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**Research Article**

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# Digital divide and social inequalities: Sociological approaches to the Greek education system and family roles

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**ABSTRACT**

The digital divide is a multifaceted social phenomenon that perpetuates and exacerbates pre-existing social inequalities within education. This study explores teachers' views on integrating ICT in Greek schools, emphasizing how the digital divide influences classroom practices. Findings indicate that the education system often acts as a mechanism of social reproduction rather than equalization, such as infrastructural deficiencies, particularly in rural areas, and the persistence of hidden curricula reinforce passivity and limit critical thinking. Teachers play a crucial role in either bridging or reinforcing digital inequalities. However, gaps in digital skills, resistance to pedagogical change, and insufficient training help maintain hierarchical relationships and traditional teaching methods. Family background further emerges as a decisive factor, as economic, cultural, and social capital shape access to digital resources and opportunities, perpetuating cycles of inequality. Geographical factors exacerbate these disparities, particularly in remote regions, where access to infrastructure is limited. Policy implications emphasize that bridging the digital divide requires more than just providing technological equipment, underscoring the need for comprehensive interventions in teacher training, digital literacy, and equity-focused reforms. Ultimately, coordinated action among institutions, educators, and families is essential to transform education into a driver of inclusion and empowerment.

**Keywords:** digital divide, ICT in education, social reproduction, teachers' perceptions, sociological approach, Greece

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## INTRODUCTION

In the postmodern era, the penetration of ICT into the division of labor and productive, social, and political relations determined the importance of access to and management of the information resources that shape the new social reality. Drucker (2006) notes that those with access to knowledge and information will become the dominant class. As this access evolves, the non-dominant class will be increasingly distanced from it, thereby intensifying social inequalities. ICT is radically transforming many aspects of social and economic life (work, company organization, education and training, etc.) (Giavrimis, 2022). The development of digital literacy, i.e., the ability of individuals to use digital technology to acquire, manage, and evaluate information, build new knowledge, and effectively participate in society (Apps, 2015; Beckman et al., 2018; Tissot, 2004). Education in this context is transforming from teacher-centered and reproductive to a space based primarily on the processing and transformation of new social data and the development of critical thinking (Anastasopoulou et al., 2025). The issue of equality in access to technology emerges as a dominant one that cannot be isolated from the broader social context. In education and societies, discrimination is multiplying, and the digital divide is becoming a new mechanism of social exclusion (Leigh, 2010).

## THE DIGITAL DIVIDE AND SOCIAL/EDUCATIONAL INEQUALITIES: A SOCIOLOGICAL PERSPECTIVE

### Conceptual Framework and Key Definitions

The *digital divide* refers to the unequal distribution of access to digital technologies, the ability to use them effectively, and the capacity to leverage their use for tangible benefits, such as improved educational or professional opportunities (Giavrimis, 2023; van Dijk & Hacker, 2011). Importantly, the digital divide is not simply a technological phenomenon but encompasses the social and cultural relationships, systems, and structures within which digital practices occur, as well as the meaning technology holds in individuals' lives (Beckman et al., 2018).

The digital divide is a multidimensional and dynamic social inequality that concerns not only differential access to digital technologies but also the social and cultural consequences that

accompany it. The digital divide is a social phenomenon that reproduces and deepens existing social inequalities (Jamil, 2021; Khalid & Pedersen, 2016; Ragnedda & Muschert, 2013; Tomczyk et al., 2024). Instead of acting as a balancing factor that offers equal opportunities to all, technology becomes yet another field of social stratification, where the advantages it provides are distributed unevenly. As Ragnedda (2019) argues, the gap is constantly changing, creating new forms of inequality at every stage.

According to contemporary literature, the digital divide manifests itself on three levels: the first concerns inequality in access to digital technologies, the second concerns skills in using them, and the third concerns the benefits derived from their use (Ragnedda, 2017). The associated digital capital refers to the accumulation of digital skills (including information, communication, security, content creation, and problem-solving) and digital technology (Ragnedda & Ruiu, 2020, p. 45). As bridging capital, it connects social and economic capital to the online sphere, enabling their mutual transformation (Ragnedda & Ruiu, 2020, pp. 32-34). This transformation is crucial for generating tangible benefits, such as improved professional opportunities, enhanced social participation, or access to educational resources (Anastasopoulou et al., 2025). The possession of digital capital is positively correlated with income and educational attainment, enhancing access to work and culture and creating a cycle of privilege and social dominance (Beckman et al., 2018; Ragnedda & Ruiu, 2020, pp. 60-62).

