



## PERSPECTIVES OF ARTIFICIAL INTELLIGENCE AS A SUPPORT TOOL FOR DISCURSIVE TEXTUAL ANALYSIS

### PERSPECTIVAS DA INTELIGÊNCIA ARTIFICIAL COMO FERRAMENTA DE APOIO PARA ANÁLISE TEXTUAL DISCURSIVA

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**Abstract:** This article aims to describe the perspectives of using ChatGPT (Chat Generative Pre-Trained Transformer) Artificial Intelligence (AI) as a tool in the Discursive Textual Analysis (DTA) process to handle information collected according to studies from the Research Project “Textual Analysis in Qualitative Research using QDA – Qualitative Data Analysis software”, from a public university in the south of Bahia. As a justification, this tool presents functionalities for identifying linguistic nuances and capturing context. It is a qualitative, exploratory research with a bibliographical source whose previous results indicate that the AI used in support during the information process can help expand textual analyses, offering greater depth in unitization, enabling understandings and reformulations of speeches, and combining speed and management via prompt. The results of this use lead to time savings without compromising ethical commitments regarding the reliability and validity of data aided by AI.

**Keywords:** Qualitative Research. Discursive Textual Analysis; Artificial Intelligence; ChatGPT.

**Resumo:** Este artigo objetiva descrever as perspectivas do uso da Inteligência Artificial (IA) ChatGPT (*Chat Generative Pre-Trained Transformer*) como ferramenta no processo da Análise Textual Discursiva (ATD), para tratar informações coletadas conforme estudos do Projeto de Pesquisa Análises Textuais na Pesquisa Qualitativa com uso de *software QDA – Qualitative Data Analysis*, de uma universidade pública no Sul da Bahia. Enquanto justificativa, essa ferramenta apresenta funcionalidades para identificação de nuances linguísticas e captura de contexto. Trata-se de pesquisa qualitativa, exploratória com fonte bibliográfica, cujos resultados prévios sinalizam que a IA utilizada no apoio durante o tratamento de informações pode auxiliar na ampliação de análises textuais, oferecendo maior profundidade nas unitarizações, possibilitando compreensões e reformulações dos discursos aliando velocidade e gerenciamento via *prompt*. Os resultados desse uso ensejam a economia de tempo sem dispensar os compromissos éticos quanto à confiabilidade e validade dos dados auxiliados pelo uso da IA.

**Palavras-chave:** Pesquisa Qualitativa; Análise Textual Discursiva; Inteligência Artificial; ChatGPT.

## 1 Introduction

This article aims to describe the prospects of using Artificial Intelligence (AI) to support the process of Discursive Textual Analysis (DTA). DTA is conducted according to procedures outlined by Moraes and Galiuzzi (2007). In turn, AI for public access was

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made available starting in 2023 and, unlike other virtual tools, lacks manuals that delineate its use. Given the possibility of describing the use of AI as a tool to support procedures in the DTA methodology, it is natural for doubts and insecurities to arise, and, from this perspective, expectations about the appropriate use of this tool emerge. In order to investigate this conjunction, the Research Project “Textual Analyses in Qualitative Research using QDA - Qualitative Data Analysis software”, from a public university in Southern Bahia, has been dedicated to studying the limits of AI use in qualitative research analysis procedures that employ the DTA methodology.

Regarding the use of AI, starting in 2023, various technological resources have been released, among which are several text generative AIs on the Internet: Bing AI<sup>3</sup>; YouChat<sup>4</sup>; Google Bard<sup>5</sup>. In this dynamic scenario, the focus was on the expectations of using ChatGPT (Generative Pre-Trained Transformer). The choice of ChatGPT is supported by the fact that AI has emerged as a popular option in various sectors, including Education, as evidenced by Alves (2023).

Generative AI operates through a Large Language Model (LLM), characterized by Duque-Pereira and Moura (2023) as having billions or even trillions of parameters, which grants them power in terms of processing capacity and accuracy in their responses with considerable speed.

The agility of this tool makes it a strong ally to analysis methodologies because in its initial stage, there is a considerable time consumption for the execution of textual partitions and deconstructions. In addition to the partitions that arise from the procedures adopted in the stages of DTA, there is the possibility of subjecting a large number of contributions to analysis (questionnaire responses, interview transcriptions, laws, official documents, etc.), which requires many hours dedicated to the process. Such use of time can be even more exhausting if the number of contributions results from extensive texts.

In addition to the mental fatigue involved in interpreting numerous contributions, there is also the risk of data loss. Whether the analysis is conducted using tables in Microsoft Word application or through notes on cards by the researcher, depending on the number of documents generated, control and precision over the progress of collected information may be affected.

With the use of an agile tool such as an AI, this concern can be eliminated. Thus, the researcher can have greater confidence in the initial stage of analysis, precisely when they are still in a journey without maps, as described by Moraes (2005).



When the researcher begins to record information, whether from questionnaires, interviews, or other forms of contributions, he/she knows little about the content and cannot even predict its developments because all contributions are deconstructed simultaneously. This generates (n)partitions, which are identified and coded in DTA as Units of Meaning or Sense (UM). With this, it is understood that UM is the description for a movement that goes from meaning to sense recursively. For this reason, the designation UM is used for both, since meaning and sense are the terms used to describe the levels of impregnation achieved by the discursive analyst during the execution of textual analysis procedures (Paula, 2018).

The intention to use AI on the initial stage of analysis is necessary because DTA is a methodology that requires the researcher's subjectivity throughout the implementation procedures as a necessary condition. With the use limited to this stage, subjectivity will not be compromised when the procedures for unitarization become difficult to control, given the large number of units obtained. Without the use of an analysis tool, at this stage, the researcher would have to organize an accumulation of pages and tables generated that arise from the beginning of DTA. Then, it is essential to revisit the subject of AI application, as it is not correct to apply AI throughout the entire process of textual analysis, which would include categorization and interpretation of the metatext, and such an approach would detract from the essence of DTA.

For DTA, the focus lies on understanding the investigated phenomena from a hermeneutic perspective, relying on the analyst's ability to interpret and comprehend the phenomena, reconstructing meanings, and exploring their depths, as presented by Moraes and Galiazzi (2007).

For this reason, the use of a tool that is not influenced by the number of documents submitted is welcome at this stage of textual analysis, also because it is capable of maintaining a certain "impregnation" given the invariant conditions to which it subjects all documents from the beginning to the end of unitarization.

While methodological component, the objective of this article enabled the structuring of an *exploratory bibliographic* research. According to Gil (2008, p. 27), research of this type "has as its main purpose to develop, clarify, and modify concepts and ideas, aiming at formulating more precise problems or researchable hypotheses for further studies". Thus, seeking to establish researchable hypotheses, consultations were conducted from digital sources and physical books of scientific materials that investigated the subject in question. For the presentation of these sources, the topics that constitute



this article were elaborated. They are: introduction; presence of software in qualitative research; Internet, Artificial Intelligence, and ChatGPT; AI to support DTA. The final considerations allow for delimiting, for now, a series of inquiries that have kept the investigations ongoing about how DTA can be implemented, with ethical care and without the invasion of undue and harmful technology use to the researcher's subjectivity.

