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Digital Education Platforms and Schooling: New Challenges and Alternatives Toward Education Equity and Children's Rights

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Digital Leap in the New Mexican School since the Pandemic Lockdown: Challenges for Governance and Pedagogical Processes

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Abstract: This paper analyzes the extent to which the use of digital education platforms (DEP), which was exacerbated by the COVID-19 pandemic lockdown, has modified educational policies for digital transition in schools in the context of the last Mexican educational reform (2019), teaching-learning processes, and school-family relations. Our main hypothesis is that the digital leap, in the New Mexican School that emerged from the last educational reform, has considerably modified the methods of educational governance, the pedagogical processes in schooling, and the ways of communication between schools and families, with implications for children's rights. The objective is to identify, from the stakeholders' perspectives, the effects of the growing importance of BigTech corporations in Mexico and of the expansion of digital capitalism, which deepened as an effect of school closures due to the pandemic, and to analyze the results from the gender perspective. The research methodology is qualitative based on in-depth interviews with policymakers and a survey of 70 school principals, teachers, and families

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from the five educational regions of the country. Our main research objective is to explore the perceptions, experiences, and opinions of women and men in urban and rural environments about the changes experienced since the pandemic in terms of digital transition and to identify the benefits and constraints of using DEP in schooling contexts.
Key words: educational policy; digital governance; pandemic lockdown effects; digital education platforms; Mexican educational reform

El salto digital en la Nueva Escuela Mexicana a partir del confinamiento por pandemia: Desafíos para la gobernanza y los procesos pedagógicos

Resumen: Este trabajo analiza en qué medida el uso de plataformas educativas digitales (PED), exacerbado a partir del confinamiento por la pandemia de COVID-19, ha modificado las políticas educativas para la transición digital de las escuelas en el contexto de la última reforma educativa mexicana (2019), los procesos de enseñanza y aprendizaje, así como las relaciones entre las escuelas y las familias. Nuestra hipótesis principal es que el salto digital en la Nueva Escuela Mexicana -que emerge de la última reforma educativa- ha modificado considerablemente los métodos de la gobernanza educativa, los procesos pedagógicos en la escolarización, así como las formas de comunicación entre las escuelas y las familias, con implicaciones sobre los derechos de las infancias. El objetivo principal es identificar, desde la perspectiva de los actores involucrados, algunos de los efectos de la expansión del capitalismo digital y la creciente importancia de las corporaciones BigTech en México, exacerbados a partir del cierre de escuelas por la pandemia, con perspectiva de género. La metodología de investigación es cualitativa a partir de entrevistas semi estructuradas en profundidad a decisoras políticas y de 70 cuestionarios aplicados entre el personal directivo de las escuelas, docentes y familias de las cinco regiones educativas del país. Se trata de una aproximación exploratoria a las percepciones, experiencias y opiniones de mujeres y hombres en contextos urbanos y rurales acerca de la manera en que han experimentado los cambios a partir de la pandemia en términos de transición digital, para identificar los principales efectos del uso de las PED en contextos escolares, en clave de beneficios y limitaciones.
Palabras clave: política educativa; gobernanza digital; efectos de la pandemia; plataformas educativas digitales; reforma educativa mexicana

O salto digital na Nova Escola Mexicana após o confinamento pela pandemia: Desafios para governança e processos pedagógicos

Resumo: Este documento analisa até que ponto a utilização de plataformas de educação digital (PED) exacerbada pelas medidas de confinamento durante a pandemia de COVID-19 modificou as políticas educacionais para a transição digital nas escolas no contexto da última reforma educacional mexicana (2019), os processos de ensino e aprendizagem, bem como as relações entre escolas e famílias.. A nossa principal hipótese é que o salto digital na Nova Escola Mexicana - que emerge da última reforma educacional - modificou consideravelmente os métodos de governança educativa, os processos pedagógicos na escolarização, bem como as formas de comunicação entre as escolas e as famílias, com implicações nos direitos das crianças. O objetivo principal é identificar, na perspectiva dos atores envolvidos, alguns dos efeitos da expansão do capitalismo digital e da importância crescente das empresas BigTech no México, que aprofundou o efeito de encerramento de escolas devido à pandemia, com perspectiva de gênero. A metodologia de investigação é qualitativa com base em entrevistas semiestruturadas em profundidade com tomadoras de decisão e 70 questionários aplicados a gestores escolares, professores e famílias nas cinco regiões educacionais do país. Esta é uma abordagem exploratória às percepções, experiências e opiniões de mulheres e homens em contextos urbanos e rurais sobre a forma como vivenciaram as mudanças desde a pandemia em termos de transição digital, para identificar os principais efeitos da utilização do PED em contextos escolares, em termos de benefícios e limitações.

Palavras-chave: política educacional; governança digital; efeitos da pandemia; plataformas educacionais digitais; reforma educacional mexicana

Introduction: Digitalization and the New Governance in Education

In recent decades, similar educational policies have been developed in many educational systems around the world, which have been conceptualized as global educational reforms (Verger et al., 2019). One result of such reforms has been a significant transformation in the methods of educational governance, characterized by the inclusion of a greater number of actors who build complex relationships with each other, processes that have caused a gradual displacement of the vertical, government-centered logic of decision-making by a heterarchical logic in education.

According to Grimaldi (2011), heterarchy refers to an organization of policy production and enactment that is the product of different forms of coordination among actors with similar activities, in which horizontal and hierarchical relationships overlap. In this productive form of policy, different actors such as the State, the market, social organizations, etc., are integrated. This integration favors the creation of public policy networks, as well as various forms of public-private partnerships. This trend has also encompassed the processes of digital transformation of educational systems.

On the other hand, the development of global-level digital capitalism has generated a series of relevant changes in the educational debate over the last decade (De Rivera, 2020). Some of them respond to the development of the global education industry (GEI; Verger et al., 2016) due to the strengthening of Big Tech companies that have found in education an attractive space for offering their products and expanding their investments.

Education represents a constantly growing market that entails a permanent demand for products and services, which, according to some projections, could grow by more than 60% by 2030 (Holon IQ, 21/05/2020). In addition, the daily life in the classroom and the daily actions of students, teachers and families in the digital world represent a giant and permanent data mine that can be valorized and generate many profits (Saura, 2020).

It is possible to observe how in recent years Google, Amazon, Facebook, Apple, and Microsoft (GAFAM) have gradually made inroads into educational systems by providing software and hardware to individuals and institutions (Jarquín, 2022; Jarquín y Díez, 2023). However, there is also an important market for venture investments by startups seeking to occupy strategic spaces in the digital education market. Due to their relevance, the irruption of such companies in the educational field has been called a "colonization of education" (Kuehn, 2020).

In addition, in an increasing number of countries, teachers, students, families, and even educational administrators have begun to carry out their training and professional activities within digital ecosystems (Bleich, 2020; OECD, 2023) as users who produce information ready for management and processing, mainly by private actors. This expansion of digital technologies in education generates two specific effects: datification, understood as "the rendering as data various aspects of experience; here, various aspects of education policy, schooling, teachers' work and the life of students" (Lewis et al., 2022, p. 63), and digitalization, a concept that refers to a greater incorporation of digital technologies in education and the increasing use of digital environments to carry out tasks related to the teaching-learning processes. Since the providers of these technologies currently have a global reach and have been able to disseminate ideas and educational practices linked to particular ways of understanding education, the study of both effects should consider the global, national, and local levels, as well as the relationships between them (Lewis et al., 2022). This allows us to understand the way in which certain educational practices linked to technological uses are developed in different contexts, as well as the impact of introducing technologies into the daily life of different educational stakeholders.

The COVID pandemic lockdown has exacerbated the existing trend towards educational digitalization, and educational systems around the world were forced to take preventive measures of social distancing to mitigate the spread of the infection. In their effort to provide continuity of training activities in educational systems, authorities, bureaucracies, and teachers turned to the digital environment, to maintain contact with students and families, as well as to generate new mechanisms for educational management. The result was a massive adoption of digital tools in education and thus a millionaire increase in the number of private platform users (Valle-Vargas, 2020). These decisions were favorable for big technology companies and startups that offered their products to schools and governments in need of solutions. The educational digitalization caused by the pandemic lockdown has been linked to a structural tendency of capitalism: accumulation through technologies (Saura et al., 2022).

