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Artigo

Generative AI in discursive skills in basic education

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Abstract

This exploratory article is intended to contribute with reflections on mental processes that consolidate learning in the mother tongue in a context marked by the growing presence of Generative Artificial Intelligence (GAIs). At the heart of the discussion, we seek to make a theoretical approximation between the genres of Bakhtinian discourses and the concept of transliteracy, highlighting the impact of GAI on developing communicational skills in primary education. The historical foundations of artificial intelligence are discussed along with the rupture caused by the generative chatbots in the public sphere. Parallel to this, some GAI models are analyzed regarding their potential for building pedagogical practices aligned with the development of skills regarding the language component in the BNCC. This analysis proposes a way to use GAIs in primary education, considering a situated approach in which cognitive development and ethical issues can be contemplated in school debates and practices about using these technologies. Finally, the importance of teaching training for using IA stands out considering the relevance of pedagogical mediation in school practices that use this technology. In addition, the intention to develop longitudinal studies is evident in order to evaluate the impacts of AIs on cognitive processes in formal education.

Keywords: Generative AI, Transliteration, Discursive skills, Basic education.

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1. Introdução

In November 2022, the company OpenAI[5] presented ChatGPT, a chatbot equipped with Artificial Intelligence (AI) with generative characteristics and Natural Language Processing (NLP), capable of answering questions in different languages and processing a large volume of texts (Bilgram and Laarmann, 2023). The tool not only interprets and collects data but can also process extensive texts in natural language. Immediately after its launch, ethical questions began regarding its authorship and the ethical implications of its use (Gill *et al.*, 2024; Oliveira, 2023). The relevance of this discussion does not preclude reflecting on the impact of its use on the cognitive dimension of human beings, specifically on how it can influence the development of communication processes. It is assumed, in this text, that the interference of this tool in cognitive processes can be an issue as complex as those related to the ethical dimensions of its social use. This study discusses cognitive and learning processes in the context of the use of generative AI. The central discussion proposes to investigate whether interaction with generative chats can influence the development of conversational discursive skills. This question is valid for Bakhtinian studies, which emphasize the importance of discourse and its genres in the linguistic phenomenon. According to Bakhtin (1992, p. 287),

> the study of the statement, in its quality as a real unit of verbal communication, should also allow a better understanding of the nature of the units of language (of language as a system): words and sentences.

Thus, considering that the understanding of the linguistic system emerges from the construction of the statement, delegating the creation of discourses to an AI can influence the development of conversational skills and other language abilities in human beings. The use of this technology by students in school, especially in Basic Education, a time when learning of the mother tongue is being formally constructed and consolidated, demands adopting a careful and targeted approach to the use of these tools without harming the cognitive processes of language acquisition and development.

The introductory text of the National Common Curricular Base (BNCC) reaffirms the structuring axes for teaching Portuguese, highlighting "language practices". These practices are divided into three main areas: 1) orality, which includes reading and listening; 2) production, which corresponds to writing in printed and multi-semiotic media; and 3) linguistic/semiotic analysis, which corresponds to the structural analysis of the language (Brazil, 2018), its metalinguistic and metacognitive knowledge. These axes are interconnected and result in the skills that Portuguese language students need to develop to be

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[5] https://openai.com/

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considered proficient. It is essential to highlight that, according to INEP[6] (Brazil, 2022a), the reading proficiency levels of Brazilian students, measured by the Programme for International Student Assessment (PISA, 2022), reveal that 50% of those assessed have not developed minimum reading skills. This result is significant, as it highlights problems with the quality of learning in the Brazilian educational system and points to cognitive processes that need to be emphasized in an education in which technology and multi-semiotic texts are intrinsic to the habits of interacting with information, research, reading, and writing, redefining the learning that students are developing in comparison to what needs to be created (Mutz; Gomes, 2022).

In this context, this article aims to contribute to studies by pointing out some relationships between learning, the use of generative chatbots, transliteracy, and language teaching.

1. The Nature of the Study

This study chose an exploratory research approach due to the still nascent but rapidly evolving use of generative Artificial Intelligence (GAI) tools in literacy and language learning. Exploratory research is particularly suited to emerging areas where there is a pressing need for an in-depth understanding of how new technologies can be integrated and their potential pedagogical implications. This approach allows researchers to investigate an understudied phenomenon flexibly, adapting as new insights emerge (Gerhardt; Silveira, 2009). Through this methodology, it was possible to outline an initial and comprehensive overview, providing a solid foundation for subsequent studies that can validate or refine the preliminary findings presented here.

The research adopted a qualitative approach to capture the nuances and complexities of using AI in education. Unlike quantitative research, which focuses on measuring and quantifying data, qualitative research focuses on profoundly understanding participants' experiences, perceptions, and contexts (Gerhardt; Silveira, 2009). Qualitative research allows for a rich and detailed exploration of the phenomenon in question using methods such as semi-structured interviews, observations, and document analysis. This approach facilitates the collection of data on recommendations for the use of AI in pedagogical practices. Due to the recent trend of AI use in Education (Loiola *et al.*, 2024) and the projections predicted in the outlined context (Vicari, 2018), it was decided to evaluate AI tools related to text production and image generation.