### **1.1. The presence of softwares in qualitative research**

In this topic, we address the presence of software in qualitative research with the aim of reflecting on its use and comparing it with what is currently shown as support perspectives offered by the use of ChatGPT 3.5. What is noticed when seeking to learn more about this AI is that there are characteristics that sometimes bring it closer to a QDA software, sometimes move it away, as benefits for use in textual analysis.

The first comparative element is perceived as a divergence because it refers to publications about the use of QDA software in qualitative research as tools for data processing. The presence of this type of tool in qualitative research contains a variety of references, such as Garcia and Estevão (2016); Schlosser, Frasson, and Cantorani (2019); Andrade, Schmidt, and Montiel (2022); Martins *et al.* (2022); and Santos, Santos, and Boss (2023), among others. On the other hand, regarding the use of various AI to fulfill this function in research, the reference still needs to be established.

The second comparative element can be perceived as an approximation to a certain extent. Pointing out this consideration, the approximation lies in the quantity of documents that can be submitted simultaneously for processing, as QDA software not only provides possibilities for handling large amounts of data but also offers various graphical and formatting options for users. However, while to obtain such visualizations in software of this type only requires clicking on a window, ChatGPT 3.5 requires the formulation of a command. In this aspect, as a functionality, AI and QDA software diverge.

Therefore, it is evident that QDA software and AI converge in terms of speed and quantity but diverge in the aspect that expresses the dependence on the researcher's action, in the specificity of generated commands, for the creation of visualizations in feedback on the platform.

In the perspective outlined above, one can perceive in this AI a differential compared to the predominant QDA software until nowadays. This is because, when



accessing a certain type of software, the functions are delimited in the respective tutorial, and even though there may be specificities, they still remain limited in terms of treatment scope previously stipulated by the owner.

An example of the possibilities of a software can be found when accessing Iramuteq, since in tutorials and manuals, a specific amount of data treatment is found, which are identified as packages, summarized in five functionalities: statistics; Correspondence Factorial Analysis (CFA); Descending Hierarchical Classification (DHC); similarity analysis and, finally, perhaps the best-known of them, the word cloud. This last form is common in applications that present the frequency of terms in a certain text excerpt.

With this exposition, one can perceive how much AI presents a multitude of resources to be explored, as there are no tutorials or manuals that contain it, since a tool like ChatGPT 3.5 is, by nature, a combination of software.

After discussing comparisons between these technological tools, it is understood that the configuration in the development of textual analyses with the support of both QDA software and ChatGPT 3.5 is viable if researchers can ensure the reliability and validity of the data obtained after the treatment performed, when, then, the ethical aspects will be respected. This is because by avoiding excessive dependence on the tool, distortions, biases, inaccuracies, and superficiality can be prevented.

Considering the necessary invariability of the elements above, the assumptions function as a warning, as the combination of these conditions would compromise the integrity of qualitative research. Therefore, in this transitional phase, in which one seeks to learn about the use of technological tools, the incorporation of AI into qualitative investigations, for now, signifies much more of a challenge than an assurance of depth.

Regarding qualitative research support software, some examples include: VIVO<sup>6</sup>, Alceste<sup>7</sup> (*Analyse lexicale par context sún ensemble de segments de texte*), webQDA<sup>8</sup>, SPHINX<sup>9</sup>, Iramuteq<sup>10</sup> (*Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires*) and others (Prediger; Allebrandt, 2016). As described by these authors, the softwares refer to packages that can be classified considering the conditions of use, by which they can be identified into two distinct types – the first comprises proprietary softwares, that is, those whose use is restricted or requires the acquisition of a license, often with significant costs, including tools like Alceste; Atlas ti; HyperRESEARCH; Kwalitan; MaxQDA; NVIVO; QDA Miner; Qualrus; The Ethnograph and WebQDA – the second consists of open-source softwares, which are



available for free for use, such as: Aquad; Cassandre; CATMA; Coding Analysis Toolkit (CAT); Compendium; Open code; Iramuteq, among others.

As for ChatGPT, this classification could currently be adopted considering that the greater the skill required in performing the task by the AI, the less likely it will be available in the free format. At this moment, paid and free versions coexist, and this article deals with the use of the free version of ChatGPT (GPT 3.5).

Moving on to the second aspect of the subject addressed in this topic, considerations about the first software tools to support qualitative data analysis are presented according to Lage (2011). These tools originated in the academic environment of the 1980s. The origin of these computational tools is linked to concerns about the application of qualitative research in situations in which there is a considerable amount of data, or when it is necessary to establish connections among information based on the attributes of research participants.

So, after presenting the QDA software in relation to the perspectives of using ChatGPT 3.5, the text is configured around the historicity of the Internet, outlining its emergence as a line of studies and projects that eventually resulted in what is now known as the World Wide Web (WWW). Given this exposition, it becomes noticeable that the Internet, in terms of public reach, was not the only one, nor was it even the first, to exist until then; even though that is the sensation of users. Similar to the previous topic, the description will begin by addressing the Internet and will be closed with considerations about ChatGPT 3.5.

## **2 Internet, Artificial Intelligence and ChatGPT**

Regarding its historicity, the Internet emerges from the conception of a network of ideas, through the recognition of mental schemes, which led to the development of the prototype of what is recognized as the worldwide web created by Tim Berners-Lee – a London-born scientist born in 1955.

The initial proposition about the idea of a network was stated<sup>11</sup> in the 1940s, by Vannevar Bush (1890-1974) – engineer, inventor, and politician. In the 1960s, this dissemination continued with the publication of Theodore Nelson, born in 1937 – sociologist and philosopher. Currently, it can be acknowledged that these were the precursors of publications about what is now recognized as the WWW (Paula; Viali,





2016). As Bush (1945) already proclaimed, if it is impossible to copy the entire structure of thought, at least it is possible to copy thought itself.

According to Lins (2013), the Internet originated in 1960 as a result of the efforts of the United States defense system – the networks were for private use. In 1969, according to Muniz *et al.* (2017), the first network connection occurred. It was established at Stanford University, the University of California in Los Angeles (UCLA), Santa Barbara (UCSB), and the University of Utah, through the American project called ARPANET (Advanced Research Projects Agency Network). One year later, only four computers (nodes of the network) were interconnected, marking the beginning of a technological revolution. Afterward, “in 1971, the network had already grown to a dozen nodes. By 1973, it had about forty nodes, and incorporated computers from other countries, such as the United Kingdom and Norway” (Lins, 2013, p. 16).

In 1974, the first commercially available personal computing machines arrived on the market. It was driven by the introduction of the Intel 8080 and Zilog Z80 processors. These innovations were released by manufacturers of that time, including “Altair, Commodore and Cromemco” (Lins, 2013, p. 17). In April 1977, Apple Computer launched the Apple II, a notable milestone in the history of personal computing. This computer, designed by Steve Wozniak and Steve Jobs, stood out as the most popular model of this first generation of 8-bit computers (Correia, 2018).

It was only in 1981 that the International Business Machines (IBM) company launched the IBM Personal Computer (IBM PC) on the market – a commercial success at the time (Filho, 2002). Nevertheless, these first-generation computers had limitations in terms of usability, with interfaces based on text commands and terminals dedicated to displaying characters. In this scenario, there were advances in the field of visual design, with the development of principles and standards of graphical interface, aiming to make the user experience more enjoyable and accessible. In this context, Apple’s team developed both hardware and software for a new computer, the Macintosh or Mac, launched in 1984 (Homsy, 2020).