In the educational field, students with high digital capital, often from socioeconomically privileged backgrounds, frequently utilize digital platforms for learning, content creation, and engagement in the digital public sphere. The lack of digital skills and quality equipment leads to lower educational outcomes and limited future opportunities, reinforcing the cycle of social exclusion (OECD, 2000a). Students from families with lower social and economic capital tend to lag in both access to and use of technologies for learning. This leads to a vicious cycle in which educational inequalities are magnified rather than reduced (Beckman et al., 2018; Giavrimis & Nikolaou, 2020, pp. 1-10; Ragnedda & Muschert, 2013). The concept of *educational inequality* refers to the systematic differences in educational outcomes, opportunities, and resources that correlate with students' socioeconomic backgrounds, geographic locations, and other social characteristics (OECD, 2000a). When combined with digital access disparities, educational inequality becomes compounded, creating what Ragnedda (2017) terms the "third digital divide", disparities not merely in access or skills, but in the tangible outcomes and life opportunities that digital engagement provides (Ragnedda, 2017). Thus, the classroom becomes a microcosm of social inequality, in which students with greater cultural and economic capital are more likely to take advantage of technology (Giavrimis, 2023). Similarly, teachers with limited digital skills experience greater insecurity and difficulty, reinforcing inequalities within the school system itself (Leigh, 2010).

In Weber's theory, the gap is linked to the stratification of society into classes, social positions, and power. Digital literacy and the ability to use technology are indicators of social status and prestige. As noted, a clear link emerges between education, an indicator of prestige and economic influence, and the ability to convert knowledge into digital fluency. Even when formal access is ensured, the difference lies in how individuals and social groups utilize technology to enhance their position in the social sphere. This means that social inequalities are not eliminated by technological equality but are instead reconfigured at new levels (Ragnedda, 2019). At the same time, the digital divide can be seen as a consequence of capitalist reproduction, in which digital technologies are not neutral tools but "means of production" of knowledge controlled by the ruling class. Unequal access reinforces the material division between social classes, with some having access to limited or commercialized forms of expertise. The digital divide functions as an ideological mechanism that normalizes class inequalities (Anyon, 2011; Fuchs, 2014). Bridging the gap requires holistic policies that extend beyond equipment provision to include skills development, critical education, and institutional measures for equitable access to technology. Only in this way can schools function as spaces for social empowerment rather than mechanisms for reproducing inequalities.

Drawing on Bourdieu's (1973) framework, *cultural capital* refers to the knowledge, skills, education, and cultural competencies that individuals inherit from their family background and acquire through socialization. In the context of digital education, cultural capital manifests as familiarity with technology, digital literacy practices valued in educational settings, and the capacity to navigate digital learning environments effectively. *Social capital* denotes the resources available to individuals through their social networks and relationships (Bourdieu, 1973). For digital inclusion, social capital provides access to technical support, guidance on technology use, and exposure to digitally engaged peer and family networks.

## ICT EDUCATION IN GREECE

In the Greek education system, ICT teaching was initially fragmented in the 1980s. The unified curriculum systematized the introduction of ICT in education, while the Intra-thematic integrated framework of studies programs (DEPPS) (YPEPTH, 2003) innovatively set as objectives for compulsory education the development of students' digital literacy. It highlights the various functions of computers as visual teaching aids, cognitive exploration tools, and resources for communication and information retrieval in daily school activities. At the same time, it emphasizes the importance of developing social and critical skills, mainly aligning with the holistic model seen in traditional schools (Giavrimis, 2023; YPEPTH, 2003). Law 4692/2020 (Government Gazette 111/A/12-6-2020) "school upgrade and other provisions" stipulates that the ICT course is taught for one hour per week in all grades. The 2021 information technology curricula follow the interdisciplinary unified curriculum framework, applicable from primary school, starting in first grade, through high school. The content covers consistent thematic areas, including algorithmic programming, computer systems, data analysis, and digital literacy (IEP, 2021).

At the same time, the IEP (2023) conducts seminars for teachers, with objectives focused on life skills, soft skills, and technology and science skills. These activities include:

(a) the 21st century digital learning program focuses on cultivating skills that combine technology, communication, and collaboration,

(b) digital citizenship skills, which enhance e-governance literacy, responsible citizenship, safe internet navigation, and resilience to addictive behaviors,

(c) technology skills, which include the creation and sharing of digital products,

(d) media management skills that promote information, technological, and digital literacy, and

(e) robotics, which emphasizes modelling, simulation, and the cultivation of scientific and computational thinking.