The coronavirus crisis across the planet led to the creation of new educational markets, particularly of those that focused on online education and on the use of digital tools (Williamson & Hogan, 2020). In Latin America, generalized school closures, which left 95% of children and adolescents out of classroom in March 2020 (UNICEF, 2020), made the GEI's educational offer a relevant option for governments concerned about the interruption of schooling. In August of that year, Google announced that more than 160 million students and educators worldwide were using its educational software. Out of this number, Latin American students accounted for over 30 million and were registered in Google's databases thanks to a series of collaborations with different political and social actors in the region (Montes de Oca, 2020).

The pandemic lockdown has also represented a turning point in Mexican education. In this context of global change, we develop an analysis that seeks to explain some of the specific effects of the digital leap on the educational policies for digital transition in schools in the context of the last Mexican educational reform (2019), considering the stakeholders' perceptions, experiences, and opinions. The objective of this analysis is to identify the effects of the growing importance of BigTech corporations in Mexico and of the expansion of digital capitalism, which deepened as an effect of pandemic-related school closures, from the agents' point of view and with a gender perspective.

The paper follows the next structure: we begin by developing a theoretical approach to digital governance in education, which we then use to analyze the digital leap in education and schooling since the pandemic lockdown in Mexico, in the context of the last educational reform. Next, we present the methodology that we have used to obtain the empirical results. We discuss these results from the stakeholders' perspective in the following order: changes in the methods of educational governance from the policy maker's perspective; changes in the pedagogical processes in schooling from the stakeholder's perspective (school principals, supervisors, educational technical advisors, teachers and families); new ways of communication between schools and families; implications of the digital leap for privacy children's rights; and finally, benefits, limitations, and challenges of the digital leap in the educational field.

Our aim is to explore the perceptions, experiences, and opinions of women and men in urban and rural environments about the changes experienced since the COVID-19 pandemic in terms of digital transition, to identify the principal effects of using DEP in schooling contexts. We conclude with a critical reflection about benefits, limitations, and challenges associated with the use of DEP, while connecting our empirical results with the theoretical framework and other studies conducted in Latin America.

Digital Governance in Education: A Theoretical Approach

The process of educational digitalization has become increasingly evident over the previous decades, particularly with the increased use of digital technology in schools, as well as the linking of educational activities with digital platforms and the introduction of activities that require the use of the Internet.

As part of this trend, Latin American education systems have been promoting digital policies in education for decades, with the aim of providing Internet connectivity to schools and students, as well as providing devices to support learning (Soletic & Kelly, 2022). However, this strive of Latin American governments towards educational digitization was made difficult by the technology access gap. In 2021, 72 million people living in rural areas in Latin America and the Caribbean did not have access to minimum quality connectivity. In 2020, 79% of the urban population had access to connectivity services, compared to 43.4% of the rural population (Ziegler & Segura, 2022), making the connectivity gap between rural and urban environments evident.

The gradual digitalization presents initial challenges regarding the organization of education systems and their governance processes in the face of the increased use of digital devices and platforms, and the consequent datification of schools, teachers, and students, derived from their incorporation into digital platforms. This is a particular scenario that is related to the vivid international debate about the governance of the sector.

The rethinking of governance in education is important given that the management and coordination of educational systems, as well as the monitoring of educational organizations and the evaluation of individuals, is increasingly mediated by digital systems, Landri (2018, 2019) argues that data, algorithms, and platforms are the new policy instruments of governance in education.

Williamson (2017) explains that as democratization advances, education policy is no longer an exclusive matter for governments and their official education departments. He explains that education has undergone a substantial change in its governance, in which

> authority over education [was] redistributed from central governments and their agencies to a much wider array of private sector and civil society organizations, including businesses, consultants, entrepreneurs, *think tanks*, policy innovation labs, charities and independent experts, many of them tangled together in networks of relationships. (p. 105)

This has constituted new forms of educational governance in the digital sphere, in which outsiders of the education sector, such as technology companies, civil organizations and philanthropic groups are increasingly emerging as relevant actors, since their technical capabilities make them important actors in the management of digital tools and in promoting their use in schools.

In the Latin American context, the discussion on educational governance in times of digitalization has not yet been fully developed. There is still no discussion regarding the advance of algorithms and the new digital governance in education (Dussel and Williams, 2023). Among other things, this responds to structural limitations of the region's educational systems, which needs to be overcome in order to propose a digital educational transformation (Ruiz, 2022).

However, in view of the changes in education systems, multilateral organizations have suggested a governance route based on the following set of strategic actions meant to adapt education systems to the challenges posed by digitalization: a) greater coordination between different levels of government; b) strengthening the ecosystem of participating actors such as networks, universities, companies, civil organizations, unions, and other institutions; c) autonomy of educational institutions and support for the training of teaching teams; and d) systematization of evidence (Soletic & Kelly, 2022). On the other hand, it has also been proposed that, in the face of the challenges generated by the pandemic, governments should improve the progressively technified governance of the sector by promoting social dialogue and strengthening their capacities as overseers of a more complex environment (UNESCO-UN, ECLAC, UNICEF, 2022).

Authors who have discussed issues related to government, power, and governance in the process of educational digitization have been greatly concerned about the intervention of

technological corporations. For example, Bonilla (2023) discusses the intervention of private actors in the provision of digital tools and the challenges this entails at the pedagogical level. Garcia and Adriao (2023) emphasize the importance that technological companies have achieved in the management of educational centers, which leads to a new process of educational privatization. Jarquín (2023) discusses the inclusion of private actors in educational governance as part of the response to the pandemic educational scenario. All these studies agree that educational digitalization in the region has been driven by private corporations and that this impulse opens the road to new forms of educational privatization. Although most studies on digital governance focus their analysis on the changes in the functions of policymakers and bureaucracy (Williamson, 2015) where private actors also participate, it is important to discuss the ways and strategies through which the incorporation of digital technology changes the behavior of leaders, teachers, students, and other users in their educational activities.

Educational digitization is not necessarily presented as a linear and decontextualized process, induced from a top-down scheme that is directly replicated in educational institutions in a homogeneous way. Once educational authorities have given the initial impetus to the use of digital technology, it is carried out in schools through a process that Ball, Maguire & Braun (2012) have called recontextualization—an appropriation of the policy at the school level, in which management staff, teachers, students and even families are involved. As we will later show, this process tends to impact in different ways the daily teaching practice, the forms of organization of schools and the educational activities of those who are enrolled in them, as well as their families.

Thus, digital governance in education should be understood in two senses (Williamson, 2015): as the structural organization that is constituted through the interaction of different groups that make up the education sector and, on the other hand, in terms of the techniques and tools that are used to intervene and generate certain changes in human action. In both dimensions, the government shares responsibilities with a series of social actors originally outside the education system, but with economic and political interests related to it. However, in such a process schools can also participate in different ways in the digital governance of education, for example, by resisting the developed policy instruments (Landri, 2018). A plethora of actors involved in the governance of the education sector have found in educational software a means to govern students individually (Williamson, 2014).

The emergence of corporate actors in the governance processes of the educational system has given rise to new forms of political networks for digital governance (Saura et al., 2022). These networks have largely developed due to the formation of public-private partnerships (PPPs) and to the intervention of heterogeneous political actors, including corporations, foundations, think tanks, etc., and have become widespread as an effect of the COVID-19 pandemic and of the alliance-making between governments and various actors interested in education (Saura, 2020).

Pandemic Lockdown in Mexico: Digital Leap in Education and Schooling

The digital leap in the Mexican educational system, understood as the massive accession of schools and educational actors to digital platforms, was carried out as a federal government strategy to guarantee the continuity of educational activities during the school closure. Although the federal government quickly developed a distance education contingency plan, the structural characteristics of an educational system sustained 87% by public funding (Secretaría de Educación Pública [SEP], 2022b) presented serious limitations to any educational program of such nature.

To put this new policy in context, it is important to point that the 2019 educational reform at the constitutional level was one of the first actions of the new National Regeneration Movement (MORENA, 2018 – 2024) government led by President Andrés Manuel López Obrador (AMLO). This reform came only six years after the previous one (enacted in 2013) and

was promoted as part of the self-styled *cuarta transformación* (fourth national transformation – 4T). It emphasized the need to design a New Mexican School (NEM), whose epistemological and pedagogical foundations were not made known until mid-2022, when the new curricular framework for basic education was publicly presented, to be implemented in the 2023-2024 school year (SEP, 2022a).

