Classroom” Methodology with the Application of the “Quizizz” Open Educational Resource for Assessment: An Experience Report

Source: The authors, 2025.

Thus, we arrived at a consistent and coherent corpus with the objectives of this research, as the selected articles directly address Open Educational Resources (OER) at the high school level within the established time frame. This provides a solid bibliographic base for exploring the meanings attributed to OER and their connections with curricular practices, since the analyzed material directly engages with the research object.

In this study, we chose Thematic Analysis (TA) as the investigative method, as we understand it aligns with the purposes we sought to achieve. Although widely used in qualitative research in an implicit manner, thematic analysis was only formally systematized and conceptualized by Braun and Clarke (2006) as “[...] a method for identifying, analyzing, and reporting patterns (themes) within data. It minimally organizes and describes your data set in rich detail” (Braun; Clarke, 2006, p. 79). Based on this understanding, we believe that adopting TA provides the theoretical and methodological conditions necessary to deepen the interpretation of the meanings attributed to OER in the selected works.

Another decisive factor in adopting thematic analysis is its capacity to offer a theoretical-methodological foundation for the deductive approach, conceived as one in which themes emerge from a framework previously defined by the researcher. According to Braun and Clarke (2006, p. 83), “[...] themes or patterns within data can be identified in one of two primary ways in thematic analysis: in an inductive, ‘bottom-up’ way [...] or in a theoretical or deductive, ‘top-down’ way”.

In the case of this investigation, the themes required construction based on a theoretical-deductive approach, as we began with the framework of curricular justice as

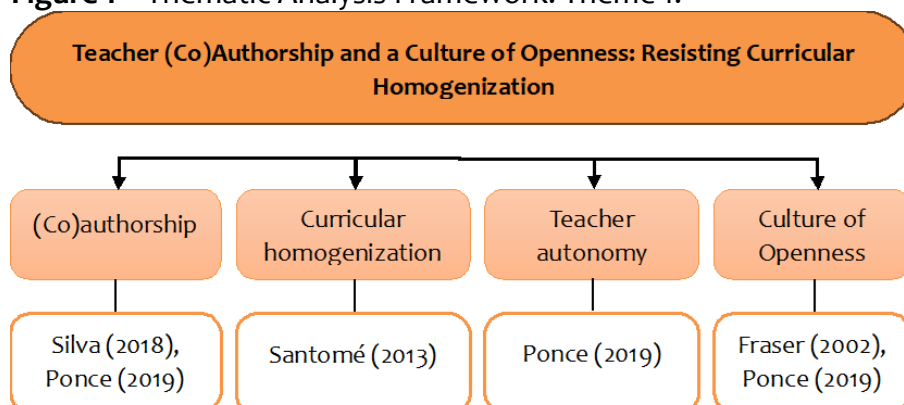
the guiding theoretical lens for interpreting the data. As the authors further note, “[...] a ‘theoretical’ thematic analysis would tend to be driven by the researcher’s theoretical or analytic interest in the area” (Braun; Clarke, 2006, p. 84).

For these and other reasons, we believe in the potential of thematic analysis to capture meanings that appear between the lines of the authors’ statements, understanding, a priori, that curricular justice, or even its principles, would hardly be mentioned explicitly in the works, since this is a perspective assumed by us as researchers. This aligns with the authors’ assertion that “[...] the latent level goes beyond the semantic content of the data, and starts to identify or examine the underlying ideas, assumptions, and conceptualizations” (Braun; Clarke, 2006, p. 84).

The process of coding and building thematic categories, conducted rigorously in line with the previously presented theoretical framework, was grounded in a priori notion of curricular justice, to ensure a satisfactory degree of coherence in the data collection process. In this regard, the contributions of Connell (1992), Fraser (2002), Santomé (2013), Machado and Silva (2017), Silva (2018), and Ponce and Araújo (2019) provided the necessary guidance.

To make the process of constructing the thematic categories clearer, we created an organizational chart divided into three figures (Figures 1, 2, and 3) to summarize the main axes identified, as well as their respective subthemes and the authors who supported each of them. These are:

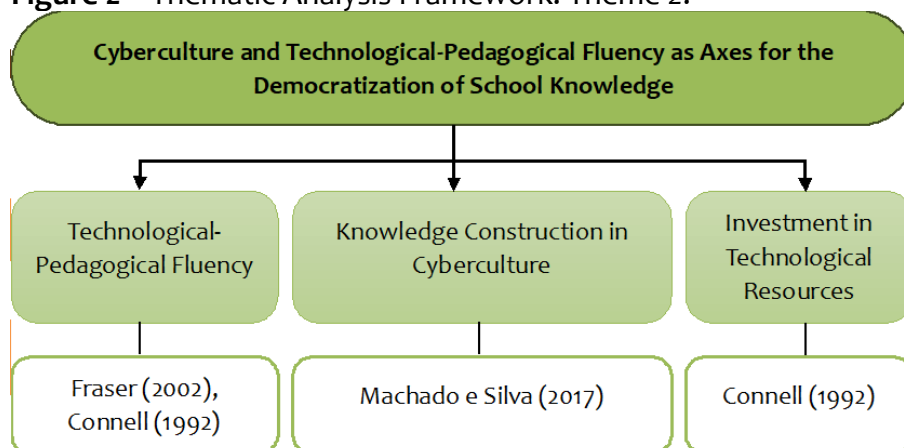
Figure 1 – Thematic Analysis Framework: Theme 1.



Source: The authors, 2025.

This theme brings together subthemes identified in the articles by Somavilla, Rocha, and Mazzardo (2022), Mallmann, Jacques, and Mazzardo (2017), Gandin and Porto (2022), Mazzardo, Nobre, and Mallmann (2017), and Bueno and Carniel (2015). It addresses the freedom that OER provide teachers to act as authors and co-authors of their own materials, as well as to openly share these resources. Such autonomy stands in contrast to the rigidity of a closed curriculum, fostering practices that are more adaptable to the realities of schools.

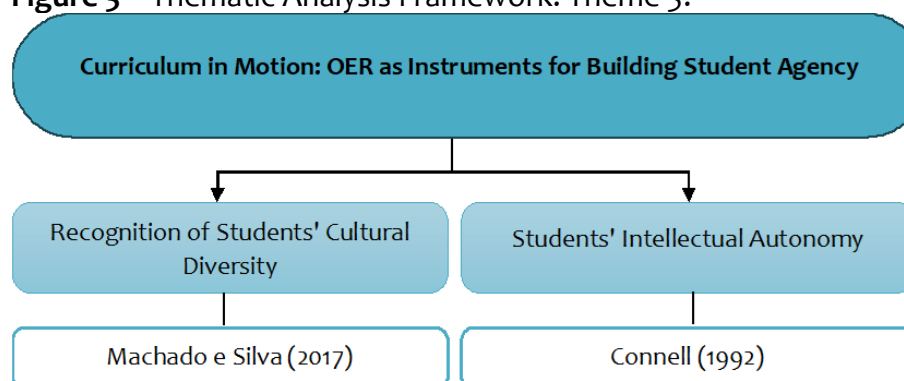
Figure 2 – Thematic Analysis Framework: Theme 2.



Source: The authors, 2025.

The second theme was identified in the works of Gandin and Porto (2022), Somavilla, Rocha, and Mazzardo (2022), Almeida and Cirino (2023), Santos *et al.* (2017), and Mazzardo, Nobre, and Mallmann (2017). It addresses how cyberculture has facilitated the sharing of educational resources between teachers and students. On the other hand, this axis also highlights the need for teachers to develop greater familiarity with technology so that the implementation of OER can be effectively realized.

Figure 3 – Thematic Analysis Framework: Theme 3.



Source: The authors, 2025.

The third theme, in turn, was developed from the research of Mallmann, Jacques, and Mazzardo (2017), Somavilla, Rocha, and Mazzardo (2022), Santos *et al.* (2017), and Almeida and Cirino (2023). It highlights how the defense of a democratic curriculum that values students' knowledge faces obstacles in the logic of resources that remain inaccessible to both students and teachers. Furthermore, this theme reinforces that OER, by enabling sharing, foster students' active participation in their own learning process.

These categories will be deeper explored in the following sections, based on the guidelines of thematic analysis proposed by Braun and Clarke (2006) and grounded in the theoretical framework that underpins this investigation.

Teacher (Co)Authorship and a Culture of Openness: resisting curricular homogenization

From the articles analyzed, we identified a recurring concern among most authors regarding the role of teachers in the face of contemporary educational challenges, giving rise to this thematic category. The authors Somavilla, Rocha, and Mazzardo (2022), Mallmann, Jacques, and Mazzardo (2017), Gandin and Porto (2022), Mazzardo, Nobre, and Mallmann (2017), and Bueno and Carniel (2015) emphasize the importance of co-authorship as an essential condition for teachers to take ownership of Open Educational Resources. From this perspective, OER are understood not merely as tools, but as means of means of resistance to curricular homogenization, by promoting teacher autonomy and fostering a culture of openness in education.

