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Techno-Pessimistic Shock and the Banning of Mobile Phones in Secondary Schools: The Case of Madrid

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Abstract

Over a three-year R&D project, the perception of mobile phone use in Spanish secondary schools shifted from initial tolerance to increasingly prohibitive policies. Drawing on the Actor–Network Theory, this study examines how mobile phones—alongside institutional discourses and school and family concerns—acted as dynamic actants, shaping public and political responses. The research adopted a qualitative design combining policy and media document analysis, nine semi-structured interviews with key stakeholders, ten regional case studies, and twelve focus groups. The study concluded with a public multiplier event that engaged the broader educational community. The Madrid region, among the first to adopt a restrictive stance, contributed two school-based case studies and three focus groups with teachers, students, and families. Findings suggest that the turn toward prohibition was motivated less by pedagogical evidence than by cultural anxieties, consistent with what it conceptualizes as a techno-pessimistic shock. This shift mirrors the historical patterns of societal reaction to disruption and technological saturation. Rather than reinforcing binary framings of promotion versus prohibition, such moments invite critical reflection. The study argues for nuanced, evidence-based, and multilevel governance strategies to address the complex role of mobile technologies in education.

Keywords: mobile phone ban; secondary education; actor-network theory; digital policy; post-pandemic education



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1. Introduction

In Spain, mobile phones now exceed 56 million devices, with 87.2% connected to the internet ([Comisión Nacional de los Mercados y la Competencia \(CNMC\) 2024](#)). This mass adoption has sparked debates over their educational use, especially in secondary education, where early exploratory initiatives emerged ([Fombona and Rodil 2018](#)). The Coronavirus disease (COVID-19) pandemic acted as a catalyst for digital practices in schools ([Ramos-Pardo et al. 2023](#)), temporarily normalizing mobile phone use as a pedagogical support. Some regions, such as Catalonia, even considered structured integration policies.

However, rising public concern about cyberbullying and online harassment, recurrently amplified by media coverage ([Mateu et al. 2023](#)), shifted the narrative. In response, the Spanish government proposed a national commission of experts to address mobile

phone use in education. Most regional policies permit mobile phones strictly for educational purposes under teacher supervision.

This article analyses the public discourses and policies on mobile phone use in secondary schools across autonomous regions as well as the policies aimed at prohibition in the last few years. These policies ranged from permissive to prohibitive, with the Madrid region becoming a paradigmatic case of early and emphatic restriction. Particularly notable was the vehemence of some school leaders and parents in demanding bans, a reaction that was disproportionate to the educational challenge and earlier stakeholder statements.

Building on this context, the case of the Madrid region is examined through the lens of the Actor–Network Theory (ANT) (Latour 2005), aiming to understand how mobile phones—initially conceived as pedagogical tools—have been progressively redefined as disruptive actants within the school network. This transformation has catalyzed what this study terms as “techno-pessimistic shock”: an emotional and unstructured reaction that simplifies a complex issue, narrowing perceived options to a single one—the total rejection of technology.

1.1. *The Role of Women in World War I and Bruno Latour’s Actor–Network Theory*

Historically, such disproportionate responses have emerged in moments of societal disruption. Bureaucratic structures and emotional exhaustion (Arendt 2006)—especially after major crises like a war or pandemic—can trigger extreme regulatory logics. One historical example involves the shifting roles of women before, during, and after World War I.

The First World War marked an unprecedented turning point in women’s participation in European public and economic life. With millions of men mobilized at the frontlines, women assumed roles in factories, offices, transport, and hospitals (Braybon 2012).

This new presence in the public sphere lent fresh legitimacy to feminist demands. Women’s civic commitment and national contribution became undeniable, leading to voting rights during or shortly after the war in many countries (RTVE 2018; Wikimedia Foundation 2025). A new generation of activists emerged, aiming to shape the post-war social order.

However, this new order proved fleeting. In the postwar years, a restorationist policy known as “return to the home” gained ground (De Grazia 1992; Koonz 1987). Governments launched campaigns to demobilize women from the workforce through economic incentives, legal restrictions, and societal pressure. Public employment adopted “male preference” policies. Trade unions, fearing wage competition and rising male unemployment, demanded the dismissal of women from key sectors.

Educational institutions also played a role in restricting women’s advancements. Access to technical and professional careers was limited, with some institutions introducing quotas to cap female student enrollment. The trend worsened as the decade progressed, and women were increasingly portrayed as illegitimate competitors (De Grazia 1992; Koonz 1987).

These dynamics fueled the rise in fascism in Italy and Germany. The “return to the home” policy became central to fascist ideology, which portrayed domesticity as a patriotic duty for women, equivalent to military service for men. In Mussolini’s Italy and Nazi Germany, motherhood was institutionalized as women’s primary contribution to the national project (De Grazia 1992; Koonz 1987).

Thus, family was positioned as the basic unit of the totalitarian state. Female subordination at home was considered vital to the functioning of the fascist political system, linking domestic gender hierarchies to broader political power structures.

The disappearance of women as social actors in the aftermath of the First World War occurred amid conservative political turbulence. Similarly, the emergence and disappear-

ance of actants in times of exception, as conceptualized by ANT (Latour 2005), helps to understand how technologies become politicized and moralized in educational contexts.

ANT proposes that agency is distributed across networks composed of human and non-human actors—including technologies, discourses, the role of persons such as women during World War I, institutions, and values—which gain or lose relevance depending on relational configurations (Latour 2005; Castells 2009). In this view, mobile phones are dynamic actants mediating school norms, social control, and resistance (Corredor et al. 2010). Their performative role aligns with the conceptualization of technologies as biopolitical apparatuses (Hardt and Negri 2001).

1.2. From Techno-Optimism to Moral Panic: The Discourse on Digital Technologies in Schools

The historical analogy of the role of women during World War I further illuminates how sociotechnical configurations shift in a crisis. Just as pre-war societies embraced progress with “critical techno-optimism” (García Canclini 1995), a similar belief in digital technologies existed prior to the pandemic.

It advocated learning through programming. Then, it developed “Logo” and promoted the idea that children learnt best when using technology creatively (Papert 1993). Similarly, in this time, it aimed to bridge educational inequalities via technological access (Negroponte et al. 1997). Scholars introduced influential concepts such as “digital natives” (Prensky 2001), while exploring distributed learning, augmented reality, and virtual environments to modernize education (Dede 2009). Others advocated technology-assisted learning and promoted the use of digital environments for autonomous learning (Mitra and Judge 2004). Self-directed digital learning and global access to knowledge through open platforms were promoted, thus promoting massive online learning and a flipped classroom model. Finally, a theory of collaborative online learning (Harasim 2017) expanded this techno-optimistic vision.

