



Platformization and teaching work: a scoping review¹

Plataformização e trabalho docente: uma revisão de escopo

Plataformización y trabajo docente: una revisión exploratoria

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Abstract: This article consists of a review of the literature on discussions about the platformization of teaching work and its consequences, identifying the different perspectives underlying the insertion of digital platforms in education. Guided by the PRISMA-ScR methodology, a scoping review was developed in the Capes Periódicos and SciELO databases, using the descriptors "teaching work" and "platformization" and their terminologies in English and Spanish, filtering 32 articles. The Covid-19 pandemic period has driven and exacerbated this scenario, with the adoption of digital platforms provided by large information technology companies, consolidating the platformization of teaching work. Negative perceptions have outweighed positive perceptions. It is important that the innovative process in education be guided by policies that overcome the risks derived from objectives that privilege business interests and the commodification of education, leaving the main actors (teachers and students) excluded from its planning, development, conduct, and monitoring.

Keywords: Digital platform; Teaching conditions; Technology and Education.

Resumo: Este artigo consiste em uma revisão da literatura acerca das discussões sobre a plataformaização do trabalho docente e suas consequências, identificando as diferentes perspectivas subjacentes à inserção das plataformas digitais na educação. Norteadas pela metodologia PRISMA-ScR, desenvolveu-se uma revisão de escopo nas bases de dados Capes Periódicos e SciELO, utilizando-se dos descritores “trabalho docente” e “plataformaização” e suas terminologias em inglês e espanhol, sendo filtrados 32 artigos. O período da pandemia Covid-19 impulsionou e exacerbou este cenário, com a adoção das plataformas digitais disponibilizadas pelas grandes empresas do ramo de tecnologia de informação, consolidando a plataformaização do trabalho docente. Percepções negativas superaram as percepções positivas. Ao processo inovador na educação, importa que seja pautado em políticas que superem os riscos derivados de objetivos que privilegiam o interesse empresarial e a mercantilização da educação, deixando os atores principais (professores e estudantes) excluídos do seu planejamento, desenvolvimento, condução e monitoramento.

Palavras-chave: Plataforma digital; Condições do trabalho docente; Tecnologia e Educação.

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Resumen: Este artículo consiste en una revisión bibliográfica sobre los debates en torno a la plataformización del trabajo docente y sus consecuencias, identificando las diferentes perspectivas que subyacen a la inclusión de plataformas digitales en la educación. Guiado por la metodología PRISMA-ScR, se realizó una revisión exploratoria en las bases de datos Capes Periódicos y SciELO, utilizando los descriptores "trabajo docente" y "plataformización" y sus correspondientes terminologías en inglés y español, resultando en la selección de 32 artículos. La pandemia de la COVID-19 alimentó y exacerbó este escenario, con la adopción de plataformas digitales proporcionadas por grandes empresas de tecnologías de la información, consolidando la plataformización del trabajo docente. Las percepciones negativas superaron a las positivas. El proceso innovador en educación debe guiarse por políticas que superen los riesgos derivados de objetivos que priorizan los intereses corporativos y la mercantilización de la educación, excluyendo a los actores clave (docentes y estudiantes) de su planificación, desarrollo, implementación y seguimiento.

Palabras clave: Plataforma digital; Condiciones de trabajo docente; Tecnología y Educación.

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Introduction

Teaching is a historic profession that has undergone various transformations over time, in line with innovations in both teaching practices and the technologies available for performing tasks. For Carvalho and Vieira (2012, p. 730), in education, "innovating means seeking diverse solutions and reflecting on what possibilities exist and which ones can be considered for effective decision-making in teaching methods, methodologies, and new strategies for each student profile".

We are experiencing the digital age, in which Digital Information and Communication Technologies (DICT) have changed and continue to change the organization of work in different professions, including the teaching profession. In a direct relationship between innovation and technologies, Carvalho and Vieira (2012) defend the need for training and attitudes for the use of technologies, given that they lead to changes in the relationship between work and life. Thus, new knowledge, the use of emerging technologies, and the willingness to seek new ways of dealing with reality are requirements for innovating the content and purposes of professional practice.

The educational environment is increasingly shaped by DICT, changing teaching and learning activities and the way and pace of teaching work. This situation has been the subject of research and debate from different theoretical and methodological perspectives, especially during and after the Covid-19 pandemic. During this period, teaching work underwent urgent, drastic, and abrupt changes and reinterpretations, and began to be carried out through digital



platforms that replaced face-to-face work. Such platforms consist of virtual environments that facilitate interactions, transactions, and information sharing between individuals, institutions, and companies, allowing for the creation, distribution, and consumption of content *online*. They began to be used by educational institutions throughout the entire educational process, from management activities to the internal classroom environment.

