Article – Theme section

Knowledge production and epistemic injustices
The use of digital technologies and artificial intelligence

Ana Isabel Zermeño-Flores[1] (iD) **, Thomas Tufte[2]** (iD) **&**
Mabel Andrea Navarrete-Vega[3] (iD)

1. University Center for Social Research, University of Colima, Mexico
   anaz@ucol.mx
2. Loughborough University (UK), University of Johannesburg, South Africa
   t.tufte@lboro.ac.uk
3. University Center for Social Research, University of Colima, Mexico
   mnavarrete@ucol.mx

Abstract

This article explores the complexities emerging from the knowing subject engaging in knowledge generation through artificial intelligence and digital technologies. By exploring a recent literature review as our case study, the possible existence of biases that may distort the studied reality and generate epistemic inequalities is investigated. A reflexive approach drawn from decolonial and feminist perspectives is applied. Findings underline the presence of epistemic biases, such as the invisibility of the knowing subject and knowledge representation, indicating that they are not simple isolated biases but part of a systemic problem that transcends specific scientific and technological practices. Ultimately, the complexity leading to epistemic biases is highlighted, encompassing interconnected systems, including the scientific, technological, and institutional.

Introduction

This document addresses the challenges posed by artificial intelligence (AI) and digital technologies (DT) in knowledge production. Through a literature review as the case study, potential biases are explored that could lead to injustices in various scientific fields and ecosystems, predominantly affecting scientific production in the Global South. To tackle this challenge, a reflexive strategy is proposed, drawing on decolonial and feminist perspectives. It involves not only making possible socio-technological biases present in the qualitative research process evident but also revealing the knowing subject, which in this case corresponds to a diverse team facing differentiated working conditions characteristic of the Global North and the Global South.

Specifically, we focus on the literature review on youth activism, an area where power dynamics and epistemic biases are particularly evident and problematic. This choice is not accidental; young activists represent a social group that often faces marginalization, and whose efforts for social change can be undervalued or misrepresented in academic production. This case study thus allows us to illustrate how digital technologies and AI can perpetuate or even amplify the epistemic injustices discussed in theory.

Reflecting upon the knowing subject and not just on the performance of technological artifacts is crucial for transforming scientific practices. According to Harding (2018), understanding the scientist as a situated subject entails recognizing that their knowledge is inevitably influenced by their social, cultural, political, and epistemic context. This reflection can stimulate their agency and provoke changes in their behavior. It is therefore essential to subject scientific practices to comprehensive and critical scrutiny in order to address and correct possible biases, thereby improving the quality and integrity of research.

This article emerged from processes of reflexivity that occurred during the search for and classification of documents conducted for a project on youth activism. The literature review was supported by DT and AI, and moments were identified where the results exhibited certain orientations or biases. This led to a reflection on what these technologies were yielding as search results.

First, it is emphasized that literature review (LR), as described by Bolaños et al. (2024), is a detailed and organized method used to gather and analyze research on a specific topic in order to reduce biases and ensure a comprehensive understanding of the subject. It involves various steps ranging from collection, synthesis and evaluation to critical analysis of information on a specific topic. This process requires a great deal of time and effort; tools such as DT and AI can thus simplify and streamline the task. Due to the involvement of technology, LR is also understood as a sociotechnical practice where humans and technical objects participate to facilitate the mentioned processes, as well as data visualization.

Digital technologies refer to the set of electronic devices and systems that operate in binary code, allowing for the efficient processing, storage, and transmission of informa-

tion. This includes computers, smartphones, digital cameras and other electronic devices that manipulate data through digital signals and algorithms. Furthermore, they facilitate the conversion of analog information to digital and encompass the use of AI to perform tasks that previously required human intervention (Hilbert, 2020).

AI is a computer science discipline that seeks to create systems or software capable of performing tasks that traditionally require human intelligence, such as natural language processing, pattern recognition, problem-solving, and autonomous learning (De La Torre-López et al., 2023). These technologies have experienced significant advances in accuracy and capability, often surpassing human experts in various areas.

Specifically, specialized AI tools for literature review have been developed, such as SciSpace, Elicit, Consensus, Inciteful, Research Rabbit, Litmaps, and Rayyan, among others. Recent studies on the involvement of some AI tools have enhanced the literature review process in search strings (Spillias et al., 2023), topic modeling (Verma & Yuvaraj, 2023), automating repetitive tasks (De La Torre-López et al., 2023), and identifying relevant articles (Álvarez-Martínez et al., 2023).

According to Gao and Wang (2023), since the advent of AI in the scientific field, its capabilities continue to advance in knowledge production; however, Gao and Wang consider that it can also exacerbate existing inequalities in science, such as inequalities in disciplines with a higher proportion of women or Black scientists. In addition to the inequalities indicated by these authors, AI must also catalyze new questions and concerns about what knowledge is being produced when we use this technology; that is, what ethical, epistemic, and social aspects influence how these technologies intervene in knowledge construction. In this line of thought, considering the suspicion of possible biases, the research question arose: How do the conditions of the knowing subject and the use of digital technologies and specialized artificial intelligence tools in literature review influence knowledge production?