These ideas were formalized in classrooms through digital competence frameworks, including the European Framework for Digital Competence for Teachers (DigCompEdu). Frameworks like that guided teachers in developing effective digital literacy and were well-received by experts (Cabero-Almenara et al. 2020). They coincided with growing industry interest in education, as companies like Google, Microsoft, and Apple launched parallel strategies to embed their technologies in classrooms.

Techno-optimism developed in tandem with the normalization of mobile technology in everyday life, even for children. In Spain, by 2024, the presence of mobile phones among minors had increased significantly: the availability of mobile devices among 11-year-olds had grown by a staggering 20%. Likewise, the percentage stands at 13% for children under 12 years of age and 4% for those under 10 years of age. On the other hand, in the case of children under 15 years of age, 94.8% have a mobile phone (Instituto Nacional de Estadística (INE) 2024). This widespread access was seen by some as an opportunity to improve teaching and learning processes through these devices, something that again provided scenarios to develop mobile learning and digital pedagogies. However, concerns about non-educational use also led to increasing regulation in schools.

Following the pandemic, disillusionment with technology grew. This post-crisis fatigue mirrored the societal regression observed after World War I, when progressive gains made by women during the war were systematically rolled back. Viewed through the lens of ANT (Latour 2005), mobile phones—once positioned as progressive actants—have become contested objects, shifting from tools of innovation to symbols of distraction, risk, and disruption. This evolving narrative prompted calls for prohibition, echoing the historical backlash against women’s wartime advancements.

A significant body of critical literature has long warned of the pedagogical and cultural limitations of educational technologies. Some scholars openly questioned the pedagogical utility of new tools. Many were technology advocates who recognized that the enthusiasm for technology lacked rigorous empirical support (Oppenheimer 1997). They observed that technology was often introduced superficially and with a technocratic or naive approach (Cuban 1993), neglecting the comprehensive changes required for deep and lasting pedagogical innovation.

These critiques intensified during the 2000s with the spread of the internet and the rise in Web 2.0. Studies highlighted the uneven access to digital resources and the risk of exacerbating social and educational inequalities (Compaine 2001; Warschauer 2004; Van Dijk 2005). Despite renewed optimism, technology continued to fall short of its transformative promises (Kirschner and De Bruyckere 2017). Critics warned that governments and corporations, driven by market logics, adopted a technophilic stance that often ignored pedagogical considerations (Cuban et al. 2001; Oppenheimer 2004; Selwyn 2011).

Moreover, the assumption that technological integration would automatically improve learning was increasingly challenged. “Technological solutionism” (Morozov 2013) described the tendency to treat complex social issues with simplistic digital fixes. Research showed that digital tools alone did not enhance student outcomes; effectiveness depended on thoughtful instructional design and pedagogical coherence. As a response, integrated models like the Technology, Pedagogy, and Content Knowledge Model (TPACK) (Koehler and Mishra 2005) emerged, advocating a holistic alignment of technology, pedagogy, and content knowledge.

The 2010s brought a shift toward “total connectivity” (Castells 2009) radically transforming how individuals interacted with information, institutions, and each other. Digital technologies raised new concerns about surveillance, control, and the commodification of digital life. Scholars warned that hyperconnectivity eroded meaningful interpersonal communication, promoting shallow, distracted forms of interaction (Turkle 2015). Meanwhile, other scholars portrayed digital network as architectures of surveillance and self-discipline (Han 2017), in which individuals willingly surrendered their privacy in exchange for connection and convenience. These frameworks position digital technologies not just as tools, but as political agents that reshape power relations and social imaginaries.

In educational contexts, these techno-pessimist perspectives converged with growing concerns about mobile phone use among adolescents. Research linked excessive screen time to attention deficits, learning difficulties, and mental health issues (Wilmer et al. 2017; Orben 2020). Public concern mounted, particularly in the wake of the COVID-19 pandemic, reinforcing calls for stricter regulation and outright bans in schools, mainly due to the ineffectiveness of parental controls (Pastor et al. 2019) as well as security measures and policies in schools (Béland and Murphy 2016). A “moral panic” appeared (Selwyn 2016). Rather than interrogating the pedagogical, institutional, or cultural contexts that mediated technology use, public debate has often fixated on banning mobile phones as a singular solution. This reductive approach overlooks critical questions: Does the approach to mobile phone use respect children’s rights? Are the pedagogical strategies appropriate for each age group? What support is offered to teachers, families, and students to develop digital literacy and responsible use?

The rise in artificial intelligence (AI) adds further complexity. Algorithms not only process data but actively structure social visibility and exclusion, shaping decision-making in opaque ways (Bucher 2018). AI systems often reflect technocratic logic focused on performance metrics (Selwyn 2024), sidelining values like equity, teacher agency, and democratic participation.

In this context, the mobile phone ban debate is not merely about classroom management; it is a key moment to reassess the normative assumptions underlying digital schooling (Selwyn and Aagaard 2021). These converging dynamics have not only reinforced a techno-pessimist turn in public discourse but have also displaced the more nuanced, evidence-based critiques (Selwyn and Aagaard 2021; Beneito and Vicente-Chirivella 2022; Álvarez-López et al. 2023; Goodyear et al. 2025).

As proposed before, this article responds to that challenge by analyzing the case of Madrid. It interrogates how mobile phones, positioned as disruptive actants, have catalyzed what it conceptualizes in this study as a techno-pessimistic shock, that it narrows the perceived options to only one: rejecting technology altogether. The aim of study is to understand how techno-pessimistic shock about technologies arrives when mobile phones become entangled with discourses on control, safety, and morality.

2. Materials and Methods

This study is part of more ample, funded by Spanish State Research Agency. Carried out between 2020 and 2023 by six Spanish universities, the project involved the University of Barcelona, the Autonomous University of Barcelona, the University of Girona, the University of Valencia, the University of Castilla-La Mancha, and the Autonomous University of Madrid. It focused on four autonomous communities with contrasting policy approaches toward mobile phone use in secondary education: Catalonia (promotion), Valencian Community (indifference), and Madrid and Castilla-La Mancha (prohibition).