However, by 2018, only 47 Internet accesses per 100 households were registered in Mexico, and 43% of Mexican households lacked any kind of Internet connection. Only 22% of the population aged six years and older residing in rural areas were computer users. One year later, only 44.3% of households had a computer, although 92.5% had a television (Mejoredu, 2020). This trend has continued over time: in 2021, only 32% of schools reported having an Internet connection (SEP, 2022b). The lack of access to technological inputs and connectivity both at school and at home represents a great challenge to overcome.

Nevertheless, distance education and the use of digital technology as a means of maintaining educational activity were presented as indispensable to maintain the provision of public educational services during the COVID-19 pandemic lockdown. This policy decision ended up integrating the national education system into the digital sphere, thus joining the global trend—albeit uneven in its forms and intensities—of educational digitalization. This represented a further step in the recovery of global educational policies and forms of organization, a trend that has deepened since 2013 (Peraza, 2020) in educational policy areas such as evaluation, governance, and school administration. This trend of change alluded to the incorporation of technological tools in education, and the pandemic proved to be a crucial scenario for its realization.

Days after the World Health Organization (WHO) declared the coronavirus outbreak a global pandemic, the Mexican government published the so-called National Period of Healthy Distance agreement (*Jornada Nacional de Sana Distancia*) mandating the suspension of classes (DOF, 16/03/2020) as a social distancing measure to prevent the spread of infection in schools.

In response to the school closure, the Ministry of Public Education (SEP) through the General Coordination @prende.mx and the TV channel Canal Once, created a set of online and TV-based learning programs, supported by private entities such as Facebook, Microsoft and Fundación Televisa. The program was called "Learn at Home" (AC, *Aprende en Casa*) and had three versions with different characteristics that were implemented over three periods: AC I, from March to June 2020; AC II, from August to December 2020 and AC III, from January to June 2021. Table 1 presents an overview of actions carried out in each of the three CA stages.

The AC program incorporated new elements over time. It is important to remember that the digital education policy in our country has been developed through collaboration between public and private sectors. A relevant example in this regard is Enciclomedia, a federal program implemented in 2003 that sought to offer students and teachers access to knowledge using Information and Communication Technologies (ICT). The program was accompanied by a series of private technology providers (Méndez & Garduño, 2021), but the public-private partnerships that formed around its implementation did not include among their functions a joint elaboration of an education policy. The situation was radically different when the Mexican state included BigTech companies, and particularly Google, in the development of a new education program during the COVID-19 pandemic.

In the first stage of the AC program, the federal government made a series of agreements with different actors that led to the conformation of a digital governance in education (La Jornada, 2020). In that context, the government shared functions and tasks with private actors, primarily Google, later joined by other corporations, and some philanthropic organizations. This configuration of the educational system followed the global trend of incorporating private actors and philanthropic organizations into the provision of private digital tools to ensure educational continuity (Jarquín, 2023).

Table 1

Actions Carried Out as Part of the National Strategy Aprende en Casa

Aprende en Casa I (March-June 2020)	**Aprende en Casa II** (August – December 2020)	**Aprende en Casa III** (January – June 2021)
• SEP produced the first TV programs in coordination with RED Mexico, SPR and Canal Once. • Pre-existing materials donated and adapted by SEP were used. • Inclusion of the radio strategy for indigenous communities. • Delivery of workbooks through CONAFE and expansion of EDUCATEL Telephone Guidance Center services. • The Learn at Home webpage and other digital resources have been made available. • Teachers receive training for digital skills development. • *Verano divertido* consisted of content with playful, recreational and leisure activities.	• The Strategy is articulated in two components: distance education and pedagogical action for teachers. • Coverage is expanded through partnerships with private television and radio stations. • Teachers participate in the development and production of TV programs. • Support from IMER and INEA radio stations to expand radio programs to 22 indigenous languages. • CONAFE continues to deliver workbooks to areas without connectivity. • Strengthened training for teachers with emphasis on digital skills and technologies and socioemotional health.	• Continues and strengthens the educational components of Aprende en Casa II. • Combines face-to-face and distance learning for green light states. • SSA, SEP and state governments plan in coordination for the reopening of schools. • *Verano extrardinario* was aired during the school break period.

Source: Coneval (2021)

On April 21st, 2020, the then Secretary of Public Education, Esteban Moctezuma Barragán, made the official presentation of the federal government's Distance Education Strategy accompanied by Google for Education executives during a webinar that brought together more than half a million teachers (Google for Education, 2020). In essence, the initiative consisted of public-school teachers using the G Suite for Education package, and of the training programs for the educational technology areas of all the State governments of the Mexican Republic so that they could supervise and administer the educational platform (Google for Education, 2020). Additionally, the company would make the Google for Education educational package and the educational possibilities of YouTube known to the teaching staff through 25 online seminars. According to one public official, the corporation would guarantee the security of teachers' and students' data. All services were announced to be free of charge and of any kind of advertising.

The distance education strategy contemplated: a) the use of G Suite, which would improve communication between teachers and students; b) an educational content aligned with the curriculum, which would make the topics included in the curriculum available online; c) training and support, for both teachers and families through online sessions; and d) YouTube for learning, a flexible and accessible educational tool.

To ensure widespread accessibility in the use of the company's platform, the SEP "delivered more than 1 million G Suite for Education accounts for teachers and more than 18 million for students" (Montes de Oca, 2020), which was a decisive step towards the educational digitalization and datification of teachers, students, and families in the Mexican educational system. These accounts would remain active once the contingency was over.

One month before the end of the first AC phase, the federal government made a positive assessment of the program in a meeting with national business leaders. Esteban Moctezuma stated that the national education system had not been paralyzed by the pandemic, and that, once

classes were back in session, the education system would be ahead of its time. For this public official, the impulse given towards digitalization would open the door to global knowledge (SEP, 2020b). Even though this assessment was made in haste, the educational response program to the pandemic represented a great effort on the part of authorities at all levels, as well as teachers, families and different collaborators who participated in the development of curricular content and didactic materials.

As a complement to the Strategy promoted by SEP and Google, in June 2020, SEP announced a strategic partnership with Facebook and Fundación UNETE to train 1.2 million teachers in the use of Facebook for education through webinars. Teachers who opted to take such training were certified by the private foundation in the use of digital tools (SEP, 2020b). In May 2020, SEP published an official bulletin stating that the AC Program had achieved the participation of more than 937,000 teachers, principals, and supervisors in the Google Classroom platform (SEP, 2020c).

The partnership between the federal government and Google represented the construction of new forms of digital governance in education through the joint incorporation of digital tools to distance education work, the creation of digital content provided by the corporation aligned to the official curriculum, which had been developed by the federal education authority, teacher training in the educational use of platforms provided by the private sector and the extension of digital services to educational communities. This led to relevant changes in the distribution of competences between the public and private sectors with respect to educational provision tasks.

Methodology

Based on the theoretical discussion about digital governance in education, this work examines the extent to which the digital education platforms (DEP), whose use has greatly increased due to the COVID-19 pandemic lockdown, have modified pedagogical processes in the context of the last Mexican educational reform (2019), teaching-learning processes, and school-family relations.

In our theoretical discussion of the digital leap in education, we emphasized the new governance of the educational system and its two main effects: digitalization and datification. We understand digitalization as the incorporation of digital technologies in education and the increasing use of digital environments to carry out tasks related to the teaching-learning processes. Datification implied generalized use of Google applications for communication between schools and families, and this reliance on Google, a company with its own commercial interests, has potential consequences on children's rights, such as protection and privacy.

Our intention is to contrast the official pedagogical discourse (Bernstein, 1990) about digital transition in education with these effects; our methodology is inspired by the enactment theories, specifically Ball's heuristic proposal (Ball, 1993, 2015) to analyze policies as cycles, from a sociological point of view. What we add to Ball's framework is a gender perspective, as we transversally incorporate the analysis of how cis-hetero-patriarchy permeates all social dynamics, especially the differential effects of the digital leap in education on mothers.

In answer to the call for empirical research about DEP and schooling sounded by the editors of this special issue, we included in-depth semi-structured interviews with key stakeholders in our research design, and that helped us to identify challenges and alternatives to the use of BigTech from the agents' point of view. Nevertheless, we also had to adapt our research methodology opting for a qualitative exploratory approach with a national perspective, through structured questionaries with different stakeholders in the educational field, including school supervisors and principals, educational technical advisors, teachers, and families[1].