When inserted into the educational environment, platforms, understood as systems, are the subject of discussions and controversies about how they affect the activities that make up the teaching work and, directly, those involved in the teaching-learning process: teachers and students. Regarding their effects and implications, according to the articles evaluated and included in the scope review resulting in *the corpus* under analysis, there are those who defend their adoption, arguing that platforms facilitate teaching work and boost the learning process for students; while those who have reservations about their use argue that teachers end up with an excessive workload and that the teaching-learning process is weakened and/or hindered by the physical distance between teachers and students.

In this sense, this article focuses on the integration of digital platforms into the educational environment and their effects on changing the organization and routine of teaching work, with a view to developing a theoretical and critical perspective on this scenario in everyday education. Thus, we hope to contribute to the understanding of these concepts and bring new discussions to all those involved, whether they are the actors who outline educational policies, educators, or education researchers in general.

Materials and methods

Seeking to answer the question “How has the platformization of education been affecting teaching work?”, a Scoping Review study was conducted, guided by *the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews* (PRISMA-ScR). In accordance with the proposal of the Joanna Briggs Institute (JBI), once the search terms for the study had been defined, articles in Portuguese, English, and Spanish addressing the theme of the platformization of teaching work were sought, filtering for the document type “article,” published in “open access” mode between 2021 and 2024, up to the date of the search, carried out in July 2024, in the Capes Periódicos and SciELO databases.

In Portuguese, the descriptive terms “trabalho docente” (teaching work) and “plataformização” (platformization) were used. In English, the terms “teaching work” and “platforming” were used. In Spanish, the terms “trabajo docente” and “plataformas” were used. The combination of terms generated the following search expression, which was used in both search engines: (“trabalho docente” OR “teaching work” OR “trabajo



docente") AND (plataformização OR platforming OR plataformas). After searching the databases, the *corpus* of this review comprises 32 articles, with the references containing the complete results of the filtering of articles evaluated and included in this scoping review, ordered by year of publication.

Results and Discussion

Considering the 32 articles resulting from the scoping review, which analyzed publications dealing with the relationship between the platformization of education and teaching work, we proceeded to analyze the data based on categories derived from the articles that comprised the *corpus*.

Capitalism and Digital Platforms

In the field of education, technological transformations were already taking place, given the new demands of capital, such as a reduction in teaching hours, with a reduction in course content and training time, in order to obtain more value and enable the stability and/or expansion of the system. As recognized by Gonçalves; Souza (2022), such changes serve the purposes of capital and the labor market, regardless of analyses of the whole in which they are inserted.

Seeking to define the different forms of the concept of "platformizing teaching work," we start from the assumption presented by Vieira (2023, p. 309) in his study on the territorial strategies of digital teaching work platforms in Brazil, which divides teaching work platforms into four aspects: those mediated by companies; those with an educational bias; those of a pedagogical nature and focused on the teacher-student relationship; and those that lend themselves to changes in the labor relationship restricted to working hours.

According to Vieira (2023), some of these types of platformization of teaching work end up subjugating the pedagogical concept of teaching work, transforming the teacher into a service provider who works on demand. With the introduction of platforms, teaching work has undergone changes in the process and organization of work, which, according to Souza *et al.* (2021), took place via synchronous and asynchronous classes, the latter with material "made available by the platforms". To this can be added "the modality of personalized remote service".

Torres *et al.* (2022), in an article published on "Work and teaching work under the aegis of neoliberalism," in which they interview Ricardo Luiz Coltro Antunes, indicate a view of capitalism characterized by the combination of the use of digital platforms and *home*



office work, which intensified the exploitation of the workforce of professionals in various fields, including those linked to education. In the interview, Antunes stated that “[...] capitalism took advantage of the pandemic to implement a deeper level of destruction and tragedy,” emphasizing that “it was not the pandemic that created the scenario we are living in: it only exposed and exacerbated it”. Finally, Torres *et al.* (2022) highlight that Antunes emphasizes that “global, platform-based companies [...] have intensified the combination of digital work and labor exploitation during the pandemic”.

Guimarães *et al.* (2023, p. 9) comment that “distance learning has its vulnerabilities, which result from problems with the internet and relate to the space reserved for study and certain impasses with online platforms”. They also highlight that, in this platform environment, the success of the teaching-learning process is focused exclusively on the student's interest in learning, giving them the leading role in online learning.

Criticism was also presented regarding the promotion of this neoliberal model, which places the student as the protagonist of the process, leaving the teacher in the background. Vieira *et al.* (2023, p. 504) state that “the notion of meritocracy, intrinsically linked to neoliberal logic, perpetuates the idea that individual success is the exclusive result of personal merit, disregarding structural factors”. This perspective, according to the authors, ends up displacing the teacher from the center of learning, a fundamental factor in conventional education.