The research employed a three-phase qualitative strategy (Figure 1) and a final strategy of dissemination, aimed at exploring public discourses, institutional practices, and the positions of key stakeholders—teachers, students, families, policymakers, and private actors—regarding mobile phone use in secondary education. Data were generated through document analysis, case studies, semi-structured interviews, focus groups, and a final public dissemination event.

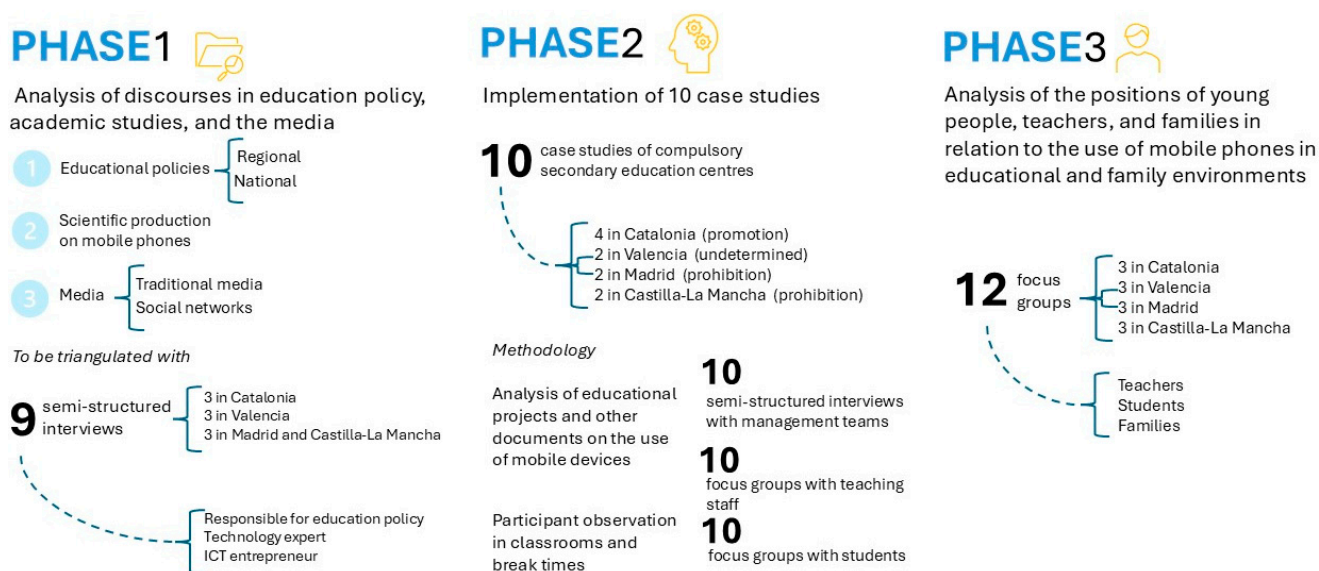


Figure 1. Three-phase qualitative strategy.

The first phase, developed in 2020, consisted of a systematic review and analysis of national and regional policy documents, academic literature published in the last decade, and diverse media content, including press, social media, and audiovisual sources. This was complemented by nine semi-structured interviews (4 women and 5 men) with education policymakers, academic experts, and representatives from edtech enterprises. These sources

were triangulated to trace dominant narratives and to identify relevant actants in the sociotechnical configuration of mobile phone governance, in line with ANT (Latour 2005).

The second phase, carried out between 2021 and 2022, involved ten in-depth case studies in secondary schools distributed across the four regions. The sampling was purposive, targeting schools with varying affiliations (public and semi-private) and with prior experience in educational technology initiatives. Each case included the analysis of institutional documents and educational projects, two participant observations in classrooms and playgrounds, two interviews with school leadership teams, and one focus group each with teachers and students. In total, ten interviews (4 women and 6 men) and 20 focus groups were conducted (10 teacher's groups and 10 student's groups). All data were transcribed, anonymized, and coded using a computer-assisted qualitative data analysis software (named MAXQDA) and "Excel" spreadsheets.

In the third phase (2022–2023), twelve focus groups were organized in collaboration with professional and civic associations. In each region, one group was held with teachers, one with students, and one with parents affiliated with family associations, totaling 64 participants (19 teachers, 24 students, and 21 parents). The focus groups were composed with attention to gender balance and were guided by semi-structured protocols, allowing participants to express their views and lived experiences related to mobile phone use in educational contexts.

The final phase, conducted in 2023, centered on the dissemination and validation of the findings. A national public multiplier event was held in Barcelona under the title "Connected Youth in the Classroom: Prohibit, Ignore or Promote?". The event gathered educators, students, families, policymakers, and representatives of civil society and educational organizations. It served both to disseminate comparative findings across the four regions and to validate the results through public deliberation and expert feedback.

In the case of Madrid (Table 1), the research team contributed actively to all phases. In the first phase, it analyzed 12 legislative and regulatory documents about mobile phone use in education and conducted three expert interviews (male only) with stakeholders involved in regional policy-making and educational technologies. In the second phase, two case studies were carried out in local secondary schools, involving five interviews with school leaders (2 women and 3 men) and four focus groups—one with teachers (3 women and 2 men) and three with students (9 women and 7 men). During the third phase, three additional discussion groups were conducted with 5 teachers (3 women and 2 men), 7 students (3 women and 4 men), and 6 parents (4 women and 2 men) (Table 1).

In Phase 2, Case Study—School 1 comprised 1 interview with the head of studies (male), 3 interviews with teachers of different specialties (2 female and 1 male), 1 focus group with 5 students at 1st year of secondary school (3 female and 2 male), 2 participant observation sessions (1 science classroom and 1 playground time) and the analysis of 3 organizational documents. Case Study—School 2 comprised 1 interview with the principal and head of studies (male), 1 focus group with 5 teachers (from all areas of knowledge), 2 focus groups with 16 first-year secondary school students (9 female and 7 male), 2 participant observation sessions (1 science classroom and 1 playground time), and the analysis of 2 organizational documents.

In Phase 3, focus groups were held with schools' communities: one with students—1 secondary school student (male), 4 high school students (2 female and 2 male), 2 vocational training students (1 female and 1 male), one with parents—4 mothers (ranging from 45 to 55 years) and 2 fathers (ranging from 45 to 55 years) with children in public secondary education from 1st to 4th grade, and one with teachers—2 Science and Mathematics (STEAM) teachers (1 female novice in a public rural school and 1 male experienced in a public urban school), 1 Arts teacher (female veteran at a semi-private urban school),

1 English teacher (highly experienced female at a public rural school), and 1 Educational Guidance teacher (male experienced in an urban public school).

