Received: 5 September 2025 | Revised: 7 November 2025 | Accepted: 14 January 2026 | Published online: 29 January 2026

RESEARCH ARTICLE

International Journal of Changes in Education
2026, Vol. 00(00) 1–13
DOI: 10.47852/bonviewIJCE62027593

BON VIEW PUBLISHING

My Disconnected World: A Study on Students' Perceptions of Mobile Phone Ban and Digital Well-Being in Urban and Rural Schools

Franciely Pereira Moreira[1,*] **and Danielli Araújo Lima**[1]

[1] *Computational Intelligence and Robotics Laboratory, Federal Institute of Education, Science and Technology of Triângulo Mineiro (Uberaba Campus), Brazil*

Abstract: This study analyzes students' perceptions of the Brazilian Law No. 15.100/2025, which prohibits mobile phone use in basic education, and explores its relation to screen time and digital well-being in urban and rural schools. Data were collected through a structured questionnaire with multiple-choice, Likert-scale, and open-ended questions, administered face-to-face to 199 students in grades 6–9 (100 from the rural area (RA), 99 from the urban area). Descriptive and inferential analyses (*t*-tests and chi-square tests) were applied to compare groups. Results showed that RA students agreed more strongly that the ban helps concentration (mean = 3.26 vs 2.29; $t = 4.55$; $p < 0.001$) and perceived it more positively overall (mean = 2.93 vs 2.20; $t = 3.73$; $p = 0.0003$). Both groups, however, recognized the pedagogical potential of mobile phones when purposefully integrated into lessons (76.4% agreement). Open-ended responses revealed mixed experiences in reducing screen time, with reports ranging from anxiety to improved focus and social interaction. This exploratory classroom-based report combines quantitative data and pedagogical reflection to illustrate students' attitudes toward digital well-being and promote conscious technology use in education.

Keywords: conscious use of technology, basic education, mobile devices, digital well-being, pedagogical intentionality

1. Introduction

The year 2025 began with significant repercussions in the educational sphere, marked by intense debates, political tensions, and numerous discussions among supporters and critics of Law No. 15.100/2025, which establishes the prohibition of mobile phone use during classes, recess, and breaks in basic education [1]. This legislation has gained visibility both in academic settings and in society at large, prompting reflections on the limits and possibilities of technological presence in students' lives. The measure has generated divergent reactions: on one hand, those who advocate for the need to ensure greater concentration and focus during school activities; on the other, those who argue that such a prohibition disregards the digital reality that permeates young people's lives. The breadth of this controversy has led researchers to produce consistent analyses on the subject, assessing not only its immediate impacts but also its long-term consequences for education [2–4].

The uneasiness I observed among my middle school students, particularly regarding the impossibility of carrying and using their mobile phones at school, awakened in me the desire to gain a deeper understanding of how they interpret and respond to this prohibition [5, 6]. The discomfort expressed by many students proved to be a relevant starting point, as it was not limited merely to the desire for access to social networks but also included the perception that the mobile phone constitutes part of their identity and daily practices. This scenario motivated a more detailed investigation, not only into their opinions but also into their screen-use habits in a broader sense—encompassing mobile phones, tablets, computers, and televisions—both in the school environment and beyond, while taking into account family, social, and cultural dimensions that significantly influence their ways of living and learning.

The enactment of Law No. 15.100/2025, by establishing the prohibition of personal portable electronic devices during different moments of school life, represents a significant attempt to address the numerous challenges imposed by the unrestricted use of digital technologies [7, 8]. Among its stated objectives are the reduction of distractions, the protection of mental health, the strengthening of concentration, and the creation of a more organized and favorable learning environment. However, while setting boundaries for their use, the law also acknowledges that such devices hold relevance in various pedagogical, accessibility, health, and fundamental rights contexts. This duality reveals that the legal text should not be interpreted in absolute terms, but rather as an attempt to balance disciplinary control with the preservation of the educational value of technologies when guided toward constructive purposes. The exceptions provided therefore

***Corresponding author:** Franciely Pereira Moreira, Computational Intelligence and Robotics Laboratory, Federal Institute of Education, Science and Technology of Triângulo Mineiro (Uberaba Campus), Brazil. Email: franciely.moreira@estudante.iftm.edu.br

© The Author(s) 2026. Published by BON VIEW PUBLISHING PTE. LTD. This is an open access article under the CC BY License (https://creativecommons.org/licenses/by/4.0/).

highlight a concern with ensuring that innovation and inclusion are not neglected in the name of a generalized restriction.

