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Digital Technology Transformations in Teaching Practices. An Approach to High School Instructors' Teaching Methods in Catalonia

Transformaciones de la tecnología digital en las prácticas docentes. Un acercamiento a las formas de enseñar del profesorado de secundaria en Cataluña

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Abstract

This article analyzes how digitalization is transforming teaching practices in secondary education in Catalonia. The aim is to understand the experiences and meanings that teachers attribute to the impact of digital technologies on their teaching methods and working conditions. A qualitative study was conducted using a hermeneutic-interpretive approach. Thirty teachers from different schools and subject areas were interviewed through purposive sampling, considering their experience and institutional context. The interviews were analyzed using inductive thematic analysis supported by NVivo 12 software. The findings reveal four main processes: (a) the weakening of "traditional" forms of knowledge transmission, displaced by audiovisual resources, Internet searches, and the emerging use of generative AI; (b) the dispersion of learning resources and curricular supports, associated with the abandonment of textbooks and the proliferation of poorly structured self-produced materials; (c) the reconfiguration of schoolwork, with a shift from

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knowledge toward technique and play, fostering fragmented and playful activities that risk superficial learning; and (d) the diversity of teachers' positions, ranging from resistance to critical integration of digital technologies. The study concludes that digitalization reshapes the school experience beyond the mere incorporation of devices, generating tensions between motivation and depth of learning, accessibility and coherence. It highlights the need to strengthen pedagogical reflection and teacher autonomy to guide technological integration toward educational purposes rather than technocratic logics.

Keywords: teaching; educational technology; digital education; pedagogical practice.

Resumen

Este artículo analiza cómo la digitalización está transformando las formas de enseñar del profesorado de secundaria en Cataluña. El objetivo es comprender las experiencias y significados que atribuyen al impacto de las tecnologías digitales en sus prácticas y condiciones de trabajo. Para ello, se desarrolló un estudio cualitativo con un enfoque hermenéutico-interpretativo. Mediante muestreo intencional se entrevistó a treinta docentes de diferentes centros. Las entrevistas se analizaron mediante análisis temático inductivo apoyado en el software NVivo 12. Los resultados muestran cuatro procesos principales: (a) debilitamiento de las formas "tradicionales" de transmisión del conocimiento, desplazadas por recursos audiovisuales, búsquedas en Internet y uso emergente de la IA generativa; (b) dispersión de los recursos de aprendizaje y los soportes curriculares, asociada al abandono del libro de texto y a la proliferación de materiales autoeditados poco estructurados; (c) reconfiguración del trabajo escolar, con un desplazamiento del conocimiento hacia la técnica y el juego, que favorece actividades fragmentadas y lúdicas con riesgo de superficialidad en los aprendizajes; y (d) diversidad de posicionamientos docentes, entre la resistencia y la integración crítica de lo digital. El trabajo concluye que la digitalización reconfigura la experiencia escolar más allá de la incorporación de dispositivos, introduciendo tensiones entre motivación y profundidad de los aprendizajes, accesibilidad y coherencia. El estudio subraya la necesidad de fortalecer la reflexión pedagógica y la autonomía docente para orientar la integración tecnológica al servicio de fines educativos y no de lógicas tecnocráticas.

Palabras clave: enseñanza; tecnología educativa; educación digital; práctica pedagógica.

Introduction

The incorporation of digital technology into teaching practices has profoundly transformed the educational landscape. Various institutional policies have promoted plans that place digitalization at the strategic center of pedagogical innovation, supported by discourses that advocate for digital modernization and improved educational quality (Espejo et al., 2023). In recent years, this process has been intensified by technological development and advances in digital infrastructure that are redefining the ways of teaching, learning, and inhabiting schools (Baldoví et al., 2025; Dussel, 2022). The massive provision of technological devices—tablets, laptops, and interactive whiteboards—the

widespread adoption of learning management platforms such as Moodle or Google Classroom, and the integration of digital applications and h s have been accompanied by teacher training initiatives to facilitate their adaptation to the new educational ecosystem. In this context, the INTEF Common Framework for Digital Competence in Teaching (2017) has established itself as a reference tool for guiding continuing teacher training through levels of competence and lines of professional development in the pedagogical use of technologies (Codina and Estebanell, 2023). Beyond the technical deployment, this transformation has introduced profound changes in the organization of teaching work, in the epistemological frameworks from which school knowledge is constructed, and in classroom dynamics (Williamson, 2019).

