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Automation in education: international issues from critical approaches

Automação na educação: questões internacionais a partir de abordagens críticas
Automatización em la educación: cuestiones internacionales desde enfoques críticos

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Abstract: This paper presents an analysis of the content of 32 articles from two special issues dedicated to the theme of automation and education in international journals. The aim was to contribute to national research, considering the large production abroad and the expansion of automation in private, for-profit higher education institutions in the country. It discusses the five main categories (human agency; machine anonymity; suppression of subjects; biases; public policies) out of a total of 12 identified topics. As well as denouncing, some of the papers indicate alternatives to the problems in context.

Keywords: Automation, Higher Education, Artificial Intelligence, Critical Education, Policies.

Resumo: *O trabalho apresenta uma análise de conteúdo de 32 artigos, sendo dois especiais dedicados ao tema automação e educação de revistas internacionais. O objetivo foi contribuir com pesquisas nacionais, considerando-se a larga produção fora e a expansão da automação em instituições de ensino superior privadas com fins lucrativos no país. Discute-se as cinco principais categorias (agenciamento humano; anonimato da máquina; supressão dos sujeitos; vieses; políticas públicas) de um total de 12 tópicos identificados. Além de fazer a denúncia, parte dos trabalhos aponta alternativas para as problemáticas.*

Palavras-chave: *Automação, Educação Superior, Inteligência Artificial, Educação Crítica, Políticas.*

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Resumen: *El trabajo presenta un análisis de contenido de 32 artículos de dos especiales sobre automatización y educación en revistas internacionales. El objetivo es contribuir con la investigación nacional, teniendo en cuenta la gran producción en el exterior y la expansión de la automatización en las instituciones privadas de enseñanza superior con fines lucrativos del país. Se analizan las cinco categorías principales (agencia humana; anonimato de la máquina; supresión de sujetos; sesgos; políticas públicas) de un total de 12 temas identificados. Además de denunciar el problema, algunos de los trabajos apuntan alternativas.*

Palabras clave: *Automatización, Enseñanza superior, Inteligencia Artificial, Educación crítica, Políticas.*

INTRODUCTION

Since legislation has permitted stock exchanges in the Private Higher Education Institutions (HEIs) capital, a process that started with the promulgation of Decree 2.306/97 by President Fernando Henrique Cardoso (Mocarzel, 2019), teacher's work and their employability underwent significant changes to account for shareholder profits. In corporate terms, the opportunity to launch future roles in the financial market meant, for companies in the sector, new possibilities of making large financial contributions and a geographical expansion of "non-profit institutions", that, until then, had invariably been overseen by maintainers. For teachers, it meant the emergence of more challenges and precariousness in their daily lives.

The increasing of these operating spaces institutions has expanded processes of educational and administrative practices standardization in the different locations in which the presence of these companies has reached, no matter in the in-person teaching or in the distance education - notably greater in the latter modality. Far exceeding the number of undergraduate vacancies in the public network, the private network offered 92.6% of all vacancies in Brazil in 2021. In absolute terms, this means that private for-profit HEIs accounted for 21,959,144 enrollments (Brazil, 2022, p. 12). Compared to 2012 and 2022, the Higher Education Census discloses a 43.3% growth in the number of undergraduate enrollments in these institutions (Brazil, 2002, p. 18).

The scenario of private for-profit HEIs' power over national higher education grows in step with fast-paced digital technological development. Aiming to optimize processes of education management and administration as well as pedagogy, publicly traded companies have been betting on the automation of part or all of the teaching work, focusing mainly on Artificial Intelligence applications.

Currently, Afya, Ánima, Cruzeiro do Sul, Kroton, Ser Educacional, Vitru, Yduqs, in alphabetical order, are the main private education groups with open capital in Brazil (Kroike; Guimarães, 2024). Akin to other education platforms, many automation technologies are produced by the world's major technology corporations and fit into the export numbers of the Global North, driving the mercantilist advance of colonizing bias over other regions of the planet.

Saura, Cancela and Parcerisa (2023, emphasis added) suggest that the discourses of the Edtech financial industry are a kind of "sociotechnical *Mercantile* imaginary" that resignify the conception of "sociotechnical imaginaries", expression taken from Jasanoff (2015), created by collective desires. Mercantile imaginaries would be designed by political actors deprived of technology (Big EdTech, venture capitalists, financial actors, etc.) and thus, "the entire financial investment of the EdTech industry is inherently linked to designing the future of Education" (Saura, 2023, p. 22).