In this context, the concept of pedagogical intentionality plays a central role in understanding the presence and use of mobile devices in the school environment. When mobile phones are employed in a planned manner, with clear objectives and embedded within structured pedagogical practices, they shift from a potential source of distraction to a powerful tool for teaching and learning. In this way, they can broaden access to information, diversify methodologies, and foster students' autonomy. However, in the absence of such intentionality, inadequate uses tend to prevail, such as access to social networks, electronic games, and content irrelevant to the learning process, which undermine concentration, negatively affect academic performance, and disrupt classroom dynamics.

Therefore, rather than adopting merely restrictive postures, it becomes essential that educational policies and school practices focus on both initial and continuing teacher education, preparing teachers to critically and creatively integrate digital technologies into their daily practice. Moreover, the development of institutional guidelines is crucial, not only to establish rules but also to provide support and incentives for the pedagogical use of mobile phones. Only through such efforts will it be possible to transform the digital presence in schools into an effective ally of learning, promoting a more inclusive, innovative, and contextually relevant education. In this sense, prohibiting without offering meaningful pedagogical alternatives risks alienating schools from students' everyday experiences; conversely, guidance and training can enhance the role of mobile devices as instruments of intellectual and social empowerment.

Thus, this study aims to understand elementary school students' perceptions regarding the prohibition of mobile phone use in schools, while also investigating the impacts of screen time on well-being and possible differences between urban and rural contexts. Accordingly, the following research questions were established:

RQ1: What are students' perceptions regarding the prohibition of mobile phone use in schools?

RQ2: What are the perceived impacts of screen time on well-being (health, sleep, academic performance)?

RQ3: How do perceptions differ between students from rural and urban areas?

2. Related Works

The purpose of the literature review is to situate the debate on the use of mobile phones in the school context from different perspectives. To this end, three main axes are addressed: (i) international experiences of banning the use of mobile phones in schools, which highlight distinct forms of regulation; (ii) the impacts of screen time on learning and health, emphasizing both risks and potential benefits; and (iii) the role of pedagogical intentionality and digital well-being, with particular attention to teacher training and the conscious use of technologies. This organization seeks to provide a critical overview that supports the analysis carried out in this study.

2.1. Mobile phone bans in international contexts

Over the past decades, the use of mobile phones in schools has remained at the center of an intense debate, dividing opinions between those who advocate for their pedagogical adoption and those who, conversely, strongly criticize their presence in the educational environment. On one side, supporters regard the mobile phone as a multifunctional resource capable of fostering learning processes that are more closely connected to students' digital realities. On the other hand, critics view it as a source of distraction that undermines concentration, weakens classroom discipline, and compromises academic performance. Nevertheless, the mobile phone transcends its initial role as a mere communicative tool, acquiring new meanings in contemporary society: it becomes a medium for knowledge production, cultural expression, and the promotion of social interaction [9]. Thus, the debate on the use of mobile phones in schools should not be restricted to a disciplinary issue but rather understood as an opportunity to rethink pedagogical practices in dialogue with students' digital experiences [3]. When incorporated in a planned manner and with clear purposes, the mobile phone in the classroom can broaden access to knowledge, enable diverse forms of expression, value student authorship, and foster collaborative group learning [2].

An analysis of international experiences shows how different countries have responded to this dilemma. Recent studies report that bans on mobile phone use have already been implemented in several contexts, with France standing out as a pioneer in 2018. Following this initiative, other European and Latin American countries also introduced similar restrictions, including Spain, Greece, Switzerland, and Mexico[1]. The central justification for such policies is to reduce distractions and refocus students' attention on school activities. However, the study conducted in England shows that the proposed ban, as recently advocated in the country, may be considered flawed, as it disregards the post-digital reality in which young people live [10]. The research argues that this measure neglects fundamental rights to access information and digital culture, in addition to representing a setback for the development of essential digital competencies.

In another context, the investigation conducted in Algeria revealed that 72.8% of teachers prohibited the use of mobile phones in the classroom [11]. However, this practice proved counterproductive, as many students began to use devices secretly and for noneducational purposes. Additionally, some teachers reported that such prohibitions were imposed by school administrators, with no consideration for pedagogical purposes. The literature suggests that rather than rigid bans, schools could harness the pedagogical potential of mobile devices by mediating their intentional use.