In the following year, the first version of Microsoft Windows emerged. It was characterized by a colorful, two-dimensional graphical interface based on the MS-DOS (Microsoft Disk Operating System). However, in this initial phase of development, Windows did not pose significant competition for Apple’s Mac, as both Apple and Microsoft only improved their models over time (Mendes, 2013).



Until 1990, the Internet remained accessible only to the academic community and governmental organizations, meaning that networks were still privately used. At the end of that decade, two developments changed this condition. The first was the introduction of the World Wide Web, which brought innovation in how sites were addressed, as it no longer relied on the numerical addresses established by the Internet Protocol (IP); browsers began to identify locations on the network through domain names. The second was the creation of the browser, also known as a web browser (Lins, 2013).

In 1992, the emergence of the first successful project in the field of internet navigation occurred. It was known as Mosaic. This pioneering program, according to Vieira (2003), represents the first web browser in history. Its technological innovations and revolutionary design allowed users to view page content attractively and navigate among information through references, known as hyperlinks. This functionality enabled users to simply click on links with the mouse to access other pages or websites.

Thus, Internet browsing was born, and shortly thereafter came the renowned Google, despite directories of sites already existing. An example is Yahoo!, which, in 1994, was a manually created thematic guide to the Web (Lins, 2013). Continuing the description, Google began its operations in 1998, and, in a relatively short period, its database already contained over 500 million hyperlinks, out of an estimated three billion that comprised the web at that time.

In the 1990s, as a reference to the use of networks, the Brazilian translation of Pierre Lévy's work "Ciberculture" (2010) arrived in Brazil, which highlights the power of networks in the formation of Collective Intelligence, in this case, emphasizing the human potential for contributions. This author also provides guidance on the mistake of considering the Internet as a panacea, because, as well known, the potential of networks lies in the widespread dissemination of problems, which is a strong aid in publicizing events, but this does not lead to solutions that depend on the formation of social consciousness. An example of this can be found in the reality embodied by the network, because in a time when so much is discussed in publications about exclusion, the very worldwide network is a place where digital exclusion is denounced. In a similar situation of using these technologies, it can be considered that AI should not be seen as a solution to all problems, but rather as a tool to assist in human activities, especially in the educational field, in which one can consult a broad reference on qualitative research of exploratory interest according to Zanete (2017), Lösch, Rambo, Ferreira (2023), and others.





Following the use of the internet, access was characterized by dial-up connections and the need for access providers, marking the era of hypertext, web pages, and websites in which predominantly textual information began to interconnect in various ways through hyperlinks, giving rise to web browsing. Another important milestone was the advent of broadband, which brought the diversification of content, such as digital images and audio, as well as the emergence of online social environments and games.

Furthermore, there was a revolutionary period marked by the diversification of screens, especially on smartphones, which, according to Lins (2013), transformed the Internet from a tool into something that constantly involves us. This involvement underpins the use of the term ubiquitous technology (Santaella, 2013).

Considering all the periods mentioned above and the innovations recorded, it can be affirmed that there is a gradual process of development, as technological innovation does not occur instantaneously or randomly; it is fueled by decades of studies, research, experimentation, and evolution.

The historicity of AI confirms this, as its emergence, although it may seem recent due to its ability to encompass a variety of subfields – from learning and perception to specific tasks such as chess games and demonstrating mathematical theorems – has roots that extend over decades of study and research in fields such as Computer Science (Russell; Norvig, 2013). For these authors, “AI is one of the newest fields in Science and Engineering. The work began shortly after World War II, and the name itself was coined in 1956” (Russell; Norvig, 2013, p. 24).

However, even after more than 60 years since its creation, the perception that AI is a recent innovation persists. This is largely due to its constantly evolving nature and to the Internet itself, which allowed for rapid dissemination, providing a sense of novelty.

After addressing its emergence, it is necessary to present the definitions of AI, which, like all technologies, denote polysemy. Following what Russell and Norvig (2013) consider, AI fits into two main dimensions, with some emphasizing processes of thought and reasoning (*rationality*) while others focus on behavior (*human performance*). These different perspectives on definitions highlight the complexity and diversity of the field of AI as a whole. And, furthermore, AI is

the subfield of Computer Science responsible for researching and proposing the development of computational devices capable of simulating aspects of human intellect, such as the ability to reason, perceive, make decisions, and solve problems (Silva, 2013, p. 1).



The authors Barbosa and Portes (2023) share the same view, contributing to the understanding of AI as a branch of Computer Science that seeks to create mechanisms, whether physical or digital, that approximate the human ability to think and make decisions. Thus, AI represents a technological advancement that enables systems to emulate a situation of intelligence comparable to human intelligence.

When it comes to the development of technologies, it is worth presenting examples of AI applications in other areas, as emphasized by Mendonça *et al.* (2018), highlighting its use in industries, covering sectors such as security, military, autonomous vehicles, personal assistants, shopping, services, among others. In the educational field in Brazil, there has been intense dissemination of the potential of ChatGPT, which is considered a prototype of an AI-powered chatbot suitable for use in various contexts. In this sense, it is worth explaining that chatbots are automated communication software designed to simulate human conversations.

The term chatbot is a combination of the words “chat” (which deals with conversation) and “bot” (a diminutive of robot), which function as software programs that can maintain conversational interactions (Santiago; Filho, 2019). According to Matias (2020), chatbots made their first appearance on Facebook Messenger, in 2016. Initially, they were used to assist customers in navigating through company websites, as well as in making purchases. Over time, this technology transcended its original function, no longer limited to a single website or page, and was adopted across various social media platforms, such as Telegram and Skype, among others (Santiago; Filho, 2019). Furthermore, according to Matias (2020), chatbots have the ability to operate without interruptions during holidays or nighttime hours.

With the acceptance of these services, as consumers increasingly prefer online consumption over in-person interactions, virtual assistants have become an advantageous option for saving time and simplifying access to help and information for consumers. These assistants are designed to simulate interpersonal conversations, characterized by a high degree of personalization, both in dialogue and in the proposals that can be offered to customers and users.

From the users' perspective, chatbots offer an experience that closely resembles a conversation with a real person; from the viewpoint of companies, this technology represents an effective solution for automating processes and expanding customer service, maintaining a level of communication that approaches a personal interaction (Santiago and Filho, 2019).