The objective of the study is to reflect upon the involvement of the knowing subject and DT and AI in literature review, thus aiming to identify biases in a specific case study. The intention is to foster a critical and reflective approach to these technopractices in order to mitigate biases and improve both the reliability of knowledge and epistemic justice. The importance of a critical review of the technological tools used in knowledge construction is emphasized, as well as observation of who generates knowledge and under what circumstances.

This study does not address the biases of DT and AI at the algorithmic level, as the researchers lack the necessary training to do so. In this sense, the technology is a "black box". However, a comprehensive reflection on the results obtained when using this technology is carried out. In other words, it starts from the perspective of the users, inferring that events occurring in the operation of the technology can be explained from a sociotechnical understanding of the practice. This approach addresses Sadin's (2018) recommendation regarding the value of testimony as a tool to challenge and mitigate the

potential negative effects of technology, involving valuing the voices of those affected by technology, especially those whose experiences are often marginalized or ignored, not only those of engineers but also those of users and their needs.

The value of the study lies in offering a reflexive strategy to observe not only the empirical reality during LR but also the situated subject carrying it out. Although the relationship between the researcher and technology has been reflected upon, the growing expansion of AI presents new challenges that require specific reflection and integration with other relevant aspects. We believe that this article may be well received by both graduate students training in LR tasks and more experienced researchers who may have reservations about technology or who have adopted it with little critical evaluation.

Interaction of scientific and digital colonialisms

Coloniality is the global articulation of Western power that manifests in persistent forms of domination and exploitation originating from the colonial era and continues to affect social, political, and economic structures by naturalizing the inferiorization of non-Western places, human groups, knowledge, and subjectivities (Quijano, 2011). Coloniality thus transcends mere political or economic domination; it also entails cultural and epistemic dimensions, permeating all aspects, both material and subjective, of social life.

With regard to science and technology, Quijano (2011) argues that they are not neutral and have been used as tools of domination and control by colonial powers and, subsequently, by local elites.

Scientific colonialism refers to how modern scientific knowledge has historically been constructed from Eurocentric and androcentric perspectives, privileging certain forms of knowledge while marginalizing others. It has been perpetuated through mechanisms such as the influence of funding agencies on research agendas and the unequal distribution of scientific resources (Grosfoguel, 2022). This is also evident in pressures to publish in high-impact journals and in establishing criteria for scientific dissemination. Examples of this include the use of English as a lingua franca, which may not necessarily respect the eloquence of native languages (Suzina, 2021), and the widespread adoption of the IMRD (Introduction, Method, Results, and Discussion) format in Western and natural sciences, as well as the macro- and microstructures of writing (Gjesdal, 2013). Such practices and conventions may clash with those of other scientific contexts and cultures (Safnil, 2000).

On the other hand, digital colonialism, related to data colonialism and the knowledge economy (Mejías & Couldry, 2019), refers to how digital technologies and internet infrastructure reflect and perpetuate unequal power relations inherited from colonialism, both in terms of access and use, and in the representation and distribution of information. According to Kwet (2019) and Tello (2023), this new configuration of capitalist power unfolds through the control of the digital ecosystem, including software, hardware, and network connectivity. Control is exercised through US Big Tech companies such as

Google, Amazon, Facebook (now META), and Microsoft, although recently other Chinese corporations such as Alibaba and Tencent have emerged.

Digital colonialism is not only technological; it is also conceptual and operates through the imposition of dominant conceptions of the digital world onto society (Kwet, 2019). Those who wield power over the digital ecosystem thus gain political, economic, and cultural advantages that, in a self-reinforcing cycle, consolidate their digital hegemony. Kwet (2019) mentions that through the myth of "manifest destiny", which upholds the belief in technological inevitability and the narrative of progress, US hegemony is maintained, perpetuating the dependency and underdevelopment of the Global South.

The epistemic bias

Bueter (2022) helps us generate a key challenge when she asserts that, once it is acknowledged that science is not value-free and is neither neutral nor impartial, the next step is to consider whether all biases in science undermine the legitimacy of the knowledge produced. This perspective serves as a provocation for this study, as it opens the door to distinguishing and appreciating between different types of bias.

According to Bueter, bias is understood as a mechanism that introduces some form of tendency in reasoning; moreover, the distinction between two types of bias is acknowledged. One is the narrow or ontological bias, which refers to the systematic deviation from truth and is based on an ideal of science free from values. The other is the broad or epistemic bias, which accepts value-laden research as long as it adheres to current best scientific practices.

