

## From macro to micro: how do Brazilian educational normative documents guide creativity?

**Abstract:** What are the normative guidelines for creativity in Basic Education? Based on an analysis of six Brazilian normative educational documents (LDB, DCN, BNCC, BNCC Computing, BNC-Formação and BNC-Formação Continuada), we sought to understand how creativity is addressed at the macro (institutional) and micro (pedagogical practices) levels. Methodologically, the investigation began by reading the titles of chapters and sections of the documents, followed by searching for keywords, such as *create* and *creativity*, and then analyzing the corresponding excerpts. The results show that although creativity is mentioned, its presence in teaching practice is limited. It is concluded that a continuous and strategic effort is needed to expand and make its inclusion more effective through both public policies and pedagogical practices.

**Keywords:** Mathematics Education. Creativity in Mathematics. Curriculum. Educational Policies.

### Del macro al micro: ¿cómo los documentos normativos educativos brasileños orientan la creatividad?

**Resumen:** ¿Cuáles son las directrices normativas para la creatividad en la Educación Básica? A partir del análisis de seis documentos normativos educativos brasileños (LDB, DCN, BNCC, BNCC Computação, BNC-Formação y BNC-Formação Continuada), buscamos comprender cómo se aborda la creatividad a nivel macro (institucional) y micro (prácticas pedagógicas). Metodológicamente, la investigación comenzó con la lectura de los títulos de los capítulos y secciones de los documentos, seguida de la búsqueda de palabras clave, como *crear* y *creatividad*, y el análisis de los fragmentos correspondientes. Los resultados muestran que, si bien se menciona la creatividad, su presencia en la práctica docente es limitada. Se concluye que se requiere un esfuerzo continuo y estratégico para ampliar y hacer más efectiva su inclusión mediante políticas públicas y prácticas pedagógicas.

**Palabras clave:** Educación Matemática. Creatividad en Matemáticas. Currículo. Políticas Educativas.

### Do macro ao micro: como os documentos normativos educacionais brasileiros direcionam a criatividade?

**Resumo:** Quais os direcionamentos normativos para a criatividade na Educação Básica? A partir de uma análise realizada em seis documentos normativos educacionais brasileiros (LDB, DCN, BNCC, BNCC Computação, BNC-Formação e BNC-Formação Continuada), buscou-se compreender como a criatividade é abordada em níveis macro (instituições) e micro (práticas pedagógicas). Metodologicamente, a investigação teve início com a leitura dos títulos de capítulos e seções dos documentos, seguida pela busca de palavras-chave, como *criar* e *criatividade*, e, posteriormente, pela análise dos trechos correspondentes. Os resultados indicam que, embora a criatividade seja mencionada, sua presença na prática docente permanece limitada. Conclui-se que é necessário um esforço contínuo e estratégico para ampliar e tornar

**Hênio Delfino Ferreira de Oliveira**

Instituto Federal de Brasília  
Planaltina, DF — Brasil


 0000-0002-7009-6576

 [henio.oliveira@ifb.edu.br](mailto:henio.oliveira@ifb.edu.br)

**Clodis Boscaroli**

Universidade Estadual do Oeste do  
Paraná

Cascavel, PR — Brasil


 0000-0002-7110-2026


 [boscaroli@gmail.com](mailto:boscaroli@gmail.com)

**Rodolfo Eduardo Vertuan**

Universidade Tecnológica Federal do  
Paraná

Toledo, PR — Brasil

 0000-0002-0695-3086

 [rodolfovertuan@utfpr.edu.br](mailto:rodolfovertuan@utfpr.edu.br)

Received • 31/10/2024

Accepted • 15/04/2025

Published • 16/05/2025

Article

mais eficaz sua incorporação, tanto por meio de políticas públicas quanto de práticas pedagógicas.

**Palavras-chave:** Educação Matemática. Criatividade em Matemática. Currículo. Políticas Educacionais.

## 1 Introduction

When investigating creativity, the first challenge lies in defining the concept, which encompasses multiple approaches. However, more recent conceptions tend to converge. For Botella *et al.* (2023, p. 1), creativity is “the ability to generate original productions that are relevant to the context in which they occur” Glăveanu (2023) highlights creativity as a social and cultural phenomenon that emerges from interactions between individuals, their communities, and the cultural environment in which they are immersed. The authors converge on the idea that creativity goes beyond an individual trait, being a collaborative and contextual process.

In the specific field of Mathematics, Gontijo (2006) defines creativity as the ability to present multiple appropriate solutions to a problem, exploring different perspectives and methods of resolution, especially those that are uncommon and original. This applies both to the solving and proposing of problems, as well as to the organization and classification of mathematical elements based on their properties and attributes, whether through textual, numerical, graphical, or sequential representations.

In the educational context, fostering creativity is justified by promoting a more dynamic, reflective, meaningful, contextualized, and creative form of teaching. Although many teachers already adopt creative approaches, such practices must be intentionally developed. The uncritical adoption of teaching methods can limit student autonomy and reduce teachers' flexibility to innovate in response to educational changes.

Beyond the conceptual aspects, we understand creativity as an action or movement that emerges from an equally creative potential, characterized either as a skill or as a competence. While creative competence involves the strategic use of creativity to solve problems and innovate, creative skill refers to the practical execution of this process — both of which are often interrelated. This concept is based on the epistemology of the word *creativity* and Perrenoud's (2000) definition of competence.