Therefore, as described on the OpenAI website (2023), the evolutionary development of language models, from GPT and its variants, GPT-2, GPT-3.5, and GPT-4, is driven by a deep learning approach that benefits from access to increasing volumes of data and advanced computational resources. Within this context, ChatGPT-4 emerges as the latest innovation from OpenAI, representing a paid and higher-capacity version. Version 4 incorporates the technique of training with human feedback, allowing continuous improvement for real-world use and advanced features for enhancing reasoning. Additionally, “ChatGPT becomes the basis for the creation of so many other textual generative GPTs, in which its paid users have the possibility to 'customize' their own, which ends up further expanding its access” (OpenAI, 2023, [online]). In view of this, it is emphasized that such updates refer to versions after ChatGPT-3.5, which is the focus of this text. This choice is due to the accessibility and availability that the free version – ChatGPT-3.5 – provides to various users, although there are reservations about this use, as

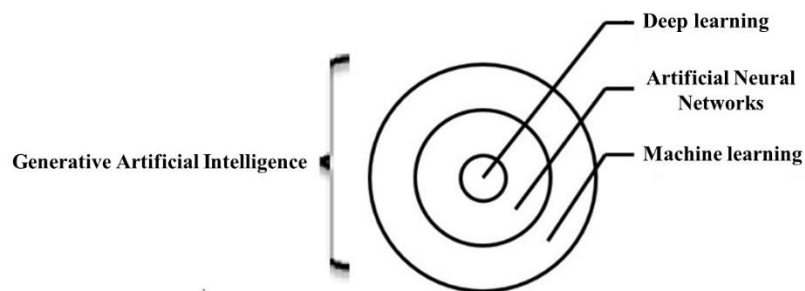
ChatGPT was launched in November 2022 and drew attention for its detailed and articulate responses, although the accuracy of its information was criticized. The ChatGPT software is formed and trained based on large amounts of text published online up to 2021, such as news, books (millions), web pages, including Wikipedia, and other sources of information (Passos; Eleutério Júnior, 2023, p. 2).

Consequently, it is worth noting that although ChatGPT is capable of generating well-elaborated responses, its dependence on data relies on information available within a temporal limit, which may lead to obsolescence. It is also worth highlighting that there is a theory that by using ChatGPT, users can potentially contribute indirectly to the continuous improvement of the model. ChatGPT feeds back with information provided during interactions, incorporating this feedback into its training and adjustments (Rodrigues; Albuquerque; Chagas, 2023). This feedback loop is a crucial aspect in the development of AI, as it allows for constant refinements and improvements in responsiveness and performance. Regarding this functionality, which enables AI to reconstruct its outputs, the importance of preserving the sources of information can be perceived. Without this, its recursiveness may blend ideas from different researchers and epochs to compose a dimension of unrealistic results. ChatGPT 3.5 does not yet have this function. When addressing the aspects of AI and ChatGPT, it is worth noting how AI based on an LLM approach operates, as it relies on various techniques including Machine Learning, Neural Networks, and Deep Learning, defined as follows:

*machine learning* is the development of computational techniques for learning and acquiring knowledge automatically. *Deep learning*, on the other hand, differs from machine learning in terms of the type of data it works with and the methods by which it learns. Therefore, it is not an algorithm in itself but rather a family of algorithms that implement deep networks with unsupervised learning. In other words, deep learning uses a complex structure of modeled algorithms based on how the human brain works, processing information similarly to the human brain. [...] *Artificial neural networks* are one of the successful machine learning techniques for solving various problems. They are mathematical models inspired by biological neural structures and acquire computational capacity through learning (Barreto; Ávila, 2023, p. 95-96, our emphasis).

For a better understanding of how these techniques work, a diagram is presented in Graph 1.

**Graph 1:** AI techniques



**Source:** Adapted from Barreto and Ávila (2023)

As can be seen, the process of forming AI begins with Deep Learning, which encompasses a set of algorithms capable of analyzing data with logic similar to how a human would draw conclusions, and this is the technical basis that allows the creation of Artificial Neural Networks. In turn, these networks are designed to emulate the functioning of biological neural networks, combining processing units in artificial neurons arranged in interconnected layers, following a pattern inspired by synapses in the human brain (Campos, 2023).

Thus, Machine Learning, as a broader field, encompasses all these techniques and constantly enhances its performance through datasets. Therefore, these interconnected techniques form the core of AI, enabling systems to learn, adapt, and perform tasks in a manner similar to human thought (Ludermir, 2021).

In this regard, this occurrence is by no means the first time that the human mind has been a source of inspiration for the production of technologies. Once again, the use of the term “intelligence” in identification – AI – draws from an idea of copying the inherently intelligible human capacity already used in the creation of the Internet itself. In the same mode of junction, one can think of AI to support data exploration, carried out by a methodology whose core is linked to the recursiveness of interpretations on texts



transformed into units that, when grouped, form blocks and return to the text structure - for this is the dynamic of DTA.

### 3 The use of AI to support Discursive Textual Analysis

For the use of any resource, it is necessary to understand, beforehand, the delimitations of the analysis methodology employed in the research that will allocate this technological support. Regarding the initial information about DTA, there is an article titled “A storm of light”<sup>12</sup>, from 2003, considered one of the first records of this methodology.

It is worth noting that DTA is one of the methodologies used for textual analysis in various fields of study, such as Social Sciences, Communication, Psychology, Linguistics, and others. As a structure, according to Moraes and Galiazzi (2007, p. 7), DTA “operates with meanings constructed from a set of texts. The textual materials constitute signifiers to which the analyst needs to attribute meanings and significance”. This attribution is, to some extent, guided and delimited by the researcher's subjectivity.

The assertion “to some extent” is implicit, as with each new reading, other nuances are perceived, and new meanings are attributed to the texts. Therefore, nothing is definitively defined because the work in analysis is always recursive until the researcher perceives that data saturation has been reached. According to Minayo (2017), the use of the term “saturation” in qualitative research still arouses controversy, as some researchers believe that this way of considering the endpoint of interpretations depends on quantitative measures. For others, the idea of saturation follows what is defined by Glaser and Strauss (1967) as the moment when data no longer offer contributions regarding the research object.

In DTA, through the applied procedures, it is sought an interpretation that enables a deeper understanding of a specific research question. It is the researcher who gauges the interpretation to determine if the data has provided this depth. The analysis procedures occur through “deconstruction, followed by reconstruction, of a set of linguistic and discursive materials, thereby producing new understandings of the investigated discursive phenomena” (Moraes; Galiazzi, 2007, p. 86).

In this dynamic of choices, the aim is to perceive the richness in the data, that is, to deconstruct layers contained in contributions that may be mixed, confused, obscured,



among other nuances. In this case, saturation is revealed when the researcher no longer perceives any data of interest to the research question.

When the research involves few contributions, obtaining its UM does not pose difficulty. However, when there is a reasonable number of texts to be submitted for analysis, the use of a supporting tool becomes necessary. According to Stake (2011, p. 64), “by increasing care during data collection and interpretation, we increase certainty that we are on the right track and decrease tolerance for negligence”. These precautions must be maintained in all stages of DTA, which, according to Moraes and Galiazzi (2007), are identified as:

- (i) *unitarization* – fragmentation of the texts that make up the textual *corpus*;
- (ii) *categorization* – establishment of relations among the various categorized elements;
- (iii) *metatext* – elaborated from fragments of the analyzed texts, capturing new elements that arise from the understanding obtained in the preceding stages.

Regarding the use of AI in textual analysis, via ChatGPT 3.5, the unitarization process is instantaneous, as it only depends on copying the texts into a Microsoft Word file and then transferring these contributions to the AI platform. Afterwards, the precise formulation of the prompt is done to carry out the unitarization task.

The units obtained in the feedback from the AI constitute the UM representing the initial deconstruction of the analyzed texts. This stage is crucial for understanding the textual information in more detail and for facilitating subsequent steps, such as initial, intermediate, and final categorizations, as well as the metatext.