> The epistemic notion of bias understands biased science not as science deviating from some ideal outcome, but as science that we have good reasons to suspect could have been (done) systematically better […] I will distinguish between two different levels on which we can find reasons to expect better: the process of research itself, and the process of establishing standards governing this research [...] At the same time, the epistemic notion is the more helpful overarching understanding of bias […] it allows for good value-laden research; that is, research that is value-laden yet in compliance with current best practice. (Bueter, 2022, s.p.)

Understanding bias as an epistemic notion opens up the possibility of identifying practices and criteria during the literature review process, given that the focus is on the quality of research and epistemic justice. Bueter argues that the epistemic notion recognizes that scientific standards are contextual, based on the considerations of each era, and can thus be questioned in order to improve knowledge. This implies a continuous refinement of scientific norms.

From a feminist perspective, one of these norms considers who constructs science, contributing to "a science less tied to historical inequities, capable of questioning itself

regarding the knowledge it produces and its validity in a heterogeneous and diverse society" (Guilleminot, 2020, p. 55). While feminist epistemology emphasizes heteronormative and patriarchal science that produces epistemic injustices by rendering women's contributions to science invisible, this mechanism of marginalization could also apply to other minority groups, such as researchers from the Global South.

As Lugones (2011) argues from a decolonial feminist perspective, it is crucial to undertake a rereading of colonial capitalist modernity, which underpins its dichotomous logic between the human and the non-human. In this sense, intersectionality emerges as a fundamental element for observing the hierarchies and injustices inherent in this system. The modern colonial apparatus tends to reduce forms considered alien to pre-modern categories, invalidating them in the process.

Epistemic injustice occurs when specific social groups, based on gender, ethnicity, class, age, or abilities, are marginalized or rendered invisible because their voices are not recognized or there are no social frameworks to understand them (Fricker, 2021). This injustice reinforces social inequity by maintaining a status quo whereby privileged groups retain their advantageous position, while marginalized groups perpetuate their condition of exclusion.

Methodology

Approaching the sociotechnical object in knowledge production has required analytical perspectives that have enabled us to identify hidden or subtle mechanisms of power. A reflective strategy was therefore adopted concerning the idea of knowledge/power from a feminist epistemology perspective (E. García & Díaz, 2022).

We analyzed a case of literature review for a study on young activists, utilizing DT-AI for the search, selection, and review of texts. This collaborative experience took place from July to August 2023. The search spanned from 2011 – a year marked by a global emergence of youth activism, including events like the Arab Spring, Occupy Wall Street, and #YoSoy132, among many others – until July 2023. The types of academic texts considered for the study included articles, books, and book chapters. The search terms encompassed the subject (young people), the main concept (activism), and seven realms of activism (democracy, climate change, indigenism, migration, gender, and LGBTQ+).

For the work process to unfold, we engaged with a diverse technological environment (Table 1). The consulted databases included Web of Science (the prototype of scientific mainstream), RedALyC (an alternative to encompass scientific production from Latin America and the Caribbean), as well as SciSpace and Elicit (AI tools specialized in literature review).

Technologies	Description
Google Meet	It is a video-calling and online conferencing platform developed by Google. This tool enables users to conduct virtual meetings, share screens, collaborate in real-time, and communicate through video and audio. There is a free version available.
Correo electrónico	It is an electronic communication service that allows sending and receiving digital messages over the Internet. It is free of charge.
Google Drive	It is a Google cloud storage service that enables users to store, sync, and share files online, facilitating access from any Internet-connected device and real-time collaboration on documents and other files.
Web of Science (WoS)	It is an online platform developed by Clarivate Analytics, focusing on academic and scientific research. It is notable for its citation database, which tracks and analyzes references between scientific articles. Access is by subscription (high cost). https://clarivate.com/
RedALyC	The Network of Scientific Journals from Latin America, the Caribbean, Spain, and Portugal is a platform driven by the Autonomous University of the State of Mexico. It provides access to a vast collection of Spanish and Portuguese-language scientific and academic journals, assessing their quality and indexing them. The platform aims to facilitate the dissemination and visibility of scientific production in these regions, promoting open access and collaboration among researchers. Access is free. https://www.redalyc.org/
Elicit	AI developed by Ought for document search, automating aspects of researchers' workflows. Currently, its primary focus is on literature review. If you pose a question, it will display relevant documents and summaries of key information about those documents. Free upon registration. https://ought.org/elicit
SciSpace / Copilot	AI developed by Typeset for document search. It operates through research questions, 'scanning' the entire article using default options and specific inquiries. It integrates other tools like Copilot. Free upon registration. https://typeset.io/
VOSviewer	Software developed by Universiteit Leiden and CWTS for constructing and visualizing bibliometric networks. These networks can include journals, researchers, or individual publications, and can be built based on citation relationships, bibliographic coupling, co-citation, or co-authorship. It also offers text mining capabilities, allowing the construction and visualization of networks depicting the co-occurrence of important terms extracted from a body of scientific literature. Free upon registration. https://www.vosviewer.com/

Table 1. Technologies Used in the Project. Source: Authors' elaboration.