Thus, theoretical support was sought in the literature for the concepts presented, ensuring a solid foundation for the research. After this initial stage, four teachers, three from the area of Literature and one from Computer Science,

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[6] https://www.gov.br/inep/pt-br/areas-de-atuacao/avaliacao-e-exames-educacionais/pisa/resultados

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were asked to test the use of AI tools in the educational context, relating them to the skills of the Portuguese language component referred to in the BNCC. This testing process was essential to evaluate the applicability and effectiveness of these tools in the school environment.

According to the article by Raiaan *et al.* (2024), the choice of AI tools evaluated in this study was based on large language models, which have the potential to develop skills in various natural language processing tasks, including translation, text generation, and question answering. This class of tools has been highlighted for its relevance and potential impact on improving educational processes. It is important to clarify that the practical application of these tools to students was left as a task to be carried out in the future.

For a better reading of the text, section 2 presents the theoretical-conceptual basis, allowing the definition of its basic conceptuais frameworks for the study. Section 3 presents, from the perspective of transliteracy, the concepts of generative chatbots, exploring both the limitations and opportunities for developing literacy. Subsequently, section 4 highlights the various possibilities of using generative chats in education, to encourage aiming to encourage pedagogical practices that improve conversational skills and transliteracy in primary education. In subsection 4.1, we relate the use of AI to skills in the Portuguese language component, highlighting the development of digital skills without neglecting the conceptual knowledge and mental processes essential to communication skills, aligning them with what is proposed by the BNCC. Subsection 4.2 highlights the impacts of the use of AI in Education. Section 5 presents some final considerations and proposals for future work.

2. Primary, Secondary, Tertiary Discourse Genres and Transliteracy

In this section, we revisit the conceptualization of discourse genres to highlight the relevance of studies in this area for developing skills related to the communication processes necessary for the construction of multiple literacies that are indispensable for communication in digital culture. However, before revisiting the concept of discourse genres and the concept of transliteracy (Frau-Meigs, 2014), we revisit the concept of competence presented in the BNCC in order to situate, in Brazilian education, what is intended to be developed when designing the pedagogical practices proposed in the area of language. In the introductory text of the BNCC, the concept of competence is described as follows:

> mobilization of knowledge (concepts and procedures), skills (practical, cognitive, and socio-emotional), attitudes, and values to resolve complex demands of everyday life, the whole exercise of citizenship, and the world of work (Brazil, 2018, p. 8).

Therefore, when discussing competencies in the educational context, it is necessary to consider not only attitudes and values but also to foster the development of skills and conceptual and procedural knowledge. A plurality of definitions of digital competencies characterize an individual as digitally

competent. Silva and Behar (2019, p. 26) combine this plurality by defining a digitally competent individual as capable of "understanding technological means enough to know how to use information, be critical, and be able to communicate using a variety of tools." Thus, being digitally competent means using technological media to critically and reflexively communicate information in complex and uncertain social situations.

Having clarified the concepts of competence and digital competence and defined what is expected of a student at the end of Basic Education, the study of discourse genres at this educational level is resumed as a *sine qua non* condition for the effective development of learning of the mother tongue. Educational policies and the BNCC support the proposal of teaching the Portuguese language component with a focus on developing competencies that include, among other knowledge, the use, understanding, and production of different textual genres and the development of conversational skills. This understanding that language is only realized through a statement and in discursive genres is a current foundation in linguistics and contemporary language studies (Gomes *et al.*, 2018).

The concepts of the philosopher and language researcher Mikhail Bakhtin are the basis of this paradigm. In his work Aesthetics of Verbal Creation, Bakhtin (1992) states that human activities, in their various contexts, are related to the use of language. For the author, language is realized from oral and written statements previously marked by more or less stable combinations organized according to the purpose of use. In this way, the statement portrays conditions of use that involve, in an intertwined manner, thematic content, style, and compositional construction. These elements are shaped according to the specificities of the communicative process. Due to their relative stability, it is possible to group these communication processes into categories of statements, which Bakhtin (1992) calls discourse genres. Thus, for the philosopher, the genres of discourse are infinite because human activities are also infinite; however, it is possible to organize them according to their nature and sphere of use since the statements are concentrated in oral or written modalities, concrete and unique, according to human activity.

Bakhtin (1992) classified discourse genres into primary and secondary. The first, of a more straightforward and more intuitive nature, refers to the spontaneous verbal use of language. The second, of a more complex nature, is not solely but predominantly the result of processes that contemplate the development of writing technology and, therefore, have more structured limits, being subordinate to these modes of production and procedures (Lévy, 1998; Gomes *et al.*, 2018). From this perspective, discourse is sustained by communication situations and interactions; that is, it is influenced by its means of production, interlocutors, and enunciative intentions. As the development of humanity changes over time, in its technocultural forms, such as writing, the discourse genre models proposed by Bakhtin (1992) are influenced by new media and communication technologies.