The term *creativity* derives from the adjective *creative*, which originates from the Latin *creāre*, meaning to form, produce, and create (Veschi, 2019). However, when discussing creativity, we also deal with interconnected concepts such as action, activity, and mobilization, materialized through competencies and skills. Perrenoud (2000, p. 19) defines competence as the ability to “mobilize a set of cognitive resources (knowledge, capacities, information, etc.) to respond effectively and appropriately to a series of situations”. Although he does not provide a specific definition for *skills*, he emphasizes the importance of mobilizing cognitive resources, which may include skills, to solve situations effectively.

As a result of this interaction, creative potential can manifest in different areas and levels of development, materializing in various ways, whether concrete or abstract, through the generation of products, highly creative processes, or individual expressions. Therefore, the debate around the development of creativity in Basic Education can encompass both institutional aspects, addressed by educational normative documents, and more specific aspects, such as classroom practices and different curricular components, including Mathematics, which is the focus of this reflection. At a macro level, we understand that normative documents guide teaching and learning spaces and processes.

When reflecting on how Brazilian educational normative documents guide creativity, we also consider that teachers develop various skills and competencies throughout their training and professional practice. They plan lessons, manage conflicts, adapt to different contexts, and seek strategies to engage students. However, creativity should not be viewed as a secondary element in teaching, but rather as an essential resource to deal with the diversity of student profiles in the classroom, enhance methodologies, and stimulate critical thinking. Still, the following question arises: To what extent do these normative documents guide the development of creativity in the school environment?

Based on this initial question, we developed this theoretical essay with a qualitative approach grounded in documentary analysis, examining six Brazilian structural normative documents for Basic Education: the Law of Guidelines and Bases of Education (LDB), the National General Curriculum Guidelines for Basic Education (DCN), the National Common Curricular Base (BNCC), the BNCC for Computing, the National Common Base for Initial Teacher Education (BNC-Formação), and the National Common Base for Continuing Teacher Education (BNC-Formação Continuada).

Concerning the importance of creativity in the educational context, Paulo Freire, when criticizing the *banking* model of education, argued that it hindered the creativity needed by both students and educators (Freire, 1996). He thus suggests creativity is intrinsically linked to the curiosity that drives us and makes us “patiently impatient before a world we did not make”, to which we nonetheless add something of our own (Freire, 1996, p. 18).

What Freire warned about remains a relevant discussion. According to Chamberlain, Liljedahl e Savić (2023), when educators intentionally commit to promoting creativity [in Mathematics Education, as we include], the chances of fostering it among students increase considerably, and thus we may overcome the traditional or conventional teaching model. In this model, the teacher is the primary source of knowledge and authority; classes are predominantly lecture-based and devoid of dialogue, and assessments focus on testing the memorization of information.

Debating educational legislation and the foundations of teacher training in Brazil is strategic for understanding how these normative documents address creativity. Depending on how it is approached in these texts, their influence may extend directly to the practical (micro) level of Education. With that in mind, this article is structured as follows: section 2 presents the methodological approach and analyzes excerpts that may indicate some guidance on creativity, subdivided according to each normative document; and section 3 offers final considerations and research perspectives.

## 2 A movement in search of creativity

The movement referred to here concerns the methodological aspects and theoretical framework of this documentary analysis. Regarding the research procedures, the documents were initially read with attention to the titles of chapters and sections, to gain a general overview of their structure and to identify potential areas of interest for reflection. This preliminary process allowed for the organization of the texts, highlighting parts that could be related to the topic under analysis. In the second stage, keyword searches for *create* and *creativity* were carried out to locate the most relevant excerpts and examine how these concepts were addressed throughout the texts. After identifying the terms, the full articles and associated paragraphs were read to understand the context in which the words were embedded. This method allowed for more focused content analysis, enabling the extraction of information to answer the research question and generate a reflection on the extent to which these documents guide the development of creativity within the school setting.

It is known that the LDB and the BNCC are two foundational elements in the structure of Brazilian education, with a relationship of complementarity and hierarchy. The LDB, established by Law No. 9.394/1996, is the legislation that provides general guidelines and defines the structure and organization of the Brazilian education systems, including aspects such as the duration of studies, school progression requirements, teacher training and responsibilities, and curriculum guidelines (Brasil, 1996).

The BNCC, implemented from 2017 onwards, is a regulatory document that defines the set of essential learning outcomes to which all students are entitled throughout their schooling. It establishes competencies and skills that must be developed at each stage of Basic Education (Early Childhood Education, Elementary, Middle and High School) and serves as a guide for school curricula and education systems (Brasil, 2017, 2018).

The hierarchy and complementarity between the LDB and BNCC lie in the fact that the BNCC provides specific details about curricular content and the competencies to be developed at each phase of Basic Education. Therefore, the BNCC operates within the legal framework established by the LDB, which in turn defines the curricula based on the General National Curriculum Guidelines (DCN), as stated in Resolution CNE/CEB n. 4, dated July 13, 2010, while still allowing flexibility for institutions and education systems.

While the LDB provides the legal framework and general guidelines for education and teacher training in Brazil, and the BNCC and its Computing complement define what students should learn, based on the DCN, the BNC-Initial Teacher Education (BNC-Formação), updated and established by Resolution CNE/CP n. 4, dated May 29, 2024, and the BNC-Continuing Teacher Education (BNC-Formação Continuada), established by Resolution CNE/CP n. 1, dated October 27, 2020, regulate how teachers should be prepared to teach. In this context, the LDB forms the foundation of the national education structure and will be the starting point of the analysis.

## 2.1 Law of Guidelines and Bases for National Education

The Law of Guidelines and Bases for National Education (LDB) is a legal milestone in the history of Brazilian education and was first enacted in 1961, during the government of João Goulart, under Law n. 4.024. It emphasized principles such as freedom, human solidarity, and dignity, to fully develop personality and promote awareness of individual rights and duties.