If the data has not yet been detailed enough, the researcher should resubmit them for deconstruction, taking the feedback from the AI as the starting point. In this stage, there is no fixed measure for the procedure. The limit lies in the researcher’s perception of the understanding achieved with the obtained UM. The guide for the researcher is necessarily linked to the research objective or question proposed.

Hence, the use of AI as support in DTA is based on the treatment of information carried out in the initial analysis procedures, that is, when a considerable number of texts or documents are analyzed and (n)partitions are generated as a result. At this stage, it is interesting to have the use of technology that increases the speed of information processing without interfering with or limiting the researcher’s personal choices.





Regarding the use of the terms “information” and “data”, it is necessary to delineate the limits for each usage. Information is the collected part, whether it be interview text, document, or other types of sources. Data stems from information and serves the conducted search. It is as if data were the information subjected to an intentional and delineated filter established by the researcher’s research objective. This discernment about the employment of the terms “information” and “data” is based on Semidão (2014).

In relation to choices, the use of AI in DTA fundamentally depends on the researcher’s understanding of how this analysis is structured and what its limits are for using tools of this type. This would be easily achievable if researchers already knew how ChatGPT 3.5 works, beyond the operationalization in obtaining the first UM. In this sense, other doubts still form part of this learning moment about AI, such as the confidentiality of the treated data and how this tool can truly maintain the fidelity of the sources, which come together to offer feedback to the prompts – proposed tasks.

Due to the lack of a definitive answer to these questions, challenges multiply. At the same time, there is an appealing performance aspect because with no limit to the use of the tool in terms of attempts to obtain new deconstructions, a considerable amount of data can undergo (n)deconstructions. This would be impossible to achieve manually, via tables and charts in Microsoft Word.

In this context, it is important for prompt generators, whether they are students, teachers, and/or researchers, to exercise active control over the use of AI by learning about its limitations and conducting a careful and reflective analysis of the generated results in order to avoid the negative issues related to distortions mentioned earlier and ensure control, integrity, and reliability in their research.

Regarding the use of terms, a discernment is made about the word “intelligence”. According to the etymology presented by Silva (2013, p. 1), “‘intelligence’ has its origin in Latin, *intelligentia*, which encompasses meanings such as ‘intelligence; understanding; knowledge; and notion’”, and this word had its first recorded appearance in the 14<sup>th</sup> century. As a complement to the terms used in describing AI, the adjective “artificial” derives from the Latin *artificialis*, carrying the meaning of “artificial, made with art, artful, and cunning”, which emerged in the 15<sup>th</sup> century. Hence, the term “artificial intelligence” was coined in the 1950s by John McCarthy (1927-2011) – a prominent computer scientist from the United States.



In this context, it should be understood that AI processes information and, therefore, does not perform analysis. To do so, it makes partitions and logical junctions inherent to its structure. It means, it relies on its algorithmic nature and provides outputs based on logical patterns of computational programming. Also for this reason, the integration of AI into qualitative research will represent, for some time, new ethical challenges, as in ChatGPT 3.5, there is no configuration for retrieving bibliographic sources, which still depends on the ethical awareness of the researcher. In the educational field, this needs to be taught as a basic rule in research.

Thus, as a type of visualization, this article highlights how AI gathers resources already known regarding the use of meaning trees, term frequency clouds, among other forms present in QDA. In a way, the potential of AI lies in its speed and ability to gather differentiated outputs that depend on the structured formulation of a task. With this, time has been dedicated to researchers who have adopted this use in teaching about the formulation of prompts. Thus, the integration of AI in this context can bring both benefits and challenges, which can be understood as advantages and disadvantages of unitarization with and without the use of AI in the DTA process.

**Table 1:** Advantages and disadvantages of unitarizing with and without AI

Aspect	Unitarizing with AI	Unitarizing without AI
Advantages	<ul style="list-style-type: none"><li>● Speed in UM identification;</li><li>● Efficient processing and treatment of large volumes of text;</li><li>● Potential to identify hidden patterns regardless of the extent of the data submitted;</li><li>● Greater control over the unitarization process for large amounts of data;</li><li>● Possibility of providing processed data to assist in the interpretation of data to be carried out by the researcher;</li><li>● Quick possibility of submitting new documents for analysis;</li><li>● Adequate planning by the researcher to maintain ethical care related to research.</li></ul>	<ul style="list-style-type: none"><li>● Constant delay in identifying UM;</li><li>● Efficient treatment for small volumes of texts;</li><li>● Potential to identify hidden patterns depending on the extent of data submitted;</li><li>● Greater control over the unitarization process for limited data;</li><li>● Possibility of greater subjective interpretation;</li><li>● Ability to adjust analysis as needed;</li><li>● Greater control over the ethical interpretation of data.</li></ul>
Disadvantages	<ul style="list-style-type: none"><li>● Dependence on the quality of the prompt, adapting the research objective to the details requested from the AI;</li><li>● Risk of distortion of results without formulation;</li><li>● Risk of bias in prompt formulation.</li></ul>	<ul style="list-style-type: none"><li>● Greater demand for time and effort to meet the research objective;</li><li>● Limitation in the analysis of large volumes of text;</li><li>● Less efficiency in identifying hidden patterns.</li></ul>

Source: Elaborated by the authors (2024)



This framework stems from ongoing studies within the Research Project “Textual Analyses in Qualitative Research using QDA software”, which have been conducted in a context regarding the relation between DTA and AI. These inquiries are in their early stages, and they draw attention to the lack of references in the literature on this relation, highlighting the importance of investigations that contribute to a theme still being explored.

Returning to Table 1, regarding the description of the advantages and disadvantages of unitarization, with and without the use of AI, it is evident that both have their place in textual analysis. The decision to employ AI in unitarization will depend on the research objectives, the amount of information submitted, the availability of resources, and the desired degree of control over the analytical process.

Studying this usage, what has been motivating investigations in the Research Group is to understand if the effectiveness of using ChatGPT in the data unitarization stages allows researchers to identify a greater number of hidden patterns and, thus, visualize, if applicable, socially invisible emerging categories.

Therefore, being careful with this usage becomes important to seek a balance that allows for the beneficial use of AI. For example, considering the possibility of excessive dependence on this tool could impair creativity and originality in the writing process, replacing with AI contributions what is expected to be data derived from the researcher’s interpretation.

In addition, there is a risk of distortion in the analyzed results when searches conducted via ChatGPT are not presented or formulated accurately. Another concern lies in the danger of plagiarism, which in turn can lead to erroneous conclusions or overly simplified representations of the investigated phenomena.

Furthermore, in the context of interaction with AI, attention to the quality of the questions formulated is necessary. Regarding this, it is known that attention to the format of the question is nothing new in the educational field. Without wanting to revisit topics already extensively discussed in other publications, there are studies and research highlighting the importance of well-crafted questioning for the promotion and development of learning, as stated by Demo (2021). For this author, both education and research significantly value the act of questioning, as questioning is like an essential starting point for the development of the historical subject. Moreover, according to Demo (2021, p. 16), “questioning involves the reference to the formation of the competent



subject, in the sense of being able to, with critical awareness, formulate and execute his/her own life project in the historical context”.