The specialized literature on educational digitization processes points to the creation of new conditions for schooling. Although this study takes a critical socio-technical perspective, it is important to note that the field of techno-pedagogical design has developed frameworks that recognize the complexity of teaching knowledge in digital contexts. The TPACK (Technological Pedagogical Content Knowledge) model, proposed by Mishra and Koehler (2006), argues that the proper integration of technology requires the articulation of teachers' disciplinary, pedagogical, and technological knowledge. Although this approach is based on assumptions that differ from those guiding our analysis, it highlights that the critical appropriation of technology by teachers also involves formative and epistemic dimensions that cannot be reduced to a merely instrumental use.

In addition to studies highlighting the potential benefits of technologies for personalizing teaching, expanding access to knowledge, and increasing students' digital skills (Area and Adell, 2021), debates have arisen around digital governance (Saura et al., 2024), teacher autonomy (Neut et al., 2024), the fragmentation of school practices in primary and secondary education (Dussel, 2022), the effects of digitization on learning (L'Ecuyer et al., 2025), the protection of the privacy of digital platform users, and the protection of the rights of children and adolescents (Raffaghelli et al., 2024; Saura et al., 2021) or the impact on educational equity (Jacovkis et al., 2024; Rivera-Vargas et al., 2023).

The process of platformization of education is not only transforming educational governance frameworks (van Dijck et al., 2018; Williamson, 2018), but is also profoundly altering the material, symbolic, and organizational conditions of teaching work (Barragán-Giraldo et al., 2024). In this digital educational ecosystem, there is a shift in the center of gravity of educational action: pedagogical principles are giving way to technocratic logics articulated around datafication, algorithmic mediation, and the collection of performance indicators (Giró and Sancho-Gil, 2021). Far from reinforcing teachers' professional autonomy, platformization tends to impose logics of standardization, automation, and surveillance (Manolev et al., 2019), shaping new forms of digital subjection in the daily practice of teaching (Al Dahdah, 2021).

In this context, digital technologies have acted as accelerators of the transformation process (Williamson et al., 2020). This forces us to critically rethink their integration into

education, not only from an instrumental perspective, but also by questioning their structural effect on teaching practices (García del Dujo et al., 2021). The platformization of education, as Decuypere et al. (2021) point out, is transforming the school experience itself. In response to this, it is not enough to incorporate new tools; it is necessary to analyze how digital technologies are redefining teaching and learning processes, altering the pedagogical dynamics and frameworks of meaning that currently guide teaching practice (Sánchez-Rojo et al., 2024).

In our research, we draw on the interpretive framework developed by Dussel and Trujillo (2018), in which digital technologies are not conceived as mere instruments, but as cultural artifacts that mediate the educational experience and shape specific modes of knowledge production. This dimension is key to understanding how technological transformations impact education. Beyond the incorporation of new tools, we are facing changes in the material conditions that are reconfiguring the educational experience. Technology is not neutral, but rather organizes practices and meanings, shaping a "digital grammar" that ultimately organizes—as García del Dujo et al. (2021, p. 13) point out—the ways of teaching, studying, and attending. This perspective highlights how technological devices not only mediate educational processes, but also profoundly organize the conditions of possibility for teaching work. In this context, the role of teachers cannot be reduced to that of mere technical executors, but must be recognized as agents capable of reinterpreting or reorienting these transformations (Ferrante and González, 2023).

This study aims to analyze the transformations in teaching practice in the context of the digitization of secondary education in Catalonia. Our objective is to investigate the experiences, discourses, and meanings that teachers attribute to the impact of digitization processes on their teaching methods. In doing so, we seek to contribute to the pedagogical debate on digitization from a perspective focused on the transformations that are currently redefining the school experience and teaching work.

Methodology

The research adopts a qualitative methodological approach, based on a hermeneutic-interpretative approach that focuses on understanding the experiences of those who are part of social phenomena (Ponce et al., 2022). From this perspective, understanding is not simply describing, but interpreting the meanings that subjects construct, in a process mediated by language, history, and the interpreter's horizon (Gadamer, 1993). As Denzin and Lincoln (2018) point out, qualitative research seeks to capture how people construct meaning in specific contexts, recognizing the multiplicity of realities and the centrality of their experience.