Table 1. Madrid Case Study Participants.

Phase	Cases	Type	Location	Participants and Data
Phase 1	Regional policy documents	Laws, decrees	Community of Madrid	5 laws/decrees 3 orders/regulatory 2 other provisions 2 official instructions and guides
	Interviews with key stakeholders	Policymakers, academic experts, and edtech enterprises	Community of Madrid	1 politician (male) 2 academic experts (male) 1 edtech businessman (male)
Phase 2	Case Study—School 1	Secondary Education/ Public School	Urban—Center city	4 Interviews, 1 focus group, 2 participant observations, 3 documents
	Case Study—School 2	Secondary Education/ Semi-private School	Urban—Suburban area	1 Interviews, 3 focus group, 2 participant observations, 2 documents
Phase 3	Focus groups with Schools communities	7 Students	Community of Madrid	From secondary school, high school, and vocational training (4 female, 4 male)
		6 Parents	Community of Madrid	Parents of children in public secondary education from 1st to 4th grade (4 female, 2 male)
		5 Teachers	Community of Madrid	From STEAM, Arts, English, and Guidance (3 female, 2 male)

This study received approval from communities and participants through specific ‘informed consent’ for each phase of the study, each interviewee, and each participant in the focus groups.

All materials from the Madrid region were transcribed, coded, and analyzed using MAXQDA and Excel, forming a comprehensive sub-corpus. In addition to the activities for the phase of dissemination, the Madrid team applied further validation techniques based on trustworthiness criteria (Guba and Lincoln 1982). These included prolonged engagement with data, transversal triangulation across phases and data types, and peer debriefing sessions to ensure analytical credibility.

The analytical process relied on thematic coding, following both inductive and deductive logic. Triangulation was applied at three levels: data types (documents, interviews, focus groups, and observations), participant groups (students, teachers, families, and institutional actors), and regional policy contexts. Cross-phase analysis was essential to identify the continuities and shifts in discourse and positioning over time. Peer debriefing among interdisciplinary researchers helped to ensure coherence and interpretive depth, while selective member checking allowed the validation of key interview data.

Overall, this robust and multilayered methodological approach provided a comparative and diachronic perspective on how mobile phones function as actants in educational contexts. It enabled the identification of sociotechnical controversies and the mapping of policy responses and cultural perceptions across diverse educational territories.

The following acronyms will be used to identify the interlocutors in the results analysis: EMP_MAD: businessman, Madrid; EXP_MAD: expert, Madrid; POL_MAD: politician, Madrid; DIR_MAD: manager, secondary school 2, Madrid; TEACHx_FGMAD: teacher, focus group, Madrid; STUDx_FGMAD: student, female, focus group, Madrid; FAMx_FGMAD: families, focus group, Madrid.

Despite its contributions, the sub-study conducted in the Madrid region faced several limitations. The geographical focus on a single region restricts the generalizability of the findings beyond its specific sociopolitical and institutional context.

The number of case studies and interviews conducted, though sufficient for in-depth qualitative analysis, was relatively small and may not capture the full heterogeneity of

educational experiences across the region. Furthermore, the duration of on-site fieldwork was limited (only 2 visits to each school), reducing the opportunity to observe long-term dynamics or the evolving practices regarding mobile phone use. These constraints were partially mitigated by cross-phase triangulation and the longitudinal engagement of the research team, yet they should be considered when interpreting the findings from this regional focus.

3. Results

In the first phase, a politician, an expert, and a businessman from the technology sector were interviewed in the community of Madrid and presented an optimistic view of the role of technology in educational environments. The experts and entrepreneurs were confident in the transformative potential of technology in education and stressed the need for further innovation. During the first two phases, different positions were observed among students, parents, and teachers. In the focus groups, parents were the most opposed to technology, while managers also showed a belligerent attitude towards its use in schools.

The use of mobile phones in education cannot be analyzed in isolation, as a simple matter of banning or allowing them, but rather as part of a broader framework involving digital policy, teacher training, institutional culture, and material conditions. In this regard, the voices collected during the first phase of the project converge in pointing out that mobile phones, like other technological tools, must be integrated into a comprehensive educational digitalization strategy—not as an end in themselves, but as means to serve a broader pedagogical project.

From a policy perspective, there is a strong emphasis that digitalization should go beyond device distribution and be grounded in a coherent institutional project. “We’re not just talking about handing out devices, but about ensuring schools are connected spaces, with Wi-Fi and proper infrastructure; devices will come depending on what we want to do”, explains a political representative (POL_MAD). They also highlighted the need for teacher training and an openness to different tools—such as “EducaMadrid” developed by regional administration, “Google Space”, or “Teams” from Microsoft—stating: “There are no forbidden tools, only poorly used ones” (POL_MAD). This view shifts the focus from the technological object to pedagogical use, and thus, to the agency of the school actors.

The tech industry, for its part, places emphasis on the quality of learning experiences. From this standpoint, digital interaction cannot be reduced to flashy or mechanical additions, but must offer meaningful cognitive and emotional experiences:

“In interactive learning, it’s not enough to just drag stuff around—it must be truly interactive. Set challenges, time limits, exercises that change if you get them wrong. If you give the same task at the same time to everyone, the student who already knows it just repeats it. Today’s students are overwhelmed with stimuli—just handing them a textbook doesn’t make sense anymore” (EMP_MAD).

This highlights the need to adapt content to the students. The goal becomes redefining school motivation, no longer rooted in traditional discipline but in the design of interactive and personalized experiences.

However, this innovation-oriented vision is not without tensions. One risk is treating digital devices as universal solutions. At this point, the voice of an educational expert offers a more balanced view:

“Printed books still need to exist, just like blackboards, because sometimes they’re essential. Students need to write, draw, and think on paper. But then there are digital devices, which can be used to focus information. It’s all compatible.

What matters is integrating mobiles, tablets, computers, and paper harmoniously, respecting different learning methods and moments" (EXP_MAD).

Rather than presenting a strict divide between analog and digital, this view suggests an integrated use of various media, based on timing, learning goals and student needs.