This scenario drives the research in the area of Education to focus on the process of automation, especially in countries where digital technologies are more widespread. Seeking to contribute to national discussions and studies, this article presents an analysis of the international literature specialized in automation and education, under critical approaches, seeking to identify questions and concerns regarding the theme, raised by foreign researchers in the area of Education and Technology. It is part of a larger scope of research that also included interviews with professors from ES (Espírito Santo State) (Rodrigues, 2024) and is one of the products of two CNPq-funded projects developed on the topic (Carvalho; Rosado; Silva, 2019).

The word "*automação*" in the original Portuguese version of this work refers to the mechanization of actions previously performed by humans. The corresponding term in English, "automation", is widespread in academic literature on the subject, although the word "automatization[3]" is also used. From what can be inferred, in the context of this work, "automation" is related to processes which digitize human tasks that are often grouped and correlated in broader conceptions, encompassing larger contexts of planning with digital information and Communication Technologies.

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3 The Merriam-Webster dictionary, an English language dictionary used in the United States of America, reports that the first known recorded use of "automate" is from 1865 and gives the following current examples of phrases as a definition: "Start with outcomes and work backwards, building new workflows rather than just automating old ones" obtained from Forbes magazine, Jan 16, 2025; "The document directs the departments of Energy and Homeland Security to launch a pilot program to use AI to help protect energy infrastructure, with the goal of automating things like vulnerability detection and patching." obtained from Wired magazine on Jan 16, 2025. The same dictionary defines "automation" as "the technique of making an apparatus, a process, or a system operate automatically", that is, the technique of making an apparatus, or process or system operate, refer, therefore, to extended planning contexts. In regard to the etymology of the word "automation", the Merriam-Webster dictionary informs that the first use of the term is from 1912, making it more recent than "automate", and suggests that it was probably coined by Delmar S. Harder, an executive at Ford Motors who served as vice president of the company from 1947 to 1948. It is also possible, reports the dictionary, that "automation" is a fusion of the words "automatic" and "operation". The term "automation", the dictionary relays, is the result of the verb to "automate".

The automation of human life is not a novelty, in view of processes seen in industry, pedagogy, and administration throughout the history of education, however, the sophisticated resources that Artificial Intelligence techniques pose have been increasingly promoting its presence in the most diverse actions. AI is highlighted in the agendas of governments and multilateral agencies, such as UNESCO (2019, 2021) and the Organization for Economic Cooperation and Development OECD (OECD, 2019, 2020), but much remains to be discussed and studied in its surroundings.

METHODOLOGICAL PATH

The qualitative research reported in this article, of exploratory and descriptive nature, results from an analysis of thirty-two articles published in English in two internationally prestigious journals that dedicated specific volumes to the themes automation and education. The choice of the specials was not only due to the theme: the articles published in both journals share critical approaches concerning the links between education and technology in their published works. The choice was purposeful, considering that the hegemonic discourse of the area, both abroad (Selwyn, 2017a) and in the country (Carvalho; Rosado; Ferreira, 2019), has mostly been dedicated to discuss "benefits" and uses of digital technologies for education, disregarding their political nature and unintended consequences.

One of the most recognized journals in the field is Learning, Media and *Technology, published by Routledge*, part of the English publishing corporation Taylor & Francis Group. The other is Postdigital Science and Education, from the Swiss academic publisher Springer Nature. Overall, the content analysis involved twenty-two articles, two editorials, five book reviews and three interviews in the area, produced by one or many authors. The journal number of *Postdigital Science and Education* analyzed is volume 5, issue 1, published in January of 2023, which received the title **Education in the automation age**, or, in Portuguese, "*Educação na era da automação*". The journal number analyzed in the research is the volume 47, issue 4, published in 2022, untitled.

In order to complete this survey on automation, large scale natural language processing processing *software*, such as ChatGPT, from the OpenAI laboratory; Bard, from Google, or others, which consolidate reports in order to shorten analysis time, were not used. The only automated resource used, occasionally, was the language translator built into Microsoft Word, through which two extensive tables were also carried out manually for the consolidation of the study.

We sought to find the topics of interest of the authors' works and their motivations. The Praxis used for this content analysis (Bardin, 1977) of articles and the definition of categories was inspired by *snowball* sampling, similar to what is done in field interviews in qualitative research in social sciences and humanities. As each text was read, two or three keywords were chosen, with a view of formulating categories. These words were always drawn from the lexicon of those who had written the article and seemed to represent the topics discussed.