In an approach that aims to bring Bakhtinian studies and digital humanities closer together, Gomes *et al.* (2018) identify the limits of primary and secondary genres, establishing a breaking point between them (Lévy, 1998). The researchers determined that, initially, there was a tendency to classify the nature of genres based on their sphere of production – public and private or in domestic and institutional contexts. The problem with this classification resided in the

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discourses that transcend these limits, as has occurred since the emergence of digital communication technologies, which contribute to a migration from one sphere to the other.

If writing, as a cognitive technology, was fundamental to the complexification of the spheres of human activity, including its discursive types, digital technologies today have been crucial for transcending the public and the private, orality and writing (Gomes *et al.*, 2018). Writing allowed for a linearization of memory and a space-time distance, broken by digital technologies. Thus, a new form of communication of a non-linear, virtual, ubiquitous, multimodal, interactive nature and with its characteristics, emerges from hypertexts – tertiary genres (Xavier; Santos, 2000; Gomes *et al.*, 2018) which, due to their digital nature, tend to mix characteristics of the secondary and primary genres. Oral and written models are hybridized in messages exchanged in messaging and email applications. The sequential structure of the sentence remains, as does the possibility of paragraphs and periods marked by punctuation marks; however, images, icons, symbols emerge, and sometimes sound figures. These new components end up reformulating the discursive genre. Consequently, this reformulation demands discernment from the interlocutors in the choice and selection of the elements of the thematic content, style, and compositional construction in order to maintain communication appropriate to the communicational context (Tenório, 2018), which is now different, given the new supports, formats, scopes, temporalities, and spatialities.

To illustrate the above, Figure 1 presents a conversation developed by participants in a research group. The main message uses a more formal structure, with long sentences marked by punctuation marks. In contrast, the participants' responses move to another level of language, using emojis and pictograms to convey complete ideas (Tenório, 2018). These elements confirm reading and demonstrate agreement with the message, reflecting a more informal form of gestural communication.

Figure 1. Hybrid messages.
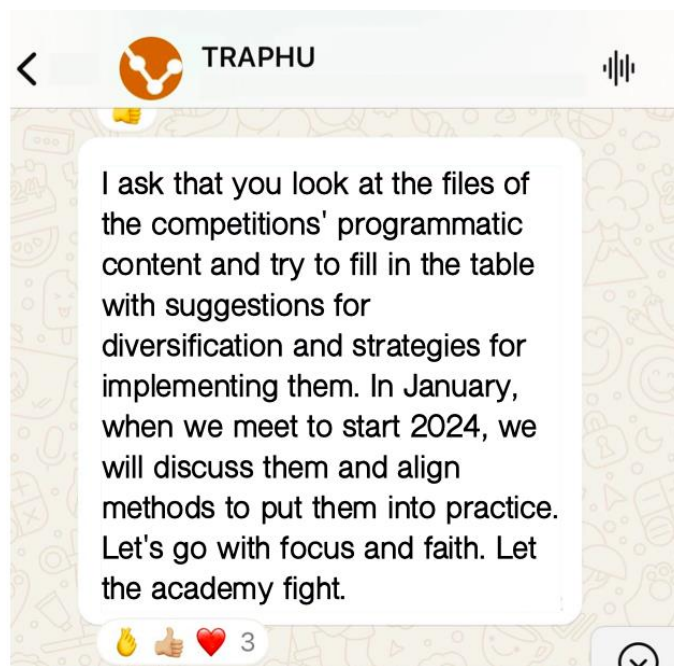
Source: The authors.

In the example in Figure 1, there was no noise in the communication, although it was possible to perceive different language levels in the communication process. However, depending on the discursive skills of the interlocutors, there could be noise in the communication process. Thus, in digital media, communication does not consist only of using the tool but also of understanding the nature of the message, the degree of formality to be used, and levels of familiarity between interlocutors for adequate vocabulary selection, among other skills that will direct how to respond (Tenório, 2018).

The uniqueness of the example provides an opportunity to reflect on how tertiary genres can influence the development of communication skills that the interlocutor needs to improve in teaching the mother tongue. According to Bolzan (2023, p. 83), " writing is one of the most complex activities humans can perform. In order to write a successful text, the reasoning requirements are diverse." The examples of interactions via WhatsApp provided illustrate the complexity of dimensions involved in this phenomenon.

Starting in 2022, the general public will have access to powerful AI tools capable of producing complex speeches and simulating human works of great socio-historical and cultural recognition. The machine power of these technologies is unprecedented, as they make it possible to greatly facilitate the generation, editing, and revision of human-written speeches. By delegating the task to an AI tool to prepare their text, the student will no longer develop the mental processes necessary to execute it, and this is a crucial point in the development of linguistic and discursive skills.

Writing a text allows for the subsequent location of information in similar models, which is crucial for understanding the meanings of the genre itself. It is important to remember that the results of Brazilian students in reading proficiency in the Programme for International Student Assessment (PISA, 2022) show difficulties with literacy in multimodal texts, which are characteristic of digital environments, as explained in the introduction to this text. These difficulties focus

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on making associations, inferences, and deductions, skills linked to a deep understanding of information and the genre.