What emerges, then, is the need to move beyond polarized debates, between "technophilia" and "technophobia", to build an integrative framework where mobile phones and other digital tools are approached from a context-sensitive pedagogical logic. The real question is not whether mobile phones belong in classrooms, but under what conditions, for what purposes, and within what institutional frameworks their use is integrated.

In phase 2, in the implementation of two case studies, different positions and discourses were observed on the part of students, parents, and teachers, which were enriched by the focus groups conducted in phase 3 that exacerbated the negative position of the educational community by incorporating parents. Teaching practices were not particularly engaged with technology, although mobile phones were tolerated and used by some teachers. Managers in phase 2 and parents in phase 3 were the most belligerent towards technology.

School principals were concerned about cases of violence in the institutions they led. Experts consulted in phase 1 did not point out these issues. According to the principals, schools became spaces where students wanted to resolve issues of honor over comments on social media. Principals did not want to have phones in their schools to avoid the emergence of such cases. They preferred for it to be relegated to their homes or life outside schools and for students to resolve their conflicts there. For their part, parents, in phase 3, were horrified by the cases of violence reported in the press, experienced in their neighborhood by their neighbors, friends or, in some cases, by themselves. They were openly opposed to the use of mobile phones in schools.

Observations in schools provide a more complex view of the presence of mobile phones in classrooms and in teenagers' lives. This perspective touches the core of the pedagogical, cultural, and social tensions shaping today's schools. The voices gathered in interviews and focus groups reveal a shared concern—but not a unified one—about the implications of mobile phones in school life.

For school administrators, interviewed during Phase 2 of the study, mobile phones were seen as a source of disruption. Their misuse was closely linked to legal and ethical issues. One principal explained it in simple terms: "What we do is make them see that, in the end, this is a crime" (DIR_MAD). Beyond legality, there was an underlying view of the school as a protected space, one that must shield itself from external influences. In this view, mobile phones embodied a constant risk of intrusion from society into the educational realm. Hence, bans were often justified not through pedagogical reasoning, but through a defensive logic:

"A student takes a photo of another and posts it online to mock them—adds little drawings, devil horns, glasses, or whatever. . . All that causes distress to the student and their family, who then call the school: 'My child's classmate posted a photo taken at school.' That forces you to act, with everything that comes with it: the waste of time—well, more than a waste, it's an investment of time and energy: 'What did you do? Why? When?' And then, a sanction. So, to avoid all that, clearly, we decided to ban its use" (DIR_MAD).

The picture becomes more nuanced when it considers teachers, students, and families. Among teachers, two main discourses emerge. On the one hand, the phone is seen as addictive and disruptive to learning; a useless and dangerous tool in students' hands: "It's

like giving a monkey a gun" (TEACH1_FGMAD), one teacher said. Such analogies portray students as immature individuals, incapable of regulating their tech use.

On the other hand, teachers point out their structural vulnerability, lacking institutional or social support to handle conflicts involving phone use:

"The weakest part in this fight against mobiles is the teachers. You really need the backing of the Head of Studies, the administration, to make decisions. Sometimes it's not easy to confront a student's phone dependency. Some of them get really aggressive when you try to take it away. You need to have a strong character to stand up to a student and say, 'Give me the phone. Give me the phone. Give me the phone'" (TEACH1_FGMAD).

At the same time, a critique of the "digital native" idea reappears. While students may be comfortable with certain apps, teachers believe they lack the skills to make meaningful educational use of mobile and digital tools:

"If we look at digital competence with learning indicators, how to really use it for learning, they're not as skilled as people think. One thing is their capacity, and another is their competence. They look very competent when their hands are on the screen, but when it comes to learning, they're not. I have teenage nephews, and they say it themselves. That's where we have something to offer" (TEACH2_FGMAD).

Teachers did not see this gap as just technical, but as an expression of deeper social inequality, rooted in family economic and cultural capital. Technology did not level the playing field; it often amplified differences:

"It's not just about the kid's abilities. It's often about the economic situation of the family. When families don't have phones or know how to use them, because some parents still haven't caught up, their kids struggle with digital practices and content. But kids from wealthier families, whose parents know about computers and all that have much better digital skills. You don't need to teach them much. They already know how to email, attach files, they know everything. While others have barely touched anything digital" (TEACH2_FGMAD).

Students themselves show an ambivalent awareness, which can be surprising. While they recognize the mobile's value for socializing or entertainment, they also feel its pressure and appreciate restrictions when paired with meaningful alternatives:

"Maybe I feel like being on my phone watching whatever, but if you promote sports during recess, or any group activity—sports, card games, whatever, any kind of team game—you just forget about the phone" (STUD_FGMAD).

It may be families, more than any other group, who most clearly express the tensions that mobile phones generate inside and outside school. Their stance reflects a deep contradiction between accepting mobile use as inevitable and feeling anxious about its real impact on learning and academic performance. One father, for example, described his experience during the pandemic, noting that despite the omnipresence of technology, his older child's learning was "far below what it was without a computer and in-person" (FAM3_FGMAD). His concern was not with technology per se, but with the kind of relationship students developed with it:

"My worry is that they're active learners, that they take an active role in thinking. And sometimes I feel like with tech, you become passive and stop thinking. So, I'd rather they learn to think without it first, and then of course they should learn to use it, because we live in a technological world and we can't ignore that" (FAM3_FGMAD).

This expresses a deeper epistemological concern: the fear that technology may replace critical thinking with passive interactions dominated by interfaces rather than meaningful learning intentions.

Another critical point relates to the impact of mobile phones on adolescents' emotional and social lives. The same father, who limited his child's screen time, shared: "He thanked me... he said: 'I see other kids my age totally consumed by their phones. They just disconnect, and their relationships are really poor'" (FAM3_FGMAD). This reveals a widespread concern among families that excessive phone use not only harms academic performance but also undermines social bonds and leads to emotional withdrawal.

Families also raised serious concerns around safety and institutional responsibility. One particularly urgent and alarming discourse highlighted a perceived lack of protection from digital risks, blaming both platforms and governments: "There's no real action, neither from the State nor from the platforms" (FAM2_FGMAD), a mother said, pointing out that digital crimes could affect both children and experienced adults. She continued "They can steal your image, your digital identity, and post it on a prostitution site, even if your parents are police officers" (FAM2_FGMAD). This points to a structural issue:

"I don't think these big tech companies really want to ensure proper use and monitoring, it would mean lower profits, and the States don't want to mess with them. So, in the end, we're all vulnerable. You could have a kid contacting 'a girl from Málaga' who's sending explicit pictures, and maybe she's not even a girl from Málaga" (FAM2_FGMAD).