In the Greek educational system, only 34% of students are enrolled in schools with an effective online learning support platform, which is lower than the OECD (2020b) average of 54%. Additionally, 89% of Greek students reported having a computer they could use for schoolwork, matching the OECD (2020b) average. The digital divide is closely tied to socioeconomic and demographic factors, including age, income, and geographic location (Karatrantou & Panagiotakopoulos, 2023). Quantitative studies indicate that income, education, and region type are the most significant factors influencing internet access and use in Greece (Gounopoulos et al., 2014). Teachers recognize that students from lower socioeconomic backgrounds and students living in remote areas face greater difficulties in accessing technological equipment and services (Giavrimis, 2023; Giavrimis & Nikolaou, 2020). These findings underscore that the digital divide in Greek education is not merely a technical issue but a reflection of broader social and economic inequalities that must be addressed through systematic policies and training (Giavrimis, 2023).

The implementation of "emergency remote education" during the pandemic highlighted several aspects related to students' digital literacy, such as:

(a) the exclusion of the "digitally illiterate," for reasons mainly related to class, economic, geographical, and biological constraints (Karatrantou & Panagiotakopoulos, 2023) and

(b) the negative psychology of students, including signs of anxiety, lack of concentration, and sleep disorders (Morgan, 2020).

While substantial quantitative research has documented the existence and correlates of the digital divide in Greece (Gounopoulos et al., 2014; Karatrantou & Panagiotakopoulos, 2023), there remains a notable gap in qualitative understanding of how teachers perceive, experience, and potentially reproduce or mitigate digital inequalities in their daily practice. Previous Greek studies have primarily focused on access metrics and infrastructure availability (OECD, 2020b) or examined teacher attitudes toward ICT adoption in isolation from broader sociological frameworks of inequality (Giavrimis & Nikolaou, 2020).

This study addresses this gap by situating teachers' lived experiences within a comprehensive sociological framework that integrates Bourdieu's capital theory with Weberian perspectives on status and stratification, thereby illuminating the mechanisms through which digital inequalities are enacted, reinforced, or challenged within Greek primary school classrooms. Furthermore, it examines the role of educators not only as mediators of knowledge but also as bearers of a specific habitus that influences their attitudes towards technology and pedagogical innovation, and ultimately the reproduction or mitigation of inequalities. At the same time, the research highlights the family's role in either reinforcing or limiting digital capital, linking the micro-level (family, school) to the macro-level (educational policy). In this way, the study extends the existing literature on the digital divide, providing empirical data from the Greek context and contributing to the theoretical understanding of digital inequality as a structural element of modern educational inequalities.

The purpose of this study is to explore teachers' views on the introduction of ICT and the resulting digital divide in Greek schools. More specifically, the research questions posed are:

(a) what is the role of the education system in the resulting digital divide and social inequalities,

(b) what is the role of teachers in the digital divide and the resulting social inequalities,

(c) what is the role of the family in the digital divide and social inequalities, and

(d) what are their views on the methods of political and institutional intervention.

## METHOD

### Research Design

This study employed a qualitative research design using semi-structured interviews to explore Greek primary school teachers' perspectives on the digital divide and its relationship to social inequalities. A qualitative approach was deemed appropriate given the study's aim to understand the subjective meanings, lived experiences, and interpretive frameworks through which teachers make sense of digital inequality in their professional practice (Iosifidis, 2017). The semi-structured interview format enabled systematic coverage of key themes while allowing flexibility to pursue emergent topics and probe participants' responses in depth.

### Participants

A purposive sampling strategy was employed to ensure diversity in participants' familiarity with new technologies, which was central to the study's focus on the digital divide. Additionally, the purposive sampling choice was not dictated by practical constraints but by the research's theoretical focus. Within the framework of interpretative sociology, the aim is not statistical representation but rather to reveal the social mechanisms through which inequality is produced and reproduced. The participating educators were selected as carriers of different forms of capital and habitus within diverse school contexts. Participants were recruited from primary schools in Greece through professional networks and direct outreach to school principals. The inclusion criteria required participants to be currently serving as primary school teachers with at least one year of teaching experience. To capture diverse perspectives, the sampling strategy deliberately sought teachers with varying levels of technological proficiency, ranging from those who self-identified as having limited ICT skills to those who considered themselves digitally proficient.