The Stavanger Declaration (COST E-READ project) also deserves mention, warning that the rapid and indiscriminate replacement of print with digital technologies in primary education may harm reading comprehension and children's critical thinking skills unless accompanied by carefully designed digital learning strategies [12]. Furthermore, studies on family mediation indicate that restrictive mediation (rules limiting online time or activities) tends to be ineffective in reducing digital risks and may even correlate negatively with the development of digital competences [13].

The international discussion highlights the complexity of the issue and reveals that prohibition policies cannot be analyzed in isolation but must be understood in relation to the impacts of screen time on students' learning and health.

2.2. Impacts of screen time on learning and health

Screen time and the use of digital devices have multifaceted impacts on the psychological health and learning of children and adolescents, with some concerning findings. A study conducted in 2016 with 40,337 young people in the United States showed that, after just 1 h of daily use, each increase in screen

time was associated with lower psychological well-being, including reduced curiosity, lower self-control, greater distraction, social difficulties, and heightened emotional instability [14]. Among adolescents aged 14–17, intensive screen users (7+ h/day) were more than twice as likely to be diagnosed with depression (r_R = 2.39) and anxiety (r_R = 2.26) and to use psychological medication (r_R = 2.99) within the previous 12 months, compared to low screen users, where r_R denotes relative risk.

Longitudinal studies further suggest that increases in recreational screen time precede declines in psychological well-being in children and adolescents. The constant presence of smartphones may also reduce the enjoyment of face-to-face social interactions, with evidence pointing to risks of digital addiction [15].

In the field of learning, recent research has indicated that although reading performance on digital and print media yields similar results in terms of comprehension and time spent, readers' perceptions still differ significantly [16]. Printed texts remain associated with greater immersion, confidence, and perceived comprehension, as well as lower fatigue when compared to reading on digital devices. These findings suggest that, even amid the narrowing of differences between print and digital formats, print continues to be the preferred medium among readers, playing a relevant role in shaping reading attitudes and experiences.

It is worth noting that the literature indicates that excessive and unplanned screen exposure tends to negatively impact health and learning. In this regard, balanced and intentional mediation policies can minimize risks and foster more effective educational practices.

2.3. Pedagogical intentionality and digital well-being

Pedagogical intentionality refers to the deliberate planning of integrating digital technologies into teaching, with a focus on meaningful learning and student well-being [12]. Studies indicate that when teachers allow smartphone use under clear guidelines, students tend to employ them for educational purposes and develop greater self-regulation. Mobile devices are perceived as tools that provide immediate access to academic content, foster curiosity and self-directed learning, and promote collaborative practices and group projects.

Research emphasizes that the quality of teaching depends not merely on the presence of technology but on how it is used, through which methods, and for what purposes [17, 18]. Digital literacy emerges as an essential competence, as it does not develop spontaneously: it requires explicit guidance from teachers and parents, including strategies for online search, critical evaluation of information, and ethical technology use [12].

Among the benefits are personalized learning opportunities, just-in-time support, enhanced social interaction without geographical barriers, and facilitated self-directed learning [19]. Technologies such as virtual reality and extended reality have shown potential to make teaching more engaging, promoting attention, memory, and student engagement.

To achieve these benefits, the teacher's role is fundamental: they must model appropriate technology use, diversify methodological strategies, and guide students toward conscious digital practices. In this sense, public policies and continuous teacher training programs are indispensable to align technological innovation, pedagogical intentionality, and the promotion of digital well-being.

In conclusion, the literature indicates that unreflective and excessive use of screens is associated with negative impacts, but their planned and pedagogically guided integration can expand learning opportunities, strengthen 21st-century competences, and foster student well-being.

3. Methodology

The present study is characterized as a descriptive and reflective experience report, based on the direct observation and pedagogical practices of the teacher–researcher in real classroom settings. Its main objective was to analyze and reflect upon a pedagogical activity carried out in basic education, focusing on students' perceptions of the recent national ban on mobile phone use in schools and its relation to digital well-being. The study design therefore prioritizes descriptive and exploratory analysis rather than causal or generalizable statistical inference. This section presents the materials, methodological procedures, and ethical considerations adopted in the study.

3.1. Material

This report considered six classes from the 6th to the 9th grade of elementary education, encompassing a total of 199 students, of whom 100 were from the rural area (RA) and 99 from the urban area (UA). The activities were carried out between February and March of 2025. In addition to the practical experience, a systematic literature review was conducted, based on previously published books and scientific articles [20], in order to provide theoretical support for the investigation and a foundation for the analyses presented.