The 1961 LDB defined the right to education for all, and freedom of teaching, and established the administrative structure of education, including the creation of the National Education Council (CNE). It highlighted the importance of primary and secondary education, as well as the need to adapt teaching to regional and social specificities (Brasil, 1961). This law was the result of extensive debates on education in Brazil and laid the general guidelines for the national educational system. However, in 1971, during the military dictatorship, it was reformed by Law n. 5.692, which introduced changes such as the requirement and vocationalization of primary and secondary education (Brasil, 1971). Only in 1996, in a democratic context, was a new LDB enacted, known as the *Darcy Ribeiro Law*.

The 1996 LDB emerged after the end of the dictatorship and the enactment of the 1988 Constitution. To align it with the new constitutional principles, a long process of debate and revision was required. Among its advancements are curricular flexibility, the appreciation of continuing teacher education, and educational inclusion (Brasil, 1996). In this context, it is essential to reflect on how the 1996 LDB incorporates creativity into the institutional guidelines for Brazilian education.

Although the text of the law is initially limited in its emphasis on creativity, its broad guidelines can be seen as opportunities to encourage innovative and creative practices. Among

these guidelines, the following stand out: (i) Continuing Teacher Education (Art. 59, III; Art. 61, I; Art. 67, II, V) or Professional Development, which points to the adoption of more creative and innovative pedagogical methods; and (ii) Integral Education (Art. 29; Art. 34, §2; Art. 87, §5), which focuses on students' comprehensive development — addressing their life projects and physical, cognitive, and socio-emotional growth — potentially including practices that value creativity and innovation as part of the educational process (Brasil, 1996).

The above-mentioned opportunities, although broad, may serve as points of convergence for actions and policies aimed at developing creativity in educational contexts. However, fragility lies in the fact that such possibilities are not explicitly expressed, and their implementation depends on how the norms are interpreted by those responsible for applying them. On the other hand, some documents are more directive, facilitating the understanding of how to foster creativity — such as DCN. This leads us to affirm that the document neither defines creativity nor discusses the potential for its development among school-aged children, nor does it consider the creativity research of its time as a basis for any formal guidance.

## 2.2 General National Curriculum Guidelines

The DCN, established by Resolution CNE/CEB n. 4, dated July 13, 2010, defines the ethical, political, and aesthetic principles that guide the organization, articulation, development, and evaluation of Basic Education curricula in Brazil. The BNCC aligns with these guidelines, serving as a reference to guide the curricula of the education systems and networks of all Federative Units, following the standards established by the CNE.

Upon examining the DCN text, it is evident that these guidelines tend to acknowledge the importance of creativity in the educational process and promote creative learning as a process of knowledge systematization. This approach goes beyond mere memorization, suggesting a more engaging pedagogical path. The aim is to stimulate students in ways that foster creativity (Brasil, 2010).

Article 17 of the DCN presents a guideline that appears strategic for Elementary, Middle and High School education. According to this article, at least 20% of the annual class hours should be dedicated to interdisciplinary elective programs and projects created by the school itself. This curricular component is part of the school's pedagogical project and is designed to allow students to choose programs or projects with which they identify, thus facilitating greater engagement and understanding of knowledge and experience. Furthermore, the first paragraph of this article (Art. 17 § 1) emphasizes that such programs and projects should be developed in a dynamic, creative, and flexible manner. This implies adaptable and innovative curricular activities aimed at stimulating student engagement. It is also important that these programs and projects relate to the local community in which the school is situated (Brasil, 2010).

Like Article 17, Article 29, which focuses on Special Education, stands out by providing clues as to what is expected from a creative school or a school that fosters creativity. Regarding this concept:

The school must, in addition to educating its students, stimulate and challenge them with personalized attention, meeting each one individually, motivated by ethics and creativity. This care facilitates the identification of personal skills and talents necessary for the proper planning of proposed activities. This school must also be committed to open, accessible, and pleasant knowledge, one that fosters social responsibility respects subjectivities and each student's individuality, and whose actions are transparent and innovative (Suanno, 2013, p. 150).



In summary, DCN offers specific guidelines for promoting creativity and autonomy in the educational process. The emphasis on elective interdisciplinary activities, individualized approaches to meet students' needs — including those with special educational needs — and reflective and holistic assessment reveals the potential for creating a dynamic and adaptable educational environment. In this way, the aspects highlight the importance of a pedagogy that not only informs but also challenges and empowers students to explore and express their creative potential.

### 2.3 National Common Curricular Base and BNCC-Computação

The Base Nacional Comum Curricular (BNCC) is a normative document that defines the essential, organic, and progressive learning, in the form of knowledge, skills, and competencies, that all students must develop throughout Basic Education. As established, these Base guides the curricula of educational systems and networks in the Federative Units and the pedagogical proposals of all public and private schools at the Early Childhood, Elementary, Middle and High School levels throughout Brazil (Brasil, 2017, 2018).

Among the documents analyzed so far, the concept of creativity presented in the BNCC is the most explicit and is associated with the ability to reinvent and reconfigure pre-existing resources and elements from written texts to other forms of language to forge new meanings and modes of expression. This creative process involves a *designer* role, where the individual does not merely consume content but engages in its manipulation and reinvention. This approach to creativity is influenced by contemporary cultural and linguistic practices, especially in the digital world, characterized by constant recycling, remixing, appropriation, and redistribution of content, as highlighted in the following excerpts:

This consideration of new and multiliteracies, and digital culture practices in the curriculum not only contributes to enabling more effective and critical participation of students in contemporary language practices but also allows for envisioning more than just a 'user of language/languages,' heading toward what some authors call a designer: someone who takes something that already exists (including written texts), blends, remixes, transforms, redistributes, producing new meanings — a process some authors associate with creativity (Brasil, 2017, p. 70).