The ability to question not only stimulates the search for answers but also drives the formation of individuals capable of critically reflecting on their environment, becoming active in shaping their lives, and contributing to the evolution of society as a whole.

In terms of using AI, it is important to question before moving to the prompt elaboration phase. It is essential to emphasize that the choice of a specific prompt will entirely depend on the research objectives, especially when it comes to DTA, and that generating appropriate tasks to obtain feedback from AI fundamentally depends on knowing how to question. By acquiring this knowledge, task generation can be configured via prompt, aligning with the research objective. For example, when analyzing field diaries used by a teacher in his/her research, the prompt can be formulated with a focus on identifying dominant discourses and analyzing the discursive strategies employed by the participants.

Hence, to ensure that the prompt structure is sensitive to the research delineations, the researcher needs to establish boundaries in the data treatment performed via AI. This flexibility in prompt formulation allows for a highly adaptable and personalized approach to meet the research needs individually, ensuring that qualitative analysis is conducted accurately and directed towards achieving the results.

In this setting, the approach defined for generating a question assumes a central role once again. Considering that, for DTA, the question itself is not a prominent element, but rather its content allied with the research objective, the substance of the formulation needs to be considered and evaluated throughout the information collection process. Thus, for AI, there is no value judgment between one prompt or another, but for the researcher – the task generator – it is the delimitation of the content that will determine the success of submitting his/her information for the treatment performed by the technology.

From this usage, it is necessary to inquire whether the nature of interactions with systems like ChatGPT prompts questioning about what is undertaken, so, is this effectively a question or a command/prompt? From this viewpoint, it becomes indispensable to make a precise distinction between the terms in order to delineate the nature and purpose of interactions with AI. Muraro (2015) emphasizes that the “question” is the essence and the motivation underlying the activity of thought, driving the search



for a reflexive construction of meanings arising from experience. Consequently, the “inquiry” presents itself as the primary origin of interest, intrinsically linked to the need to interpret the world and confer meaning to experience.

On the other hand, “command prompts” are suggestions intended to facilitate ChatGPT in understanding the questions presented, allowing for an appropriate response. These prompts can be shaped in different configurations, from direct inquiries to formulations of incomplete sentences that the system should complete (Silva, 2023). Such delineation supports the differentiated understanding and interaction between the question, as the engine of thought, and the prompt, as a guide for the interaction with AI.

Therefore, seeking to understand this differentiation, it is necessary to observe that it involves separating into two distinct groups: in the first, there is what one can expect from a good question; in the second, what one can obtain from an appropriate prompt. With this distinction, respectively, one adheres to the human function of wanting to know something, while the other, not always clear to the user, but inevitably a mechanical and algorithmic function to seek logic among terms and, thus, respond to the formulation of logical propositions with terms contained within these structures.

Therefore, within the academic scope, Brito and Lopes (2023) affirm that preparing readers and writers in a technological era marked by the presence of AI tools constitutes a considerable challenge. This challenge seems to persist as new generations are increasingly immersed in screen reading, acquiring little familiarity with spending more time on the same text. Thus, the accumulation of challenges remains particularly significant when considering the need to promote ethical and civic education suitable for future professionals, now immersed in a reality shared with the potential of AI.

#### **4 Preliminary considerations**

This article provided a description of the possibilities and challenges of using AI to support DTA. The objective was to describe the perspectives of using AI to support the DTA process, with a specific focus on using the free ChatGPT 3.5 as a tool to process collected information. As is customary in the commitments made in the development of research, ethical challenges related to the reliability, validity, and fidelity of the data are recognized and addressed, which depend on how this use occurs.

As stated, AI offers the ability to significantly accelerate the process of textual analysis, especially in identifying UM – one of the fundamental stages of DTA. By



formulating appropriate prompts, researchers can guide AI to automatically identify the UM present in the analyzed texts, providing an efficient way to deal with large volumes of data and allowing analysts to devote time to focus on more in-depth interpretations and categorizations.

In this article, through a literature review, the evolution of the Internet, the presence of computers, and the emergence of AI were presented in a way to emphasize the complexity and diversity of this constantly evolving theme. The foundational structure of both the Internet and AI became clear, as both were designed with mechanisms resembling human abilities to think and make decisions, while it is noticeable how their evolution is grounded in decades of study and research, making the idea of novelty disposable.

In the context of DTA, AI, represented by ChatGPT 3.5, anchored in an LLM machine learning model, proves to be a valuable tool for accelerating the identification of UM. Proper formulation of prompts plays a fundamental role in unitarizing documents or texts under analysis, adapting to the individual needs of research focused on understanding the investigated phenomena. Therefore, AI must be applied in a specific manner and cannot replace the role of the analyst in interpretation and categorization, as it is up to the analyst to present the relations among the units according to the environment, sources consulted, and subject investigated.

For now, these descriptions highlight the possibility of using ChatGPT 3.5, which, in DTA, seems to offer significant advantages in terms of efficiency and speed. In view of this, the presence of AI not only impacts the DTA methodology but also qualitative research analyses, which can benefit from textual (de)constructions in a phase of prospecting the results achieved from the initial analysis procedures.

On the other hand, it can be considered that while in the use of a QDA the analysis is only altered when new documents are placed under treatment, in AI it is sufficient to change the prompt for a new treatment to be performed on the initial contributions. From this automation of guidance, through the generation of clear commands, it is up to the researcher to have precision in the necessary delineations for the research conducted, and, then, it is returned to the principle that guides all searches with or without the use of AI: to meet the objective of the investigation.

As a consequence, it is expected that AI will be a tool that also integrates networks, images, graphics, and forms of proof of its ethical contribution to research, that is, maintaining care for the preservation of sources and respecting authorship – bibliographic





and documentary references – so that, instead of deepening, distortions that would invalidate the speed and recursiveness currently presented by AI are not reached.

Finally, the researcher needs to be attentive to whether or not to accept what is produced with the use of AI. For this to happen, it is necessary to have knowledge about: the theme being addressed, the methodology of analysis being employed, and the limits imposed by them. With this awareness, the speed of AI can be helpful because if there is an unexpected variation in the treatment of information, it is up to the researcher to investigate why or, if necessary, reject that feedback.

The use of updated tools like ChatGPT 3.5 does not undermine the role of the researcher or make it obsolete. On the contrary, it can be argued that it is through the agility of the tool that the time dedicated to reading and studying by the researcher can be optimized, given his/her research schedules. Once again, the quality of the study and the research depends on the knowledge of those who produce it, and this will determine the validity of using ChatGPT 3.5. The limit of DTA remains associated with the ability to extract from the data the arguments that meet the research objective.

For future studies, in the ongoing Research Project, the intention is to identify the functionalities explored via ChatGPT 3.5 for areas of DTA that allow for establishing relations beyond unitarization. Since it is necessary to preserve the researcher's subjectivity, not all stages of DTA allow for this use. That is why the focus here is on areas. It is up to the researcher to recognize in the analysis methodology the moments when these possibilities occur.

## References

ALVES, A. Reflexões filosóficas sobre inteligência artificial. **Revista Paranaense de Filosofia**, União da Vitória, v. 3, n. 1, p. 129-145, jan./jun. 2023. Available at: <https://periodicos.unespar.edu.br/index.php/rpfilo/article/view/7822/5575>. Accessed on: 25 jan. 2024.