The unwillingness of major tech companies to implement real safeguards, fearing it would cut into their profits and the passivity of governments in the face of this.

4. Discussion

Throughout the research, the educational community's perception of mobile phones in secondary schools evolved from a position of cautious optimism to one marked by growing prohibitionism. In Madrid, this shift was particularly pronounced, highlighting how a device once envisioned as a pedagogical ally became reframed as a threat to educational order. This transition, accelerated in the wake of the COVID-19 pandemic, was not driven by pedagogical failures or empirical evidence of harm, but by cultural anxieties, public fears, and media narratives that reconfigured mobile phones as disruptive actants. Drawing on ANT (Latour 2005), this shift was a reconfiguration of the sociotechnical network, where non-human elements like mobile phones became entangled with discourses of control, safety, and morality.

The empirical findings from the Madrid case exemplify this dynamic. In the early phases of the study, interviews with political actors, educational experts, and technology industry representatives revealed a shared belief in the pedagogical potential of digital tools. Policymakers emphasized the need for comprehensive digitalization strategies that transcend mere device distribution, calling for teacher training and flexible technological infrastructures. Industry voices advocated for meaningful, interactive learning experiences that adapted to students' cognitive rhythms. Even the experts highlighted the compatibility of analog and digital methods, proposing hybrid models sensitive to context and learner diversity. Mobile phones, in this early configuration, were articulated as desirable actants within a digitally enriched pedagogical environment.

However, as the project advanced into Phases 2 and 3, a stark transformation became evident. The same mobile devices that were once welcomed as tools for innovation were reframed by many school leaders and parents as invasive, uncontrollable, and dangerous. School administrators in Madrid recounted incidents of cyberbullying, unauthorized photography, and classroom disruption, which they used to justify blanket bans. One

principal equated mobile misuse with criminal behavior, framing prohibition as a form of institutional self-defense. Among parents, pandemic-era fatigue coalesced with moral panic over adolescents' screen time, mental health, and digital dependency. For many families, banning mobile phones became a symbolic act of care and protection, an attempt to reassert parental control in a perceived landscape of technological disorder.

This shift corresponds not to a techno-pessimist critique rooted in scientific evaluation (Selwyn 2011, 2016, 2024; Han 2017; Morozov 2013), but to a more visceral, emotional, and unstructured form of pessimism. Rather than deliberating the pedagogical merits and drawbacks of mobile use, this reactive stance aligns with what could be conceptualized as a "techno-pessimistic shock"—a sudden, affect-laden backlash that reduces a complex issue to a binary logic of prohibition versus promotion. Such logic, as emphasized in the results, was echoed in the voices of the teachers and parents who felt disempowered, unsupported, and alone in their efforts to manage mobile phone use. Their frustration was compounded by inadequate institutional support and societal ambivalence.

Students themselves articulated ambivalence, acknowledging the social affordances of mobile phones while also expressing relief at moments when structured, engaging alternatives—like sports or cooperative games—drew them away from the screen. These nuanced reflections underscore the inadequacy of dichotomous policies. Students did not reject digital tools wholesale but called for meaningful integration that respected their cognitive and emotional needs.

In contrast with a reasoned techno-pessimist position (Cuban et al. 2001; Selwyn and Aagaard 2021), where concerns are grounded in systemic analysis and pedagogical evidence, what unfolds in the Madrid case is an emotional governance of technology. Here, mobile phones are not debated but condemned; not rethought but banned. This mode of governance reflects historical patterns of reactive regulation during times of crisis. Drawing a parallel with post-World War I gender politics, the exclusion of women from public life—despite their wartime contributions—mirrored a broader societal need to reestablish order and reaffirm patriarchal control (De Grazia 1992; Koonz 1987). Similarly, in post-pandemic education, the mobile phone became a symbol of disruption to be expelled from the classroom, as if this act could restore a lost pedagogical and parental stability.

The analogy to gender politics illuminates a deeper logic: in both cases, the object of exclusion (women and mobile phones) had previously been instrumentalized in a moment of crisis, only to be rejected when that crisis subsided. The urge to reassert authority over the educational space by excluding mobile phones mirrors attempts to reclaim governance over a youth population perceived as increasingly autonomous, unruly, and opaque to adult norms. In this light, techno-pessimism becomes not merely an epistemological stance but a sociopolitical strategy to regain control. It is tied to broader anxieties about youth, authority, and digital surveillance. Regional bans in Spain often lack robust empirical grounding (Beneito and Vicente-Chirivella 2022). Instead, they reveal moral panics and technopolitical tensions (Selwyn 2011), the productive value of pessimism in critically examining educational technologies.

5. Conclusions

Certainly, as mentioned in the methodological section, the study has limitations (geographical concentration in the Madrid region, limited number of cases, and the relatively short duration of field observations) that may not allow for a complete understanding of the phenomenon under analysis.

But what the Madrid case underscores is the extent to which mobile phones have become political actants in the Latourian sense. They are no longer mere devices, but objects imbued with moral valence, institutional authority, and familial fears. Their prohibition

is less about their inherent properties and more about the network of human and non-human actors—teachers, parents, policies, infrastructures, and media narratives—that coalesce around them. This insight challenges technocentric approaches that isolate devices from their contexts and underscores the importance of relational thinking in educational technology governance.

Yet, this study also reveals a path forward. Amid the anxiety and prohibitionist discourse, voices from students, teachers, and experts pointed to alternative possibilities: contextual integration, hybrid pedagogies, and multilevel support systems. This study has a potential impact on public educational policies, teacher training strategies, and the design of more reflective, critical, and adaptive technological governance frameworks (Álvarez-López et al. 2023; Goodyear et al. 2025). Mobile phones can be educational assets—if governed wisely, inclusively, and contextually. For example, the complexity of mobile phone use among Spanish adolescents is a widespread recognition of their educational value and a clear tendency toward predominantly social uses (Álvarez-López et al. 2023). Most schools lack structured limitations, leaving students to navigate usage norms largely unassisted.

School policies banning mobile phone use do not necessarily lead to improved adolescent mental well-being (Goodyear et al. 2025). These findings suggest that current prohibitive policies lack sufficient evidence of effectiveness and require further development. Nonetheless, such policies might serve as low-cost strategies to reduce educational inequalities affecting certain student groups (Béland and Murphy 2016).