[Skill] (EF69AR08) Differentiate between the categories of artist, artisan, cultural producer, curator, designer, among others, establishing connections between professionals in the visual arts system (Brasil, 2017, p. 207).

In the list of general competencies for Basic Education, the BNCC suggests the act of *creating* as a component of the educational process — appearing 40 times — while *creativity* is mentioned only 13 times. The document encourages students to exercise intellectual curiosity and adopt scientific methods such as investigation, reflection, critical analysis, imagination, and creativity to explore causes, formulate hypotheses, solve problems, and develop innovative solutions, including those of a technological nature (Brasil, 2018).

Competency 2: Exercise intellectual curiosity and employ scientific approaches — including investigation, reflection, critical analysis, imagination, and creativity — to investigate causes, develop and test hypotheses, formulate and solve problems, and create solutions (including technological) based on knowledge from different areas (Brasil, 2017, p. 9).

In this sense, creativity is not viewed in isolation but as a cross-cutting, integral part of

a set of competencies that foster critical thinking and problem-solving across various fields of knowledge.

Regarding integral education, already mentioned about the LDB, it is presented from a perspective that goes beyond the length of the school day. It refers to the intentional construction of educational processes that aim to promote learning aligned with the needs, possibilities, and interests of students, as well as the challenges imposed by contemporary society. This implies recognizing and valuing diverse childhoods, youth identities, and youth cultures, encouraging them to “create new ways of existing” and expressing themselves in the world (Brasil, 2018, p. 14).

In terms of pedagogical approaches, the BNCC identifies two possibilities: the investigative approach and the political approach. These are distinct but complementary. The investigative approach focuses on promoting student protagonism in their learning processes, encouraging them to engage in scientific and technological practices and procedures. The emphasis here is on challenging students with open and contextualized problems, that is, real-life situations without a single correct answer (Brasil, 2018).

Allevato and Onuchic (2019) highlight that research has pointed to creativity's potential to contribute to reading and writing processes in Mathematics. In this context, problem-solving also stands out as an activity that supports the construction of mathematical knowledge, enabling connections with other knowledge areas and everyday situations, thereby breaking down the barriers that constrain and limit school subjects.

The political approach is primarily aimed at High School and seeks to provide students with a deep understanding of the roles played by various social actors, the mechanisms they use, and the political and economic projects in play. High School is emphasized as a period in which young people are intensely forming their worldviews and values (Brasil, 2018). In this context, creativity can emerge through pedagogical practices that not only promote an understanding of political and economic projects but also encourage students to question, reinvent, and propose new solutions to social problems, moving beyond reproducing ideas to exploring alternative and innovative perspectives.

The BNCC addresses creativity as integrated into the production of artistic, cultural, and technological products, whether original or not. However, the emphasis still primarily lies in written and artistic outputs. Despite this limited scope, there is some initial recognition of creativity's relevance in other knowledge areas, such as the specific competencies for Natural Sciences in Elementary and Middle School. Notably:

Analyze, understand, and explain characteristics, phenomena, and processes related to the natural, social, and technological (including digital) world, as well as the relationships established between them, exercising curiosity to ask questions, seek answers, and create solutions (including technological) based on knowledge in the Natural Sciences (Brasil, 2018, p. 324).

This approach not only reinforces scientific knowledge but also encourages the creative application of such knowledge to solve problems and explore new ideas. In Mathematics education, the goal of Elementary Education is to develop Mathematical Literacy. The PISA 2012 framework defines it as

an individual's capacity to formulate, employ, and interpret Mathematics in a variety of contexts. This includes mathematical reasoning and using mathematical concepts, procedures, facts, and tools to describe, explain, and

predict phenomena. It helps individuals recognize the role that Mathematics plays in the world and enables constructive, engaged, and reflective citizens to make well-founded judgments and decisions (INEP, 2012, p. 1).

We understand that creativity is embedded in the concept of Mathematical Literacy through the idea of an “individual’s capacity to formulate, employ, and interpret Mathematics in a variety of contexts” (Inep, 2012, p. 1). This capacity involves not only understanding and applying mathematical concepts and procedures but also the creative reasoning required to describe, explain, and predict phenomena. However, it is worth noting that the document does not explicitly establish this relationship. This perspective on creativity is inferred from a somewhat optimistic reading, given that the document itself does not emphasize creativity as a skill to be intentionally developed, especially in Mathematics classes.

The term *Creativity in Mathematics* appears only once in the document, as follows: “the idea of variation and constancy involves questions such as ‘what if?’, which mobilize processes of abstraction, representation, and generalization — essential to creativity in Mathematics” (Brasil, 2018, p. 520). In this context, variation and constancy may refer to observing, imagining, abstracting, discerning, and recognizing similarities and differences, as well as identifying what has changed and what has remained unchanged, expressing and representing patterns to generalize them. While these ideas are presented within the Mathematics domain, they are not exclusive to it and can promote integration across different knowledge areas (Brasil, 2018).

Within the scope of the analysis of the BNCC, it is relevant to include the BNCC-Computação, a complementary document regulated by Resolution n. 1, dated October 4, 2022, of the Chamber of Basic Education, as it addresses an emerging topic in educational training in Brazil and may also serve as one of the pathways for developing creativity.