Participants

The sample consisted of thirty secondary school teachers from different educational centers in Catalonia. In order to ensure the heterogeneity of the participants and the types of educational centers, the teachers were selected through purposive sampling (Patton, 2015). This made it possible to access teachers with profiles relevant to the study, ensuring that the perspectives gathered captured a wide variety of contexts. The selection criteria took into account both the individual characteristics of the teachers and the contextual dimensions of the schools. In the first case, years of teaching experience, gender, and subject area were considered. In terms of schools, ownership (public or charter), institutional size (measured by the number of classes and students enrolled), and level of educational complexity, estimated based on socioeconomic indicators, were taken into account. These criteria made it possible to form a diverse sample, suitable for exploring different realities within the Catalan education system.

Table 1

Participants distributed according to teacher selection criteria and contextual dimensions of the schools

Gender	Women (between 27 and 50 years old)	16	Years of experience	> 15 years	12
	Men (between 25 and 55 years old)	14		< 15 years old	18
Complexity	Standard	10	Subject area	Humanities, social sciences, and arts	17
	Intermediate	11			
	High	6		Science and technology	13
	Maximum	3			
Ownership of the center	Public	25	Size of the center	> 400 students	14
	Subsidized	5		< 400 students	16

Strategies and procedure

The study was based on semi-structured interviews (Flick, 2015), given their ability to delve deeper into the participants' experiences (Kvale, 2011). The interviews were structured around different thematic areas. In this article, the analysis focuses on the transformations in teaching practices in the context of educational digitization, with the aim of gaining insight into the uses of digital media in the classroom and changes in teaching methodologies.

With regard to ethical considerations, the research followed the guidelines of the *British Educational Research Association* (BERA, 2019). First, informed consent was obtained from the participants. The confidentiality and anonymity of the data were guaranteed. Spanish data protection regulations (LOPD and RGPD) were followed, ensuring that the collection, storage, and processing of information complied with legal and ethical standards.

Analysis of the information

A thematic analysis approach was chosen (Clarke and Braun, 2016), following an inductive process in which emerging patterns in the teachers' discourses were identified. Given that these perceptions are mediated by beliefs and values, the analysis incorporates elements of a phenomenological approach, aimed at understanding the experience lived by the participants. The analysis was carried out in six phases: (1) familiarization with the data; (2) generation of initial codes; (3) search for themes, grouping the codes; (4) review of the themes; (5) definition of the themes; and (6) preparation of the report, integrating the themes into an analytical narrative that would allow for an accurate representation of the teachers' perspectives.

To support the systematic processing of the data, NVivo 12.0 software was used, which facilitated the organization, coding, and structured exploration of the information collected (Bazeley and Jackson, 2013).

Results

The results of our research indicate that the incorporation of digital technology in classrooms is leading to new conditions for schooling. First, we address the presence and uses of digital technology in the classroom by teachers. Second, we show the impact that digitization has had on teaching methods, taking into account three fundamental aspects: the transmission of knowledge, curricular supports, and the characteristics of school work. Table 2 shows the coding of the results and their frequency.

Table 2

Coding of results into categories, subcategories, and frequency

Category	Subcategories	Frequency
Weakening of knowledge transfer	Reduced centrality of the teacher Fragmentation of knowledge	High
Dispersion of resources and curriculum support	Multiplicity of sources Disorder in materials	Medium
Displacement of knowledge by technology and games	Primacy of play Role of technology versus content	High

Uses and positions regarding digital technology	Initial rejection Critical integration	Medium

Presence and uses of digital technology in classrooms

Beyond the educational approach of schools in relation to educational digitization, teachers say they have a certain degree of autonomy in deciding how to use digital tools when teaching their subjects. While a significant number of teachers use them regularly both to teach classes and to propose activities, other teachers say they use them much more sparingly. At one extreme, we find teachers who use digital devices and materials as central elements of their teaching practice. They see them as teaching aids that allow them to "convey content in different formats, not just orally" (E2). In addition, they attribute to them the ability to "capture the attention" of students and even to "adapt to their needs" (E16). At the other end of the spectrum, we find teachers who refuse to use digital technologies because they believe that "they are contributing to a decline in academic standards" (E9). Some point out that "they are not useful as learning tools" (E7) and argue that it is appropriate to "continue with traditional content and methodologies because they are still effective, rather than innovative" (E15).