[1] For each interview, we use an anonymized identifier [I#] so we did for each questionnaire [Q#].

We constructed a qualitative significant survey sample at the national level, obtaining 70 responses from the five educational regions of the country, stablished for the SEP (Arellano, 2015), as Figure 1 shows: 19 for the western region, in the States of Nayarit (11) and Jalisco (8); 26 for the central region in Mexico City (8) and the States of Querétaro (3) and Puebla (15); 11 for the south-southeastern region in the State of Oaxaca; 10 for the northwest in the State of Nuevo León and four for the northeast in the State of Sinaloa. Fifty-eight of our responses are from public schools and 12 from private schools. In each of the four regions[2] we included rural and Indigenous schools to avoid an urban bias.

Figure 1

The Geographic Distribution of the Sample

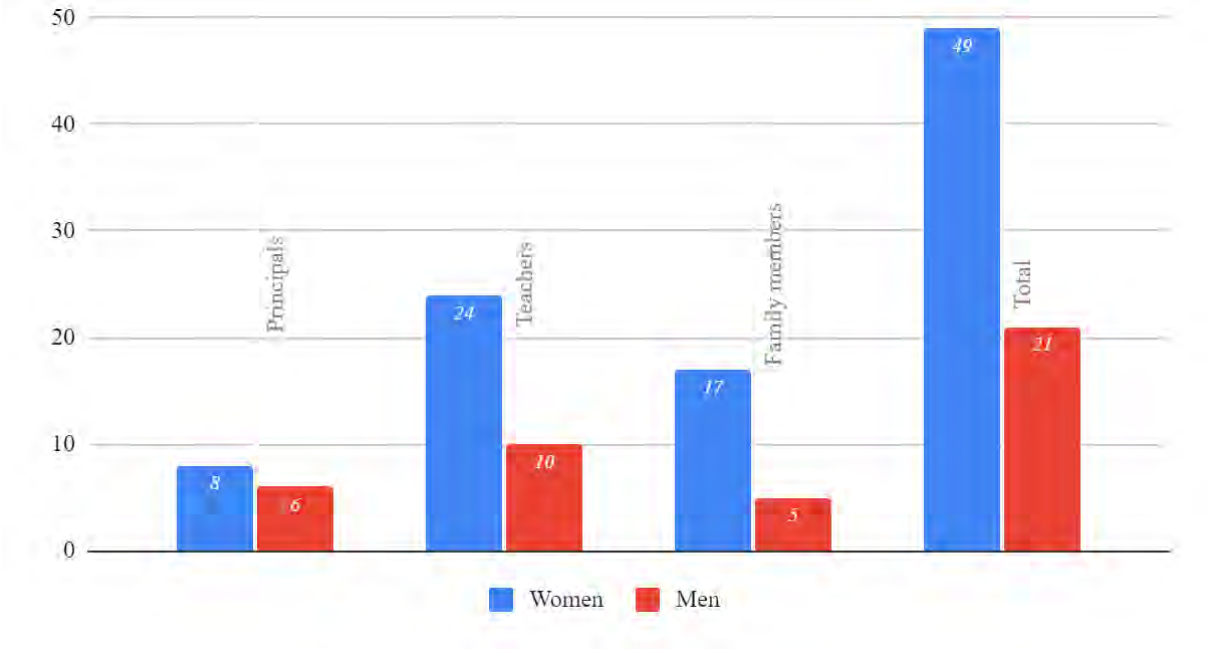
Source: Authors' fieldwork data.

[2] The five educative regions of the country were established by the SEP, in coordination with the members of the National Conference of Governors in 2015, in order to promote and implement a system of coordination in educational matters (Arellano, 2015). The five regions are: the south-southeastern zone that includes the states of Campeche, Chiapas, Guerrero, Oaxaca, Quintana Roo, Tabasco, Veracruz, and Yucatán; the central zone that includes the Federal District, the State of Mexico, Hidalgo, Morelos, Puebla, and Tlaxcala. The western zone encompasses Aguascalientes, Colima, Guanajuato, Jalisco, Michoacán, Nayarit, Querétaro, and Zacatecas; the northeastern zone includes Coahuila, Durango, Nuevo León, San Luis Potosí, and Tamaulipas. Finally, Baja California, Baja California Sur, Chihuahua, Sinaloa, and Durango form part of the northwestern. This sample responds to an analytical research design that allows to capture the socio-demographic, geographic and ethnic diversity of our country, considering the polarization between urban centers (megacities) and the rural zones.
According to Lloyd (2020), while in the north, more than 80% of the population has access to the Internet, in the south, only half of the population has access to the service. When the situation is analyzed by ethnic group, the gap widens even more; for example, only 11% of speakers of an indigenous language have a computer and 9.8% have access to the Internet. In all four regions we sought the participation of rural education teachers and, except in the north, in all other cases we were able to access indigenous education.

Out of 70 respondents, 23 are from urban settings and the rest from rural contexts, including 13 interviews about indigenous education schools, as Figure 2 shows.

Figure 2

Sample Distribution by Gender and Type of Setting (Urban, Rural, and Indigenous)



Source: Authors' fieldwork data.

Overall, we were able to consult 14 people in leadership roles (6 men and 8 women), 34 teachers (10 men and 24 women) and 22 family members (17 mothers and 5 fathers). Although we sought gender parity within our sample, female response rate was much higher.

We tested the survey questionnaire with six individuals in different school roles (directive, teacher, familiar) and gender roles (female/male). The interviewees themselves recommended that we used *Google forms* to gather feedback, which they could more easily and rapidly give to us by using their mobile phones and when they had time to spare for reflection. We allowed answers by voice message sent through WhatsApp or telephonically. We relied on personal contacts and, in order to avoid the self-selection bias, we used the *snowball* technique to identify participants who were hard to reach. We have followed the appropriate institutional review board (IRB) fieldwork protocols[3]. Our personal contacts were used only for the pilot stage of fieldwork and to contact key informants who helped us identify schools, principals, teachers, and families in different States through their own contact networks. We consider that this procedure has helped us to reduce the self-selection bias and to access a network of diverse educational agents, although we are also aware of the limitations and potential biases associated with the *snowball* sampling.

[3] In terms of feminist's methodologies and epistemologies, social research is more honest from a situated position. The people who conducted this research have a dialogued perspective of a single academic mother in charge of a 9-year-old girl in third grade of elementary school and a 5-year-old preschooler, affected by the death of her father in the pandemic lockdown, and a young man from Oaxaca, whose mother is a teachers committed to the national coordinator of education workers (*Coordinadora Nacional de Trabajadores de la Educación,* CNTE), and columnist in a well-known leftist newspaper of national circulation and militant of the teachers' movements. Both are in constant reflexivity on educational processes.

In any case, we did not aim for our sample to be representative, but rather sought to do an exploratory study of the experiences, opinions, and perceptions of different agents in the educational field. We did our best to balance the number of survey responses from each of the five educational regions. Finally, we sought to balance our sample by gender and to make it reflect the diversity of roles in the field.

For decision makers, we opted for in-depth semi-structured interviews with key stakeholders to complement our documental analysis of public policy interventions. We first interviewed the public official in charge of @prende [I1], a federal program within the SEP, and we contrasted this interview with the one we obtained at the local level, in the occidental state of Nayarit, which was given to us by an official from the General Directorate of basic education [I2]. In order to elaborate on some of the aspects discussed in this interview, we then conducted a third interview with the head of the Department of Electronic Educational Media for Basic Education (MEEBA) in Nayarit, who had previously worked as a technical advisor in basic education [I3].

All these interviews were conducted with women officials and were organized around the following themes: 1) agreements between the government (through the SEP) and the private sector for the digital transformation of elementary schools, 2) the benefits and limitations of the digital leap, 3) its privacy and children's rights implications, and 4) the main challenges for education policy.

Our last decisionmaker interview was with a specialist from a design and technology study program (PINION education) in Mexico City; this public official is also the mother of a sixth-grade girl (11 years old). The script for this interview was structured with the intention of piloting our questionnaire for educational staff along four axes: main digital tools used in their school context, main changes experienced since the pandemic in terms of digital transition, benefits and constraints identified from a subjective perspective.

Finally, for school supervisors, principals, and families, we opted for structured interview questionnaires sent first through WhatsApp and then through Google Forms. We used the hermeneutic semantic analysis through key words to obtain the results[4].