From a financial perspective, between the cost and benefit existing in the relationship between company and work, for Oliveira, Pino, and Accorssi (2021, p. 10), digital platforms “[...] provide jobs that are rooted in the logic of reducing the costs of workers”. In this way, digital platforms increase added value and, at the same time, increase the financial return for capitalists, reproducing what is in the market's interest, which today shapes and regulates work.

Considering that teaching work has broken down the physical barriers of educational institutions and has also become part of teachers' homes, the costs of transforming and maintaining the residential space into a work environment have fallen on teachers, in addition to the acquisition of all the technology required in this process, without ignoring the fact that those who did not have the necessary training to deal with the resources needed the "support of family members or colleagues," according to Souza *et al.* (2021, p. 10). The articles presented highlight the relationship between platformization and the intensification of teaching work, resulting from the massification of DICTs and a new pedagogical organization imposed by these technologies and the factors adjacent to the difficulties of their implementation.



Pandemic and acceleration of platformization

The health crisis caused by Covid-19, which forced social distancing, was a crucial factor in the “untimely” adoption of DICT, also known as Information and Communication Technologies (ICT). Sousa, Pereira, and Fialho (2021) emphasize that Emergency Remote Education (ERE) was prioritized without any theoretical basis to legitimize or support it. In addition to the already highlighted perspective of capital, the Covid-19 pandemic accelerated this process of technological transformation, with the insertion of digital platforms into everyday school life.

Possolli and Fleury (2021) discussed the challenges and changes in teaching practice in ERE, which occurred during the Covid-19 pandemic period, via a resolution by the Ministry of Education (MEC), with the publication of Ordinance No. 343/2020. According to the authors, ERE altered the teaching-learning process and teaching performance. They concluded that even with prior skills in the use of DICT, “most teachers did not feel comfortable with the transition from face-to-face to remote format, and encountered initial difficulties in relation to the use of platforms and technological resources” (Possolli; Fleury, 2021, p. 21).

Possolli and Fleury (2021) describe that, although the tools were already available, teachers did not use them, making it challenging and necessary, given the situation, to rethink pedagogical practice. It was even noticed that students are more adept at and practice the use of information and communication technologies than teachers themselves.

Barreto (2021) reports that during the pandemic, educational institutions created a discourse that aimed to romanticize remote teaching, sparing no effort to deliver materials to students living in a wide variety of locations, even those with difficult access. He also describes the training provided to teachers on how to use the major platforms to deliver the required content and activities to students.

The *online* platforms adopted to maintain the right to education were essential for the introduction of remote learning. With the aim of enabling teachers to work remotely, learning how to use these platforms took place almost entirely through quick training sessions. When training was offered by educational institutions, the responsibility was delegated to the teachers and students themselves. They had to learn how to use the platforms and structure their access to information technology, which were necessary for this process to occur properly.

For Sousa, Pereira, and Fialho (2021, p.15), the measures adopted in remote teaching did not serve to provide qualified training for teachers, nor did they contribute to “mitigating



the problem of unequal access to and permanence in school; on the contrary, remote teaching reinforced social inequalities". In the study developed by Flores *et al.* (2021, p. 11), "only 14.4% of respondents reported that they had previous experience with distance learning, and this aspect had implications for the teachers' adaptation process". In this context, the authors, who were part of this scoping review, reported that neither teachers nor students had prior training, highlighting the national scenario in which technological limitations are numerous.

Silva and Novais (2020) add to the effort and performance on the part of teachers to overcome problems, highlighting the involvement of parents or guardians in activities and monitoring students' schoolwork in remote learning. Despite these difficulties, Possolli and Fleury (2021) emphasize that DICTs are increasingly present in the educational environment. On a positive note, during the pandemic, DICTs combined with platform solutions enabled education to continue, which would have been an even greater loss for both students and teachers.

Teachers did their best in extremely frustrating circumstances to maintain teaching during the pandemic. The way of working was rethought, seeking innovation in teaching strategies, aiming at interaction with students and families, using the different platforms available. Teaching work has been completely changed. In the view of Cunha, Bueno, and Ferreira (2021, p. 7), platforms make it possible to "reinvent work," but they also reveal differences from the previous model, which took place in the "school environment". They admit that "remote teaching is a support for the transmission of content and communication between people, in a relationship that may provide conditions for instructional learning [...] " although it is not close to the educational practices that take place in the school environment.

In the authors different views on the platformized classroom environment faced by teachers, we find extremes and paradoxes: remote classes that are either overcrowded or completely empty; blurring of boundaries between private life and work, between work and home. These situations have direct implications for the manner and quality of teaching work, considering that, until then, teachers had not been prepared to deal with this reality.