The unit of analysis was the literature review case, while the unit of observation was the collected data, aspects, details, and specific elements within the case that were relevant to the analysis of epistemic biases and their relationship with the colonization of power.

The study was conducted within the qualitative-interpretative paradigm and, on a technical level, participant observation was carried out during the planning and execution stages through recording in research logs, as well as recordings and reports of work meetings.

The procedure for systematization and analysis consisted of two phases. The first one was aimed at organizing the results. This involved a self-reflective process on the part of the research team using the technique proposed by García and Díaz (2022) called "Flower of Questions". This technique consists of three petals that integrate processes of self-exploration and interrogation centered on the knowing subject, such as the following:

> a) Biographical-affective commitments, meaning the biographical determinants that lead us to decide to embark on an investigation and all the emotional baggage we bring to the research process; b) Ethical-political commitments, which account for our positions on society and the object of our research, as well as our approach as researchers to the research activities outlined in the ethical guidelines we adhere to; c) Pragmatic commitments that structure our practices, such as the funding source for our research, the material conditions in which we carry out the work, and the institutional constraints that bind us. [own translation] (E. García & Díaz, 2022, pp. 89-90)

As the three commitments only consider the awareness and positioning of the researcher regarding what is being investigated and the conditions in which it is done, and do not properly include the act of conducting the research, we chose to add a fourth petal to the flower: the *procedural commitment*. This petal was aimed at addressing the practical aspects of the LR, applying the same logic of questioning and reflection as the technique proposes. In addition, the questions of the commitments were adjusted to the interests of this study (Figure 1 – see next page).

The second phase of analysis involved identifying epistemic biases and recognizing, in the collection, selection, and presentation of information carried out through DT and AI, any bias in the way information was obtained and knowledge was constructed. Additionally, it entailed detecting how, in the process, certain groups, perspectives, or voices were systematically excluded or ignored. In this phase, feminist and decolonial perspectives served as guides for encoding biases and epistemic injustices.

Results and discussion

The findings are divided into two main sections. The first describes the *procedural commitment* used in LR through DT and AI, corresponding to the added petal. The second addresses the knowing subject through the three petals of the Question Flower proposed by García and Díaz (2022).

Epistemic biases in literature review with DT and AI

To address the question related to procedural commitment: What biases and conflicts are identified in the process of collecting, selecting, and presenting information when interacting with DT-AI?, aspects were considered such as what technology was used, what
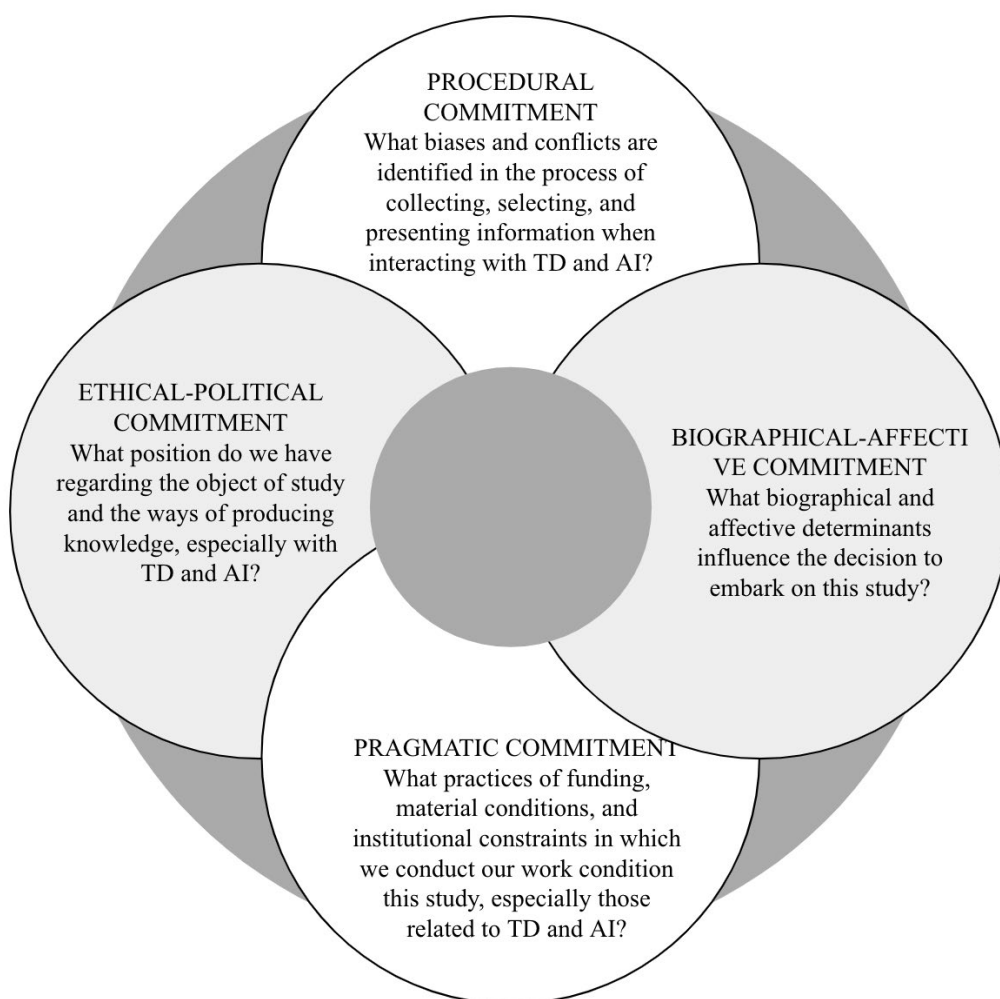
Figure 1. Analysis Model
Source: Adaptation from the analysis technique 'Flower of Questions' by García and Díaz (2022).