The objective of this analysis is to identify the effects of the growing importance of BigTech corporations in Mexico and of the expansion of digital capitalism, which deepened as an effect of pandemic-related school closures, from the agents' point of view and with a gender perspective. We strive to identify changes and challenges in three main dimensions: 1) digital governance, corporate interference in education, and its implications on children's rights, 2) pedagogical proposals, and 3) relationship between schools and families. The proposal to conduct this analysis from a gendered perspective responds to the necessity of giving voice to women's experiences in relation to the changes that have occurred since the pandemic lockdown, in a highly feminized educational environment[5].

Changes in the Methods of Educational Governance: The Policy Makers' Perspective

Until August 2022, the @prende.mx Program, previously called the National Educational television, was a decentralized agency within the SEP, the ministry into which @prende.mx was incorporated in August 2022 (DOF, 2022). At that moment, @prende.mx was given new powers, including that of formulating new public policies. Currently it is a General Directorate responsible for all educational media, including television, as well as for the design, creation,

[4] In comprehensive sociology, this type of analysis focuses on the study of the meaning that words, terms, or utterances acquire in a context, that is, in a textual whole (Eco, 2018; Martínez, 2002).

[5] In Mexico, 96% of educators are women at the preschool level (0-3 years), 85% at the primary level (6-12 years) and 62% at the secondary level (12-15 years) (Lloyd, 2020).

development, broadcasting, transmission, and distribution of digital contents and tools. The current General Director of this Program is a woman who has been in office since mid-2021, she creates and produces television programs, communication campaigns, and digital, multimedia, and transmedia products.

In order to identify the main changes in the methods of educational governance, we asked about the agreements that have been established with the private sector for the digital transformation of basic education schools. This approach was a response to the pandemic lockdown when the government turned to private television stations for the transmission of the AC program in order to maintain contact with the entire educational community during the health emergency and to achieve a wider coverage of the national territory.

According to the interview, the current government's priority is the reorganization of the agencies in charge of the design, production, and distribution of digital educational materials, so that they can better fulfill their purpose and reduce the digital divide by building a new digital culture focused on the understanding and responsible use of technology and by prioritizing access to materials through various means, either with or without Internet, and thus providing long-run educational alternatives for the entire population.

During previous presidential administrations, public spending on educational technologies was focused on "supposed solutions that in reality were only temporary projects, that had no significant impact on learning and, in the long run, generated more problems for the educational community" [I1]. From the policy maker's perspective, the existing economic inequality impacted education, generating a digital divide, because many of the digital educational materials were developed for certain technologies, with specific technical requirements that left millions of students and teachers without the opportunity to use them. As an example of such policies, our respondent mentioned the *Enciclomedia* Program promoted during the government of the right-wing National Action Party (PAN) at the beginning of the millennium. This program was intended to equip classrooms with an interactive encyclopedia for basic education curricula whose contents could be projected on an electronic blackboard, but it was often implemented in rural communities that did not have access to electricity and drinking water. On the other hand, the @prende 2.0 Program, implemented during the right/center-wing Institutional Revolutionary Party (PRI) government (2012 – 2018), included the distribution of personal tablets with certain restrictions on their use, resulting in a huge number of unused devices. In this light, government spending on educational technology was "[more driven by] the market supply (or digital modes) than by the objective need for materials, infrastructure, and telecommunications" [I1].

The policymaker we interviewed explained that this "supposed investment in education became a current expense, while ignoring that technological services provision has always been concentrated in a few hands". She mentioned KIO Networks, TELMEX, and IUSA as examples. In short, the policy approach during previous administrations was to limit "the digital transformation to the purchase of inputs, generating only a fleeting impact on education, since these devices soon became obsolete" [I1]. The reorganization of digital collections includes the use and creation of communication standards and compatibility of platforms that maintain free access to knowledge over time and simultaneously facilitate their maintenance and upgrading. In the interview that we conducted in the State of Nayarit with the objective of contrasting the information at the local level, the public official designated by the General Directorate of Basic Education mentioned the agreement made with *G Suite* for the adaptation of educational content during the pandemic lockdown. She told us that, as part of this agreement, all state-level educational staff was ordered to use institutional accounts associated with Google (@nay.nem.mx in the case of Nayarit)[6]. State policies evidently responded to decisions made at the federal level, and the local administrations just oversaw their adoption.

[6] However, the public official in charge of MEEBA noted that, during this transition, WhatsApp was the tool most used for communication among educational personnel and between teachers and families.

In relation to the discourse about the benefits of incorporating digital tools into primary education, all the policy makers interviewed were in favor of the digital leap. However, the General Director of @prende.mx stated that she considers the development of critical thinking in children to be fundamental for the effective use of these tools.

In Nayarit, the new policy adoption was met with great resistance that was interpreted by the administrator as the fear of change by the teachers "who were already attached to a traditionalist approach; they made excuses for fear of how students and parents would respond" [I3]. According to the head of the Department of Electronic Educational Media for Basic Education (MEEBA), few teachers were able to make full use of the tools offered at the federal level because of their lack of abilities.

From the federal perspective, the main obstacles for the incorporation of digital tools into pedagogical processes are related to two factors: equipment and connectivity[7].

The pandemic lockdown is identified as a paradigm shift with respect to educational processes, since it made evident the need for and the importance of equipping, reconnecting, and working in favor of models such as the *telesecundaria* and *telebachillerato*[8], to reduce the digital divide and to promote access to education. However, it is recognized that, for decades, distance education models in Mexico were neglected and had obsolete equipment.

During her interview, a federal policy maker affirmed that @prende.mx has the objective of turning on the tele-schools and of reaching the most remote areas of the country with the educational signal of the Edusat Network. She assured that, for the current government, the priority is the reorganization of the agencies, rather than the distribution of devices. Historically, she said, public policies have focused on urban centers without attending the most remote areas - rural and indigenous towns; however, this federal government has prioritized programs such as "Internet for all", whose objective is to connect the latter regions to the Internet.

As can be seen from these initial results at the level of the policy makers, pandemic lockdown accelerated the digital leap in the Mexican education system in a new political context linked to MORENA's 4T government, with its New Mexican School (NEM) proposal, in which women play a more prominent role in policy decisions with a critical sense in the discourse. However, limitations in the effective adoption of such discourses continue to prevail.

In short, the main changes in the methods of educational governance comprise new agreements with the actors involved in the field, including distributors of technological devices and creators of educational software such as Google, which involve training processes for teachers, pedagogical technical advisors, and school principals' teams, as well as a new way of relating to students and families.

Regarding the possible abuses of that tool, in the training processes for the use of the G Suite platform during pandemic lockdown, the educational administration suggested that teachers should not overburden parents by transferring teaching sequences, but rather try new, more enjoyable activities or even film themselves teaching the class. In the case of Nayarit, the training process for approximately 8,000 teachers was conducted by a team of four trainers, which made it necessary to generate brigades of volunteer trainers (mainly technical-pedagogical advisors) who were certified by the private company that acted as a Google partner. No training processes designed for families were carried out.

[7] According to the INEGI figures for 2022, Internet access in Mexico was at 72%, and approximately 84.1 million people in urban areas had connectivity. However, 28% of the population still does not have Internet access.

[8] These educational centers for distance learning at the secondary and high-school levels are situated in the most remote and marginalized areas of the country that have been historically neglected and stigmatized.

Changes in the Pedagogical Processes in Schooling from the Stakeholder's Perspective

According to our interview data, pedagogical processes have been significantly modified by the use of digital tools, although there are still many pending challenges in terms of equity and capabilities.

With the intention to address the perspective of school stakeholders, as we mentioned in methodological section, we piloted our interview script with teachers and principals, women, and men, as well as a mother of a sixth-grade girl in a private school in Mexico City who also participates in the PINION education design and technology study program. Before reporting the overall interview results, we want to rescue some of her reflections in her double role, because of their qualitative significance.

In relation to the changes brought to her daughter's school by the digital transition, she reports the use of a new platform for teaching and learning mathematics in upper primary school, but states that her expectation -which she associates with her profession- would be for a more profound change.