Platforms and implications for teaching work

In the study developed by Possolli and Fleury (2021) , when addressing the use of DICT and adaptation to platforms, the challenge of reinventing teaching work, which had to adapt to professional practice with these new technologies, reorganizing its processes to offer education via digital platforms. The same challenge also occurred in the educational



environment, on the part of educational institutions, aiming at the acquisition of knowledge and engagement on the part of teachers and students.

The pandemic situation, which accelerated the process of adopting digital platforms, the fragile training and preparation of teachers in their activities, coupled with social distancing, caused teachers to be overloaded with work with the introduction of these platforms, also mixing work and leisure time, since teaching work was brought into teachers' homes. This situation of expanding tasks normally performed in the school environment to the home environment of education professionals has generated work overload and various technology-related problems.

The social isolation imposed by the pandemic, combined with the need to rethink teaching practices, also changed the work of teachers, making it an exhausting and conflictive period for them. Campos and Carvalho (2023, p. 1) understand that: "The analysis showed that teachers had an intense workload due to the need to learn new technologies for remote teaching, formulate material appropriate to the new method, and reconcile work with domestic activities".

Still in this perspective, Junior and Cardoso (2023, p. 3) stated that "teachers were overwhelmed with constant questions, complaints, and problems at different times, since students had difficulties in the remote learning process". For Junior and Cardoso (2023), this situation made it more difficult for teachers to disconnect from their professional activities in the home environment.

Given the difficulty of separating the professional and personal spheres, certain DICT resources have created uncomfortable situations among teachers, as described by Flores *et al.* (2021, p. 16): "personal tools (telephone, SMS, social networks, etc.); personal cell phones; Facebook, WhatsApp, Twitter, etc., are online technological resources that they would not recommend, since their use: "invades privacy too much".

Reinforcing this view, Portes and Portes (2021, p. 12) recognize the "privatist" nature of digital platforms that enabled "teleworking," changed space, routine, and family life, promoting the blurring of boundaries between work and other activities, such as those related to rest and time "to be spent on domestic life" and related activities. Other studies highlight that teachers found their work more difficult given the issue of having to reconcile professional activities with domestic chores during the pandemic. Paéz-Herrera *et al.* (2023) report that the role of women and mothers was a challenge for professional teaching work and the development of *e-learning* classes. Female teachers also had to perform multiple tasks associated with their gender, while at the same time having to innovate, train, and organize themselves to survive in their professional work.



In the remote environment, various dysfunctions in teaching work led to a reorganization of teaching and learning in this process of platformization of teaching life and working conditions. Martins *et al.* (2023) found that teachers *working from home* during the pandemic experienced an increase in their workload and an impact on their mental health. Regarding this situation, Portes and Portes (2021, p. 3) emphasize that: "The exhaustion caused, to a large extent, by anxiety and depression as the main changes in teachers' mental health and the overload/intensification of work should be analyzed as expressions of the overexploitation of capitalism".

Possolli and Fleury (2021) reported that teaching practices had to be redefined by teachers, who were forced to reinvent themselves to promote active education in the face of the challenge posed by platforms. This concern is highlighted by the need to maintain bonds, affection, interaction, and dialogue with students in the classroom. In this regard, they concluded that "it was observed that one of the difficulties encountered in remote teaching was the lack of interaction with students. It was found that new methodologies and strategies were applied in emergency remote classes in order to increase student interaction and participation" (Possolli; Fleury, 2021, p. 21).

Considering only the duties of teaching, even in the traditional environment, before the pandemic, remote work, and the use of platforms, teachers are professionals subject to situations that cause absenteeism due to illness in their professional activity. The changes in teaching work and the school policies adopted end up intensifying this situation, as acknowledged by Lima *et al.* (2023, p. 28436), who recognize the importance of teachers' mental health, as well as the "need to adopt preventive and health promotion measures, as well as improvements in working conditions and school infrastructure".

The mental aspects of remote teaching work are also highlighted by Junior and Cardoso (2023) when they present the so-called "work hyperconnection". Even though mental illness occurs individually, the collective perception of teachers was that feelings of anguish, frustration, and demotivation worsened due to dissatisfaction with their own performance, the subtraction of professionals' life projects, and a feeling of indifference towards the guarantee of "teacher disconnection".

The intensification of teaching work, given the use of platforms and remote working, is also evident in the need to spend more time performing the same tasks that were previously carried out in person in the physical environment of educational institutions. According to Junior and Cardoso (2023, p. 3), when "virtual work as a working modality became the norm in the daily life of the category". [...] "All the information that was previously transmitted orally" [...] "during the pandemic required additional steps" [...] and demanded [...] "more work and less free time".