For the collection of empirical data, a structured questionnaire composed of four blocks of questions was administered in person during class sessions. The instrument, publicly available at this link, was organized as follows:

1) General information: gender, average daily screen time, and main activities performed.
2) Opinion on screen use and the prohibition of mobile phones at school: four questions assessed on a Likert scale (1–5).
3) Benefits of reducing screen time: five Likert-scale (1–5) questions related to mental health, sleep, concentration, social interaction, and interest in reducing screen time.
4) Personal reflection: two open-ended questions on previous experiences with screen-time reduction and suggestions for strategies to decrease usage.

Additional details on the instrument and analytical procedures are provided to enhance transparency. The questionnaire consisted of 11 closed-ended items assessed on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) and two open-ended questions designed to elicit students' reflections. The Likert items were grouped into two thematic dimensions: perceptions of the mobile phone ban and perceived impacts of screen-time reduction. Although reliability indices (e.g., Cronbach's α) were not calculated due to the exploratory nature of this classroom-based study, the instrument was piloted informally with two classes to ensure clarity and age-appropriate language.

3.2. Methodological procedures

For the open-ended responses, an inductive content analysis was conducted. The teacher–researcher and a second reviewer independently examined all answers to identify recurring expressions and grouped them into thematic categories (e.g., "difficulty reducing screen use," "improved concentration," "family interaction"). Simple frequency counts were used to describe the

prevalence of each theme. Quotations were not included to protect student anonymity. This approach provides descriptive qualitative support to the quantitative results presented in the following section.

Given that the study took place in only two schools (one urban and one rural), all statistical comparisons are presented for illustrative and pedagogical purposes only. The observed differences should be interpreted as case-bound and exploratory, reflecting the specific educational realities of these contexts rather than broader population patterns.

In the analysis of the results obtained through the questionnaire, a statistical approach was adopted, using a comparative descriptive analysis based on the Likert scale between the UA and RA groups. Essentially, the Likert verification scale seeks to make a series of statements about its definition based on the responses of a group, in which participants indicate their level of agreement [21]. For data analysis, the R Studio software was employed, as it enables statistical exploration and the construction of graphs in an accessible way, even for users with only basic programming knowledge [22–24].

In addition to descriptive analysis, hypothesis testing was conducted to verify whether differences between students from rural and urban areas could be considered statistically significant. Hypothesis testing begins with the formulation of an initial assumption about a population parameter, which is then confronted with sample data to decide on the acceptance or rejection of that assumption [25, 26]. In this process, the null hypothesis is defined as the absence of a significant difference between the analyzed groups, and the statistical procedure assesses whether the empirical evidence supports or refutes this premise [27]. For this purpose, the following design was adopted:

1) Null hypothesis (H_0): there is no significant difference between students from urban and rural areas regarding perceptions of mobile phone prohibition and the impacts of screen time.
2) Alternative hypothesis (H_1): there are significant differences between urban and rural groups in their perceptions of mobile phone prohibition and the impacts of screen time.

For hypothesis testing, the Student's *t*-test for independent samples was applied to continuous variables (mean responses on the Likert scale), and the chi-square test was applied to categorical variables (such as gender and screen time). The level of significance adopted was $\alpha = 0.05$, the standard criterion in educational and social science research. This procedure provides greater scientific rigor to the study, going beyond simple description and allowing the evaluation of whether the observed differences have statistical validity.

3.3. Ethical considerations

This classroom activity was conducted within the regular pedagogical routine of the participating schools and did not constitute an independent research intervention requiring submission to a research ethics committee. In the Brazilian educational context, such initiatives are part of the official curriculum and fall under the school's pedagogical autonomy, as established by local educational authorities. The report presented in this manuscript therefore describes a pedagogical experience carried out under the supervision of the school, without experimental manipulation or collection of personal data.

This study involving human participants was reviewed and approved by the Ethics Committee of the Federal Institute of Education, Science and Technology of Triângulo Mineiro (Uberaba Campus), Brazil (Approval No.: 8.054.542). In addition, within the enrollment process of the participating schools, parents or legal guardians formally sign a consent form authorizing the use and dissemination of students' activities and images, provided that they are linked to a pedagogical plan and educational purposes.