> *A lot of learning is being lost. It is obvious, and there are also studies that say that new technologies are affecting concentration and literacy skills. We see it every day in the classroom. From my point of view, we should work in the opposite direction, educating without these tools. It's very simple. Just turn off the switch*. E5

Between these two extremes, we find a wide range of positions. Of particular note are those that, without challenging educational digitization, call for the need to question its use and effects. This does not mean that technology is perceived as a problem, but rather that it recognizes the need to ask questions about how it is incorporated into the field of education, especially when "there is a feeling that it has been done hastily, without deep pedagogical reflection or rigorous evaluation of its impact" (E12). Hence the need raised by teachers to incorporate digital tools into the classroom "in a restricted manner and for educational purposes" (E16). From these positions, there is a call for a more conscious and critical use of digital technologies, avoiding their implementation solely in response to institutional pressures or interests outside the educational sphere. In fact, we find teachers who, although they joined the trend toward digitalization a few years ago, are now returning—in view of the results—to analog forms of work such as "the use of markers and blackboards, explaining things and proposing exercises that students must do in class without using computers" (E16), as well as a return to "oral communication, copying, and writing by hand" (E19). In their opinion, these methods allow students to better consolidate the content. One teacher explained it in the following terms:

> *I have forbidden them from taking notes on the computer. I tell them that they have to learn to write by hand, that they can't spend all day typing. It's a skill they shouldn't lose. I'm not the only one who does this. The students have computers, but you choose whether or not they have to use them. What is clear is that you can teach without all that*. E12

Some teachers ask their students not to work with computers. They cite reasons mainly related to the loss of attention that having screens open in class entails, but also to prevent them from using spell checkers, translators, or artificial intelligence tools that, in their view, hinder the work they should be doing themselves.

> *When they work with computers, they make mistakes, but they don't realize it because the program corrects them. They are in the habit of opening the spell checker, ChatGPT. Although it has advantages, it also has disadvantages, because it often prevents them from learning for themselves. These tools end up doing the work, not them. I think it's important for them to use books, paper, and pen. [...] I like digital technology and there are useful resources, but I often prefer them to do it on paper because they will assimilate the learning better*. E17

In general, we observe that teachers' use of digital technology in the classroom responds to a variety of approaches and positions ranging from enthusiastic integration to explicit resistance, including intermediate proposals that seek to "balance the digital and the analog" (E25). This diversity not only reveals the autonomy that many teachers have, but also the complexity involved in incorporating technologies into educational contexts. Far from being a homogeneous implementation, decisions about the use of digital devices are influenced by pedagogical assessments, previous experiences, expectations about learning, and a critical evaluation of the observed effects. What emerges strongly from the accounts is "the need for digitization not to be understood as an obligation or an end in itself, but as a tool that must be at the service of educational objectives" (E8).

Transformations in teaching methods

The incorporation of digital media is transforming the pedagogical practices that have historically characterized schools, especially with regard to the "traditional" school model of conceiving, constructing, and transmitting knowledge, and its corresponding teaching materials and classroom activities. The most relevant findings are presented below.

Weakening of knowledge transmission

One of the teachers described the changes in the ways of teaching and transmitting knowledge in a very graphic way: "We have moved to a more visual format. [...] Now we project many images and videos. In Art Theory, they enjoy it very much because we can

project images with a very high degree of quality, something that a book cannot achieve" (E21). This "more visual" format sometimes shifts a significant part of knowledge transmission to the showing of videos in class, which, as this philosophy teacher states, are credited with the ability to "hook" students and facilitate "classroom management."

> *If someone who is talented at explaining things and is also very knowledgeable in their field has made a video, it will always be much more engaging than if I explain it myself. Because, at the end of the day, I might be on top form one day, but when I've already explained it three times, or it's the first time, or I have a headache, and I also have to manage the classroom, it makes everything much more complicated. If there is a video with a speech that has already been edited and I am only responsible for managing the classroom, things flow more easily*. E3

The impact of digital culture has made it possible to renew teaching materials. New formats are being incorporated, but in many cases this is done in a fragmented way and without a clear thread. For many teachers, this diversity does not facilitate a coherent and orderly deployment of the subject matter. In some cases, the act of transmission is replaced by what one teacher defines as "a poti-poti," referring to a series of activities that teachers carry out, which are apparently more playful than academic, in an attempt to capture the interest of the students: "It's difficult to teach because you have to be very aware of constantly varying the activities. You have to do a poti-poti, a little bit of everything. [...] You are forced to constantly vary, always coming up with different activities to get their attention." E7

This type of activity, which is associated with dynamism as a way of making classes more attractive, ends up fragmenting attention, hindering concentration, and impoverishing the cognitive processes necessary for deep learning. Activities such as prolonged reading or tasks that require a certain amount of dedication are perceived as tedious. There is, therefore, a tension between the time required for education and digital immediacy. "They are not used to slow processes. Immediacy prevents them from integrating knowledge into their memory. (...) The economy of attention is limited because times are fast, and that does not lead to solid learning" (E13).