It is necessary to remind that the researchers' bias is present in this process and their subjectivities produce interference in the performance of the survey. After reading each text, we tried to verify the possibility of framing any highlighted terms in one or more of the previous keywords. Otherwise, we chose new ones, also based on the semantics of the author. This process was repeated for the first third of the articles, when a total of twelve categories already accommodated any discussion identified until the end of the sample analysis, reaching "data saturation".

This analytical practice included the construction of two tables designed to facilitate reading different meanings emanating from the texts, individually or in conjunction. One was more superficial, it organized the titles of the articles, giving them reference codes, and listing the keywords informed by the authors with other preliminary information. The second table (1), more detailed and thorough, contained: the levels of Education reported in each article, how automation manifested itself in the discussion, what the authors' concerns were, the power relations discussed in the texts, and what they suggest in regards to their research questions.

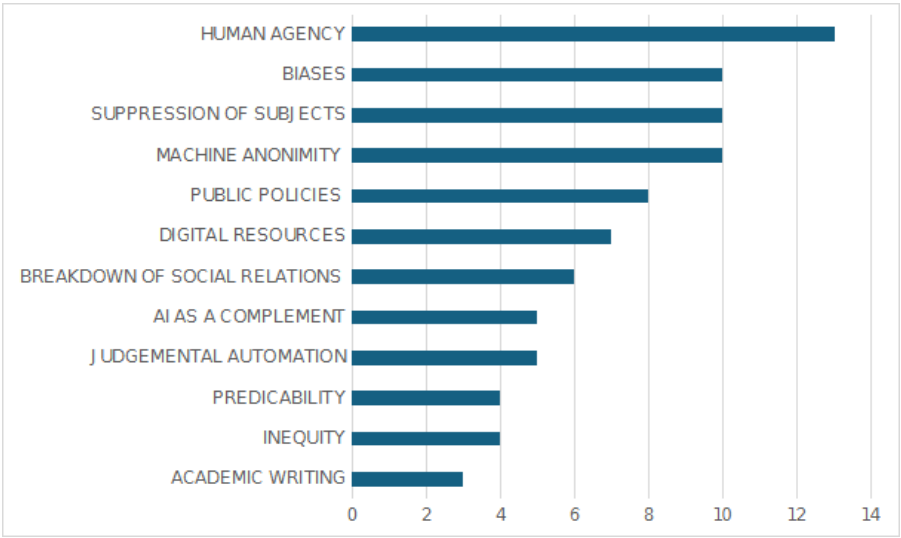
Table 1 - Category elaboration from the texts analyzed

POST DIGITAL SCIENCE AND EDUCATION							
TEXT REFERENCE	**DEALS WITH HE?**	**LEVEL OF EDUCATION ADRESSED**	**HOW DOES AUTOMATION MANIFEST ITSELF?**	**WHAT CONCERNS DO THE AUTHORS RAISE?**	**WHAT ARE THE POWER RELATIONS?**	**WHAT DO THE AUTHORS SUGGEST/ PROPOSE?**	**GROUPING BY MAJOR THEMES**
PDS 1	YES	SCHOOLS/ UNIVERSITIES	*Facial recognition systems at the entrance to institutions to register visitors. *Automatic correction of exam papers. *Pre-selection of candidates for jobs at the institutions. *Student assessment. *Allocation of resources. *They are talking about software, apps, systems, platforms and digital devices in which automation is "of minor importance".	*That the technologies that are adopted for small tasks in everyday school life, which go almost unnoticed in everyday life, begin to be understood by their users as convenient, practical, especially by teachers. *How reliable are the results produced by autonomous systems? *How far from the school environment are programmers, software engineers and other actors? *The social consequences of re-dimensioning and reducing the act of education to individual and non-social activities. *Automatic systems don't dispense with the need for a human presence to fix malfunctions; how can qualified personnel be retained for these emergencies? There is no guarantee that it will "plug in and work".	*One has to wonder why people are willing to delegate their subjectivity to the machine. Why do they prefer not to have to argue about grades with a student; or why does a student prefer not to receive feedback directly from a teacher, a human? What is this desire to reduce friction, as the authors call it? *The prominence of these technologies changes what used to be understood as communal, conversational, relational, weakening the notion of socialization. *Perhaps the strongest consequence, they say, is the removal, if not suppression, of subjects in learning processes. The ultimate logic of automation in schools would be to make the subject obsolete: Today, they may be unpredictable, irrational, resistant; but machines work in "predictable datification". This also applies to spaces and temporalities. *How does this process of cyber-delegation tie education systems to large multinational corporations? Who, outside of this community of experts, can trace or control the problems that software may produce?	*That Augmented Intelligence should be thought of instead of Artificial Intelligence. That AI should complement the work of professionals, not replace them. *Think about accountability for the attitude of transferring decisions from human beings to machines. How responsible should a teacher be for the results of an automated system that they know little or nothing about? *It is necessary to engage in the description and understanding of new technologies that are considered worth studying/adopting, as well as pointing out aspects of education that are worth protecting. As Bell (2021) says, you need a "critical doer as well as a critical thinker".	DISRUPTION OF SOCIALIZATION SUPPRESSION OF SUBJECTS AI AS A COMPLEMENT