Educational Policies, Training, and Teaching Work in a Platform-Based Environment

With regard to post-pandemic prospects, educational policies have begun to support discourse on remote and hybrid teaching, encouraging the intensive use in public schools of platforms belonging to powerful private groups known by the acronym GAFAM (*Google, Apple, Facebook, Amazon, and Microsoft*). According to Barreto (2021), these companies are considered and referred to in the literature on digital platforms as *the “big five”*. Even outside Brazil, according to Flores *et al.* (2021, p. 11), "online platforms such as Zoom, Microsoft Teams, Google Classroom, Moodle (96.9%), and email (88.7%) are the most widely used alternatives for distance learning".

In the study conducted by Dughera and Bordignon (2023) in Argentina on the changes in teaching work caused by the pandemic and the introduction of DICT, it was found that:

[...] the pandemic led most teachers to become information workers through the production of digital goods, the use of platforms for pedagogical mediation, and the automation of certain tasks. This transformation is closely linked to a series of changes in teaching work: working hours, classroom management, and health problems (Dughera; Bordignon, 2023, p. 285, our translation).⁴

Optimistic perceptions in this scenario of DICT insertion and adaptation to platforms in the daily routine of the educational environment and pedagogical practice are also highlighted. Possolli and Fleury (2021, p. 17) commented that these changes during the ERE came to "encourage and transform continuous professional learning, aiming at the development of skills by teachers for the transformation of the teaching-learning process".

Vieira *et al.* (2023) point out that policies that encourage the adoption of digital platforms in education can lead to a reduction in the role of the educational teacher. Terms such as mediator, facilitator, tutor, among others, are adopted, always seeking the performativity of work, defining in this model of neoliberal teaching work dynamics the term "neoprofessor". This scenario of the relationship between technology as a partial technological replacement, in which the teacher is relegated to a secondary role, is also pointed out by Barreto (2021, p. 10), although it is "[...]" less visible than the first, it

⁴ [...] la pandemia condujo a que gran parte de los docentes se conviertan en trabajadores informacionales a partir de la producción de bienes digitales, el uso de plataformas para la mediación pedagógica y la automatización de ciertas tareas. Esta transformación se configura en diálogo estrecho con una serie de cambios en el trabajo docente: tiempo de trabajo, gestión del aula y malestar en la salud. (Dughera; Bordignon, 2023, p. 285)



completes the strategy of removing the teacher from the entire teaching work process, notably with regard to planning and evaluation".

Barreto (2021) comments on statements that emphasize the challenge of creating a "federated network" with collaborative solutions developed by educational institutions to break with the current submission to the terms of access and consent on which the licenses for use of the platforms offered by the private sector are based. This vision seeks to develop platforms that break with the business logic in determining what is given to think about in educational institutions.

Regarding the concept of business logic applied in educational institutions, Santos and Schroeder (2022, p. 78) emphasize that "[...] the reforms implemented largely reiterate ideals of productivity, quality, efficiency, and competition, which are translated into curricula guided by the pedagogy of skills and pedagogical practices of a technical and professional nature".

Schaffrath and Madalozzo (2021), who address pedagogical practice and teacher training in remote environments, emphasize an optimistic view of the integration of DICTs. First, they highlight that these tools should not be seen only as challenges for a specific moment, such as that experienced during the pandemic, but rather as an opportunity for collective construction between teachers and students. They also defend the existence of different ways in which academic knowledge can be socialized and that these technologies present in remote teaching can be facilitators. Finally, they discuss the concept of "virtual presence" and defend it as [...] "a political act of saying no to pedagogical immobility in times of exception". They conclude "that there is nothing more pedagogically correct than the act of resisting didactically and expanding the ways in which people meet in their process of training for the future" (2021, p. 180).

Rethinking the teacher training process given the incorporation of DICT into the school environment in the post-pandemic scenario, Junges, Maidel, and Castilho (2022, p. 13) suggest that continuing education processes "[...] should contemplate the appropriation of new teaching practices, privileging innovative strategies and methodologies that meet the needs of the educational context and stimulate more creative, dynamic, and reflective pedagogy". The authors also highlight the importance of those involved in the educational process having access to a wide range of technological and digital resources, enabling personal, educational, and social transformation.

Regarding the teacher-student relationship mediated by DICT in distance learning situations, "the role of the teacher continues to be that of mediator of the teaching-learning process, but with different characteristics," according to Salvago and Paniago (2021, p. 1). In this environment, according to the authors, "interaction with distance learning students



brings new challenges to distance teaching practice, making it necessary to become familiar with virtual presence, using new strategies for interacting with students".

Another relevant aspect to be discussed in the teacher training process, related to the work environment to which they will be subjected, is the need for a full understanding of the practices and concepts that differentiate Distance Learning and Face-to-Face Teaching. Barreto (2021) points out that distance learning and face-to-face teaching treated as "modalities" do not address issues that go beyond the *modus operandi*, as other concepts of teaching, learning, and training are at stake. "Hence the importance of the notion of technological substitution, with always emphasizing that it is not simply a matter of replacing the teacher, but the entire teaching work process (Barreto, 2021, p. 10)".