A total of 23 primary school teachers participated in the study, comprising nine men and 14 women. Participants' ages ranged from 32 to 54 years, and their professional experience spanned from 1 to 36 years. The sample included teachers from schools of varying organizational sizes and geographic locations, including both urban and semi-urban/rural settings, to capture potential infrastructural and contextual differences that might influence experiences of the digital divide (**Table 1**). The school environment was considered a critical factor, as access to computer laboratories, the quality of internet connection, and the availability of technical support significantly influence the possibilities for integrating ICT into teaching practice. Furthermore, schools located in rural or remote areas often serve

**Table 1.** Participants table

| Category | Sub-category | Number of teachers |
|---|---|---|
| Gender | Male | 9 |
| | Female | 14 |
| Experience (years) | 1-5 | 4 |
| | 6-20 | 13 |
| | 21-36 | 6 |
| Age | 32-39 years | 8 |
| | 40-49 years | 10 |
| | 50-54 years | 5 |
| School location | Urban | 14 |
| | Semi-urban/rural | 9 |
| School size (by classes) | Large (over 11 classes) | 10 |
| | Medium (6-10 classes) | 9 |
| | Small (1-5 classes) | 4 |
| Total | | 23 |

student populations with lower socio-economic and cultural capital, making the digital divide more pronounced and multi-layered. Finally, the selection of schoolteachers with varying levels of digital familiarity was not intended for evaluative comparison, but to explore the mechanisms through which the unequal distribution of digital capital among teachers themselves influences daily school life. In this way, the methodological approach aligns with the study's theoretical aim to understand the digital divide as a social and institutional process.

The sample size of 23 participants was determined by the principle of theoretical saturation (Guest et al., 2006), whereby data collection continued until new interviews no longer yielded substantially new themes or insights. While purposive sampling does not permit statistical generalization, it is particularly suited to qualitative research aimed at exploring diverse and characteristic cases in depth (Iosifidis, 2008). The demographic composition of the sample reflects the feminized nature of the primary teaching workforce in Greece, while ensuring sufficient male representation to explore potential gender-based perspectives (World Bank, 2023).

## Research Tool

Data were collected through individual semi-structured interviews conducted in Greek, the native language of all participants. Each interview lasted between 32 and 45 minutes and was audio-recorded with participants' informed consent. Interviews took place at participants' schools, typically in their classrooms, at times convenient to them to minimize disruption to their teaching duties. Prior to each interview, participants were provided with information about the study's purpose and assured of confidentiality and their right to withdraw at any time.

The interview protocol was structured around four thematic areas:

(a) teachers' understanding of the digital divide, including questions such as "What does the term digital divide mean to you?",

(b) the factors perceived to cause the digital divide, such as "What are the reasons for the digital divide in education?",

(c) the consequences of the digital divide on everyday life and teaching, including "How does the digital divide affect your work?", and

(d) possibilities for addressing the digital divide, both through individual teacher action and systemic interventions.

The protocol also collected demographic information, including participants' age, gender, years of service, educational qualifications, parents' educational and occupational backgrounds, and school organizational characteristics.

During interviews, the researcher attended both verbal and non-verbal communication cues. When participants appeared uncertain about the meanings of the questions, clarifications were provided. Follow-up probes were used to elicit elaboration on responses, such as "Can you give me an example from your experience?" or "How do you think friends and acquaintances can help with technology engagement?"

## Research Process

The audio recordings were transcribed verbatim and analyzed using thematic analysis following the six-phase approach outlined by Braun and Clarke (2006). In the first phase, the researcher engaged in familiarization by reading and re-reading the transcripts while noting initial impressions and potential patterns. The second phase involved systematic initial coding, in which meaningful text segments, ranging from sentences to paragraphs, were assigned descriptive codes. Coding was both deductive, drawing on theoretical concepts from the literature such as cultural capital, digital capital, and social reproduction, and inductive, remaining open to unexpected themes emerging from the data. In the third phase, codes were collated into potential themes by identifying patterns and relationships among them. The fourth phase involved reviewing themes to ensure internal coherence and clear distinction from one another, returning to coded extracts and the full dataset to verify that themes accurately represented the data. Phase five consisted of defining and naming themes, articulating the essence of each theme and its contribution to answering the research questions. The final phase involved writing up the analysis, selecting illustrative quotations, and relating findings to the theoretical framework.