Source: created by the author.

After analyzing all the articles and their links to the different keywords described on the right, we began calculating the sum of the times in which these categories were identified in the texts. Once this calculation was completed, we created a numerical ranking which revealed the incidence rates of the themes in descending order. Thus, it became possible to obtain indications of the issues that appeared most frequently in the articles chosen, as shown in the illustration below:

Graph 1 - Incidence if categories in selected articles



Source: created by the author.

In the next section, the five most identified categories of content analysis will be discussed, out of a total of twelve: human agency; machine anonymity; suppression of subjects; biases; and public policies. Both these categories and the reflections that follow are "a way of seeing and perceiving reality with a particular eye, while revealing and demonstrating a much broader context that allows reality to be evidenced through the researcher" (Ghedin; Franco, 2011, p. 87).

MAIN ISSUES FROM AN INTERNATIONAL PERSPECTIVE

Mapping the concerns of foreign researchers, whose work was developed under critical approaches on the subject of automation and education, may lead national readers and researchers to observe and/or consider them in their fields of action and study. In this way, national researchers may resignify these concerns in regards to local contexts, often distinct from international perspectives, but also influenced by them through the acquisition of technologies or the development of processes and imaginaries, as previously pointed out.

HUMAN AGENCY

This category held the record for number of mentions in works published in the special issues of *Post Digital Science and Education* and *Learning Media and Technology*, with references found in thirteen of the thirty-two texts. This suggests that the relevance of human presence and action in educational processes cannot be disregarded, even though, in the contexts analyzed, there is a possibility that automation may perform the same tasks. According to this perspective, in the dispute of space between humans and machines, the prevalence of human actors should always be considered.

In the article *Unpacking the hidden curriculum in educational automation: a methodology for ethical praxis* (Gallagher; Braines, 2023), the authors discuss the need to denaturalize the use of digital technologies in educational environments, dealing specifically with university spaces. Following the development of their questions, the authors propose to resignify biased results produced by digital technologies through activities that value the self-esteem of the educational community. Therefore, they suggest using four methodologies wherein the objective is to draw attention to the physical presence of these apparatuses, which have become part of the daily management of pedagogical environments and that can produce segregating results from biases.

The first of these methods, called "*Photovoice*", is developed from photographs produced in schools that have recently incorporated technologies into pedagogical environments. Among them, there are images stored in visual recognition procedures, such as student calls made by facial biometrics as well as visitor registration technologies at the entrance doors of educational spaces. Revisiting these photographs could produce, according to the authors, new forms of representation and perception of self-image of community members.

Another methodology proposed by Michael Ghallager and Markus Braines is named "speculative fiction", which consists of a way of interrogating the production and transmission of technical discourses that are present in a naturalized way by robots. This technique would be especially valid for cases in which learned natural language models are used, such as in artificial intelligence that produce text and images. Furthermore, with the intention of promoting critical thinking, the researchers propose "*Futurecrafting*" as a way to make the differences between machinic and human actions, exploring the limitations of the former in a playful way. The fourth methodology is centered on the organization of students in teams to discover new connections, encouraging and developing socialization among them.