it was used for, and what problems or situations were encountered and considered (Table 2).

Table 2 enables the identification of different interrelated biases related to both technological aspects and human capabilities, as well as scientific norms. This highlights the fact that the application of technologies in literature review is grounded in a historically dominant, androcentric, and colonialist scientific system, thus contributing to the perpetuation of pre-existing epistemic injustices.

On the one hand, the bias of rendering the *subject-generating knowledge invisible* was identified. This bias indicates a systematic tendency or error in literature review by not acknowledging or highlighting the identity or characteristics of the individual (e.g., gender and age) or group producing the knowledge. It can manifest by not identifying affiliation

Technology Used	Intended Use	Observations During Use
Web of Science (WoS)	To obtain documents globally, with impact metrics.	- No identification of belonging to minority groups of knowledge generators. - A centrality of texts from countries in the Global North was identified, particularly from the U.S. Even with adjustments in search terms, the results were predominantly centered in the Western context.
RedALyC	To obtain documents from the Latin American region that have undergone quality evaluation and indexing processes.	- No identification of affiliation with minority groups of knowledge generators. - It offers only three categories for filtering (years, language, and discipline). - Frequently yielded results that deviated from the pre-established criteria.
Elicit	To broaden and direct the search for scientific documents with impact metrics or indexed.	- No identification of affiliation with minority groups of knowledge generators. - The most suitable results were achieved when a better relationship with the system was established, and when the questions were better formulated.
SciSpace / Copilot	To review the content of selected articles.	- No identification of affiliation with minority groups of knowledge generators. - The software analyzed the content of the texts based on pre-established options in the system, such as 'Practical Implications,' 'Contributions,' 'Methodology,' among others. - On several occasions, it responded that it did not identify the theoretical or methodological framework, but upon manual review of the article, these elements did exist, although not explicitly stated in the text. - In several instances, the results regarding the contributions of the article and the study's objective were very similar. - Initially, the documents it provided were not very current until a personal payment was made for the service, and more recent articles appeared.
VOSviewer	To generate a panoramic and systematic view of the object of study through maps.	- Requires input data to be in specific formats such as tabular text files or standard network format files (available in both Wos and Scopus but not in RedALyC), limiting compatibility. - Due to the frequency logic, the nodes of countries in the Global South that were of interest to the study were not initially visible.

Table 2. Experiences in the use of technology during the Literature Review
Source: Authors' elaboration.

with minority groups, such as women or indigenous people, among others, leading to the invisibility of diverse perspectives and voices in research.

The results indicate that none of the four tools used in the literature review allowed for the identification of whether knowledge came from male researchers, female research-

ers, young researchers, indigenous researchers, or individuals with disabilities, among other possible diversities. This bias is related to the scientific normative system, which prioritizes standard data for registration in journals, such as the author's name, affiliation institution, abstract, and keywords, preferably.

After collecting the data, automated search systems such as WoS, Scopus, and RedALyC processed and generated a packaged database. This database was subsequently analyzed using VOSviewer software. However, in the obtained results, certain knowledge producers became invisible as they disappeared in the process, thereby risking their exclusion from discussions. Such was the case, for example, of knowledge produced by indigenous researchers regarding the bias of academics' colonialist perspectives, such as the study by Murrup-Stewart et al. (2022). This invisibilization emerged as a direct result of a chain reinforced by technological mediation and the trust placed in it. It is important to highlight that the extent of this situation may go unnoticed if the researcher does not critically question the process itself.

The mechanism that generates this bias can be found in the fact that traditional science assumes that knowledge is independent of the subject and the context in which it is produced. Meanwhile, feminist epistemology strongly criticizes the unconditional subject (Guilleminot, 2020) because it hinders diversity in knowledge production, limits the possibility of addressing representativity, and obstructs equity in science.