Frau-Meigs (2014) criticizes the valorization of skills as they are presented, arguing that current models do not favor the development of multiple literacies that provide complex cognitive processes based on meaningful activities. For the researcher, what is happening is the development of pedagogical models that use tools to share disciplinary content, models focused on developing critical skills and/or that promote citizenship, or even models that privilege creativity in these environments. However, these proposals would not be sufficient because they maintain a logic of vertical incorporation through education (Frau-Meigs, 2014). Furthermore, there is a lack of robust studies that demonstrate the impact of digital tools on cognitive development, reading construction, and learning, since, without deep reading, critical reading is compromised (Unesco, 2023; Wolf, 2019). When there is no need to read, understand, reason, and decide, as is the case when AIs take on the execution of this type of task, harm to learning processes can arise.

An alternative path to fragmented verticalization is presented through the association of various literacies inherent to information culture: code, data, document, and current affairs, and culture, resulting in a transliteration process defined as a "set of interaction skills put into practice by users, especially the available means of information and communication: oral, textual, iconic, numerical, essentially in digital environments" (Frau-Meigs, 2014, p. 66).

Figure 2. Transliteracy model and the three infocultures
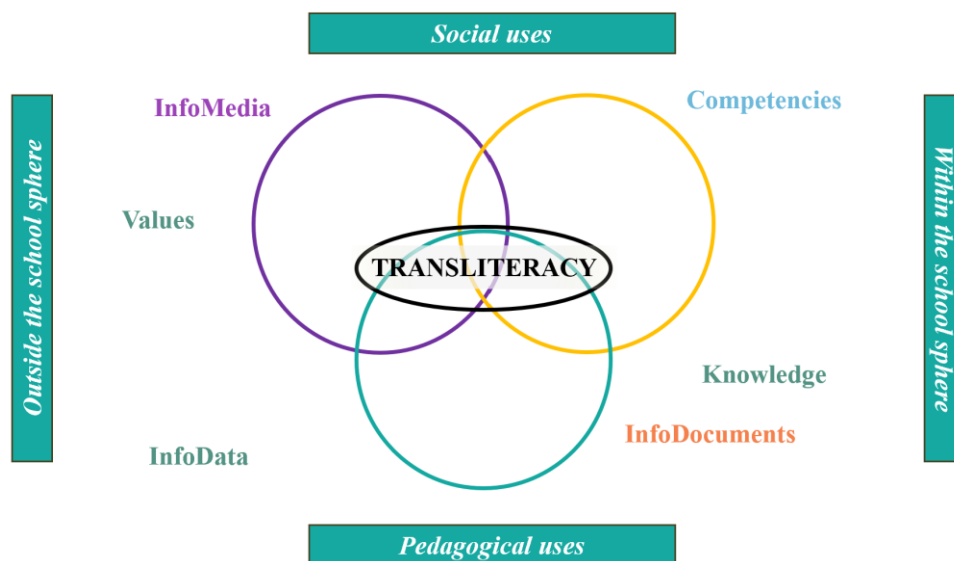
Source: Frau-Meigs, 2014 p. 66.

Transliteracies are not perceived uniformly in the literature. However, it is possible to gather the central assumptions from the studies of Lassalvia (2022), in which transliteracy is identified as situated social practices that contain subjectivities beyond the simplistic development of digital skills. This approach is described as "humanistic, philosophical, inclusive, contextual, strategic and that must precede other perspectives, answering seminal questions, such as why, for whom and what, considering the specificities of each group" (Lassalvia, 2022, p.

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204 – emphasis added). Thus, the core of transliteracy does not focus on the medium but on the skills to adequately judge context, intentionality, language, and tools to exercise decision-making in real complex experiences, as advocated by the perspective of education for skills.

3. AI and Generative Chatbots

With the launch of ChatGPT, questions have arisen about how highly developed generative AI and NLP models will redefine information searches on the internet and content production (Bilgram and Laarmann, 2023). Generative models are recent, but the history of AI and chatbots can be traced back to the 1950s when Alan Turing raised the question of the possibility of interaction between people and machines (Uhrig, 1995; Saracevic, 2008; Adamopoulou; Moussiades, 2020).

 AI is a multidisciplinary field in which systems are developed to take on tasks assigned initially to humans (Mishra; Srivastava, 2014), including pattern recognition, learning, decision-making, and natural language processing (Teixeira, 2019). For education, Zawacki-Richter (2019) describes that the applications are vast and can contribute to the activities of teachers, administrators, and students.

There are AI models of different natures, including those based on fuzzy logic, which deals with data uncertainty and imprecision (Nguyen, 2020); on genetic algorithms (Katoch; Chauhan; Kumar, 2021), which aim to combine and propose solutions based on the theory of human evolution; on neural networks, whose mathematical models are inspired by the functioning of the human brain and rule-based AI, or symbolic AI (Khosla; Dillon, 1998), which uses rules and logical representations for decision-making; and on machine learning (Carleo *et al.*, 2019).