BARBOSA, L. M.; PORTES, L. A. F. A inteligência artificial. **Revista Tecnologia Educacional [online]**, Rio de Janeiro, n. 236, p. 16-27, jan./mar. 2023.  
BARRETO, A. M. P.; ÁVILA, F. de. A inteligência artificial diante da integridade científica: um estudo sobre o uso indevido do ChatGPT. **Revista Direitos Culturais**, Santo Ângelo, v. 18, n. 45, p. 91-206, may/aug. 2023. DOI: <https://doi.org/10.31512/rdc.v18i45.1373>.

BRITO, R. F.; LOPES, M. Â. P. T. Constituição do sujeito acadêmico em tempos de ferramentas de inteligência artificial: um olhar filosófico-discursivo. **Sapere aude**, Belo Horizonte, v. 14, n. 27, p. 54-75, jan./jun. 2023. Available at: <http://periodicos.pucminas.br/index.php/SapereAude/article/view/31015/20977>. Accessed on: 2 sep. 2023.



BUSCH, V. Como podemos pensar. **Revista Atlantic Monthly**, Boston, v. 1, p. 101-108, jul. 1945. Available at: <https://www.theatlantic.com/magazine/archive/1945/07/as-we-may-think/303881/>. Accessed on: 8 feb. 2024.

CAMPOS, R. S. Desmistificando a inteligência artificial: uma breve introdução conceitual ao aprendizado de máquina. **Aoristo - International Journal of Phenomenology, Hermeneutics and Metaphysics**, [S. l.], v. 5, n. 1, p. 106–123, may. 2020. DOI: <https://doi.org/10.48075/aoristo.v3i1.24880>.

CORREIA, L. F. da S. **Modulações entre o analógico e o digital**: apontamentos históricos da inserção do Brasil na era da informação (1977-2000). 2018. 382 p. Doctoral Dissertation (Doctorate Degree in Social History) – University of São Paulo, São Paulo, 2018. Available at: [https://www.teses.usp.br/teses/disponiveis/8/8138/tde-21022019-103111/publico/2018\\_LuizFilipeDaSilvaCorreia\\_VOrig.pdf](https://www.teses.usp.br/teses/disponiveis/8/8138/tde-21022019-103111/publico/2018_LuizFilipeDaSilvaCorreia_VOrig.pdf). Accessed on: 1 oct. 2023.

DEMO, P. **Educar pela pesquisa** [eBook]. 10. ed. Campinas, SP: Autores Associados, 2021.

DUQUE-PEREIRA, I. da S.; MOURA, S. A. de. Understanding generative artificial intelligence from the language perspective. **SciELO Preprints**, 2023. DOI: <https://doi.org/10.1590/SciELOPreprints.7077>.

FILHO, P. R. V. **O processo antitruste impetrado contra a IBM e Microsoft**. 2002. 113 p. Master Thesis (Master's Degree in Computer Science) - Federal University of Santa Catarina, Florianópolis, 2002. Available at: <https://core.ac.uk/download/pdf/30364236.pdf>. Accessed on: 6 feb. 2024.

GARCIA, F. M.; ESTEVÃO, C. O uso de software de análise de dados qualitativos; QDA'S em uma investigação em rede. **Revista Pesquisa Qualitativa**, São Paulo, v. 4, n. 5, p. 253–274, 2016. Available at: <https://editora.sepq.org.br/rpq/article/view/52>. Accessed on: 08 feb. 2024.

GIL, A. C. **Métodos e técnicas de pesquisa social**. 6. ed. São Paulo: Atlas, 2008.

GLASER, B.; STRAUSS, A. **The discovery of grounded theory**: Strategies for qualitative research. New York: Aldine Publishing Company, 1967.

HOMSY, L. F. D. **Contextualização e evolução das interfaces gráficas digitais**. 2020. 115 p. Master Thesis (Master's Degree in Design and Visual Culture) – European University, Lisbon, 2020. Available at: <https://comum.rcaap.pt/handle/10400.26/36876>. Accessed on: 1 oct. 2023.

LAGE, M. C. Utilização do software NVivo em pesquisa qualitativa: uma experiência em EaD. **ETD - Educação Temática Digital**, Campinas, v. 12, n. spe., p. 198-226, mar. 2011. DOI: <https://doi.org/10.20396/etd.v12i0.1210>. Accessed on: 22 sep. 2023.

LÉVY, P. **Cibercultura**. Translation by Carlos Irineu da Costa. 3.ed. São Paulo: Editora 34, 2010.

LINS, B. F. E. A evolução da internet: uma perspectiva histórica. **Cadernos Aslegis**, Brasília, v. 17, n. 48, p. 11-46, jan./apr. 2013. Available at: [https://www.belins.eng.br/ac01/papers/aslegis48\\_art01\\_hist\\_internet.pdf](https://www.belins.eng.br/ac01/papers/aslegis48_art01_hist_internet.pdf). Accessed on: 23 sep. 2023.

LÖSCH, S.; RAMBO, C. A.; FERREIRA, J. de L. A pesquisa exploratória na abordagem qualitativa em educação. **Revista Ibero-Americana de Estudos em Educação**, Araraquara, v. 18, n. 00, e023141, e023141, 2023. DOI: <https://doi.org/10.21723/riae.v18i00.17958>.



LUDERMIR, T. B. Inteligência artificial e aprendizado de máquina: estado atual e tendências. **Estudos Avançados**, São Paulo, v. 35, n. 101, p. 85-94, jan./apr. 2021. Available at: <https://www.scielo.br/j/ea/a/wXBdv8yHBV9xHz8qG5RCgZd/?format=pdf&lang=pt>. Accessed on: 6 feb. 2024.

MARTINS, K. N.; DE PAULA, M. C.; GOMES, L. P. S.; SANTOS, J. E. O software IRaMuTeQ como recurso para a análise textual discursiva. **Revista Pesquisa Qualitativa**, São Paulo, v.10, n. 24, p. 213-232, apr./aug. 2022. DOI: <https://doi.org/10.33361/RPQ.2022.v.10.n.24.383>.

MATIAS, A. C. de F. B. F. **A influência da inteligência artificial no e-commerce**: o uso dos chatbots. 2020. 45 p. Master Thesis (Master's Degree in Information Systems Management) – University of Lisbon, Lisbon, 2020.

MENDES, L. M. T. **Dizer demografia**: recenseamento do design português. 2013. 91 p. Master Thesis (Master's Degree in Design and Multimedia) – Coimbra University, Coimbra, 2013. Available at: <https://estudogeral.uc.pt/handle/10316/99900>. Accessed on: 1 oct. 2023.

MENDONÇA, A. P. A.; RODRIGUES, B. A. A.; ARAGÃO, C. A. S. de; VECCHIO, R. C. del. Inteligência artificial – recursos humanos frente as novas tecnologias, posturas e atribuições. **Revista Contribuciones a la Economía**, La Rioja, v. 16, n. 4, p. 01-20, oct./dec. 2018. Available at: <https://www.eumed.net/rev/ce/2018/4/inteligencia-artificial.html>. Accessed on: 20 sep. 2023.