The unit of analysis varied according to content, encompassing single sentences, paragraphs, or extended narratives as appropriate (Kyriazi, 2002). To enhance analytical rigor, preliminary themes were discussed with colleagues, and the coding scheme was reviewed to identify potential inconsistencies or blind spots (Roberts et al., 2019). The researcher maintained reflexive awareness throughout the analysis, acknowledging that their own positioning as an educator and researcher inevitably shapes interpretive choices. Quotations presented in the findings have been translated from Greek to English by the researcher, with attention to preserving participants' intended meanings.

Also, qualitative research requires acknowledgement of the researcher's role in shaping data collection and interpretation (Iosifidis, 2017). The primary researcher has professional experience in education and familiarity with the Greek school system, which facilitated rapport with participants and informed understanding of their contexts. However, this insider perspective also carries risks of taking certain assumptions for granted or over-identifying with participants' views. To mitigate these risks, the researcher maintained reflexive notes throughout the research process, documenting decisions, emerging interpretations, and potential biases. The theoretical framework was used not as a rigid interpretive lens but as a sensitizing framework, remaining open to modification in light of the empirical data (Dimopoulos & Koutsampelas, 2024).

Finally, the study adhered to ethical guidelines for research involving human participants. All participants provided informed

consent before their interviews, having been informed of the study's purpose, procedures, and their rights. To protect anonymity, participants are identified by alphanumeric codes (P1, P2, etc.) in the presentation of findings. Audio recordings and transcripts were stored securely and accessible only to the research team.

## FINDINGS

### Theme 1. The Role of the Education System in Reproducing Social Inequality

Rather than functioning as an equalizing mechanism, participants described the education system as reproducing and reinforcing the digital divide. Three interconnected subthemes emerged: inequalities stemming from teachers' differential ICT competencies, the impact of inadequate infrastructure, and the role of hidden curriculum dynamics.

#### *Inequalities in ICT skills and knowledge among teachers*

Participants consistently identified significant disparities in digital competencies among teaching colleagues, particularly along generational lines. These disparities were described not merely as individual skill gaps but as structural features of the teaching profession that directly affect educational quality and create dependency hierarchies within schools. As one participant explained: *"These people find new technologies very difficult ... either because they do not want to, or because they have never sat down to learn, as they have many years of service, twenty and thirty years ..." (P4).*

This quotation illustrates how P4 frames limited digital skills as a complex intersection of resistance and circumstance, implicitly suggesting that systemic training failures over the course of extended careers have compounded individual reluctance. The reference to "twenty and thirty years" of service suggests that institutional support for ongoing professional development in ICT has been insufficient over time. Another participant articulated the direct pedagogical consequences: *"Teachers who are not very knowledgeable are unable to adapt to the new circumstances ... Of course, time is lost, and there is a lack of understanding" (P7).* P7's observation connects individual teacher deficits to broader systemic inefficiencies, noting that limited ICT competence creates barriers to adaptation that affect the entire classroom environment. The phrase "lack of understanding" suggests a communicative breakdown between digitally-oriented educational expectations and teachers' capacity to meet them.

Several participants described how digital skill disparities created informal hierarchies and dependency relationships within schools: *"When electronic entries are made, they are usually handled by those who are more experienced with computers" (P11), "Older colleagues often ask younger ones for help" (P8).* These accounts reveal how technological tasks become concentrated among more digitally proficient teachers, creating what might be termed a "hierarchy of skills" that restructures workplace relationships. From a Bourdieusian perspective, digital competence functions as a form of capital that generates power differentials within the school field. Participants also expressed heightened vulnerability: *"I believe teachers are more exposed to the digital divide... they need to be one step ahead" (P14), "There were teachers who struggled to manage digital classrooms and were exposed in front of their students" (P3).* P3's use of "exposed" is particularly revealing, suggesting that digital incompetence carries stigma and threatens professional identity. This aligns with Weberian notions of status anxiety, wherein teachers' inability to demonstrate technological competence undermines their authority and prestige.