The objective in her field of work is to prepare children for the digital environment of the future, "which in reality is already the present" [I4], that is, to promote the formation of skills for the design of digital environments, favoring a solid tool base in programming, digital culture, digital citizenship - including electronics and 3D printing - and the various skills that she considers of great relevance for the preparation of new citizens. "It is a project that I absolutely believe in, because it is focused on generating creative solutions, design and technology skills that we believe will be basic for these people in the development of their professional careers, especially considering the changes that professions will undergo: the ones that will be transformed, the new ones that will emerge, and even those that will become obsolete" [I4].

In relation to the benefits of using digital tools in teaching and learning processes, the interviewee mentioned the possibility of independent learning as a very interesting one, "although, to get there, very well-designed tools are needed" [I4]. She also referred to the preparation of children for an environment in which technology will be present in all areas, i.e., to foster skills that will be basic: "just as it is currently necessary to handle a word processor or a spreadsheet, it will surely be important to have some knowledge of programming, for example, and this is an issue that is not having much relevance in the curriculum" [I4].

According to her, the main limitation for the integration of digital tools in her daughter's school environment is that the use of digital tools is minimal: "what I would like is that they get on the train of learning about design and technology" [I4]. From her professional perspective, she observes that children's abilities to master digital tools are related to their autonomy levels. Developing this autonomy is a complex process in lower primary school, since reading and writing are often not yet well established at this level, and this hinders access to digital tools, which ranges from basic processes, such as "logging" or naming, to achieving good program adaptations for children that are more visual, suitable for early ages.

The interviewee also mentions teachers' fear and resistance as a very important obstacle for integrating digital tools in schools: "it is a process that requires a lot of accompaniment to be taken seriously and implemented correctly" [I4].

As a professional and as a mother, she is very impressed by the speed of change, especially given the perspectives that are opening with the developments in artificial intelligence. "In my work and in my personal praxis I am committed to research because it is such a powerful change that will affect all areas, [including] of course, education, creation, writing… and this is the first thing that has been released! It certainly has a power comparable to the Internet, which was born at the end of last century, and whose evolution has been dizzying" [I4]. "The voracity of my pre-adolescent daughter to learn about the world makes it impossible for me, as a mother, to follow all the contents that my daughter accesses, because these tools have also become basic

in her socialization. Personally, I have opted to have an open dialogue with her, because there comes a moment when surveillance strategies are overrun" [I4].

With the results of this in-depth interview used as a background, we obtained important hermeneutical clues to analyze the results of the survey questionaries. The survey responses allow us to identify a series of changes in educational practice, derived from the development of different learning strategies linked to the incorporation of digital technology in schools.

Teachers say that more elements are integrated in the classes as complementary materials to guide the educational process "in a more up-to-date way". However, some mothers question this type of change, since they have noticed that some teachers no longer want to explain the topics but limit themselves to showing videos. In this example, her third-grade daughter was unable to understand how to read the analog clock, because the teacher only showed them the video explaining the topic and asked them to copy in their notebook what they had understood. "They never practiced with a hand clock or had exercises to grasp the subject; they jumped from the video to the multiple-choice test" [Q33].

In relation to the alleged greater student autonomy to learn through digital technologies, some teachers refer to the use of digital tools as a way to encourage research and self-directed learning. There are also parents who explain that their children "are now more independent when doing their work" [Q48]. However, it is necessary to question whether such independence at the basic education level leads to meaningful learning or whether what is being promoted is simply a way of controlling that "homework has been done", regardless of how mechanical its completion might have been.

In short, most comments that were made refer to the change that the incorporation of digital tools in the teaching and learning processes has meant for basic education and to the communication processes between schools and families. When it was reported that no changes were identified, the respondents referred to the generations of lower primary school that went from preschool to primary school during the pandemic, so that there was no "before and after for them, but rather we are talking about *digital schooling* generations" [Q2].

Our survey data allows us to conclude that some schools have basic technological infrastructure, such as computers, projectors, or loudspeakers, but the availability of such infrastructure is not generalized. Rural and indigenous schools report lack of infrastructure or equipment that is obsolete or damaged due to inclement weather, including the lack of Internet and even electricity access. The most important issue identified is the inequal access to individual devices and Internet because of the families' economic means or the arrangement of devices, but also the infrastructure availability for schools in rural or economically disadvantaged contexts.

In short, it is possible to identify a series of changes that the digital leap has produced in teaching and learning processes in cases where the necessary infrastructure and the possibility of access exist. Among these, we might mention the use of digital applications for school organization, to practice mathematical operations, to promote playful dynamics in class, as well as the use—sometimes abusive—of videos and tutorials as a presentation tool for different topics contained in the curriculum. At the pedagogical level, the fundamental change that has taken place is the use of digital technology in the classroom.

New Ways of Communication between Schools and Families

As to the 70 survey responses obtained through WhatsApp (both text messages and voice notes) and Google Forms, we begin by analyzing the first dimension: the use of digital tools for communication between schools and families, during the 2022-2023 school year -the first one in which there have been no school closures due to the COVID-19 pandemic-, three years after the initial school pandemic lockdown.

Seventy-eight percent of the responses specifically refer to the WhatsApp messaging system (including its video calls and voice notes) as the main communication tool, while some

refer generically to the cell phone, noting in some cases that phone calls or text messages are used for some specific situations.

Respondents from rural environments and indigenous communities refer generically to the use of Internet, as the main change in school-family communications since the pandemic lockdown, although in these contexts direct contact and traditional communication methods have been maintained through circulars and workbooks.

Diverse digital technologies used for school-related communication: 1) WhatsApp has been primarily used for principal-teacher communication, although Google Classroom platform has also been used, for example, to upload teaching plans and to avoid the displacement of technical-pedagogical advisors and school supervisors. 2) Some schools report a policy of using only email for communication between schools and families; in some cases, they refer specifically to Gmail, in other cases, they refer to institutional email, also used for communications between supervisors and teachers. After the pandemic lockdown, a few schools tried to return to traditional communication methods, such as physical circulars or direct contact at the reception and dismissals. 3) Several responses refer to communication through social networks and five people made specific references to the use of Facebook. In other cases, communication has taken place through Messenger instant messaging or the Google Classroom platform; for meetings, the use of Google Meet and Zoom is reported.

Some schools, mainly private, use their own web pages and/or blogs, private institutional chats, as well as their own platforms. One respondent specifically mentioned an "integrated digital ecosystem", which includes messaging services of the UNOi system LMS platform, including platforms for exams, attendance taking, and reading in English, as well as the Innovamat platform for teaching and learning mathematics. In the case of one private school, reference was made to the use of the IPad Notion license, noting its high costs. A couple of respondents mentioned the use of the Kahoot! tool in its free version, for teaching and learning processes.

Attitudes towards changes produced by the incorporation of digital technology: In general terms, the respondents identify a series of changes that they deem favorable in the process of incorporating digital technology in schools, except in indigenous education, where no significant changes are identified, mainly for reasons of technology accessibility. In private schools, a more accentuated rhetoric about the beneficial nature of the change towards digitalization is identified.

Respondents in general mention positive changes in the school-family communication process, such as greater efficiency due to immediacy and the possibility to ascertain that the messages have been transmitted and received. At the same time, these respondents also note that more time is spent on such communication both at school and at home.

Among mothers, the change is evident in terms of adaptation to the daily use of digital technologies. Meanwhile, teachers refer to learning methods different from the traditional ones, as well as greater autonomy on the part of students. 1) In general, there has been little questioning about quality of digital communication or the quality screen-mediated of educational and social time. 2) However, some principals expressed that "the dynamics and interaction with families is facilitated, but the sensitivity of one-to-one contact has been lost". Teachers also mention that digital technology has generated "less tolerance for waiting to make contact".

The forms of communication within families have also changed, as well as the demands placed on mothers. One of them explains how she has had to train herself in the use of school platforms to be able to accompany her daughter in the learning process: "I have had to learn from her the use of tools to help her locate school material. I had to stay alert to find the information and to ensure that she was not distracted with videos [Q4]".

From a woman principal's perspective, this kind of change has been a challenge for mothers, who have had to work together with their children in reviewing pedagogical materials or videos. In some cases, this is positively valued, since many mothers have a low educational

level, and helping their children has turned into a way to review learning that may not have been consolidated.

Implications of the Digital Leap for Privacy and Children's Rights

As to the implications that the use of digital tools has on privacy and children's rights, policy makers stated that the use of any type of technology entails both benefits and risks. Nevertheless, they acknowledged the existing gaps in our country, not only in Internet access, but also in digital environments and knowledge about the diversity of resources available for education.