In the case of ChatGPT, we have an AI based on Large Language Models or LLMs (Maddigan; Susnjak, 2023). LLMs use significant data to interpret contextualized questions and answer them in a language close to human language. Thus, the GPT-LLM created by OpenAI is a versatile AI capable of producing different scenarios, allowing the generation of creative texts, music, and even images from inputs (prompts) submitted by its users (Bilgram and Laarmann, 2023). Subsequently, other AIs based on LLMs were activated, such as Google's Gemini, the DALL-E 2 image generator, and Microsoft's Copilot, among other AI systems (Lino *et al.*, 2023).

Regarding discussions on the impact of the use of generative AI in education, the main themes have been its usefulness in pedagogical processes of teaching personalization (Wyk *et al.*, 2023; Lino *et al.*, 2023), as a brainstorming tool (Wyk; Adarkwah; Amposah, 2023; Loos *et al.*, 2023), in addition to questions about the ethical dimensions of its use (Silva *et al.*, 2023). However, the full impact of the use and development of AI is still uncertain. Its use in education is estimated to be relevant in the coming years (Zawacki-Richter, 2019).

Recent studies (Oliveira *et al.*, 2023; Gill *et al.*, 2024; Adiguzel; Kaya; Cansu, 2023) have argued that generative chatbots offer valuable support to pedagogical practices and that their applicability extends to various teaching modalities. In generative models such as ChatGPT, the potential to personalize

teaching (Chodorow; Gamon; Tetreault, 2010; Adiguzel; Kaya; Cansu, 2023; Oliveira *et al.*, 2023) is an attractive option for adoption in pedagogical practices, since a single teacher is not able to meet all the demands of a group (Gill *et al.*, 2024). The tool would work as an aid to the teacher. Regarding applicability, the OpenAI blog describes possible practices, such as staging conversations, supporting translation, and creating questionnaires. The University of Louisiana at Lafayette (Ull, 2023) also highlights the potential for emotional support and content review.

Despite being recent, these tools' potential for education is promising. However, since the tool itself does not have this potential, it is up to the teaching staff to take the lead in proposing uses that favor learning development. Below, we highlight the tool's impacts and uses in the development of teaching-learning processes, considering the skills described in the BNCC for the Portuguese language component.

4. Generative Chats: Uses and Impacts on Learning Discursive Skills

This section begins with an example of AI use, shown in Figure 3. An objective prompt was given to the generative chatbot Copilot for a relatively simple question, and the response was an incorrect statement. Since the interlocutor is familiar with AI training procedures, they sought to understand whether the database was outdated. This action reflects a technical understanding uncommon among standard users, especially elementary school students.

Figure 3. Copilot Test.
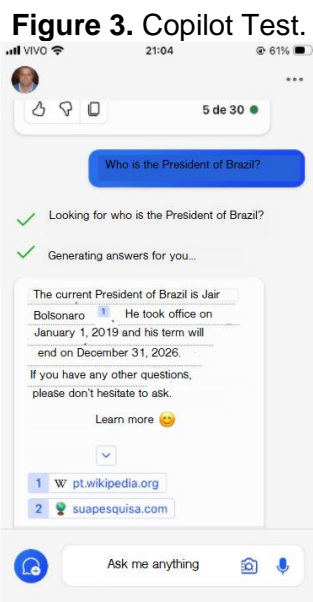
Source: The authors. Date: 09/01/2024.

In this sense, students can adopt a proactive, reflective, and critical approach to the potential of these tools. Producing assertive prompts is not enough to get the most out of AI; it is necessary to go further, knowing how to analyze, compare, and decide when and for what to use it. It is important to note that generative chats and search tools are not equivalent and do not have the same purposes; however, a good part of the searches for information have

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already been transferred to generative chatbots such as ChatGPT and Gemini. The structured responses in a language close to humans, provided by this new technology, can influence the average user not to confront the answers, generating a problem beyond linguistic skills – misinformation.

Another challenge to consider before proposing these tools in primary education concerns the mental processes related to the production of speech genres and the use of AI. According to Wolf (2019), the human brain is highly malleable and capable of expansion. However, this expansion is conditioned by the content read and the medium in which the reading takes place.

Far from proposing to limit students' access to these tools, the aim is to develop situated practices in which their use favors learning from a transliteracy perspective, in which the development of digital skills is intertwined with codes, data, processes, and cultures that permeate the use of technologies (Frau-Meigs, 2014; Lassalvia, 2022). It is noteworthy that studies related to the use of this tool, in general, have higher education as their field of research (Zawacki-Richter, 2019; Chodorow; Gamon; Tetreault, 2010; Adiguzel; Kaya; Cansu, 2023). However, it is necessary to consider the educational scenario in each segment so that the proposed practices are appropriate to the segment's demands. In Basic Education, developing the ability to research, select, compare, infer, and deduce what is implicit in the message is still necessary. Therefore, mediation's importance for using these tools is reinforced.