Criticisms of the current way in which platforms are being used include the encouragement of innovation for innovation's sake, with pedagogical work taking a back seat and, above all, this work being handed over to business interests. Barreto (2021, p. 13) points out that "teachers are caught between platforms and applications that ultimately suggest that their training is not suited to the "new educational reality".

The advancement of technology, digital platforms, and Artificial Intelligence has been debated in the context of replacing teaching work. We cannot ignore that the teaching profession is directly related to a practice based on the teacher-student relationship within a social environment. No matter how much DICTs evolve, they cannot replace this social interaction necessary for individual development. Lima and Kochhann (2023, p. 9) emphasize that these technologies are intended to assist and not replace teaching work, as has been preached, but they highlight the concern with the use of Artificial Intelligence "[...] to the extent that software and digital platforms take on the functionality of teaching and perhaps replace the function of teaching. This is a context that poses new and greater challenges for teachers and has repercussions on how they experience their profession and face their daily professional lives". Finally, Lima and Kochhann (2023, p. 10) state that "In the information age, technology adds a lot to education, as it can make classes more dynamic and provide more practical experiences. It also promotes interdisciplinarity, content sharing, and interaction," reinforcing the role of technology as an aid and not as a substitute for the teaching profession, which should be used to improve results.

The introduction of platformization in the educational environment has been normalized as the "new normal," a view shared by Barreto (2021). In the study developed by Flores *et al.* (2021, p. 17), some concerns are raised that the massification of platformization may bring to the educational environment, since "[...] the diversification of platforms 'increases confusion' and that they should not "literally transpose face-to-face teaching to distance learning".



This concern with the massification of education and the use of digital platforms as a tool for repeating knowledge is also brought up by Oliveira, Pino, and Accorssi (2021, p. 13), who state that: "Within digital platforms, teachers have become mere content creators". This view can also be seen as a way of modifying and reducing the meaning and importance of teaching work. "There is no longer any talk of teaching materials in favor of 'learning objects,' promoting a kind of celebration of the emptying of the teaching work process (Barreto, 2021, p. 10)".

A negative aspect of the future of the teaching profession is also brought to light, in which, given the introduction of platforms, teachers end up subjecting themselves to worrying situations in their working conditions, given the productive restructuring driven by digital technologies. Oliveira, Pino, and Accorssi (2021, p. 15) raise concerns about the Uberization of teaching work, highlighting that professionals' income is one of the main factors. In an uberized scenario, where teachers act as service providers via platforms, a fixed income is not a reality. Thus, "Uncertainties can lead these professionals to a state of alienation, in which they no longer see themselves as belonging to a class, and thus marginalize themselves from union representation".

The term *uberization* refers to a process of individualization and invisibilization of labor relations, which take on the appearance of "service provision", obliterating wage-earning and exploitative relationships, as described by Antunes (2020). This perspective of the *uberization* of work, which has been widely discussed in different areas of activity, changing workers' routines and, in fact, redefining professions, is a situation that has historically been experienced in each cycle of industrial revolutions.

In this concern with labor relations in this platform-based environment, which leads to a discourse of precariousness in the profession, Cavazzani, Santos, and Lopes (2024, p. 225) present the panorama of the social devaluation of the teaching profession as a historical reality. They emphasize that they currently see a discouragement of the teaching profession, amplified by the platformization of work, considering that "If, in formal teaching environments, teachers are increasingly framed as service providers in a deeply commercialized system, the situation of teachers on platforms is even worse.

Junior and Cardoso (2023, p. 12) express concern about this scenario, considering that "regardless of the change in production processes, it is consistent with the requirement for a minimum level of protection for workers, with a view to caution and prevention of the negative psychosocial impacts experienced today and which extend their dictates to the most diverse sectors of society".



During the pandemic, it was necessary to promote student learning using digital platforms, a promotion intensified by neoliberal logic, with teachers feeling directly responsible for taking on all the demands necessary for the process, seeking solutions on their own, and assuming the role of managers of the educational process. Pesce, Voigt, and Cordeiro (2023, p. 16) state that teachers' working conditions during the pandemic affected their subjectivity, with the dimensions of private life overlapping those of working life. The boundaries between the physical and temporal limits of teachers' work and their private lives were blurred to such an extent that teachers felt responsible for the educational process. By naturalizing these demands, they experienced moments of excessive fatigue and physical and mental illness.

On the issue of educational reforms and the risks of regulating, monitoring, and controlling teachers' work using digital platforms, Barbosa and Alves (2023, p.1) point out that these "converge and favor, above all, the disqualification of teaching work and the expansion of privatization, with consequent educational losses that signal damaged training and the worsening of educational inequalities".