The works analyzed reveal a mismatch between the defense of a democratic curriculum and the ways in which school knowledge circulates, which have often relied on the adoption of materials with restrictions on use and sharing. As a result of this reality, the exclusionary nature of educational policies that keep knowledge under the control of major publishers and educational platforms, which hinder the use, adaptation, and redistribution of materials, stands out. Such practices contradict the notion of justice as parity of participation proposed by Fraser (2002). This contradiction is evidenced in the following statement from one of the articles analyzed:

we highlight the clash between closed, restricted, and protected logics, which organize the current digital textbooks made available to public schools in the country, and the uses of free editing software that are being disseminated in the form of Open Educational Resources. (Bueno; Carniel, 2015, p. 132)

In contrast to these logics, OER are presented as tools that enable a movement toward openness in education, as they challenge the monopoly over knowledge and encourage collaborative practices of authorship and distribution of teaching materials. This process not only expands access but also breaks with curricular homogenization by allowing the adaptation of content to local realities. This issue is connected to the perspective of Santomé (2013), who argues that the curriculum should respond to students' realities. This logic is expressed in the work of Gandin and Porto (2022), who state:

[...] the exploration of OER is a means to enhance the movement toward openness and collaboration regarding the authorship of teaching materials, while at the same time enabling the implementation of teaching that is tied to the connected reality in which we live, through new teaching resources. (Gandin; Porto, 2022, p. 107)

Other studies analyzed reinforce the importance of a culture of openness in promoting democratic access to knowledge, such as Mazzardo, Nobre, and Mallmann (2017), who highlight the capacity of these resources to be customized to meet the needs of audiences from diverse contexts.

Open Educational Resources (OER) can contribute to increasing access to knowledge for more people worldwide, as they can be used in formal education at all levels and modalities, in informal education, and in lifelong learning. (Mazzardo; Nobre; Mallmann, 2017, p. 28)

This excerpt aligns with Ponce and Araújo's (2019) contributions, which emphasize knowledge as a fundamental dimension of curricular justice, viewing it as a human necessity and as the means through which individuals relate to the world.

The idea of (co)authorship lies at the core of open education, as it fosters teachers' active participation in creating and adapting resources that are aligned with their educational contexts. This understanding resonates with Silva's (2018) advocacy for amplifying voices and valuing diversity in curricular processes. This perspective is synthesized by Gandin and Porto (2022), who state:

[...] the culture of authorial production of teaching materials proposes new horizons for teaching practices, as it encourages teachers to be authors of their own resources, thus enabling them to develop such materials collaboratively with other teachers and in accordance with their lesson objectives and purposes. (Gandin; Porto, 2022, p. 110)

Mallmann; Jacques; Mazzardo (2017) endorse this discussion by addressing the need to break away from rigid pedagogical practices and to strengthen a culture of sharing in education. Such a dynamic expands access opportunities and reinforces the democratic nature of knowledge. According to the authors, “[...] in this way, teachers move from being consumers to becoming (co)authors of teaching materials” (Mallmann; Jacques; Mazzardo, 2017, p. 132), which reinforces the importance of guaranteeing teachers the freedom to create and adapt resources according to the specificities of their educational contexts.

Thus, the culture of openness, by breaking away from the logic of inaccessible resources, presents itself as a possibility for reconfiguring the curriculum toward teaching that is more attuned to students’ daily lives, a principle which, according to Ponce and Araújo (2019), links knowledge to human dignity. By encouraging teacher (co)authorship, OER enable not only greater autonomy but also an active role in the redistribution and recognition of knowledge, which, according to Silva (2018), is essential for the collective confrontation of educational inequalities. This perspective reinforces that such authorship goes beyond technical mastery, fostering pedagogical intentionality, critical thinking, and a commitment to counter-hegemonic educational practices aligned with contemporary realities.

Cyberculture and Technological-Pedagogical Fluency as Axes for the Democratization of School Knowledge

In this section, drawing on the contributions of Gandin and Porto (2022), Somavilla; Rocha; Mazzardo (2022), Almeida and Cirino (2023), Santos et al. (2017), and Mazzardo; Nobre; Mallmann (2017), we address the relationship between cyberculture and the promotion of school knowledge. Concurrently, we discuss the importance of investing in technology as a condition for such mediation, the challenges posed by the obsolescence of teaching materials, and the need to develop teachers’ technological-pedagogical fluency as a prerequisite for the effective integration of OER into curricular practices.