MINAYO, M. C. de S. Amostragem e saturação em pesquisa qualitativa: consensos e controvérsias. **Revista Pesquisa Qualitativa**, São Paulo, v. 5, n. 7, p. 01-12, apr. 2017.

MORAES, R. A pesquisa em sala de aula: uma viagem sem mapa. **Revista LINHAS**, Florianópolis, v. 6, n.7, p. 01-11, 2005. Available at: <https://revistas.udesc.br/index.php/linhas/article/view/1256>. Accessed on: 5 feb. 2024.

MORAES, R.; GALIAZZI, M. do C. **Análise Textual Discursiva**. Ijuí: Ed. UNIJUÍ, 2007.

MUNIZ, A. H. A.; FOREST, F.; CECÍLIA, G. A.; SILVA, G. de P.; PONTES, L. G. R. de; MUNIZ, M. S. de A.; CRUZ, R. A.; SABINO, E. Estudo de caso transição do protocolo IPv4 para IPv6. **Revista Gestão em Foco**, Amparo, n. 9, p. 529-541, 2017. Available at: [https://portal.unisepe.com.br/unifia/wp-content/uploads/sites/10001/2018/06/055\\_estudo8.pdf](https://portal.unisepe.com.br/unifia/wp-content/uploads/sites/10001/2018/06/055_estudo8.pdf). Accessed on: 1 oct. 2023.

MURARO, D. N. A pergunta como potência da filosofia e da educação. In: Actas del Tercer CONGRESO LATINOAMERICANO DE FILOSOFÍA DE LA EDUCACIÓN, 3., 2015, Mexico. **Actas...** Mexico: Actas, 2015. p. 01-17.

OPENAI. **ChatGPT**. 2024. Available at: <https://openai.com/blog/introducing-gpts>. Accessed on: 6 feb.2024.

PASSOS, M. R. L.; ELEUTÉRIO JÚNIOR, J. Chatbot, ChatGPT: inteligência artificial e/ou inteligência comercial e/ou inverdades robotizadas, por enquanto. **Brazilian Journal of Sexually Transmitted Diseases**, Niterói, v. 35, n. 2, p. 01-04, apr. 2023. DOI: <https://doi.org/10.5327/DST-2177-8264-2023351330>.

PAULA, M. C. de. **A prática pedagógica na formação de professores com o uso de TDIC sob o foco das objetivações de Agnes Heller**: Brasil e Portugal num estudo de caso múltiplo integrado. 2018. 370 p. Doctoral Dissertation (Doctorate Degree in Science and Mathematics Education) - Pontifical Catholic University of Rio Grande do Sul, Porto Alegre, 2018.



PAULA, M. C. de; VIALI, L. Word Wide Web: do hipertexto a hiperímia. In: VIALI, L.; LAHM, R.; RIBAS, E.; PAULA, M. C. de (org.). **Tecnologias na Educaço em Cincias e Matemtica**. Porto Alegre: EDIPUCRS, v. 1, 2016. p. 16-28.

PREDIGER, R. P.; ALLEBRANDT, S. L. Uso de softwares em pesquisa qualitativa. In: Salo do Conhecimento Uniju, v. 2, n. 2, 2016, Iju. **XXI Jornada de Pesquisa**, Iju: RS, 2016, p. 01-05.

RODRIGUES, G. de O. C. A.; ALBUQUERQUE, D. W.; CHAGAS, J. G. das. Anlise de vieses ideolgicos em produçes textuais do assistente de bate-papo ChatGPT. In: **WORKSHOP SOBRE AS IMPLICAÇES DA COMPUTAÇO NA SOCIEDADE**, 4., 2023, Joo Pessoa/PB. **Proceedings...** Porto Alegre: Sociedade Brasileira de Computao, 2023. p. 148-155. DOI: <https://doi.org/10.5753/wics.2023.230807>.

RUSSELL, S.; NORVIG, P. **Inteligncia artificial**. 3. ed. Rio de Janeiro: Elsevier, 2013. Available at: <https://www.cin.ufpe.br/~gtsa/Periodo/PDF/4P/SI.pdf>. Accessed on: 20 sep. 2023.

SANTAELLA, L. **Comunicao ubqua**: repercusses na cultura e na educao. Paulus, 2013. Available at: <https://ria.ufrn.br/jspui/handle/123456789/1449>. Accessed on: 4 oct. 2023.

SANTIAGO, N. de O.; FILHO, C. A. P. L. O uso de chatbots como ferramenta de comunicao online em lojas de varejo brasileiras. **Revista UNI-RN**, Natal, v. 19, n. 1, p. 208-235, 2019. Available at: <http://revistas.unirn.edu.br/index.php/revistaunirn/article/view/615>. Accessed on: 2 oct. 2023.

SANTOS, D. de J. M. dos; SANTOS, P. V. dos; BOSS, S. L. B. A anlise de contedo com apoio do software gratuito RQDA. **Revista Pesquisa Qualitativa**, So Paulo, v. 11, n. 28, p. 805–824, sep./dec. 2023. Available at: <https://editora.sepq.org.br/rpq/article/view/612>. Accessed on: 8 feb. 2024.

SCHLOSSER, D. F.; FRASSON, A. C.; CANTORANI, J. R. H. Softwares livres para anlise de dados qualitativos. **R. bras. Ens. Ci. Tecnol.**, Ponta Grossa, v. 12, n. 1, p. 539-550, jan./apr. 2019. Available at: <https://periodicos.utfpr.edu.br/rbect/article/view/9550/pdf>. Accessed on: 8 feb. 2024.

SEMIDO, R. A. M. **Dados, informao e conhecimento enquanto elementos de compreenso do universo conceitual da cincia da informao**: contribuies tericas. 2014. 199 p. Master Thesis (Master’s Degree in Information Science) - So Paulo State University, Marlia, 2014. Available at: <https://encurtador.com.br/fgpw4>. Accessed on: 4 oct. 2023.

SILVA, R. G. **Chat GPT direto ao ponto**: como dominar prompt de maneira eficaz. [S. l.]: [s. n.], 2023. Available at: [https://books.google.com.br/books?id=mnrOEAAAQBAJ&printsec=frontcover&hl=pt-BR&source=gbs\\_ge\\_summary\\_r&cad=0#v=onepage&q&f=false](https://books.google.com.br/books?id=mnrOEAAAQBAJ&printsec=frontcover&hl=pt-BR&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false). Accessed on: 22 aug. 2023.

SILVA, R. Inteligncia artificial. Verbete. In: VIEIRA, W. (Org.). **Enciclopdia da conscienciologia**. 2013. Available at: <http://repositorios.org/handle/123456789/3737>. Accessed on: 20 sep. 2023.

STAKE, R. **Pesquisa qualitativa**: estudando como as coisas funcionam. Translation by Karla reis. Porto Alegre: Penso, 2011.



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VIEIRA, E. **Os bastidores da internet no Brasil**: as histórias de sucesso e de fracasso que marcaram a web brasileira. Barueri, SP: Manole, 2003.

ZANETTE, M. S. Pesquisa qualitativa no contexto da educação no Brasil. **Educar em Revista**, Curitiba, n. 65, p. 149-166, jul./sep.2017.

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