All of this results in a "decrease in their ability to concentrate" (E19). What teachers observe is that "students tend to disconnect, engaging in other activities when they do not receive immediate stimuli" (E6). Teaching is conditioned by this fragmented attention in the classroom, which the introduction of digital technologies has only amplified. "Before, digital distractions were kept out of the classroom, but now, by integrating them into the learning space, their adverse effects are exacerbated" (E6).

In addition, the transmission of knowledge that was previously carried out by teachers has been replaced by the use of the Internet as the main source of knowledge and training. This is particularly true of indiscriminate Google searches, but also the use of generative AI, which, in their opinion, has been an educational watershed.

> *What is happening is that we are leaving certain aspects of education in the hands of the Internet. [...] No matter how much I tell them not to search the Internet, they do it anyway. They have a computer, and instead of looking in a book, they look on Google because it's easier. They type in a question and get an immediate answer. And with ChatGPT, it's even more extreme. This is happening and no one is addressing it. [...] No one is concerned about the searches they do, that information that has not been reviewed or supervised is accepted as valid, or that children are trusted to search for information without anyone having taught them how to do so*. E5

ChatGPT appears to be "the main problem we teachers face today" (E18). The use of AI, which is also being promoted by the education administration itself, is viewed with suspicion by many teachers. Its emergence has only exacerbated a relationship with knowledge that was already marked by the superficiality of Google searches: "Now the resource is to ask ChatGPT everything (...). Technologies leave me a little unprotected, because when I ask them to do a task, they all do it with Chat" (E17). Many teachers express concern that "these tools allow students to complete tasks without understanding what they are doing, avoiding the cognitive effort involved in researching, writing, or arguing" (E9), while promoting a logic of thought automation that erodes the pedagogical value of error, process, and sustained effort. What is at stake, therefore, is the very meaning of education as a formative practice, as well as the figure of the teacher as a mediator of knowledge "in the face of the logic of immediate and unaccompanied responses" (E5).

Dispersion of learning resources and curricular supports

The expansion of technology in schools is also leading to a decisive break with pedagogical models that have h ly relied on textbooks as a fundamental support for teaching practice. Teachers cite two main reasons for abandoning books in general, and textbooks in particular: on the one hand, "they are not adaptable to students" (E2); on the other, they are described as "unreadable" (E3), "rigid" (E29) or "anachronistic" (E20). A significant number of teachers say they have chosen to develop their own materials based on what they find on the Internet. In this self-publishing, the choice of content is left to the discretion of the teachers.

This has led to a dispersion of materials in digital documents, platforms, web pages, photocopies, etc., which "does not contribute to establishing a structured framework from which to present the content and offer an overview of the subjects" (E10). Added to this

is the fact that, as noted above, the types of activities carried out are predominantly quick searches for information and fragmented tasks. The result is that "students end up working with documentary sources that, in many cases, have not undergone any didactic treatment or editorial supervision" (E5). No teacher, however good they may be, can replace the exhaustive editorial review process that books undergo. In this regard, one teacher points out that "the textbook is necessary and essential [...] because the exercises and content are of high quality" (E15). On the other hand, without a book, the logical and progressive sequence of content is lost, making it difficult to construct even minimally organized knowledge, which has negative consequences not only for teaching practice but also for the students' own learning process. Ultimately, "the textbook is a tool that allows the student's academic journey to be organized, as well as guiding the teacher" (E6).

Textbooks not only offer a coherent, organized, and sequential presentation of a subject matter that helps teachers follow a progressive and consistent structure. They also provide "general knowledge and common educational foundations that compulsory education cannot forego if it wants to continue to guarantee education for all" (E9). The warning given to us by teachers who work in schools that have switched to a digital model is that "books have been eliminated too lightly" (E6). An essential form of learning such as reading has been replaced by practices that, although they appear to be more attractive, ultimately lead to a "dispersion of content and activities" (E7) and, above all, to the loss of a clear frame of reference. All this in a context in which "there is a strong rejection of books as objects of knowledge, even a rejection of reading as a source of pleasure; that is why it also generates so much rejection among students" (E19).