Gandin and Porto (2022) argue that the possibility of (co)authoring materials is strengthened when associated with the choice of digital formats, since the “online” environment fosters more open and accessible educational practices. According to the authors, “[...] the choice of digital format is justified by the ease of putting into practice the characteristics that define the openness of educational resources” (Gandin; Porto, 2022, p. 107). Based on this understanding, Somavilla; Rocha; Mazzardo (2022) emphasize the role of the internet in mediating such practices:

This new perspective on searching for materials on the internet will provide all those involved with the opportunity to use and share the resources produced, thereby enabling innovative teaching and learning practices mediated by technologies and OER. (Somavilla; Rocha; Mazzardo, 2022, p. 251)

This idea converges with Machado and Silva’s (2017) advocacy for alternative pathways for the distribution of and access to knowledge. From this premise, Almeida and Cirino (2023) report an experience mediated by an open resource made available on a digital platform, developed through a flipped classroom dynamic in high school. Among their findings, the authors highlight the interactive potential of OER, noting that, when adopted in digital environments, these resources intensify student engagement and stimulate more meaningful exchanges in the learning process. “Students are given the opportunity to develop knowledge, whether interacting with educational resources in groups or individually, as digital platforms are part of young people’s daily lives and are frequently accessed via smartphones” (Almeida; Cirino, 2023, p. 10).

In contrast, Gandin and Porto (2022) warn that, to create an environment that is truly conducive to interaction through digital materials, it is essential for institutions to invest in technological resources. According to the authors, adequate infrastructure not only broadens student participation but also fosters a culture of sharing, already mentioned in this study, in which the digital environment constitutes fertile ground for the exchange of content and collaboration.

It is necessary to consider the structure and resources available in the school environment, as well as the time investment teachers must make to design and effectively implement the creation of resources. In the creation and practical use of OER in digital format, for example, schools must have internet access and other technological resources, which will depend on the type of OER created and the practical plan designed by the teacher. (Gandin; Porto, 2022, p. 113)

In addition to considering the availability of these resources, Santos *et al.* (2017) point out that there is still a significant gap in the quality of such materials. The authors identified that games are among the most used OER but note that “among the difficulties encountered in practice with these resources are issues related to content adaptation and the lack of quality in some of them” (Santos *et al.*, 2017, p. 269). We can therefore see that mere access to these resources does not guarantee the principle of participation defended by Connell (1992), it is also necessary to advance in the curation of content made available in open format.

However, for teachers to truly assume the role of (co)authors of their own teaching materials, it is essential to encourage the development of their technological-pedagogical fluency. In this context, Gandin and Porto (2022) make a valuable contribution by identifying such fluency as a determining factor for teachers’ critical engagement in the process of (co)authoring educational materials. According to the authors:

The higher the teacher’s level of fluency, the greater their ability to reconfigure knowledge, develop new methodologies, critically select information, and, above all, create quality resources based on clear pedagogical purposes and grounded in formative teaching experience. (Gandin; Porto, 2022, p. 111)

Mazzardo; Nobre; Mallmann (2017) further emphasize the need to recognize that the lack of knowledge among teachers and students about licensing processes and copyright law is a limiting factor for advancing the culture of openness we seek, preventing OER from being fully explored as tools for curricular transformation. In this regard, the authors state: “The lack of knowledge about OER, open licensing, and copyright law limits the increase in production and availability, and more dissemination of the potential of OER to transform education is also needed” (Mazzardo; Nobre; Mallmann, 2017, p. 30).

As we can see from the authors’ statements, cyberculture has been central to the dissemination of Open Educational Resources, serving as the means through which opportunities arise for the creation and sharing of teaching materials, while also valuing the knowledge each student brings from their lived experience to the teaching-learning process. Furthermore, the personalization of pedagogical approaches, facilitated by the digital environment, makes it possible to adapt teaching to the specificities of each school

context. These findings align with certain principles of curricular justice, particularly redistribution (Machado; Silva, 2017) and participation (Fraser, 2002; Connell, 1992).

Curriculum in Motion: OER as Instruments for Building Student Agency

This final category encompasses topics related to the openness of OER to distinct cultural repertoires, as well as the valuing of students' lived experiences as a factor in fostering their motivation and intellectual autonomy, as identified in the works of Mallmann; Jacques; Mazzardo (2017), Somavilla; Rocha; Mazzardo (2022), Santos *et al.* (2017), and Almeida; Cirino (2023). These authors highlight the role of OER in strengthening the centrality of learners in the educational process, since without such a premise, the principles of curricular justice cannot be effectively implemented.