4.1. Pedagogical Practices with AI in Basic Education: How Teachers Can Use Generative AI to Enhance Learning

The supporting text for the Brazilian curriculum presents ten general skills to be developed throughout the school year. The fifth general skill includes an essay directly related to digital literacy, highlighting the importance of creating and using digital technologies to access and disseminate information and produce knowledge (Brazil, 2018). A series of skills are proposed to achieve this skill, such as skill EF69LP10 from the Portuguese language component. The initial letters (EF) indicate that this is an Elementary School skill, and the numbers (69) suggest that the skill will extend from the sixth to the ninth grade in the LP component, occupying the tenth position of the skills. This skill emphasizes producing news for radio, TV or videos, news, and opinion podcasts. Table 1 below describes some of the knowledge, skills, and attitudes that were observed during the process of executing a podcast.

**Table 1. Knowledge, skills and attitudes in podcast execution**

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Knowledge	Skills	Attitudes
- Know the structure of the script; - Know the topic of the interview; - Know the structure of the interview; - Know how to respect speaking turns - Know the interfaces and software for recording and transposing to podcast distribution platforms. - Know the structure of the language periods to prepare questions.	- Know how to write messages and send them using different communication styles and language to invite people to the podcast. - Know how to identify the different communication channels represented by messages, SMS, emails, or other forms of digital communication and differentiate them. - Know how to choose the type of digital communication according to its purposes, such as: information, entertainment, opinion, learning, and others. - Know how to evaluate which device should be used. - Know how to edit audio recordings	- Be willing to act with caution and security regarding logins and passwords. - Be willing and attentive when writing an interview to be welcoming and empathetic to the interviewee. - Be prepared to use different forms of communication appropriately and cautiously, as needed. - Be able and attentive to listen carefully and respond respecting speaking turns.

Source: The authors.

The knowledge, skills, and attitudes in Table 1 are part of the digital competencies described as the fifth general competency. However, linked to these competencies are skills such as respecting speaking turns, developing a script, and organizing questions for an interview, which are specifically related to linguistic knowledge of the language. Therefore, it is understood that the development of linguistic skills must precede or be built in parallel with digital competence development. While linguistic skills provide the basis for effective communication, digital skills allow this communication to occur efficiently and appropriately in the various digital environments and platforms that permeate the contemporary sociocultural environment. This parallel development seeks to ensure that individuals can better participate in the digital society, using their linguistic skills to enhance their digital skills.

Regarding the use of AI in Basic Education, it is necessary to consider the actual usefulness of the tool. Using AI to help understand a dense text, favoring flipped learning, can work for primary education (Johnson, 2013). In this case, generative chatbots translate a more complex text into more straightforward language. Figure 4 shows the use of Google's Gemini to correct a sentence. Since the standard of this AI is the normative use of the Portuguese language, the corrections are directed not only towards spelling but also towards explaining the points that can be improved to make the text more transparent and objective.

Figure 4. Correcting writing with Generative AI

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> Bard, correct my text: Nowadays, we want to have more access to culture, but this is not always possible.

Access other drafts. ⌄ 🔊

The text is correct, with the exception of two small changes that can be made to improve the clarity and flow of the sentence.

The first change is the replacement of "nos pretende" with "pretende-se". This change makes the sentence more impersonal and objective, which is appropriate for a formal text.

The second change is the replacement of "mais isso não sempre é possível" with "mas isso não sempre é possível".
This change makes the sentence more concise and easier to read.

Source: The authors.

It is possible to observe that AI can do something valued by language scholars: realizing that communication is not restricted to texts that conform to the standard norm. This is because these AI models are trained with a massive set of text and code data from different language levels, allowing them to identify and adapt to other forms of speech.

"The text is correct," says the AI, but it can be changed to meet the formality of the language. In the example, multiple discussion possibilities in a language class are highlighted based on the AI's response, such as textuality, language levels, semantics, and the morphosyntactic study of the language. The teacher can start the discussion by asking why the AI said the language is correct, for example. Figure 5 highlights the final suggestion from Gemini's AI for adjustments in the initially proposed period.

Figure 5: A writing suggestion.

With these changes, the text would read as follows:

Nowadays, we want to have more access to culture, but this is not always possible.

Another change that can be made is to replace "culture" with "cultural manifestations". This change makes the sentence more specific and comprehensive, as it covers all forms of cultural expression, such as art, music, literature, among others.

With these changes, the text would read as follows:

Nowadays, we want to have more access to cultural manifestations, but this is not always possible.

The choice of the most appropriate change depends on the specific context of the text. If the text is about a general issue about access to culture, the first change is more appropriate. If the text is about a specific issue about a cultural manifestation, the second change is more appropriate.

Source: The authors.

It is possible to observe that, in Figure 5, the AI response considered the scope of the target audience, the normative standard of the language, and the clarity and coherence of the text - crucial elements of communication competence. For a student with a certain degree of maturity, reading and understanding the AI analysis could help in perceiving language as a system that

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is subordinate to context and intentionality, and other elements that interfere in the production of discourse. This interaction with the AI would help develop metalinguistic skills, making it possible to pay attention to how language functions as a system, in addition to the relevance of adapting the language to the context of speech in communication processes. Thus, a mediated approach could promote the development of skills associated with different levels of learning, transforming the experience into an opportunity for a deeper understanding of the language.