The BNCC-Computação came into effect on November 1st, 2022, and from its text, it is evident that creativity, along with other competencies, emerges from principles involving the development and recognition of patterns. These include constructing sets of objects based on various criteria such as quantity, shape, size, color, and behavior; experiencing and identifying different forms of interaction through computational artifacts; designing and experimenting with algorithms through the manipulation of environmental objects and bodily movements, both individually and in groups; and solving problems by breaking them down into smaller parts, identifying steps, stages, or recurring cycles that can be applied or adapted to other situations (Brasil, 2022).

For the Elementary Education stage, a competency was identified in the BNCC-Computação that brings creativity closer to the field of Computing. In this phase, the document addresses the goal of “expressing and sharing information, ideas, feelings, and computational solutions using different languages and computing technologies in a creative, critical, meaningful, reflective, and ethical manner” (Brasil, 2022, p. 11), aligning with the use of technologies and computational artifacts.

When linked to the use of computational technologies, the skill (EF05CO10), “expressing oneself critically and creatively in understanding technological changes in the world of work and the evolution of society” (Brasil, 2022, p. 32), suggests that students should be able to express critical and creative thinking through computational or non-computational devices, demonstrating an understanding of how technology brings change to everyday life, including the world of work. For example, students might create an animation, either digital or on paper, depicting their impressions of a technological impact on society. A concrete example would be the use of mobile phones to send voice messages instead of making phone calls, a



common practice in daily life.

When related to the use of computational artifacts, the skill (EF15CO08), “recognizing and using computational technologies to research and access information, express oneself critically and creatively, and solve problems” (Brasil, 2022, p. 36), guides students to explore the different characteristics of information and communication technologies, identifying how they work and their main features, as well as recognizing their different uses in people's daily lives, both inside and outside school. For instance, this could involve presenting images of various technologies (cell phones, tablets, computers, among others), highlighting their characteristics such as size and type, as well as their different everyday uses. An example would be creating a portfolio with images of technologies (Brasil, 2022).

Still, within the BNCC-Computing and at the High School level, two competencies stand out. The first is “Constructing knowledge using computational techniques and technologies, producing content and artifacts creatively, with respect for ethical and legal issues, that provide experiences for oneself and others”, and the second is “expressing and sharing information, ideas, feelings, and computational solutions using different platforms, tools, languages, and computing technologies in a fluent, creative, critical, meaningful, reflective, and ethical manner” (Brasil, 2022, p. 61).

It is thus observed that creativity appears to be a significant element in Computing within Basic Education, manifesting through competencies that encourage students to explore and engage in experiences through playful and interactive activities, both in manipulating objects and developing algorithms. However, it is also noticeable that the term *creativity* is used alongside other adjectives associated with the expression and communication of information, such as fluent, critical, meaningful, reflective, and ethical, indicating its use without a deeper, well-grounded, or guiding discussion. In other words, creativity is not treated as a substantive concept within the classroom context.

## 2.4 BNC-Formação

While the BNCC and BNCC-Computação focus on the competencies and skills of students, two other frameworks are dedicated to teacher education: one for initial training and another for continuing professional development. These guidelines aim, among other objectives, to ensure teacher qualification across different modalities of Basic Education by integrating scientific, technical, and ethical-political aspects, and by promoting the continuous improvement of educational quality. Within this context, teaching is defined as an intentional and methodical educational practice (Brasil, 2024).

Resolution CNE/CP n. 4, dated May 29, 2024, establishes the National Curriculum Guidelines for Initial Higher Education of Teaching Professionals in Basic School Education. It encompasses undergraduate licentiate programs, pedagogical training for graduates from non-teaching fields, and second licentiate degrees.

A search for the term *creativity* in the document reveals that it appears in only two articles. Article 6, which addresses the initial education of teaching professionals in Basic Education, emphasizes that this training must ensure a national common base. In this article, item IV states that formative processes should contribute to the development of a broad and systemic perspective on teaching, learning, and assessment, such that pre-service teachers develop skills such as critical thinking, problem-solving, effective communication, collaborative and interdisciplinary work, creativity, innovation, leadership, and autonomy.

Article 7, which outlines the responsibilities of Higher Education Institutions (HEI) in offering initial teacher education programs, stipulates that these institutions must ensure the integration of the national common base into their Course Pedagogical Project (PPC),

articulated with the Institutional Pedagogical Project (PPI) and the Institutional Development Plan (PDI). In this regard, item VIII underscores the importance of providing opportunities for critical reflection on different languages and their processes of construction, dissemination, and use, to promote the development of critical thinking and creativity among future teachers.

Resolution CNE/CP n. 4/2024 thus establishes important guidelines for the initial education of Basic Education teachers, aiming to improve the quality of education and to prepare professionals capable of responding to the diverse realities of education in Brazil. However, despite referencing creativity in certain instances, the topic remains only marginally explored within the document.

Another relevant aspect to consider is the need to promote an educational environment that values divergent thinking and experimentation, encouraging future teachers to adopt more creative and personalized pedagogical approaches. The resolution could advance further in this regard by including guidance on formative practices that allow pre-service teachers to explore and develop their creative potential in varied educational contexts.

## **2.5 BNC-Formação Continuada**

Resolution CNE/CP n. 1, dated October 27, 2020, establishes the National Curriculum Guidelines for the Continuing Education of Basic Education Teachers and introduces a Common National Base (BNC-Formação Continuada). In this document, continuing education emerges as a dynamic and adaptive process, that is, one characterized by a flexible and diversified approach (Brasil, 2020).

Article 10, for instance, proposes an organic connection between Higher Education and Basic Education, seeking to overcome the fragmentation of knowledge and the lack of articulation between different domains of knowledge. It recommends the integration of experienced school teachers into the teaching staff, thereby strengthening the role of practical experience in ongoing teacher education. Articles 11 and 12, in turn, emphasize the need to align Continuing Education policies with the concrete realities of the environments in which teachers work. Training should be contextualized within actual teaching practices, suggesting an approach that values meaningful and continuous learning throughout the teaching career.