Perhaps more worryingly, technological denialism is masking a certain authoritarianism and political verticality, with no imagination in the implementation of more humane pedagogies. As Ines Dusell asked when analyzing the Argentinean curriculum: Why is there not more presence of technology in the Argentinean curriculum (Ocoró-Loango and Cortés Salcedo 2010). The answer is that it was a humanist and creative curriculum, perhaps in the nineteenth century, but now it was of no interest.

The education community has suffered a shock that educators and researchers must commit to unraveling. Schools and education policies in the Madrid region are on the way to this irrational response, an absurd idea that ends up becoming one to which everyone in education subscribes.

The techno-pessimistic shock described here is not grounded in rational critique but emerges from affective tensions, institutional vulnerabilities, and public exhaustion. Studying this moment through the ANT allows the contingent, relational, and political dimensions of educational technology to surface. Future research lines, such as longitudinal studies analyzing the evolution of these policies or comparative investigations in other territorial contexts may be necessary. For example, a similar approach as the rest of the regions analyzed in the macro-study in which this sub-study is included (Catalonia, Valencia, Castile-La Mancha) but with different starting policies and in regions more tolerant and committed to the use of technology in schools, such as Asturias and the Canary Islands. Rather than reacting with bans, educational systems must embrace slow, reflective governance that accounts for complexity. Only by resisting binary framings and investing in pedagogical imagination can move toward a digital education that is both critical and humane.

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Institutional Review Board Statement: This study did not require ethical review because, according to Article 1 of Regulations of the Research Ethics Committee of the Universidad Autónoma de Madrid, approved by the Governing Council of UAM on 13 June 2003, modified by the Governing Council of UAM on 18 July 2013 and 14 July 2016, research of this type is exempt under the following conditions: that it is not involving the use of samples of human origin, the collection and processing of personal data that may affect fundamental rights (rights and freedoms of individuals, and that any breach may have legal and reputational consequences), animal experimentation and the use of biological agents or genetically modified organisms, in accordance with the provisions of current legislation (*). This study meets these criteria because follows the basic research ethics principles of respect for the individual (ensuring the autonomy, dignity and privacy of participants), beneficence (seeking the benefit of participants and society at large), non-maleficence (avoiding harm to participants) and justice (ensuring access to the benefits of research), where each participant has been informed about the purpose of the study, all information collected is confidential, no names or locations are disclosed, the participant participates voluntarily, has had the option to withdraw at any time from the research and has received as much additional information as required, and therefore, ethical review was not required. (*)Law 14/2011, of 1 June, on Science, Technology and Innovation, Law 14/2007, of 3 July, on Biomedical Research, Royal Decree 1716/2011, of 18 November, on the authorisation and operation of biobanks, Regulation (EU) No 536/2014, on clinical trials on medicinal products for human use, Royal Decree 957/2020, of 3 November, which regulates observational studies with medicinal products for human use.

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Abbreviations

The following abbreviations are used in this manuscript:

AI	Artificial intelligence
ANT	Actor–Network Theory
COVID-19	Coronavirus disease
INE	Spanish National Institute of Statistics
MAXQDA	Computer-assisted qualitative data analysis software
STEAM	Science, technology, engineering, the arts, and mathematics
TPACK	Technology, Pedagogy, and Content Knowledge Model
UNESCO	United Nations Educational, Scientific, and Cultural Organization

References

- Arendt, Hanna. 2006. *Eichmann in Jerusalem: A Report on the Banality of Evil*. New York: Penguin Classics.
- Álvarez-Lópes, Gabriel, Luján Lázaro, Belén Espejo, and Daniel Caballero-Juliá. 2023. Uso de dispositivos móviles entre los jóvenes: Hacia una regulación multinivel. *Cadernos de Pesquisa* 53: e10319. [\[CrossRef\]](#)
- Béland, Louis-Philippe, and Richard Murphy. 2016. Ill Communication: Technology, distraction and student performance. *Labour Economics* 41: 61–76. [\[CrossRef\]](#)
- Beneito, Pilar, and Óscar Vicente-Chirivella. 2022. Banning mobile phones in schools: Evidence from regional-level policies in Spain. *Applied Economic Analysis* 30: 153–75. [\[CrossRef\]](#)
- Braybon, Gayl. 2012. *Women Workers in the First World War*. London: Routledge.
- Bucher, Taina. 2018. *If...Then: Algorithmic Power and Politics*. Oxford: Oxford University Press.