> Speculative approaches to automation in education carry complexity, uncertainty, and risk, as well as technological and pedagogical practices which are largely unknown. Rather than being seen as a flaw in research design, this uncertainty can be generative particularly in imagining new futures [...] (Gallagher; Braines, 2023, p. 61)

Another example of a discussion of "human agency" viewed in the context of a university environment, is the article *Enacting empowerment through an automated teaching event: a posthuman and political perspective* (Gibson, 2023), also from the *Post Digital Science and Education* journal. In the article, Patricia Gibson reports experiments conducted in partnership with students, in the classroom, dealing with a *bot* called *Flors*, which she had created to be a co-author in a creative writing discipline she taught at an English university. The questions that guided Gibson's research were about the ways in which it would be possible to promote human empowerment in pedagogical relationships involving the use of automation. The article questions the way a robot teacher's power is understood, arguing that what is at play is not an opposition between human and machine, but the ways in which such teaching practices can be ethically regulated.

In her article, Gibson argues that robots such as *Flors* can be programmed locally, and that the idea that only large technology companies can produce pedagogical resources like this is a myth. In this way, local projects can constitute themselves as a didactic alternative to commercial products offered by the market. With *Flors*, for instance, the researcher discovered it was possible to make some writing workshops more dynamic by encouraging students to continue narratives initiated by the machine. *Flors*, for example, suggested a quote from activist Greta Thunberg[4] and conversations of a political, libertarian and democratic nature were triggered from this excerpt.

Both Gallagher and Braines' article and Gibson's article seem to recognize the pedagogical potential of the use of automation in university contexts. They put teaching action and pedagogical proposals in the foreground of the discussion, considering the action of the people involved when resorting to automation resources while also understanding that such robotic actions can produce unwanted effects, such as inadequate or incorrect responses or the erasure of the importance of certain identities in the construction of knowledge. The authors suggest the incorporation and the debate about machine deficiencies by embracing and welcoming uncertainties and doubts that occasionally arise in the classroom, rather than reinforcing feelings and actions of rejection and prejudice.

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4 The biography and interests of activist Greta Thunberg can be found on her Instagram profile @ gretathunberg or on her website, which is www.thegretathunbergfoundation.com.

Tied for second in the number of references in the indexations of the categories proposed by this survey are "biases", "suppression of subjects" and "machine anonymity", with ten mentions for each.

BIASES

In the context of this work, the expression "bias" can be understood as a "systemic deviation caused by an inaccurate estimation or sampling process", (Baeza-Yates, 2018). The author explains that biases can arise from different sources, such as statistical, cultural and cognitive biases, impacting the way algorithms process data and make decisions. Cathy O'neil (2016), among other authors, has been discussing how biases can result in forms of segregation and discrimination produced by automatic systems to the extent that they cannot perform data readings that do not fit the patterns learned by machines. This allows unwanted results such as discrimination by skin color, social status, age, gender, among others

An example of an article dealing with biases is *In their words: 41 stories of young people's digital citizenship* (Black et al., 2022), from the journal *Learning Media and Technology*. In the article, Rosalyn Black, Lucas Walsh, Catherine Waite, Phillipa Colin, Amanda Third, and Sherene Idriss link the concepts of digital citizenship and digital security, questioning the idea that young people need to be supervised to surf the internet. The authors suggest that it is possible to offer young people autonomy, loosening the supervision of legal guardians during these experiences. The bias, not always digitally built, would be, in this case, that the research participants would not be able to perform this task alone. The proposal was to encourage young people to inquire about their itineraries of interests and to reflect, by themselves, on how they understood digital environments, exploring and understanding the harm and benefits of these practices. Thus, the article uncovers questions about informal education, proposing a conversation with young people about how to explore their digital citizenship. Above all, they are no longer seen as incapable.

Another article related to this theme is *Automating situations in Ed-Tech: techno-commercial logic of assetisation* (Hansen; Komljenovic, 2023), in which the authors reaffirm the idea proposed by critical thinking: the use of automation is problematic insofar as it collects and processes data from users, thus reproducing social inequalities instead of removing or mitigating them. According to the authors, these automatic interventions are expanding rapidly and the trend has implications on the subjectivities of students that cannot be disregarded.

SUPPRESSION OF SUBJECTS

"Suppression of subjects" refers to the annihilation of human agency in automated processes, in this case, those associated with education. This is a concern that can be understood as the opposite of "human agency". The texts listed under this Aegis are related to attempts to annihilate human subjectivities when dealing with automation in educational environments. An example of an article that highlights this concern is *The life and times of university teachers in the era of digitalization: a tragedy* (Teräs; Teräs; Suoranta, 2023). Hanna Teräs, Marko Teräs and Juha Suoranta studied the relationship that higher education teachers in Finland establish with automation, trying to understand what types of interactions occur between them and the digital tools offered by educational institutions to perform tasks.