In a more direct criticism of neoliberal policies and the commodification of education and its interconnections with teaching work and the future of education in the face of platformization, which is a moment of capital, Leher (2022, p. 2) raises the following concerns: "the destruction of jobs regulated by labor laws; the expropriation of teachers' knowledge; the corrosion of the didactic-scientific autonomy of teachers and schools; and the intensification of the exploitation of teaching work". For Leher (2022, p. 2), "The movement of capital in the educational sphere aims to subordinate curricular knowledge to the vague competencies advocated by Private Apparatuses of Corporate Hegemony (APHe) propagated by the technological platforms of educational corporations".

Regarding the vision of public education policies, which is often detached from the reality of educational environments, and the advancement of the private sector that encourages the platformization of education, according to Mallmann (2023, p. 542), demand the need to examine "data from research reports and school censuses that highlight the hegemonic presence of software and platforms belonging to *big tech companies* in public education. arguing "that the distributive measures of equipment and disordered training programs accentuate the instrumental and technical nature," thus not promoting "educational innovation for the contextualized resolution of the historical challenges of Brazilian education, such as dropout rates, grade repetition, age-grade gaps, devaluation, and precariousness of teaching work (Mallmann, 2023, p. 542).



Alberti, Machado, and Feiges (2023) highlight that educational policies configured in results management end up legitimizing centralized interventions, reducing teacher autonomy based on the use of platforms. Another aspect pointed out negatively in this rise of DICTs in everyday school life is the concern with the supervision and control of teaching work. For Mello, Santos, and Pereira (2022, p. 912): “The insertion of digital technologies into everyday school life represented the expansion of the inclusion of management tools for controlling teaching activities,” from their training to the “monitoring of the results of indicators imposed on school networks and units”. They recognize this process as neo-technicist, consolidating “neoliberal reasoning”.

Considering the platformization of teaching work and the continuous growth of DICTs in the educational environment, there is a favorable trend toward *online* teaching, in which learning takes place through electronic means (*e-learning*), which is a new form of teaching work. However, *online* work is generating a certain degree of stress among teachers who are unable to control technological situations and the pressure exerted by the environment in relation to the use of academic platforms (Sánchez *et al.*, 2022, p. 86, our translation)⁵.

Conclusions

The evolutionary process of technologies, which involves all types of professions, is something natural in the course of human history, reconfiguring work. The teaching profession would not be left behind in these transformation processes, since, if we think about the teaching profession throughout history, various and numerous transformations involving the insertion of technologies into its daily routine have already occurred. We have moved from the traditional blackboard and chalk, through the whiteboard and pen, to the digital whiteboard. From the traditional use of the overhead projector, we have evolved to the use of computers and data projectors. We can also mention the transformation that the internet has brought about in educational environments.

The way teachers work has changed and will continue to change. In this process, adaptations are necessary. Professionals who are more resistant to change may lose their place in the job market or be labeled as archaic by many for maintaining what are considered traditional practices. We are not opposed to developments and innovations in teaching work,

⁵ Los resultados indican la tendencia a una actitud favorable hacia el aprendizaje electrónico, considerando adoptar el aprendizaje electrónico como una forma de trabajo docente; sin embargo, el trabajo en línea está generando cierto grado de estrés en el profesorado al no poder controlar situaciones tecnológicas y la presión ejercida por sus compañeros ante el uso de las plataformas académicas. (Sánchez *et al.*, 2022, p. 86)



nor are we premature enthusiasts in favor of DICT and platform-based work as necessarily superior innovations that must therefore be used.

As for investment in DICT, the project needs to be planned and developed according to the needs of educational institutions and mediated by the professionals who will be users of these technologies: teachers and students. This model can provide solutions that are more suited to the realities of institutions, both in terms of management and the teaching-learning process; generation of local employment and income, with the teams necessary for the development of solutions and a reduction in the interference of large corporations that offer "ready-made and standardized" solutions in educational environments, promising efficiency in a business logic of education.

Articulated scenarios, in which the adoption of platforms is mediated by political and market interests, with private companies, mainly the so-called *big techs*, which are included in the educational space. Teachers are left in the background and are not even invited to participate in these discussions that directly affect their work and teaching practices. Situations are imposed, and teachers must adapt to the scenario or risk being replaced by others who accept this environment.

Treating education as a private, profit-seeking enterprise, mainly by advocating cost reduction to increase profitability, viewing teaching as a cost rather than an investment, is an attack on the process of quality education and citizen training. In this context, teachers traditionally carry out their work routine in a conflictive environment and with a wide range of tasks to be performed with scarce resources. In educational terms, treating teachers as commodities and thinking of education as a simple structure to serve economic groups represents a reduction in the professional role of teachers.