Additionally, as stated in Article 13, Continuing Education should also facilitate collaborative learning among teachers, supported by experienced mentors or tutors. This strategy aims to foster the exchange of experiences and the joint development of competencies. Finally, Article 14 highlights that Continuing Education programs should be articulated with flexible and modular courses, enabling teachers to continuously complement, update, or enhance their skills and knowledge.

The articles underscore the importance of an adaptable training structure for the ongoing professional development of educators. Within this framework of competencies, Article 3 emphasizes the need for teachers to possess solid knowledge of the established content in their fields, teaching methodologies, learning processes, and cultural production, both local and global (Brasil, 2020). These competencies presuppose the development of the General Competencies previously defined in Resolution CNE/CP n. 2/2019 (BNC-Formação Inicial) and encompass three interdependent dimensions: professional knowledge, professional practice, and professional engagement.

The professional knowledge dimension includes mastery of curricular content, understanding of curricular logic, and the ability to connect such content to students' contexts and other subjects. Within this dimension, teachers are expected to develop skills in instructional planning, selecting appropriate educational strategies, defining learning objectives, and applying suitable assessment methods. Moreover, educators should understand

students' characteristics and use this understanding to adapt their teaching strategies, supported by scientific evidence. Familiarity with institutional and sociocultural environments, including educational policies and legislation, is also essential. Finally, self-knowledge is strategic for both personal and professional development, enabling teachers to identify areas for improvement and critically evaluate their teaching practices to continuously enhance performance (Brasil, 2020).

In the professional knowledge dimension, as in the other two, the term creativity does not explicitly appear as a concept; instead, the action of *creating* is embedded in certain specific competencies and skills. It is expressed through the development of adaptive teaching strategies, pedagogical innovation, and the implementation of methods that foster critical thinking and active learning. Regarding creation in pedagogical professional practice, seven competencies underscore the importance of creativity within this dimension, not only in how teachers plan and conduct their lessons but also in how they engage and motivate students:

- 2a.1.1 – Designing didactic sequences aligned with the learning objectives defined by current curricular regulations;
- 2a.1.3 – Establishing challenging learning objectives;
- 2a.2.1 – Employing teaching activities that incorporate varied forms of oral expression, reading, and writing by students, relating them to learning in other knowledge areas;
- 2a.2.5 – Formulating thought-provoking questions and providing adequate time for resolution;
- 2a.2.8 – Using diversified assessment strategies consistent with learning objectives and areas of experience, allowing all students to demonstrate their learning;
- 2a.3.3 – Structuring challenging learning situations that consider students' prior knowledge and interests, ensuring progress for all;
- 2a.4.3 – Identifying different strategies and resources to meet specific learning needs (e.g., disabilities, giftedness, students with lower performance), which intellectually engage students and support consistent curriculum development (Brasil, 2020, p. 11-12).

It is noteworthy that Resolution CNE/CP n. 1, dated October 27, 2020, and the selected excerpts do not directly address the issue of creativity. Nonetheless, one can infer indirect references to the concept, especially when the focus of pedagogical professional practice lies in teaching and learning through strategic planning and adaptive methods. Institutional professional practice, on the other hand, centers on the planning and optimization of infrastructure, curricula, and teaching and learning resources. This includes the selection and use of available educational resources, contributions to curriculum updates, and the flexible structuring of learning environments. Additionally, it involves the responsible use of Information and Communication Technologies (ICT) (Brasil, 2020).

Institutional professional practice also emphasizes professional and interpersonal collaboration, which involves fostering a climate of respect and empathy, using monitoring systems, and planning activities that consider the holistic development of students. It also includes support for student evaluation and placement, facilitating interaction with local social protection networks, and maintaining communication with families about student progress (Brasil, 2020).

This dimension comprises contributions to the general management of teaching and active participation in learning communities, as well as the planning of personal development

and continuing teacher education. The use of assessment data to improve pedagogical practices and support systems for teachers is also fundamental. Concerning creative demands, this involves the challenge of rethinking and reconfiguring practices to make teaching and learning processes more effective, engaging, and inclusive — an effort that extends beyond individual teaching actions to encompass the entire educational network. Such an approach can be interpreted through six core competencies:

- 2b.1.2 – Utilizing various spaces, infrastructure, and available resources to plan pedagogical activities that consider different cognitive domains and dimensions of thinking;
- 2b.1.4 – Structuring learning spaces and environments in flexible and coherent ways according to the proposed learning situations;
- 2b.2.5 – Collaboratively constructing strategies to ensure that all students in the school unit learn;
- 2b.2.6 – Planning integrated activities that take into account students' comprehensive development needs;
- 2b.2.7 – Sharing professional practices and engaging in pedagogical dialogue with peers, including through the use of technological resources;
- 2b.4.2 – Contributing to the creation and maintenance of learning communities in classrooms, institutions, and professional networks (Brasil, 2020, pp. 13-14).

In the third dimension, known as professional engagement, the competencies and skills are oriented toward strengthening a culture of high academic expectations and school effectiveness. They address the knowledge and application of educational research and policies and the collaborative efforts to enhance student learning and development. These competencies include consistent support for students to maximize their potential, equitable treatment, and the use of errors as opportunities for learning. They also stress the importance of interaction with families and communities to build meaningful partnerships and emphasize conscious and respectful conduct within the institutional environment, including involvement in the analysis and improvement of educational practices.