In order to reduce those risks, the SEP works with the National Guard (*Guardia Nacional*) and the cyber-police. This dynamic was mentioned in the case of Nayarit, where these kinds of coordinated actions with the police are especially focused on talks with students -given with prior parental consent- about sexting, cyberbullying, or Internet security tips. Given the sensitivity of these topics, they were introduced in higher primary grades (for students that are 10–12 years old) and only with formal parental consent. The police also intervene in case of complaints. However, at least in Nayarit, the designated MEEBA-police team, is too small to attend these issues, "which leads to a certain slowness in the approach" [I3].

A local policy maker in Nayarit stated during the interview that since before the pandemic lockdown, there have been agreements with the State Human Rights Commission to sensitize school personnel about the right to privacy and child protection. For example, school safety manuals and protocols ensure that children's photos are not published without parental consent, as it was a common practice to share photos from school festivals and activities.

From the federal perspective, it is affirmed that the State "should provide platforms that guarantee the security of personal data so that the population can exercise its right to access information and communication technologies in a secure manner" [I1]. However, an official that we interviewed cautioned that the process of "building reliable mechanisms and alternatives is also linked to the familiarization and fostering of a digital culture, in which children and the community can learn about alternative digital platforms and tools to stay safe" [I2]. She was referring not only to risks, but also to the possibilities of accessing and using digital tools in safe spaces.

Issues of security, privacy, and children's rights were not mentioned in survey responses, unless we specifically asked about them. In that case, the generalized argument was that "any change carries risks".

Benefits, Limitations, and Challenges of the Digital Leap in the Educational Field

The responses obtained regarding the potential benefits of adopting digital technology in education showed a generally favorable perception by families, teachers, and principals, despite differences in geographical environments (urban and rural), type of provision (public and private), socio-cultural roles (teachers, families, principals) and gender. Some people mentioned certain risks in the use of technologies by infants, as well as the bad practices that some people may engage in and with which they may put students in uncomfortable situations. Most responses alluded to the various potential advantages of digital technology in the pedagogical field, especially in private schools; some responses also mentioned efficiency in communication.

The main arguments about the benefits of digital technology in pedagogical processes are related to the assumption of keeping up to date. A mother explains: "I really like to see that my daughter is digital [...] we cannot keep them away from the digital world, it is where many aspects of life are taking place. They feel more identified with what is happening in that world, they are part of this technological development" [Q46]. From a teaching perspective, it is important to

"introduce students to the digital and technological world, in which we are immersed as a society today" [Q62].

Regarding the potential pedagogical benefits, the teachers argue that the use of digital technologies in education offers a "greater possibility of catering to different learning styles" [Q38] or that it "makes classes more attractive" [Q12, Q16, Q22, Q58]. Thus, it is deduced that this could have an impact on the students' interest in educational content. It is considered that digital tools in education make it possible to obtain information more quickly and thus "to save time". This was a repeated argument, although it is not clear what exactly this "timesaving" refers to; nevertheless, it is symptomatic of the discourse of these times. Other arguments are related to improvement "control" over educational processes, improvement of teaching work, or improvements in productivity and innovation. The argument about the potential benefits for strengthening the students' self-learning capacity is also recurrent: "unquestionably, autonomy, curiosity, and creativity are strengthened, thereby developing self-taught human beings" [Q39].

In most responses from school principals and teachers it is possible to observe a discourse that the use of digital tools, especially videos and some others, is an alternative solution to the crisis of the educational system, which was already evident before the pandemic and was due to the lack of students' motivation. Undoubtedly, in this field there is an area of opportunity for educational research.

Finally, in relation to the main difficulties faced, the digital divide is evident, since most of the actors linked to schools in rural or indigenous environments mention the lack of access to the Internet and to digital devices, as well as the economic implications of data use. However, the cost is also a recurrent issue in urban schools, both public and private. In addressing these difficulties, the need to conduct the analysis with a gender perspective becomes evident. Most moms express a greater burden of responsibility and time demand in their daily lives: "Young children cannot use these tools on their own, so my son's homework became extra work for me, because in addition to helping him do his homework, I needed to scan it; if they are videos, I must edit them, take pictures, and upload them to the platform, or send them by email. I also must help him enter virtual meetings and convince him to keep his microphone off, to pay attention, and not to interrupt his class" [Q4].

The type of difficulties mentioned have to do with the need to dedicate more time to accompanying the educational process, the excess of information, or the misuse of platforms. Also mentioned, especially by school principals, are the lack of digital skills in teachers and families and resistance to change on the part of teachers. Nevertheless, several people interviewed, regardless of their role, state that there are no difficulties in integrating digital technologies into the teaching and learning process, although this tendency is greater among principals and stakeholders involved in private schools.

As to the challenges identified for the digital leap in education, emphasis is placed on the need to generate a digital culture that develops and fosters critical and creative capacity with respect to technology. It was also emphasized that digital education is neither synonymous with the consumption of certain types of devices, nor limited to questions of entertainment and that, above all, it was necessary to disassociate the notion of technological development only linked to the market.

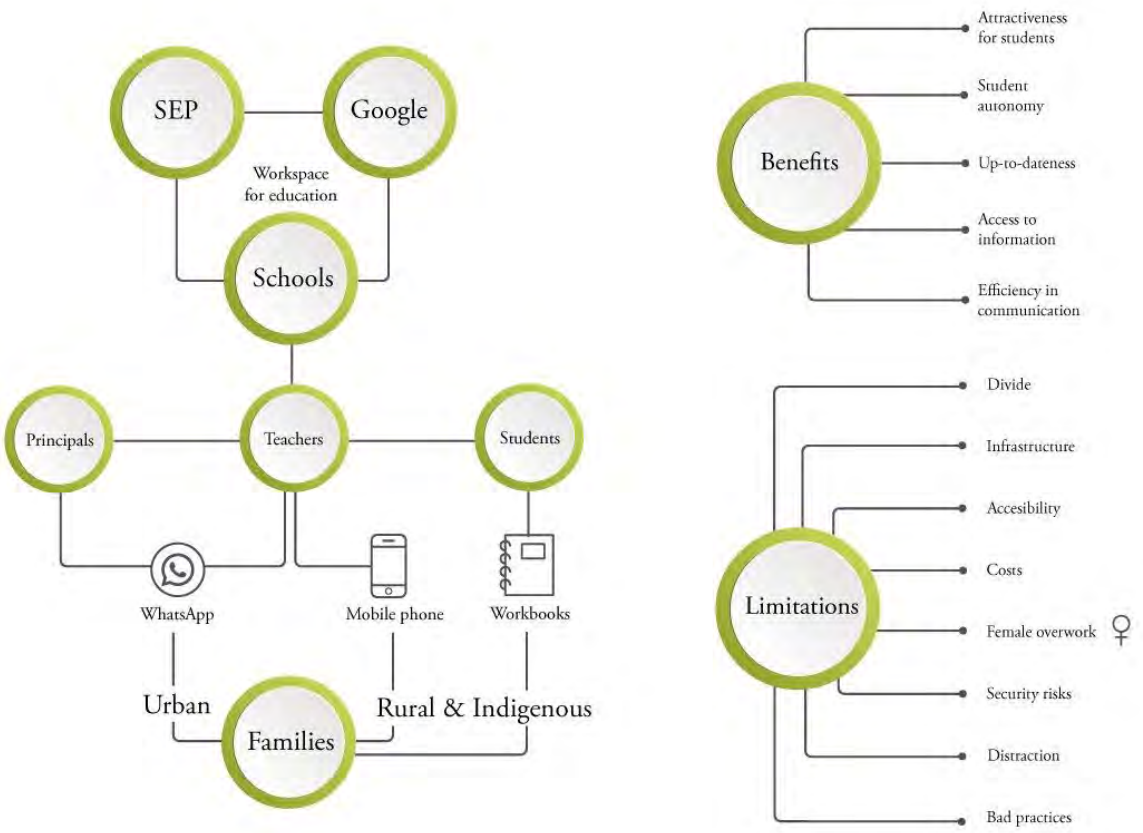
The federal policy maker interviewed, remarked that the enormous amount of misinformation to which we are exposed has become evident in recent years: "there is a lot of information, hundreds of pages and resources; however, we do not have the necessary tools to know how to discern, which information is true. Broadening our view of technology is the first step to making a safe and responsible use of it" [I1].