The first aspect identified from the reading of the texts concerns the flexibility of OER as a fundamental element for developing practices that are more responsive to the demands of the contexts in which they are adapted. In this regard, Mallmann; Jacques; Mazzardo (2017) argue that "[...] OER, given the possibilities for adaptation, are materials that enhance more authentic practices consistent with different educational contexts" (Mallmann; Jacques; Mazzardo, 2017, p. 123).

Thus, valuing students' experiences shifts the focus of teaching toward their concrete realities, however, for this to occur, attention must be paid not only to teachers' actions but also to a curriculum that engages with the demands of contemporary times, as stated by Somavilla; Rocha; Mazzardo (2022):

[...] once again, the commitment to opening formal education to students' experiences and lived realities is introduced through educational policies that invest massively in transforming what already exists into objects of multimedia learning, enabling the unfolding of didactic reflections into digital media. (Somavilla; Rocha; Mazzardo, 2022, p. 252)

Machado and Silva (2017) corroborate this view by advocating for the recognition of students' diverse cultural heritages as a condition for truly contextualized practices. In this way, rethinking a pedagogical practice that effectively acknowledges students' sociocultural diversity opens doors to a more stimulating learning environment. Thus, "[...] the motivation or stimulus originating from the OER is one of the factors that contribute to its use in the classroom" (Santos *et al.*, 2017, p. 267).

This movement toward valuing students' authorship and active participation is linked to Connell's (1992) proposal, which highlights how the democratization of learning can pave the way for more inclusive experiences. Almeida and Cirino (2023) emphasize that the rigidity of formal assessments can be overcome through the versatility of Open Educational Resources, which provide opportunities for students to engage in the assessment process in a freer and more reflective way. According to the authors:

[...] students showed enthusiasm when being assessed through the Open Educational Resource, as there was an opportunity to relate, reflect, and re-signify knowledge, constructing and attributing meaning to the applied concepts, breaking away from the pressure exerted by a formal assessment, yet enabling intellectual autonomy. (Almeida; Cirino, 2023, p. 21)

From the construction of this analytical category, we observed in the authors' contributions that OER can provide conditions for an education that is more responsive to school realities. It is important to stress that such flexibility only materializes when it is linked to the recognition of students' cultural diversity. Thus, the articles analyzed indicate that OER, as discussed in the theoretical section of this study, tend to promote student agency, which is consolidated through the development of intellectual autonomy, understood as the capacity to learn with criticality and intentionality, an essential element for the realization of curricular justice through OER.

Conclusions

This study aimed to thematically analyze, through the lens of curricular justice, the national scientific production on Open Educational Resources (OER) in Brazilian High School. In revisiting this objective, we highlight how the mapped literature reflects the tensions between the promise of a democratic curriculum and the concrete practices of knowledge circulation in the context of the final stage of basic education.

The analysis first revealed a contradiction between the advocacy for a fair curriculum and the preference for restrictive teaching materials, which runs counter to the principles of redistribution and participation. In contrast to this reality, OER emerge as enablers of a culture of openness, challenging the monopoly over knowledge and fostering teacher and student co-authorship. This premise values students' experiences and

promotes their intellectual autonomy and motivation. Along the same lines, the authors emphasize cyberculture, whose logics of connectivity enhance the circulation of resources through networks, platforms, and learning communities. On the other hand, the corpus also points to certain weaknesses, such as the qualitative shortcomings of available OER, the lack of technological infrastructure, and the need to develop teachers' techno-pedagogical fluency so they can effectively assume the role of (co)authors.

From a conceptual standpoint, the findings align with two key principles of curricular justice: participation and recognition. The mapped works demonstrate that OER can broaden spaces for student voice, incorporate diverse knowledges, and foster more authentic learning pathways. However, equally fundamental dimensions, such as distributive justice through the fight against poverty (Fraser, 2002), care for vulnerable subjects (Ponce; Araújo, 2019), sensitivity to students' realities (Santomé, 2013), and the confrontation of historical inequalities (Silva, 2018) appear either marginally or not at all in the analyzed studies.

The thematic distance from these issues suggests the need to expand the OER debate so as to incorporate more integrated perspectives of social justice, avoiding approaches that are limited to the instrumental aspects of these resources. These absences, in turn, indicate a fertile field for future investigations.

Considering this scenario, we propose that subsequent research move beyond an exclusively technical-pedagogical logic and integrate dimensions of social justice in a transversal manner, investigating, for instance, how OER can serve the redistribution of educational opportunities across different territories and social groups. We further recommend that institutional policies coordinate investment in digital infrastructure, teacher training, and the (re)evaluation of OER quality, with the aim of consolidating a resource ecosystem that effectively addresses curricular inequalities and expands student participation in the production of school knowledge.

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