In this dimension, educators are encouraged to invest continuously in their professional development by participating in training activities and assuming responsibility for their growth. This includes engagement in research to address educational challenges and the pursuit of expanded knowledge and practices to improve teaching quality. Regarding creative demands, professional engagement involves rethinking and reformulating educational practices, seeking innovations and adaptive solutions, and fostering a culture of learning that is reflective, inclusive, and dynamic. This can be observed in the following five competencies:

- 3.1.2 – Designing projects and other actions, in collaboration with the school team, to promote learning and development for all students;
- 3.2.4 – Studying and sharing professional practices, engaging in pedagogical dialogue with peers both in person and remotely;
- 3.3.4 – Dialoguing with stakeholders and articulating intersectoral partnerships that enhance student learning and holistic development;
- 3.4.1 – Collaboratively engaging with colleagues to construct knowledge from teaching practice and to design, implement, and assess strategies that improve classroom dynamics and the teaching and learning process for all students;
- 3.5.4 – Engaging in research on school education issues across all stages and

modalities, and in the pursuit of solutions that contribute to improving student learning quality and meeting their comprehensive development needs (Brasil, 2020, pp. 14-15).

The BNC-Formação Continuada highlights that teacher education must be adaptive and responsive to new educational demands. However, the promotion of creativity has not yet been fully integrated into the competencies related to professional practice and engagement, remaining limited to the act of creating. For instance, although the focus could be placed on the development of teacher creativity, it only appears in actions such as collaborative project design, technology integration, and community engagement. Nevertheless, this approach still seems contingent upon a specific intent to foster creativity, rather than emerging organically or intuitively throughout the training process. This observation connects with Chapter IV of the resolution, entitled *Lifelong Education*.

### 3 Final Considerations

The concept of creativity presented in the analyzed Brazilian educational normative documents refers to *the ability to reinvent and reconfigure pre-existing resources, adapting them innovatively to create new meanings and forms of expression*. From macro to micro levels, these documents offer different degrees of guidance regarding creativity in the school context, revealing potentialities but, more significantly, limitations. When a set of educational regulations is not explicit or assertive about the importance, promotion, and appreciation of creativity, it primarily indicates the absence of a structured project for the development of creativity within a society. This approach suggests that creativity is not perceived as something that needs or can be developed like other competencies and skills. As a result, several constraints emerge — among them, is the lack of guidelines for implementing creative practices, which leaves room for varied interpretations. That is, teachers from different subject areas and school administrators may adopt divergent approaches or even neglect aspects of creativity due to the lack of explicit guidance.

Another limitation lies in the guidelines for teacher training. Without a normative foundation that values creativity, teacher education tends to prioritize technical and disciplinary competencies to the detriment of methodologies and strategies that encourage innovation and creative thinking. This may also influence the adoption of rigid curricula and standardized assessment methods, which discourage creative practices by favoring content reproduction over the exploration of new ideas. In terms of school environments, when creativity is not formally valued, this diversity tends to be viewed as secondary. This, in turn, can affect how educators and students perceive the importance and potential of creativity, hindering the development of a school culture that encourages creative thinking.

From a macro to a micro perspective, it is observed that while the LDB provides general guidelines, the appreciation of creativity, and for creativity, still appears distant from full incorporation. In many cases, it emerges as an absent or underexplored dimension. The DCN, however, provides specific recommendations for the promotion of creativity and autonomy in the educational process, with an emphasis on interdisciplinary elective activities, individualized approaches to meet students' needs (including those with special educational needs), and reflective and holistic assessment. Yet, these remain limited in their potential to foster dynamic and adaptable learning environments.

About the BNCC and its complement, the BNCC-Computação, creativity is approached through the development of artistic, cultural, and technological products, whether original or not. Nonetheless, the emphasis still falls predominantly on written and artistic productions, the manipulation of objects, and algorithm development. Despite these limitations, the BNCC does



show an initial recognition of the importance of creativity in the fields of Natural Sciences and Mathematics, suggesting a beginning toward expanding the demand for creativity within curricula.

Regarding teacher education, both the BNC-Formação and the BNC-Formação Continuada do not explicitly include creativity as a foundational pillar. However, the act of *creating* is considered an element of the educational process, with emphasis on collaborative project development, technological integration, and community engagement. It is worth noting, however, that creating does not necessarily imply creativity, it is only part of something deeper and more intentional than merely generating a flow of ideas.

Given the impact that legislation has on national educational projects, a consistent trend can be observed in Brazil regarding the relevance of fostering creativity — primarily in students, but only in an initial manner when related to teachers. This aspect is broadly addressed in the LDB and DCNs, and specifically detailed in the BNCC, BNCC-Computação, BNC-Formação, and BNC-Formação Continuada. However, although this acknowledgment represents an important step, it is not sufficient by itself, since the development of creativity within education is a more complex process.

According to the aims of this investigation and the data presented, it is evident that the Brazilian educational normative documents mostly address creativity indirectly or implicitly, becoming more explicit in some, such as the BNCC and BNCC-Computação. At a macro level, institutions are encouraged to promote flexible and innovative learning environments. At a micro level, creativity is primarily stimulated through pedagogical planning, the adoption of technologies, and the development of methodologies that foster critical thinking and responsiveness to students' needs.

It is necessary to emphasize that these documents significantly fall short by not promoting deeper and more systematic discussions and guidelines regarding the development of creativity in both students and teachers within the educational context. Concerning the strategies for translating institutional guidelines into teachers' and pedagogical teams' practices, beyond theoretical reflections such as this one, there is also a demand for continued professional development focused on various aspects, for instance, the development of creativity in specific contexts such as Mathematics Education. In light of this gap, future research may explore the relationship between creativity and Mathematics teaching more deeply, investigating methodologies that involve problem-posing and problem-solving, including open-ended problems, as strategies to enhance creativity in teaching and learning processes, among other possible avenues of investigation.