Another possible use of generative chatbots in education is in developing prototyping and innovation in situations where users are not experts (Bilgram; Laarmann, 2023). In these cases, the tool would be an idea generator to support brainstorming processes. In Basic Education, the tool could help identify problems related to the geographic space where the student is located. Based on the answers provided by the tool, students can discuss the problems identified and explore which of them are susceptible to intervention by presenting solutions.

The teacher can use AI to create programming code, suggest prototype models, formulate assertions (precise prompts), analyze responses, and rephrase questions, all practices that would help with conversational skills relevant to life. Remember that in order to develop communication skills, the student needs to be able to negotiate meanings and be familiar with linguistic and paralinguistic resources (Silva, 2017).

Next, Table 2 presents AI tools, describing in parallel columns the skills and practices that could be developed using the tools. The skills described are applied between the sixth and ninth years of EFII. The aim is to provide a practical and integrated view of how AI technologies can be aligned with learning objectives.

Table 2. BNCC tools and skills.

Generative AI models	BNCC skills from 6th to 9th grade that can be activated with AI	Practices that can be developed with AI	Component-specific skills
Gemini – chatbot developed by Google. https://deepmind.google/technologies/gemini	**(EF69LP02)** Analyze and compare various advertising pieces (posters, leaflets, billboards, advertisements and commercials in different media, spots, jingles, videos, etc.), in order to understand the articulation	Request AI to generate advertising pieces and analyze the results, identifying the suitability of language, objectives and intentionality, refining the result.	To appropriate written language, recognizing it as a form of interaction in the different fields of social life and using it to expand one's possibilities of participating in literate

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Generative AI models	BNCC skills from 6th to 9th grade that can be activated with AI	Practices that can be developed with AI	Component-specific skills
ChatGPT – Summarize and respond to texts in PDF format. https://chat.openai.com/auth/login	between them in campaigns.		culture, (...) to become more autonomous and proactive in social life.
Capcut – Video editor and generator **https://www.capcut.com/pt-br/**	**(EF69LP06)** Produce and publish news, photos, photo reports, photo reports, multimedia reports, infographics, news podcasts (...)	Request AI to create reports and/or translate an uploaded text into a multi-semiotic language with AI; produce podcast scripts.	Activity image analysis and translation into written text, Transforming uploaded texts into images, etc.
Chatpdf – lê e analisa pdf **https://www.chatpdf.com/**	**(EF69LP08)** Review/edit the text produced (news, report, review, opinion article, among others), taking into account its suitability to the production context, the media in question, and characteristics of the genre(...)	Request that AI correct an author's text by making linguistic adjustments	To appropriate written language, recognizing it as a form of interaction in different fields of social life.
Chatsonic – Persona **https://chatsonic.pro**	**(EF69LP09)** Plan an advertising campaign on issues/problems, themes, causes that are significant to the school and/or community, based on a survey of material on the theme or event, (...)	Ask AI to identify community-related issues and propose solutions. (Ideal for communities where students may be at risk by leaving school to survey their surroundings).	Understand the phenomenon of linguistic variation, demonstrating a respectful attitude towards linguistic varieties and rejecting linguistic prejudices.
GPT-3.5- A set of models that			

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Generative AI models	BNCC skills from 6th to 9th grade that can be activated with AI	Practices that can be developed with AI	Component-specific skills
improve upon GPT-3 and can understand and generate natural language or code. https://openai.com/blog/gpt-3-5-turbo-fine-tuning-and-api-updates **GPT-4 and GPT-4 Turbo** - set of models that improve upon GPT-3.5 and can understand and generate natural language or code https://chat.aiapp.org/login	**(EF69LP10)** Produce news for radio, TV or videos, news and opinion podcasts, interviews, commentaries, vlogs, (...)	Generate video scripts and use persona to present, analyzing posture, vocal articulation, reading.	Read, listen and produce oral, written and multi-semiotic texts (...) fluency and criticality, in order to express oneself and (...)
	(EF69LP35) Plan scientific dissemination texts, based on the development of an outline(...)	Identify central elements characteristic of popular science texts.	Use, in social interactions, the variety and style of language appropriate to the communicative situation, the interlocutor(s) and the discourse genre/textual genre.
DALL·E - model that can generate and edit images from a natural language request **https://openai.com/dall-e-2**	**(EF69LP22)** Produce, review and edit texts that make demands or propose problems that affect school or community life(...)	Generate clear prompts to ask for the type of text the users want.	Recognize the text as a place for the manifestation and negotiation of meanings, values and ideologies.

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Generative AI models	BNCC skills from 6th to 9th grade that can be activated with AI	Practices that can be developed with AI	Component-specific skills
Study Fetch-Creates notes from audio and generates questions **https://www.studyfetch.com/pt**			
Whisper - model that can convert audio to text **https://openai.com/research/whisper**			

Source: The authors.