#### *The hidden curriculum and infrastructure deficits*

Participants described how inadequate and unequally distributed technological infrastructure reinforces educational inequalities, particularly disadvantaging schools in rural and under-resourced areas:

P11 participant powerfully illustrates how infrastructure deficits create cascading educational barriers. The 40-kilometre distance serves as both a literal and a symbolic measure of exclusion, while the acknowledgement that "not everyone can afford that" explicitly links geographic isolation to economic inequality:

> "The teacher who does not use it will say, 'Kids, go to the library and look it up,' and that is good, so we do not stray from the books, but if, for example, our school does not have a big library, what will the child do? They will have to travel 40 kilometers to the city to do so, and not everyone can afford that, which makes it very difficult for the teacher." (P11)

P16's description of students sharing computers highlights how resource scarcity reduces individual learning opportunities. Such conditions suggest that even when schools possess some digital resources, access remains stratified at the classroom level, reinforcing unequal educational conditions: *"There are no computers. Here at school, only a few classrooms have computers ... The children sit three to a computer." (P16)*

### Theme 2. Family Characteristics, the Digital Divide, and Social Inequalities

Participants emphasized that the digital divide is fundamentally a reflection of existing socioeconomic inequalities rather than a purely technological phenomenon. The family emerged as a primary site where digital capital—or its absence—is transmitted across generations, reinforcing patterns of educational advantage and disadvantage.

#### *Social class and educational level*

Participants identified clear correlations between families' social positioning and their children's digital engagement: *"The higher one's social status, the more one uses them... the better one's educational level" (P1), "Parents who had a higher level of education invested in technology for their children" (P7).* These observations align closely with Bourdieu's framework: parents with higher educational attainment possess the cultural capital to recognize the educational value of technology and the economic capital to invest in it. P1's linking "social status" to technology use suggests awareness that digital engagement itself becomes a marker of class position. Another participant explicitly connected parental educational level to children's digital development: *"If the parents' educational level is very low... they will leave the child in obscurity" (P9).* P9's metaphor of "obscurity" powerfully captures how parental educational limitations can leave children without guidance in navigating the digital world, perpetuating educational disadvantage. This transmission of digital disadvantage represents a form of negative inheritance that compounds existing class inequalities.

#### *Economic barriers to digital access*

Economic constraints emerged as a fundamental barrier to digital inclusion, with participants identifying how poverty directly limits families' capacity to participate in digital education:

> "I think that those who are not financially well off are mainly affected, that is, the lower economic strata, as not all farmers are poor, but most farmers are in an average financial situation,

> so I believe that farmers, ordinary employees, builders, in short, jobs that perhaps do not require a high level of education, I believe that they are greatly affected by this." (P14)

P14's extended reflection demonstrates a sophisticated awareness of class dynamics, noting that the digital divide aligns with occupational categories associated with lower educational requirements. The specific mention of farmers, employees, and builders grounds abstract inequality in concrete occupational realities of rural Greece.

P5's comment situates internet access within the hierarchy of household expenses, revealing how digital access competes with basic utilities for limited family resources. This prioritization of essential expenses over digital connectivity exemplifies how economic scarcity enforces digital exclusion: *"The economic issue is a very big one, because not everyone has the money, beyond paying their electricity, telephone, and other bills, to also pay for the internet; they may not have it." (P5)*

#### *Geographical exclusion*

Participants identified geographic location, particularly residence in rural or remote areas, as compounding other forms of disadvantage: *"Clearly, it is a matter of remote areas ... they do not have the right conditions and infrastructure" (P20).* P20's assessment that remote areas lack "the right conditions" suggests both material infrastructure deficits and broader environmental factors that limit digital engagement. This geographic dimension of the digital divide reflects Weberian insights into how life chances are shaped by market position and access to resources.

#### *Social capital and support networks*

Participants identified social networks as important resources for developing digital competence: *"Yes, I really believe that ... it is not the same when you have two or three friends around ... A friendly environment helps a lot" (P7), "Friends and acquaintances will help you, they will push you, you will be able to ask them questions" (P2).* These quotations illuminate how social capital—access to knowledgeable and supportive networks—facilitates digital skill development. P2's reference to friends who "push" individuals suggests that social networks provide not only informational support but also motivation and accountability. The absence of such networks, conversely, represents a form of disadvantage that compounds other barriers to digital inclusion.

### Theme 3. Policies and Institutional Interventions

Participants articulated the need for systematic policy interventions while also expressing skepticism about whether such interventions adequately address structural causes of digital inequality.