On the other hand, there is the *bias of knowledge representation*. It occurs when there is a systematic distortion in how knowledge is represented in the literature review process. It may involve the disproportionate selection of works from certain geographical regions, and a preference for specific perspectives and narrative structures, resulting in a biased representation of the diversity and breadth of approaches in a given field. This bias affects the objectivity and completeness of the review.

The results show at least two instances of bias. One is geographical, highlighting the centrality of knowledge generated in the Global North, predominantly from the USA. This led to a lack of global representativeness and the underrepresentation of perspectives from countries in the Global South. This occurred due to the possibilities of interoperability between automated search systems and bibliometric analysis software.

The analysis of the WoS database worked perfectly with VOSviewer, while the limitations in the filtering categories in RedALyC and its inability to generate a bibliographic database made it impossible to analyze this data through VOSviewer. This limitation introduced a geographical representation bias because the results offered by VOSviewer through maps of countries with production on the topic showed the Global North and invisibilized the Global South because its presence was very limited compared to the robustness of the production recorded by the Western world.

This deficiency is related to the differentiation of economic resources in innovation investment (Kwet, 2019; Tello, 2023). Services such as WoS, Scopus, Elicit, and SciSpace are supported by powerful private consortia (Table 1), and the last two (Elicit and SciSpace)

operate through the "freemium" service model – a business model that offers basic services for free but provides the option to access additional functions or services through a subscription. Meanwhile, RedALyC is a free access initiative involving universities from Latin America, Spain, and Portugal with limitations to compete.

One of the mechanisms associated with the production of this bias are the scientific canons regarding what knowledge is worthy of being published in high-impact journals, whether it be due to language (Suzina, 2021) or writing logics.

Indeed, the other instance of the knowledge representation bias is the *structure and scientific writing*. This was observed mainly in the adoption of the IMRD format and in the prompts used in AI. In the first case, it occurred when AI analyzed documents and did not identify certain content or sections that were found upon manual review by the researcher. This situation may be due to at least two conditions; on the one hand, AI takes the IMRD linear structure as a model and, if it does not find sufficient coincidence, it may overlook styles from other scientific cultures that use different ways of structuring and naming the same sections. Another condition is related to the incipient capacity of AI's automatic analysis, which is still in its early stages and needs improvement in inference processes. This highlights that, at this stage, human supervision is still required in the literature review (De La Torre-López et al., 2023).

Regarding the prompts, both SciSpace and Elicit operate through user-generated questions and, during the query, suggest additional questions that broaden the search possibilities. This exercise may result in a representation bias by standardizing requests to formats that coincide with English linguistic structures (Suzina, 2021), as well as with the macro and micro structures of language used in science. As Gjesdal (2013) asserts, this standardization may exclude authors who use alternative forms of argumentation and language organization that do not align with Western scientific norms or culture.

At first glance, it may seem that formulating questions precisely is the responsibility of researchers' language skills and tool mastery. However, it does not imply that researchers are incapable of formulating relevant and precise questions in their language. Instead, it highlights a specific logic imposed by technological mediation that is associated with the dominance of a foreign language.

Conditioned knowing subject
Biographical-Affective Commitment
Addressing the question of how biographical and affective determinants influence the decision to embark on this study involved considering past experiences, academic background, and personal history. Additionally, it encompassed exploring personal and emotional motivations linked to the project, ultimately making transparent the individuals responsible for generating this knowledge.

This reflective exercise allowed us to appreciate that the integration of different socio-cultural and academic profiles helped observe the object from different angles and offer

Team Members	Gender	Academic level	Place of origin	Place of residence	Role in the project	Shared history	Language competence	Technological competence	Competence for the project*
A	Woman	Senior	Mexico	Colima, Mex	Responsible for the literature search	A-B & A-C, Consolidated A-D, Limited	Spanish native and English intermediate	DT, Advanced. AI, Intermediate	ICT4D, Literature review, and Youth
B	Man	Senior	Denmark	London, UK	Project leader	B-A, Consolidated B-C & B-D, In formation	English expert and Spanish fluent	DT, Advanced. AI, None.	CFS and Youth Activists
C	Woman	Early Career	Chili	Colima, Mex	Litt researcher	C-A, Consolidated C-B, In formation C-D, Limited	Spanish native and English beginner	DT, Advanced. AI, Intermediate	ICT4D and Youth
D	Woman	Early Career	England	London, UK	Litt researcher	D-B, In formation D-A & D-C, Limited	English native and Spanish beginner	DT, Advanced. AI, None.	Activism and Youth

Table 3. Composition of the research team
*Source: Authors' elaboration. NOTE: Refer to the Annexes for the scales to self-assess the Common History, Language Competence, and Technological Competence. *The abbreviation CFS refers to Communication for Social Change, and ICT4D to Information and Communication Technologies for Development.*

various solutions (Cuklanz & Rodríguez, 2020). Table 3 illustrates the biographical dimension of the research team by showing that it consisted of four individuals with diverse profiles considering gender, academic background, place of origin, residence and project participation, and also language, technological and thematic competencies.