An applied activity-based learning approach allows for contextualizing language teaching, considering what is written, why, and why it is written, situating learning in discourse and the means of production (Lassalvia, 2022). In this way, the skills described in Table 2 are intertwined with the competencies of the Portuguese language field without disregarding spaces in which students produce and consume content. From the perspective of transliteracy, critical knowledge, creativity, and citizenship come together with culture so that the process can be consolidated (Frau-Meigs, 2014). In this sense, AI can also favor education beyond the classroom, allowing students to produce their learning practices using multimedia (something they already do in their daily lives) for a purpose other than usual.

The possibilities are endless, such as script writing, short film script production, conversation simulation, writing and rewriting processes, production and analysis of multi-semiotic texts, news creation, and grammatical correction, among other uses relevant to the development of linguistic and discursive skills (Oliveira *et al.*, 2023). The crucial issue lies in the preparation of the teacher to use the tools with students since their use for education goes beyond the dimension of digital literacy, extending to the understanding of ethical issues involving the use of AI (Duque *et al.*, 2023; Fernandes *et al.*, 2024).

4.2 GAI usage impact on education

AI emerges as a tool with the potential for new education models. As presented throughout section 3 of this article, AI tools can help establish new education models by providing teachers with resources to stimulate creativity and other skills highlighted as relevant in the BNCC. Potential uses of AI in education

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include the ease of personalizing learning by analyzing each student's performance, identifying their difficulties and potential, and, based on this information, generating personalized content and activities. Automating classroom design, optimizing learning, encouraging adherence to processes, generating interactive dialogues, and promoting engagement are some of the benefits of using AI in education described in the literature (Su; Yang, 2023; Bahroun; Anane; Zacca, 2023; Sharples, 2023).

However, using AI in education also presents risks that cannot be ignored. One of the main challenges is the possibility of perpetuating biases and discrimination present in the data used to train AI models. If the training data is biased, AI can generate content and activities that discriminate against certain groups of students, perpetuating existing inequalities. Thus, generating more inclusive models becomes one of the challenges of using AI (Bahroun; Anane; Zacca, 2023; Ferreira *et al.*, 2024). In this sense, there is a need to train teachers to understand that the use of AI in Basic Education must transcend the development of understanding of the tool, but there is a need to explore ethical and behavioral issues that concern its use in education (Ferreira *et al.*, 2024).

Finally, it is worth noting that, like all emerging technologies, generative AI requires longitudinal testing to understand its impact on learning. In addition, issues related to the cost of the service must be considered for inclusive access in education since the complete AI tools are offered in paid versions (Su; Yang, 2023).

5. Final considerations and future work

The future of AI in education cannot yet be measured; however, for better or worse, these tools have been influencing our daily lives, whether in automatic calendar reminders or text auto-completion. Much has been gained, but much has also been lost. Today, it is possible to ask a generative chat: "Write a message of thanks for the gift received," meaning that all the emotion we need to gather to write an original piece of writing is no longer accessed if an AI does it for us.

When we ask AI to create a poem, a song, or a painting, it is not just a question of authorship but of renouncing all the mental processes that make us human – emotion, intentionality, understanding of the interlocutor, empathy, among other methods that are no longer activated in us to create the painting, the song, or the poem. An education that uses AI to facilitate learning needs to assess which mental processes are no longer activated and how cognitive development is affected, especially when considering primary education.

This study revisits concepts relevant to human language, such as the construction of the statement itself and the relevance of strategic competence in negotiating meanings in verbal interactions. It is understood that a gap in current studies published on AI is the search for understanding the impact of its use on mental processes for cognition. It is inferred that, like any tool, use is not an advantage; the difference lies in the intentionality of this use.

From the perspective of the BNCC, discourse genres, through language practices, are the basis of language studies. Production conditions, such as intentionality, means, and style, are fundamental elements for the communicative

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process (Bakhtin, 1992), which need to be developed in primary education. In this sense, GAIs can contribute to situated learning.

When Frau-Meigs (2014) calls for the development of education for transliteracy, she places learning in a dimension in which the means of communication and information at their oral, textual, iconic, audiovisual, and numerical levels are understood and developed by students in their practices inside and outside of school. These elements need to be present in education so that there is an understanding of the language beyond what is said, that is, so that the student becomes capable of mobilizing knowledge, skills, attitudes, and values to solve everyday life issues, exercising citizenship more broadly (Brasil, 2018). The extent to which AI tools interfere in transliteracy still needs to be studied. However, practical proposals have been made to integrate AI into the teaching-learning process, enhancing the tools for learning.

Finally, as a perspective for future work, we plan to conduct a systematic literature review to identify the use of GAI in primary education in formal teaching spaces. In addition, we hope to conduct a field study with primary education students, in which a pedagogical intervention with generative chats will be carried out to develop the skills listed in Table 1. The project aims to explore the practical potential of generative chats in the educational context, focusing on the direct impact of these tools on developing specific skills in the Portuguese language component.

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