This devaluation indicates a precariousness of work. It is favored, among other factors, by public education policies, whose role should be to value education, as well as by managers of private educational institutions, who privilege market logic. These policies and managers are allied with companies in the technology sector that offer solutions that promise to solve all the problems of education in terms of the teaching-learning process, but in reality end up having negative implications for teaching work, generating work overload, demotivation, and even illness among teachers.

As highlighted, the Covid-19 pandemic has accelerated a process that was already occurring, more slowly but continuously, of inserting digital platforms into teaching work. In most cases, this insertion is designed with economic rather than pedagogical results in mind. We have a scenario of a reduction in the number of teachers in institutions and the use of teaching work as a generator of content. In this scenario,



teachers, supported by the technologies available in educational institutions, are encouraged to create content that is repeated and distributed countless times, in scenarios where they often no longer have contact with the material generated, which is appropriated by the institution that promises the market quality training at low cost and at the expense of appropriating work as a means of generating more value.

The change in teaching work has also been influenced by the physical space in which professionals perform their tasks. When teachers start working from home, offering content digitally, educational institutions reduce their costs in terms of both physical spaces and maintenance costs. These costs end up being transferred to the teachers themselves. This situation of working from home, sold by those interested as something positive, causes social distancing between teachers and students, something essential in the development of students, as defended by some theories of pedagogy.

This situation blurs the boundaries between home life and working from home. The breakdown of physical boundaries in the workplace increases overload, stress, and additional work beyond the hours stipulated in the contract, making it difficult for teachers to manage and distinguish between their personal lives and professional activities in their daily lives. This results in a workload that differs from the formal working day.

From the perspective of platformization, students are seen as the main authors of their educational trajectory. Teachers, in the role of mediators, are placed in the background, with their professionalism and position abstracted in terms of the recognition and potential of their work. Without guidance and face-to-face teaching, students become aimless and end up losing their way in their educational process, unable to organize their study routine alongside the hours they usually divide between work and rest.

In distance learning courses, in many situations, students do not even have contact with the professional who developed the content being worked on and made available by educational platforms, dominated by the private market, where materials are developed by companies and not necessarily by professionals with teaching training. In this scenario, the teacher is now referred to as a tutor, mediator, and/or content creator, among other names.

Specifically regarding teaching work, platformization has meant that the traditional face-to-face classroom environment has had to be readapted to this new reality of digital platforms, generating financial and mental costs for teachers and reinforcing the fact that there was no preparation or time for this process to occur in a planned and efficient manner. The entire change process took place in a short period of time, with each teacher being solely and fully responsible for the change.



The platformization of education and teaching work has led to an increase in work, making it difficult to distinguish between the time spent on professional activities and the time dedicated to domestic life. As already highlighted, professional and domestic aspects have ended up mixing. The mental health of teachers, given the intensification of work, goes unnoticed by different social actors. Even in the educational environment, educational institutions, together with education managers, do not seem to recognize the real impact of platformization and the excessive workload that this change has brought to teachers' lives. It is private companies that profit from the platformization of education and teaching work, in line with the economic power exercised by the so-called *big tech companies*.

Finally, it is important to note that this is not an opposition to the inclusion of DICTs in teaching work, nor to the use of platforms. The implications of DICT use do not always occur as advertised. On the one hand, they can bring benefits to work and, therefore, be considered useful and necessary for the evolutionary process of education; on the other hand, depending on the manner and guidelines for their adoption, they can limit teachers' autonomy and protagonism, in addition to serving purposes that are distant or adverse to the fundamental purposes of the profession and its place in the professional development of teachers and society as a whole.

DICTs are beneficial and necessary for teaching and educational innovation if structured collectively, with the participation of all those involved in the process. Thus, clear objectives, planning, available resources, and, above all, investment in teacher training and professional development for the appropriate and critical use of DICTs in the educational environment are necessary. In this scenario, progressively dominated by DICT and platforms with increasingly expanding offerings and uses, training and clarity are valuable for understanding their place and contributions to teaching work and the teaching profession. For now, the total replacement of teachers by these technologies is not on the agenda. They can be facilitators and, as in other professions, solve and act as support in situations of repetitive and exhausting work in the teaching career, compromising decent work.

There has been a dysfunction in the insertion of these technologies, introduced in an untimely manner, favoring the advancement of the platformization of teaching work and other sectors. The lack of planning by those actually involved in the work, the professionals who perform the tasks and who should benefit (and not be punished) by technological advances, contributes to this dysfunction. Whenever innovations are based on policies that favor the interests of a few, of private companies, in the pursuit of profitability and capital growth, and do not include real benefits for workers, whom these technologies should assist, dysfunctions will occur in relation to the role of education in society.



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