## References

ALLEVATO, Norma Suely Gomes; ONUCHIC, Lourdes de la Rosa. As conexões trabalhadas através da Resolução de Problemas na formação inicial de professores de Matemática. *REnCiMa*, v. 10, n. 2, p. 1-14, jun. 2019. <https://doi.org/10.26843/rencima.v10i2.2334>

BOTELLA, Marion; BOURGEOIS-BOUGRINE, Samira; BURKHARDT, Jean Marie; CAROFF, Xavier; GUEGAN, Jérôme; MERCIER, Maxence; VINCHON, Florent; LUBART, Todd. Homo creativus: uma visão geral da pesquisa em criatividade. *Recriai*, v. 4, p. 1-24, 2023.

BRASIL. *Lei n. 4.024, de 20 de dezembro de 1961*. Fixa as diretrizes e bases da educação nacional. Brasília: Diário Oficial da União, 27 dez. 1961.

BRASIL. *Lei n. 5.692, de 11 de agosto de 1971*. Fixa diretrizes e bases para o ensino de 1º e 2º

graus, e dá outras providências. Brasília: Diário Oficial da União, 12 ago. 1971.

BRASIL. *Lei n. 9.394, de 20 de dezembro de 1996*. Estabelece as diretrizes e bases da educação nacional. Brasília: Diário Oficial da União, 23 dez. 1996.

BRASIL. Ministério da Educação. Conselho Nacional de Educação. *Resolução CNE/CEB n. 4, de 13 de julho de 2010*. Dispõe sobre as Diretrizes Curriculares Nacionais Gerais para a Educação Básica. Brasília: Diário Oficial da União, 9 jul. 2010.

BRASIL. Ministério da Educação. Conselho Nacional de Educação. Resolução CNE/CP n. 1, de 27 de outubro de 2020. Dispõe sobre as Diretrizes Curriculares Nacionais para a Formação Continuada de Professores da Educação Básica e institui a Base Nacional Comum para a Formação Continuada de Professores da Educação Básica (BNC-Formação Continuada). Brasília: Diário Oficial da União, 29 out. 2020.

BRASIL. Ministério da Educação. Conselho Nacional de Educação. *Resolução CNE/CP n. 4, de 29 de maio de 2024*. Dispõe sobre as Diretrizes Curriculares Nacionais para a Formação Inicial em Nível Superior de Profissionais do Magistério da Educação Escolar Básica (cursos de licenciatura, cursos de formação pedagógica para graduados não licenciados e cursos de segunda licenciatura). Brasília: Diário Oficial da União, 3 jun. 2024.

BRASIL. Ministério da Educação. Conselho Nacional de Educação. Resolução CNE/CP n. 2, de 20 de dezembro de 2019. Define as Diretrizes Curriculares Nacionais para a Formação Inicial de Professores para a Educação Básica e institui a Base Nacional Comum para a Formação Inicial de Professores da Educação Básica (BNC-Formação). Brasília: Diário Oficial da União, 23 dez. 2019.

BRASIL. Ministério da Educação. Secretaria de Educação Básica. *Base Nacional Comum Curricular: Computação*. Brasília: MEC/SEB, 2022.

BRASIL. Ministério da Educação. Secretaria de Educação Básica. *Base Nacional Comum Curricular: Educação Infantil e Ensino Fundamental*. Brasília: MEC/SEB, 2017.

BRASIL. Ministério da Educação. Secretaria de Educação Básica. *Base Nacional Comum Curricular: Ensino Médio*. Brasília: MEC/SEB, 2018.

CHAMBERLIN, Scott A.; LILJEDAHN, Peter.; SAVIĆ, Miloš. Organizational framework for book and conceptions of mathematical creativity. In: CHAMBERLIN, Scott. A.; LILJEDAHN, Peter; SAVIĆ, Miloš. (Ed.). *Mathematical creativity: a developmental perspective*. Cham: Springer, 2023, p. 41-54. [https://doi.org/10.1007/978-3-031-14474-5\\_4](https://doi.org/10.1007/978-3-031-14474-5_4)

FREIRE, Paulo. *Pedagogia da autonomia: saberes necessários à prática educativa*. São Paulo: Paz e Terra, 1996.

GLĂVEANU, Vlad. *O valor da criatividade* [Entrevista]. Disponível em [https://www.youtube.com/watch?v=ELX97I\\_vje8&t=79s](https://www.youtube.com/watch?v=ELX97I_vje8&t=79s); acesso 15 mar. 2025.

GONTIJO, Cleyton. Estratégias para o desenvolvimento da criatividade em Matemática. *Linhas Críticas*, v. 12, n. 23, p. 229-244, 2006. <https://doi.org/10.26512/lc.v12i23.3321>

INEP — INSTITUTO NACIONAL DE ESTUDOS E PESQUISAS EDUCACIONAIS ANÍSIO TEIXEIRA. *Matriz de avaliação de Matemática — Pisa 2012*. Brasília: INEP, 2012.

PERRENOUD, Philippe. Construindo competências. Entrevista concedida a Paola Gentile e Roberta Bencini. *Nova Escola*, n. 135, p. 19-31, set. 2000.

SUANNO, João Henrique. *Escola criativa e práticas pedagógicas transdisciplinares e ecoformadoras*. 2013. 297f. Tese (Doutorado em Educação). Universidade Católica de Brasília. Brasília.

VESCHI, Benjamin. *Criatividade*. 2019. Disponível em <https://etimologia.com.br/criatividade>; acesso 19 mar. 2025.