The authors say that one of the survey respondents listed thirty different resources used in their daily lives. In addition to which, he says, the resources tended not to remain the same, being constantly changed by managers, making it difficult to master the functionalities of each one. According to the survey, as soon as *software* learning was consolidated, it was understood as obsolete and the use of another tool began. The researchers understand that teachers are buried by avalanches of technological devices and that, since the time for preparing classes and attending students is increasingly scarce, there are few moments left to understand the mechanisms that underlie the use of technologies.

Considering their research, the authors believe it to be crucial to seek transparency in the use of digital mechanisms in higher education, with a view to promoting democracy in the workplace and teacher participation in local and global debates. They understand that, as educational professionals, teachers should have a central role in determining the conditions they need to carry out their work. However, this has been happening less and less frequently.

> Back in time, digital technology was surrounded by optimism and excitement, largely because of the new pedagogical possibilities that teachers in their academic autonomy were free to either explore or ignore. However, alongside a major paradigm shift in higher education, digitization, too, has shifted and taken new forms. Based on the **narratives, the development** has been towards increased bureaucracy (see Graeber 2015) instead of humanized use of technology (Fromm 1968). (Teräs; Teräs; Suoranta, 2023).

In the article by Neil Selwyn, Thomas Hillman, Annika B. Rensfeldt and Carlo Perrota, which introduces the special volume of *Postdigital Science and Education*, the authors raise questions about the relationship between automation and teaching. There are questions about the reasons that lead to the desirability, especially for teachers, of delegating to autonomous systems so-called small activities, previously left under their responsibility. Among the actions that are now carried out mechanically are: the installation of facial recognition systems at the entrance to institutions; the automatic correction of tests and the evaluation of students, as in previous works by Selwyn *et al.* (2021) and Gilliard, Selwyn (2022).

> At the same time, it is important to consider the appeal of delegating decisions and judgements to a machine – in other words, why people are prepared to go along with the 'subsumption of subjectivity', to automated systems (Andrejevic 2020). For example, teachers might be happy to defer responsibility, and dodge the awkward task of personally grading students that they have grown to know – particularly given increasing trends of students contesting grades and even initiating legal action over mis-grading. At the same time, students might also welcome the option of not having to subject themselves to the vulnerability of being judged directly by their teachers who actually know them. While understandable, such examples raise questions about how these automations might work to recast and reduce the act of education into a transactional process. (Selwyn *et al.*, 2021)

The authors point out the desire to reduce frictions and tensions in school environments as one of the main points of debate that need to be deepened, since it counters educational processes, especially in the critical perspective. For them, the prominence of these technologies modifies what was understood as communal, conversational, relational, and has weakened notions of socialization. Perhaps the strongest consequence, they say, is estrangement, if not *suppression of subjects* (Selwyn *et al.*, 2021, P. 19)1, in learning processes. The ultimate logic of automation in schools would be to make the subject obsolete: subjects can be unpredictable, irrational, resistant, but machines work with the predictability of datification, encompassing spaces and temporalities, tied to the neoliberal world project currently underway.

MACHINE ANONYMITY

By "machine anonymity' one can understand digital operations carried out subliminally, in the background, in which, purposefully, the presence of automation is not revealed to the user, as though it does not exist. This category concerns examples of investigations such as the one in *Automating teacher work? A history of the politics of automation and artificial intelligence in Education* (Rensfeldt; Rahm, 2022). In their considerations about the research, the authors express a desire to denaturalize

the presence of automation in the daily work of teachers, in view of the risk that technosolutionist discourses mask political intentions carried out behind the scenes, privileging non-human action in day-to-day school life and providing fanciful justifications to suggest that the presence of teachers would be dispensable.

It is necessary, they say, to foster debates on the ethics and regulations of the uses of these resources, raising discussions about the ways in which automation is related to teaching work and which parts of it are inserted in automation, or even prepared to be so. Although technology has always been part of education, automation, according to Annika Bergviken Ramsfeldt and Lina Rahm, enhances the dimensions of its interventions in learning processes, even more if it is linked to economic liberalism as is often verified today. This process ends up affecting the self-perception of the autonomy of these professionals and this way, its neutrality is a fallacy that cannot be accepted. It needs to be revealed and questioned.