- Cabero-Almenara, Julio, Julio Barroso-Osuna, Rosalía Romero-Tena, and Antonio Palacios-Rodríguez. 2020. Marcos de competencias digitales docentes y su adecuación al profesorado universitario y no universitario. *RECIE. Revista Caribeña de Investigación Educativa* 4: 137–58. [CrossRef]
- Castells, Manuel. 2009. *The Rise of the Network Society*, 2nd ed. Hoboken: Wiley-Blackwell. [CrossRef]
- Comisión Nacional de los Mercados y la Competencia (CNMC). 2024. Las líneas móviles superan los 56 millones en España, un 87.2% de ellas con acceso a Internet. Available online: <https://www.cnmc.es/prensa/estadisticas-telecomunicaciones-febrero-20220413> (accessed on 15 May 2025).
- Compaine, Benjamin M., ed. 2001. *The Digital Divide: Facing a Crisis or Creating a Myth?* Cambridge: MIT Press.
- Corredor, Felipe, Francisco Tirado, and Lupicinio Iñiguez-Rueda. 2010. ¿Bajo las riendas del teléfono móvil? Control social, normalización y resistencia. *Psicología and Sociedad* 22: 60–69. [CrossRef]
- Cuban, Larry, Heather Kirkpatrick, and Craig Peck. 2001. High access and low use of technologies in high school classrooms: Explaining an apparent paradox. *American Educational Research Journal* 38: 813–34. [CrossRef]
- Cuban, Larry. 1993. Computers Meet Classroom: Classroom Wins. *Teachers College Record* 95: 185–210. [CrossRef]
- De Grazia, Victoria. 1992. *How Fascism Ruled Women: Italy 1922–1945*. Oakland: University of California Press.
- Dede, Chris. 2009. Immersive interfaces for engagement and learning. *Science* 323: 66–69. [CrossRef] [PubMed]
- Fombona, Javier, and Francisco-Javier Rodil. 2018. Niveles de uso y aceptación de los dispositivos móviles en el aula. *Pixel-Bit* 52: 21–35. [CrossRef]
- García Canclini, Nestor. 1995. *Hybrid Cultures: Strategies for Entering and Leaving Modernity*. Minneapolis: Minnesota UP.
- Goodyear, Victoria A., Péymane Adab, Amie Randhawa, Sally Fenton Hareth Al-Janabi, Maria Michail, Kirsty Jones, Paul Patterson, Breanna Morrison, Alice Sitch, Jonathan Quinlan, and et al. 2025. School phone policies and their association with mental wellbeing, phone use, and social media use (SMART Schools): A cross-sectional observational study. *The Lancet Regional Health—Europe* 51: 101211. [CrossRef] [PubMed]
- Guba, Egon G., and Yvonna S. Lincoln. 1982. Epistemological and methodological bases of naturalistic inquiry. *Educational Technology Research and Development* 30: 233–52. [CrossRef]
- Han, Byung-Chul. 2017. *Psychopolitics: Neoliberalism and Technologies of Power*. London and New York: Verso.
- Harasim, Linda. 2017. *Learning Theory and Online Technologies*. London: Routledge.
- Hardt, Michael, and Antonio Negri. 2001. *Empire*. Cambridge: Harvard University Press.
- Instituto Nacional de Estadística (INE). 2024. Survey on Equipment and Use of Information and Communication Technologies (ICT) in Households. Available online: <https://www.ine.es/dyngs/Prensa/en/TICH2024.htm> (accessed on 15 May 2025).
- Kirschner, Paul A., and Pedro De Bruyckere. 2017. The myths of the digital native and the multitasker. *Teaching and Teacher Education* 67: 135–42. [CrossRef]
- Koehler, Matthew J., and Punya Mishra. 2005. What Happens When Teachers Design Educational Technology? The Development of Technological Pedagogical Content Knowledge. *Journal of Educational Computing Research* 32: 131–52. [CrossRef]
- Koonz, Claudia. 1987. *Mothers in the Fatherland: Women, the Family and Nazi Politics*. London: Routledge.
- Latour, Bruno. 2005. *Reassembling the Social. An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press. [CrossRef]
- Mateu, Borja, Montserrat Blanco, Xavier Giró, and Joaquín Paredes-Labra. 2023. Posicionamiento de los medios de comunicación tradicionales respecto al uso educativo de los móviles en educación secundaria. *Educación XX1* 26. [CrossRef]
- Mitra, Sugata, and Paul Judge. 2004. *The Hole in the Wall*. New Delhi: Dataquest India.
- Morozov, Evgeny. 2013. *The Folly of Technological Solutionism*. New York: PublicAffairs.
- Negroponte, Nicholas, Susan R. McKay, Randal Harrington, and Wolfgang Christian. 1997. Being digital. *Computers in Physics* 11: 261–62. [CrossRef]
- Ocoró-Loango, Anny, and Ruth Amanda Cortés Salcedo. 2010. Perfiles latinoamericanos: Entrevista a Inés Dussel. *magis, Revista Internacional de Investigación en Educación* 2: 415–20.
- Oppenheimer, Todd. 1997. The computer delusion. *Atlantic Monthly* 280: 45–62. Available online: <https://www.theatlantic.com/magazine/archive/1997/07/the-computer-delusion/376899/> (accessed on 15 May 2025).
- Oppenheimer, Todd. 2004. *The Flickering Mind: The False Promise of Technology in the Classroom and How Learning Can Be Saved*. New York: Random House.
- Orben, Amy. 2020. Teenagers, screens and social media: A narrative review of reviews and key studies. *Social Psychiatry and Psychiatric Epidemiology* 55: 407–14. [CrossRef] [PubMed]
- Papert, Seymour. 1993. *The Children's Machine: Rethinking School in the Age of the Computer*. New York: Basic Books.
- Pastor, Yolanda, Rebeca Martín, and Manuel Montes. 2019. Patrones de uso, control parental y acceso a la información de los adolescentes en la red. *Estudios sobre el mensaje periodístico* 25: 995–1012. [CrossRef]
- Prensky, Marc. 2001. Digital natives, digital immigrants part 2: Do they really think differently? *On the Horizon* 9: 1–6. [CrossRef]
- Ramos-Pardo, Francisco Javier, Diego Calderón-Garrido, and Cristina Alonso-Cano. 2023. Una revisión sistemática del uso educativo de teléfonos móviles en tiempos de COVID-19. *Education in the Knowledge Society (EKS)* 24: e29903. [CrossRef]

- RTVE. 2018. La lucha de las sufragistas logró el voto femenino. Available online: <https://www.rtve.es/noticias/20180206/lucha-sufragistas-logro-voto-femenino-reino-unido-hace-100-anos/1675121.shtml> (accessed on 15 May 2025).
- Selwyn, Neil. 2011. Editorial: In praise of the need for negativity in educational technology. *British Journal of Educational Technology* 42: 713–18. [CrossRef]
- Selwyn, Neil. 2016. *Is Technology Good for Education?* Cambridge: Polity Press.
- Selwyn, Neil. 2024. On the Limits of Artificial Intelligence (AI) in Education. *Nordisk tidsskrift for pedagogikk og kritikk: Special Issue on Artificial Intelligence in Education* 10: 3–14. [CrossRef]
- Selwyn, Neil, and Jesper Aagaard. 2021. Banning mobile phones from classrooms: An opportunity to advance understandings of technology addiction, distraction and cyberbullying. *British Journal of Educational Technology* 52: 8–19. [CrossRef]
- Turkle, Sherry. 2015. *Reclaiming Conversation: The Power of Talk in a Digital Age*. New York: Penguin Press.
- Van Dijk, Jan. 2005. *The Deepening Divide: Inequality in the Information Society*. Thousand Oaks: Sage.
- Warschauer, Mark. 2004. *Technology and Social Inclusion: Rethinking the Digital Divide*. Cambridge: MIT Press.
- Wikimedia Foundation. 2025. Representation of the People Act 1918. Available online: https://en.wikipedia.org/wiki/Wikipedia:Manual_of_Style (accessed on 29 May 2025).
- Wilmer, Henry H., Lauren E. Sherman, and Jason M. Chein. 2017. Smartphones and cognition: A review of research exploring the links between mobile technology habits and cognitive functioning. *Frontiers in Psychology* 8: 605. [CrossRef] [PubMed]

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