Another challenge that the pandemic lockdown made evident is the need for training to develop digital skills: "we cannot continue with the same pedagogical practices and want to reproduce the school traditional dynamics in distance education and digital platforms" [I1]. In this respect, some respondents mentioned that technological training and the incorporation of

specialized personnel in the internal processes of the school community itself is essential for the promotion of a digital culture; particular importance was placed on ensuring that such processes are not hindered by administrative hurdles. To summarize, in Figure 3 we use a semantic network to show the main results obtained from a keyword analysis.

Figure 3

Semantic Network of Stakeholders' Perceptions about the Use of Digital Platforms in Schooling



Source: Authors' fieldwork data.

Conclusions

This paper focuses on the digital leap in the New Mexican School since the pandemic lockdown. The main objective is to identify, from the stakeholders' perspectives, the effects of the growing importance of BigTech corporations in Mexico and of the expansion of digital capitalism, which deepened as an effect of school closures due to the pandemic. We also analyze the situation from the gender perspective, showing transversally how cis-hetero-patriarchy permeates all the social dynamics under scrutiny, especially as we focus on their differential effects on mothers.

The process of educational digitalization has become increasingly evident over the previous decades, particularly with the increased use of digital technology in schools. The COVID-19 pandemic lockdown exacerbated that existing trend, favoring large technology companies and startups that offered their products to schools and governments in need of

solutions. This phenomenon has deepened the accumulation through technologies, a structural tendency of capitalism.

Since the process of datification has advanced in educational systems through the incorporation of schools, students, and teachers into digital platforms, governance in education has substantially changed due to the inclusion of a greater number of actors who build complex relationships with each other. This change is causing the vertical, government-centered logic of decision-making to be gradually displaced by an heterarchical logic in education. In this sense, data, algorithms, and platforms seem to be the new policy instruments of governance in education.

In this paper we analyze to what extent the use of digital education platforms (DEP), which was exacerbated by the COVID-19 pandemic lockdown, has modified educational policies for digital transition in schools in the context of the last Mexican educational reform (2019), teaching-learning processes, and school-family relations.

We investigate the ways in which commercial digital platforms impacted school cultures since the pandemic lockdown in Mexico, in the last educational reform (2019) framework. For that purpose, we have conducted an exploratory qualitative analysis centered on the policy enactment of the New Mexican School in order to identify its specific effects on the methods of educational governance, the pedagogical processes in schooling, the ways of communication between schools and families, teachers and students, and among education stakeholders themselves. We also explored, from the stakeholders' perspectives, the implications of the digital leap for privacy and children's rights, such as benefits, limitations, and challenges of the digital leap in the educational field.

In order to identify these effects, we used in-depth interviews with policy makers, teachers and mothers, as well as a survey for school principals, pedagogical technical advisors, teachers, and families. We obtained 70 survey responses, which is a significative sample at the national level, considering the five educational regions defined by the SEP (northeast, northwest, western, center and south-southeast). The effects identified include benefits, limitations, and challenges for pedagogical processes in urban, rural, and indigenous contexts.

As we could see in the course of our fieldwork, teachers, students, and families have also been sites of intervention or "datified bodies", since the incorporation of digital tools has generated important changes in their practices. However, the uneven development of educational digitalization has not generated implications directly linked to control policies. Nevertheless, one effect of the digital leap in the Mexican educational system is linked to the issue raised by Lewis; Holloway & Lingard (2022, p. 68): under threats of different nature, teachers may be forced to act as a particular type of teacher with a perspective favorable to metrics, competence, and data-driven dispositions.

In our fieldwork we could also observe that there is a generalized discourse about the benefits of incorporating digital technologies into educational processes, centered fundamentally on the idea of "being up to date" and not on the margins of social evolution. The idea that the use of DEP favors educational processes is widespread in both the public and the private sphere of education, especially in urban areas. It is associated with a more attractive pedagogy for students, with the promotion of autonomy and independent learning capacity, as well as with efficiency. The main limitations are related to the lack of basic infrastructure and internet accessibility -especially in rural and indigenous environments- as well as to the economic costs of individual devices and the data costs of being online. In this sense, the digital divide is evident more for economic than generational reasons, an issue that should be emphasized in terms of equity.

The issues of privacy and children's rights are practically absent from stakeholders' reflections. Only when probing questions were asked about them, we got back the association with bad practices in the use of technologies and the idea that any change entails risks. Meanwhile, policy makers responded the same questions by explaining how cybersecurity

protocols are followed in coordination with the police and the National Guard, with an emphasis on promoting a culture of digital crime prevention. However, in pedagogical terms, it is the mothers who express a greater awareness about the risks of distraction from the use of DEP during the learning process. The issue of screen addiction or the dependency on electronic devices does not yet appear to be a central one.

On the other hand, specifically since the pandemic lockdown, women began to talk about the effects of digitization in education on their work overload, while men focus on its economic costs. From the perspective of principals and teachers, the use of DEP encourages a closer following up of the educational process by families -and especially mothers. It is also positively valued because it allows family members to have access to educational materials in a country where family members tend to have low levels of education.

Since the crisis caused by the coronavirus pandemic, the institutional policy at the federal level focused on the generation of agreements with Google to provide digital services to schools through the G Suite platform. During the current federal administration, the policy has focused more on the promotion of a digital culture than on the provision of devices, the latter being a characteristic of previous governments.

Based on the pandemic experience, many schools have tended to maintain a digital culture, although in some cases there are attempts to return to face-to-face contact and traditional methods of communicating with students and their families.

The main tool for communication between schools and families, as well as between teachers and principals, is the WhatsApp messaging system. To a lesser extent, Facebook, Messenger, and email have also been used. In general, the possibility of communicating quickly and the fact that messages are kept on individual devices are positively valued; however, there is little questioning of these methods in terms of privacy and limits on personal and family time. When such questioning exists, it is mostly done by teachers.

The use of GoogleClassroom is positively valued by principals for supervision and teaching control purposes. On the other hand, it creates a work overload for moms, due to the early ages of children undergoing basic education. Since the pandemic lockdown, the use of Google Meet and Zoom platforms has tended to persist for online communication between principals and schools, but not so much between schools and families.

The perspective of private schools on the use of platforms for teaching and learning purposes contrasts with that of public schools -especially in rural and indigenous environments- since private school promote the use of platforms to a greater extent. Our fieldwork data reveals the use of the UNOi platform—from Santillana global—as well as Innovamat, for teaching mathematics or IPad licenses. The use of the free Kahoot! tool was also mentioned. However, the most common reference -especially in the public-school environment- is to the use of YouTube videos and the search for information through Google search engines. It is also necessary to open new research lines about the impacts of digitalization on education in indigenous contexts.

In sum, it has been possible to observe how the digital culture in education has spread in Mexico and received a positive evaluation by most of the stakeholders. Addressing the digital divide seems to be the central objective in terms of governance. Undoubtedly, it is the most obvious challenge for national education policy. However, issues related to datification, privacy, and children's rights are also the major pending issues. At the pedagogical level, it will be important to continue observing the effects of the use of DEP in terms of meaningful learning vs. task completion and test training.

From a gender perspective, it is necessary to address the implications of the work overload for women who accompany their children's educational processes, which has been intensified due to the use of DEP. The relationship between schools and families is largely based on this pattern, and instant communication is its main ally.

The pandemic lockdown is still recent, but there are voices that reflect on the importance of recovering face-to-face contact; a few people also question the new mechanisms for monitoring and control of teachers, as well as the effects of the use of DEP on the learning and mental health of children.

As a result of neoliberalism, states have seen several public sector bodies diminished; consequently, the infrastructure with which the process of educational digitalization is carried out regularly comes from the private sector. This puts pressure on governments to generate a series of partnerships and joint actions with these providers.

It should be clarified that these alliances specify not only the provision of digital infrastructure, but also some of its uses. In this sense, some private companies end up being part of the government processes by participating in the training processes of policy makers, civil servants, school management teams, teachers, students and even families, in order to "take better advantage" of the tools offered to the educational sector.

These types of practices are regulated through a digital infrastructure that enables processes directly linked to the classroom and at the same time, establishes limits in terms of operational possibilities, data storage and control mechanisms for the work processes of educational agents. This in turn generates a high level of dependence on applications and devices that belong to agents with specific economic interests and results in the neglect of privacy issues and children's rights.

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