#### *Role of the state*

Participants viewed the state as bearing primary responsibility for addressing digital inequality yet criticized its failure to ensure equal conditions: *"The state should have given all children a tablet and internet access, but it did not" (P3), "The state should have ensured equal opportunities, but it did not" (P8).* These statements reveal participants' expectations that the state should function as an equalizer, providing universal access to digital resources. The repeated phrase "but it did not" conveys frustration and disappointment at the perceived state's failure. Some participants articulated more structural critiques: *"Everything is done to serve certain interests because there is money behind the technologies" (P4).* P4's comment suggests awareness of how technology policy may serve commercial rather than educational interests, aligning with critical perspectives that view the digital divide as embedded within capitalist structures (Fuchs, 2014).

#### *Training gaps and school infrastructure*

Participants emphasized inadequacies in professional development and school resources: *"Training was fragmented and not systematic" (P3), "The seminars do not reach everyone, with the result that some are left behind" (P18).* These observations suggest that professional development opportunities themselves are unequally distributed, potentially creating a "digital elite" among teachers. Similarly, participants noted persistent infrastructure inequalities: *"Some schools have modern laboratories, while others do not even have good internet access" (P5).*

P19's comment about locked computer rooms starkly illustrates how even existing resources may remain inaccessible due to staffing deficiencies, highlighting the need for comprehensive rather than equipment-focused interventions: *"In some schools, computer rooms remain locked because there is no technician" (P19).*

## DISCUSSION

The digital divide is a complex social phenomenon that reproduces and deepens existing social inequalities (Jamil, 2021; Khalid & Pedersen, 2016; Ragnedda & Muschert, 2013; Tomczyk et al., 2024). This study explored Greek primary school teachers' perspectives on the introduction of ICT and the resulting digital divide, situating their experiences within broader sociological frameworks of inequality. The excerpts from the interviews are not treated as self-evident descriptions of reality, but as narratives that reveal social structures, power relations, and institutional practices.

Participants described the education system as functioning more as a mechanism for reproducing social inequalities than as an equalizing force, particularly in relation to the digital divide. They cited infrastructural deficits, especially in remote and rural areas, alongside educational policies that implicitly promote passivity and hierarchies through the hidden curriculum. These findings align with existing literature. Ragnedda and Muschert (2013) and Fuchs (2014) argue that the digital divide reinforces class distinctions, while Anyon (2011) emphasizes the education system's role in capitalist reproduction. From a Weberian perspective, the unequal distribution of digital resources reflects how bureaucratic structures influence life chances, favoring students with access to infrastructure while disadvantaging those without (Ragnedda, 2017). The classroom thus becomes a microcosm of social inequality where students with greater cultural and economic capital are better positioned to leverage technology for educational advancement (Bourdieu, 1973; OECD, 2000a).

Teachers emerged as occupying a dual role in the digital divide: potentially bridging inequalities or, often unwittingly, reinforcing them. Participants highlighted skill disparities between younger and older teachers, resistance to technological change, and inadequate systematic training that generates dependency relationships and internal hierarchies within schools. Teachers with limited digital competence tend to rely on traditional, teacher-centered methods that may not promote students' critical thinking and digital literacy development. This finding resonates with research suggesting that teachers with limited digital skills reinforce existing inequalities (Leigh, 2010), while those with higher digital capital tend to reproduce social hierarchies (Ragnedda & Ruiu, 2020). Teachers' digital proficiency becomes a source of status and prestige within institutional hierarchies,

and older teachers' resistance to change may represent attempts to maintain existing social status as technological developments threaten to reconfigure power relations.

The family emerged as the primary agent of socialization, shaping the acquisition of digital capital. Consistent with Ragnedda and Ruiu's (2020) findings, participants emphasized positive correlations between family income, parental education, and children's digital capital. Students from families with higher economic and cultural capital have access to better-quality technology and higher-speed internet. At the same time, those from lower socioeconomic backgrounds often lag, perpetuating intergenerational cycles of inequality (Ragnedda & Muschert, 2013). Geographic factors, particularly residence in rural or remote areas, compound these disadvantages through limited infrastructure and reduced access to information resources. These findings corroborate other Greek studies linking socioeconomic environment to digital inclusion (Giavrimis, 2023; Karatrantou & Panagiotakopoulos, 2023).

Regarding policy interventions, participants emphasized that addressing the digital divide requires systematic approaches extending beyond equipment provision. Effective interventions should develop digital literacy, the capacity to use technology to acquire, manage, and evaluate information and to build new knowledge (Tissot, 2004). Teacher training should encompass both technical skills and pedagogical integration strategies, transforming education from a teacher-centered reproduction to spaces that emphasize critical thinking and the processing of new knowledge. Policy interventions must also address geographic dimensions of the divide by ensuring appropriate infrastructure reaches remote and rural areas.