With regard to the differentiated competencies of the authors, their complementarity stands out in response to the theoretical, methodological, and technical requirements of the study. For instance, the individual biographies of the authors indicate that at least half of the team had previously explored the use of generative AI tools, which facilitated reflection on adopting them in the literature review and prompted internal discussions regarding their implications in knowledge construction, ethical aspects, and associated gaps.

Among the affective aspects identified by the research team, at least four reasons to engage in the project stand out. Firstly, they valued embarking on a new project related to youth but approaching it from the field of activism. They also mentioned their interest in continuing the collaboration they had been cultivating in the academic network Caleidoscopio,[1] in which three of the researchers have participated since 2019. Additionally, they considered it necessary to contribute to the experience and recognition of the Early Career Researchers (ECR) to enhance their possibilities of entering the workforce in a highly competitive field such as academia. Furthermore, there was a strong motivation to strengthen trust within the research team and promote more inclusive, fair, and dialogue-driven work practices involving the use of technologies. This aligns with the importance of the affective dimension in scientific processes highlighted by García and Ruiz (2021).

On the other hand, as it was a new object of study with some newly-formed human relationships, the presence of emotions ranged from nervousness and uncertainty to enthusiasm, hope and satisfaction in the face of a new challenge. The emotional charge involved in the process facilitated knowledge generation by enhancing communication and allowing mutual consideration of the workload, specific institutional conditions, and personal contingencies that typically arise in any collaborative project. Furthermore, it was evident that trust, respect, and affection generated work commitment, as well as creativity in resolving setbacks such as geographical distance, disparities in the use of AI, and in the field of youth activism.

Ethical-Political Commitment

The question about our positioning regarding the object of study and the ways of producing knowledge, especially with DT and AI, led to the team's awareness regarding the values of research ethics, equity, transparency, responsibility, participation, and sustainability within the framework informing the object of study and the use of DT and AI.

In self-exploration, there was a consensus that studying activism in young people is relevant for influencing social change, particularly in the Global South. This is in line with the theoretical-conceptual frameworks of Communication for Social Change and

ICT4D, which several team members have been working on for many years. It aligns with understanding and promoting the capacities of young people, especially those related to education and activism.

The commitment to maintaining transparent, inclusive, and equitable production policies to ensure fair representation and recognition of all team members was likewise reaffirmed. From the planning phase, a framework for ethics and work production was established, aiming to promote non-hierarchical, dialogical, and equitable working relationships. For example, adopting consensus-based decision-making, providing full access to team materials and sessions for the entire team – where possible – as well as engaging in joint publications incorporating ECRs and rotating authorship. This latter practice allowed different team members the opportunity to be lead authors, thus promoting diversity of voices and perspectives. This framework aligns with critical pedagogy in promoting knowledge generators and change-makers (Freire, 2002).

The work was carried out under the conviction that knowledge is intersubjective, and diversity and constructive dialogue can generate better results and promote healthy environments for human relationships. In other words, producing knowledge not only involves thinking about the object of study but also about how the knowledge producing subject (the research team) is configured, as well as the tools used (Gjesdal, 2013).

Regarding digital technologies, it was assumed that these have changed the way scientists do their work, including how they obtain information, handle data, publish findings, and connect and collaborate with others in the field (Verma & Yuvaraj, 2023). An environment with digital and AI technologies was therefore integrated to support project management, communication, and production (Table 1).

The decision to adopt DTs and AI stemmed not only from their accessibility and success but also because they have been used and studied in various fields for a long time. It is considered that, if they are critically and creatively utilized, they can enhance productivity, creativity, and even social and individual development (Álvarez-Martínez et al., 2023). However, their adoption is not without risks in terms of widening social gaps and the naturalization of a technicist and efficiency-driven rationality devoid of human measure.

Pragmatic Commitment
The question of how financing practices, material conditions, and institutional settings influence this study, particularly those related to DT and AI, addresses several crucial aspects. It explores opportunities to integrate the ECRs into the team, both formally and informally. Additionally, it examines the financial resources available for the project and the environments, including access to technologies, that facilitate the work. Table 4 visually depicts significant differences in knowledge production conditions, underscoring more favorable circumstances in the English university compared to the Mexican one, where only two aspects yielded positive results.