Characteristics of school work in high school: displacement of knowledge by technology and games

For many teachers, the incorporation of digital media places knowledge the background by emphasizing the utilitarian dimension of education. Having technologies available allows for more practical activities: "starting with practice and then reflecting on what we are learning and what it is for, and not the other way around, as we did before, when we started with theory and then practiced. Now we practice, and then we see what we need from theory" (E3). In this sense, technologies reinforce the competency-based approach and, in turn, establish a new hierarchy among types of knowledge, to the point of often placing technical knowledge above disciplinary knowledge. A significant number of language and literature teachers say, for example, that they spend a considerable amount of time teaching "how to format digital texts, create automatic indexes, or make PowerPoint presentations" (E1).

At the same time, one of the tensions most often pointed out by teachers has to do with the risk that the playful and technical component associated with these tools will shift the focus away from academic content. There is often a dilemma between creating enjoyable experiences and ensuring meaningful learning. Although some teachers value

the motivation generated by these activities, it is recognized that, in many cases, the use of digital dynamics is limited to a gaming experience without students retaining the knowledge covered.

> *Sometimes you ask yourself: what do I prefer, that they have fun or that they learn? The thing is, I also have a great time doing these activities and watching them play [...]. But, of course, there are times when they see everything as a game and don't remember what we've worked on*. E17

These types of observations point to an underlying pedagogical concern: the superficiality with which content is addressed when technological tools become an end in themselves rather than a means to reinforce learning. For this reason, some teachers are looking for ways to reorient these practices to give greater centrality to content, incorporating activities that maintain a certain level of interest without sacrificing the depth of schoolwork. In this context, games and technology are potentially valuable elements, but their use requires careful didactic planning that allows us to go beyond the immediate experience.

> *The motivation to use a computer will always be higher than working in a notebook, but that is a bit misleading. You cannot believe that, through the motivation produced by proposing activities as if they were a video game, you will generate a learning process equal to that produced by reading a book or doing mathematical operations*. E13

Transforming classrooms into predominantly playful environments can, in the opinion of some teachers, create false expectations in students, who may associate learning with engaging in entertaining activities. Some teachers comment that "students constantly ask us to do Kahoots" (E7). Although gamification can be a useful tool at specific times, its excessive or poorly designed application runs the risk of reducing the perception of the classroom as a serious learning space, "displacing deeper pedagogical objectives in favor of playful dynamics" (E10). The following testimony warns of the need to prevent play from becoming an end in itself:

> *Making everything too playful wastes their time. [...] Certain platforms are used as if they were a game (for class groups, scores, prizes, etc.). In the end, they cannot distinguish between Game of Thrones and the Germanic era or the Middle Ages*. E2

Overall, the testimonies analyzed show a shared concern about the risk that technology and games, when they become central to educational activity, end up displacing academic content and emptying teaching practices of meaning. Far from rejecting the use of digital resources or playful dynamics, teachers warn of the need to use them with techno-pedagogical criteria tailored to each subject and teaching style, "avoiding momentary motivation taking precedence over what students should learn"

(E9). The main objections are not so much about whether or not to integrate these tools, but rather how to do so without diluting the educational objectives. The key, according to the teachers' accounts, lies in "finding a balance that allows us to harness the potential of digital technology without sacrificing the intellectual demands that education must guarantee" (E8).

Discussion

The results of this research allow us to place the analysis of educational digitization beyond its instrumental dimension. Far from being merely a change in the tools used in teaching, the findings show that the digitization process is profoundly reshaping the conditions of teaching work and the forms that teaching currently takes. As anticipated in the theoretical framework, digitization brings with it a series of ideological, organizational, and pedagogical assumptions that need to be problematized (Dussel and Trujillo, 2018; Espejo et al., 2023).

First, the majority of teachers point out that the implementation of digital policies has been rushed and disconnected from the needs of the classroom. This aspect coincides with previous research that points out how educational innovation processes tend to develop without the effective participation of school agents (Jacovkis et al., 2024; Rivera-Vargas et al., 2023). The lack of rigorous pedagogical debate has led to a use of technology that in many cases appears more like an obligation than an informed choice. This imposition generates resistance, but also forms of reinterpretation, which reinforces the idea that teachers are not passive recipients of technological policies, but active agents who negotiate and dispute their meanings (Ferrante and González, 2023).