### Implications for Policy and Practice

The findings of this study carry significant implications for educational policy and teaching practice in Greece and potentially for other contexts facing similar digital divide challenges. First, the Greek Ministry of Education should develop and implement a universal digital access initiative that provides all primary school students with devices and internet connectivity, regardless of socioeconomic background or geographic location. This policy should include provisions for ongoing technical support and device replacement to ensure sustainable access rather than a one-time provision. Second, teacher professional development programs should be reformed to provide systematic, mandatory, and differentiated ICT training that accommodates teachers' varying baseline competencies. Such programs should move beyond technical skills to address pedagogical integration, critical digital literacy, and awareness of how digital inequalities manifest in classroom settings. Training should be continuous rather than episodic, and accessible to all teachers regardless of their school's location. Third, infrastructure investment should prioritize equity-focused distribution that targets under-resourced schools, particularly those in rural and remote areas, rather than reinforcing existing advantages of well-equipped urban schools. Each school should be staffed with dedicated ICT support personnel to ensure that technological resources remain accessible and functional. Fourth, curriculum frameworks should explicitly integrate critical digital literacy objectives that prepare students not merely to use technology but to critically evaluate digital content, understand digital citizenship, and recognize the social implications of technological engagement.

At the school level, administrators should foster collaborative professional learning communities that enable peer mentoring among more and less digitally proficient teachers. Such structures can reduce dependency on hierarchies and transform skill disparities into opportunities for mutual development. Teachers should adopt culturally responsive digital pedagogy that acknowledges and addresses the diverse digital experiences students bring from their home environments. This includes avoiding assumptions about access to home technology and designing learning activities that do not systematically disadvantage students from less digitally-resourced backgrounds. Schools should strengthen family engagement strategies that support parents in developing their own digital skills and understanding of their children's digital education needs. Such initiatives can help interrupt the intergenerational transmission of digital disadvantage.

### Limitations

Several limitations should be considered when interpreting this study's findings. First, the purposive sampling strategy and relatively small sample size (n = 23) limit generalizability to the broader population of Greek primary school teachers. While the sample provided rich qualitative insights, the findings should not be assumed to represent the views of all Greek teachers or teachers in other educational contexts. Second, the study relied exclusively on teacher perspectives and did not include students, parents, or administrators, whose views might offer complementary or contrasting insights into the dynamics of the digital divide. Future research could benefit from multi-stakeholder designs that triangulate perspectives across the educational community. Finally, the nature of the study captures teachers' perceptions at a particular point in time, limiting insight into how these perceptions evolve as technology and policy contexts change. Longitudinal research would provide valuable insights into temporal dynamics in digital divide experiences.

## CONCLUSION

The digital divide in education is not merely a technological issue but a reflection of more profound social and economic inequalities. This study found that Greek primary schools, rather than equalizing digital opportunities, tend to reproduce differences through teachers' differential ICT competencies, family characteristics, and unequal access to resources. The lack of systematic training, inadequate infrastructure, and knowledge hierarchies hinder collaboration and limit learning opportunities. Institutional interventions appear fragmented and often reproduce rather than address underlying inequalities. Addressing the digital divide requires coordinated action by the education system, teachers, families, and the state to eliminate social inequalities. Participants recognized that bridging the gap involves strengthening digital skills, promoting critical thinking, and addressing the more profound social inequalities reproduced across generations (OECD, 2000a; Ragnedda, 2019). The digital divide is ultimately a structural phenomenon related to broader social inequalities. The roles of education systems, teachers, and families are mediated by class, economic, and geographical discrimination. Effective policy interventions require holistic approaches that reduce structural inequalities rather than merely provide technical support.

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and Good Research Practice of the University of the Aegean, ensuring compliance with scientific integrity principles, national and EU legislation, and general bioethical norms, in line with international standards such as COPE. All participants were adult teachers who provided informed consent after being fully briefed. Data were securely stored, encrypted, access-restricted, and fully anonymized; anonymized files will be retained for four (4) years and then destroyed. The study involved only non-invasive interviews and posed no risk, safeguarding participants' dignity, autonomy, and privacy.

**AI statement:** No generative AI were used to generate text, analyze qualitative data, or create figures in this manuscript. Only assisted software was used exclusively for grammar polishing, such as minor language editing and proofreading, without generating, altering, or interpreting the scientific content of the manuscript.

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