This is also the main issue of the article *Automation is coming! Exploring future (s)-oriented methods in education* (Pargman; Lindbergh; Buch, 2023), in which the authors affirm that emerging decision-making technologies embedded in robotic systems end up promoting teachers' engagement with future temporalities that they have not yet mastered, involving them in contexts that have not yet materialized and destabilizing their work routines. This particular state of "not knowing", they say, leads teachers to develop practical solutions on a day-to-day basis that do not start from concrete, tangible foundations. The authors suggest methodological movements in which these new technologies are better studied and understood.

PUBLIC POLICIES

The "public policies" category is less mentioned and focuses on government regulations of school automation. The article *Laws of Edu-Automation? Three different approaches to deal with processes of automation and artificial intelligence in the field of Education* (Decuypere *et al.*, 2023) offers a report regarding the participation of a group of researchers in a symposium in the city of Leuven, Belgium, in which starting points were discussed to think about the proposition of laws that may regulate the use of automation in school environments, with the intention of engaging the academic community to contribute to the formulation of guidelines.

At the time, three discussion groups were formed. The first was focused on formulating "pedagogical terms and conditions", in an effort to understand meanings arising from the connection of the entries "edu-" and "- automation" (Decuypere *et al.*, 2023, p. 53). In other words, what is the intended referent when using the term *edu-automation*. The goal was to make these meanings visible and tangible to other educators so that it would be possible to "snowball" this issue and allow educators

to negotiate values with developers, designers and academic managers from better established concepts, aiming to be able to join the debate, collectively, in participatory management.

> The first group focused on the proceeding, often invisible, negotiations of values that emerge and exist when automation meets education, as these values commonly get 'snowed under' by seemingly technical decisions and operationalizations, for instance, in the field of AI. (Decuypere *et al.*, 2023, p. 53)

The second work group discussed the presence of the hyphen between education and automation as an inherent part of understanding what "a good school" would be, and why this often occurs. Finally, the third group was tasked with discussing the roles played by humans and non-humans in the relationship between the two entries. The researchers noted that all these efforts were aimed at overcoming the common place that identifies such technologies as neutral or, on the contrary, dangerous.[5] Although the effort to formulate alternatives was made, the researchers report that the symposium did not reach a consensus that could lead, for example, to the elaboration of a propositional document. However, the researchers believe that the initiative of group meetings and exchanges of experience will inspire future discussions.

Another text selected for analysis in the "public policies" category is *By-passing teachers in the marketing of digital technologies: the synergy of education technology discourse and new public management practices* (McGarr; Engen, 2022). In this article, the authors discuss how advertising around commercial products of the digital industry for both elementary and higher education influences the purchasing decision of public managers, bypassing teachers' opinions in the process. Through discourse analysis, the authors conclude that marketing techniques sell ideas of wit and contemporaneity in technological resources purchase and application in educational environments. However, they emphasize that it is important for teachers to be alert to the presence of such discourses so that they can use these technologies critically, as they are continuously excluded from decision-making processes and need to be informed about economic and political ties that link products to their manufacturers.

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5 According to the statement "It is only through this engagement that we can get beyond perceiving automation as being a merely neutral instrument in, or conversationally, as being in inherent danger to educational practices, and instead get involved in alternative ideas." (Decuypere et al, 2023, p. 53)

FINAL REMARKS

Other topics of international researchers' interest were gathered in the categories "digital resource", which deals with the validity and pertinence of the use of systems such as Wikipedia in an academic environment; "disruption of socializations", which addresses the destructuring of affective bonds; "AI as a complement", which notes intentions to associate human presence with automation for joint efforts; "automation of judgments", (collaborative, via the internet) and "inequity", which is concerned with the results of these inequalities.

Most of the thirty-two articles analyzed do justice to the critical perspective that brings them together, albeit under different approaches. Furthermore, the works cited are not limited to denunciation, but point out ways (Apple; Au, 2011) to contribute to increasingly automated realities in Higher Education Institutions (private for profit, especially), though Basic Education is also targeted. The researchers bring to life, in the words of Freire (1987, p. 42, emphasis added), a "**Denouncement** of a dehumanizing reality and **announcement** of a reality where people can be more. Announcement and denouncement are not empty words, but a historical commitment" to be pursued by researchers and educators in times in which the automation of life is ever growing.

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