Institution	Formal Work Situation of ECR	Informal Collaboration Insertion	Economic Support for Research	Internet Access and Computing Equipment	Interinstitutional Digital Collaboration	Access to Document Databases
University of Colima (Mx)	Limited	Sufficient	Limited	Sufficient	Limited	Limited
Loughborough University (UK)	Limited	Limited	Sufficient	Sufficient	Limited	Sufficient

Table 4. Conditions for Conducting Research. Source: Authors' elaboration

Some practical conditions were that, although the micro-project did not have funding, being part of a first-world institution enabled some access to resources or research support funds. An example of this was the grant that was mobilized for researcher D's involvement in the project, a grant that came out of a 'small pot' at the Institute she was affiliated to. On the other hand, the employment situation of early career researchers was precarious at both universities. Researcher D was only affiliated to the university on a short-term contract for the literature review task, and C was an assistant with an administrative position. However, both aspired to become researchers on longer-term contracts and enjoy the benefits associated with such positions.

It is worth mentioning that both universities had sufficient infrastructure to enable connectivity services and collaborative work platforms such as Google Workspace and Microsoft 365, where daily processes of teaching, research management and production could take place. However, collaborative work was complicated by digital security policies implemented at both universities, which had restrictions on sharing documents with individuals from outside their institutions. This aligns with the study on factors influencing data breach risks in universities (Li et al., 2023). To overcome the digital security policies, Google Drive was used from personal accounts.

Additionally, another limitation that impacted the strategic assignment of tasks was the differentiated access to material resources between both universities, such as the inability to access the WoS collection at the University of Colima due to its high cost. This situation led the Mexican team to consult RedALyC and work with free technologies for data search and analysis.

This narrative highlights the disparities in access to resources and opportunities between Northern and Global South universities (Quijano, 2011), exemplified in the relationship between Loughborough and Colima universities. However, it also shows that, when faced with systemic-structural problems in research, researchers compensate for these shortcomings and tackle challenges, sometimes with personal resources, weaving affective bonds and promoting the distribution of symbolic capital – academic recognition and a sense of belonging. This aligns with the formation of epistemic communities as described by Feldman (2013), although it is worth acknowledging that while individual response is commendable, it also depletes the creative energy of researchers. The exer-

cise likewise highlights the need to reflect on the researcher's situation (Gjesdal, 2013) and their commitment to knowledge as a strategy for transforming their practice (Freire, 2002).

Conclusions

Firstly, it is acknowledged that the use of digital technologies, including specialized artificial intelligence tools, simplifies and effectively speeds up literature review processes; in other words, they are efficient sociotechnical practices because they deliver relevant scientific texts. However, having conducted our critical-reflexive examination, the presence of latent epistemic biases in the process becomes evident. These biases tend to invisibilize the knowing subject and distort the representation of produced knowledge, leading to the generation of inequities and ultimately, epistemic injustices.

The specific findings of our study on the literature review on youth activism underscore these issues. Digital technologies and AI not only reproduce existing biases but also complicate and amplify them, especially in contexts such as youth activism, where young people's voices and experiences are often marginalized. This case study clearly illustrates the theoretical issues discussed and highlights the need to adopt concrete measures to mitigate these biases, improving the equity and reliability of the knowledge generated.

Secondly, it is evident that the mentioned biases are not independent entities but components of a systemic problem that extends beyond individual scientific and technological practices. We face a complex challenge involving interconnected systems, such as the scientific, the technological, and the institutional, all heirs of both scientific and digital colonialism.

Digital technology, in its association with a non-neutral Western science, not only reproduces existing biases but also complicates and amplifies them. This is partly due to the opacity and design standards of these technologies, as well as the rationality that promotes the idea of neutrality and progress. It is essential to recognize that these technologies do not operate in isolation but are embedded in a sociotechnical fabric that includes institutional and personal factors.

Furthermore, epistemic injustice in this context is not limited to the bibliometric or technological sphere but demands a broader perspective that considers the knowing subject in their context, capabilities, and aspirations. Concrete measures need to be adopted to mitigate these biases and develop strategies that enhance the equity and reliability of generated knowledge.

We must note that this article does not aim for a simple moral imperative for the inclusion of the Global South; rather, it advocates for considering how to broaden our perspectives when delineating the scope of our studies. This approach alone would enrich the diversity of generated knowledge, including not only that which aligns with the criteria of Western modern science. For this, we need technology that addresses that richness.

We caution that given the relevance and presence of generative artificial intelligence in the social sciences, we consider it crucial to review specific practices, such as literature review in this study, to better understand how technologies affect and are affected by the sociotechnical fabric in which they are embedded.

On the other hand, this work reveals the need for future studies that reflect on how digital technologies in general, and AI in particular, can intervene in the interpretation and representation of data. Text mining and Big Data tools could incur biases in aspects such as training and data availability, algorithmic design and optimization, interpretation through contextualization and disambiguation, as well as cultural and linguistic factors, among others. These biases must be revealed too.

Finally, it is imperative to demand that technological designers and major companies in the sector develop specialized technologies that will allow for the appreciation of the global richness of generated knowledge. Only then can we better understand social reality and work towards building a more just and equitable world.

Notes

1   Caleidoscopio Network, a research network on digital culture and human development. (https://portal.ucol.mx/cuis-redcaleidoscopio/)

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