Secondly, the results show that digitization has brought about significant changes in the logic of knowledge transmission. The centrality of audiovisual resources, platforms, and fragmentary content has displaced traditional forms of teaching—the teacher's lesson, the use of textbooks, or prolonged work with written content. This trend, however, does not always translate into improvements in learning. On the contrary, many teachers note a loss of depth in cognitive processes, difficulties in sustained attention, and an excessive dependence on digital tools that operate under the logic of immediacy. These empirical observations are in line with studies that warn of the risks of superficial pedagogy associated with the indiscriminate use of digital technologies (Dussel, 2022; L'Ecuyer et al., 2025).

In this sense, one of the contributions of the study is to show how the introduction of digital devices has not been accompanied by a structural reflection on the most appropriate times, supports, and methodologies to promote learning. The replacement of textbooks with scattered and unstructured resources in digital formats, together with the fragmentation of activities, has weakened—according to the teachers interviewed—the possibility of constructing a coherent pedagogical thread. This trend points to a central tension in the current process of educational transformation: the contrast between accessibility and depth, between dynamism and structure, between immediate

motivation and sustained intellectual effort.

In turn, these findings can be interpreted in light of the TPACK model (Mishra and Koehler, 2006). The results show that, although teachers have basic technological skills, the incorporation of digital tools is not necessarily integrated into a pedagogical analysis and connected to the curriculum content. This lack of integration partly explains the fragmentation of resources and the superficiality of some learning pointed out by teachers. From this perspective, the results reinforce the need to promote training processes that strengthen teachers' techno-pedagogical knowledge, preventing digitization from being reduced to the instrumental use of devices and platforms.

Thirdly, the findings reveal that, although teachers recognize the motivational potential of some digital tools, they also express concern about a progressive trivialization of school work. When the playful appeal takes precedence over content, there is a risk that educational requirements will be weakened and educational goals will be blurred. This concern is linked to studies that question the shift towards schooling focused on superficial motivation and user experience, regardless of substantive pedagogical criteria (Ferrante and Dussel, 2022; Masschelein, 2024).

Likewise, one of the most pressing emerging issues is the use of generative artificial intelligence, especially tools such as ChatGPT. Teachers agree that these types of technologies pose new challenges for teaching practice: they automate school tasks, displace cognitive effort, reduce the pedagogical role of error, and relegate the process and pedagogical mediation. This situation highlights one of the paradoxes of digitization: while it promises personalized learning, it weakens the material and symbolic conditions for that learning to be meaningful (Habib et al., 2024).

From a more structural perspective, the study allows for a critical discussion of the implications of the platformization of education. As various authors point out (Barragán-Giraldo et al., 2024; Díez-Gutiérrez, 2022; van Dijck et al., 2018; Williamson, 2019), the growing dominance of platforms managed by large technology corporations is reconfiguring the frameworks of educational governance. This phenomenon has direct effects on teaching work: it introduces logics of standardization, measurement, and control that can undermine professional autonomy and transform the conditions of possibility for pedagogical practice. Our results show how these transformations are not abstract, but are experienced in the classroom, in the preparation of materials, in relationships with students, in the planning of activities, and in classroom management.

Finally, it should be noted that, despite tensions and difficulties, teachers do not adopt a uniform stance on digitization. The accounts collected show, rather, a diverse map of positions ranging from explicit rejection to critical incorporation, including hybrid forms that attempt to combine the digital and the analog. This diversity shows that the debate is not about accepting or rejecting technology, but rather about asking how, why, and under what conditions it is integrated into educational practice (Jacovkis et al., 2023).

In this sense, the present study reinforces the need to promote a sustained pedagogical debate on the aims of education in the digital age, beyond the technocratic frameworks that have dominated the institutional discourse on educational innovation (Barragán-Giraldo et al., 2024).

In this context, digitization cannot be implemented from a logic that substitutes educational meaning for technological efficiency. Digital policies must be at the service of a profound pedagogical reflection that places the educational needs of students and the autonomy of teachers as cultural agents at the center. As Simons and Masschelein (2022) argue, in the face of acceleration and performance, schools must continue to be spaces where other forms of experience, learning, and relationship with knowledge are safeguarded. This study provides keys to thinking about these alternatives from the perspective of those who, day after day, build pedagogical bonds in increasingly complex conditions.

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