No identifiable or sensitive information about students was collected, stored, or analyzed. All materials—such as drawings and photographs—were produced as part of normal classroom activities and publicly displayed on the school's mural during the course of the project. The inclusion of these materials in the manuscript is purely illustrative, and all images have been anonymized to ensure that no student can be individually recognized.

Given the absence of personal data collection, individual identification, or any form of experimental intervention, approval by an ethics committee was not applicable in this case. Furthermore, the authors declare that the study received no external funding and that there are no conflicts of interest to disclose.

4. Data Analysis

With the beginning of the 2025 school year, the new regulation of the Ministry of Education came into effect, prohibiting the use of mobile phones in public and private schools throughout Brazil. Already in the first week of classes, evident discontent was observed among students, particularly those in the 8th and 9th grades, who expressed greater dissatisfaction. In this context, a deeper investigation became necessary regarding students' relationships with the use of screens, including smartphones, tablets, computers, and similar devices.

In the second week of classes, the students were invited to complete a questionnaire aimed at investigating their relationship with screen use, as well as their perceptions regarding the mobile phone ban and the possible benefits resulting from reduced use of these devices in daily life. In this context, the activity "My Disconnected World" was proposed, which will be detailed later.

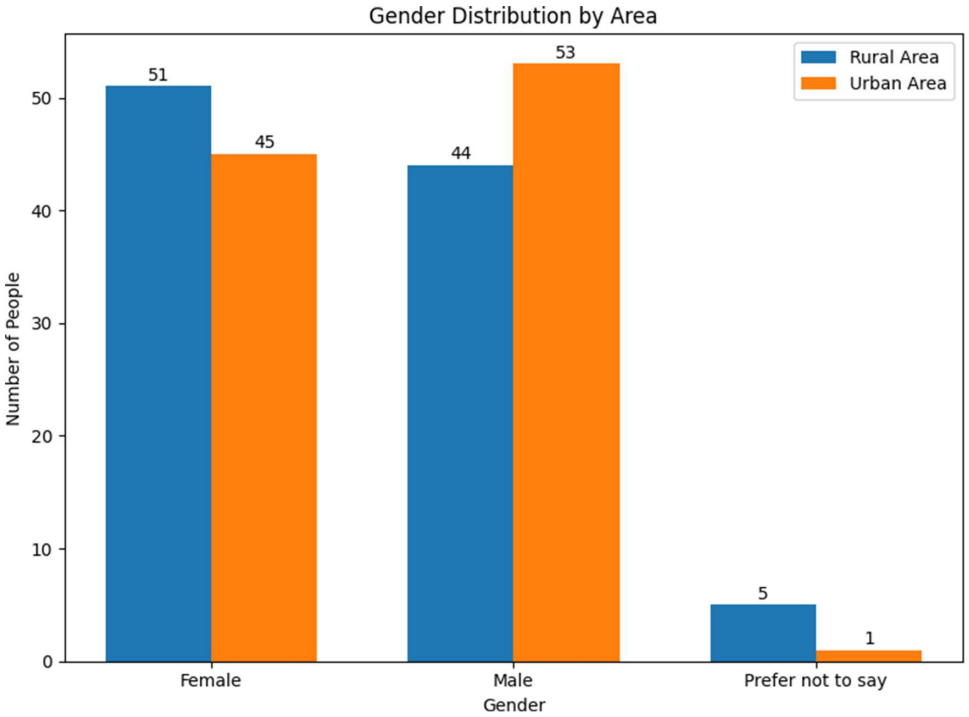
The groups analyzed consist of students aged between 11 and 14, enrolled in the final years of elementary education. As illustrated in Figure 1, in the rural area (RA), female students predominate (51 students), whereas in the urban area (UA), the majority are male (53 students).

Regarding the average daily screen time (mobile phone, computer, tablet, and/or TV), Figure 2 shows that 30% of students in the RA reported using these devices for less than 2 h per day, while 25% indicated usage exceeding 6 h per day. In contrast, in the UA, only 4% of students reported less than 2 h of daily use; the majority, about 41%, reported using them between 2 and 4 h per day, and approximately one-fifth stated that they use screens for more than 6 h daily.

With regard to the purposes of screen use (Figure 3), it can be observed that the vast majority of UA students use their mobile phones mainly to chat with friends and family and/or to watch videos. In the RA group, the results showed a similar pattern, with emphasis on chatting with friends and family, playing electronic games, and watching videos. These data indicate that, despite cultural and social differences, the preferences of adolescents in this age group are quite similar.

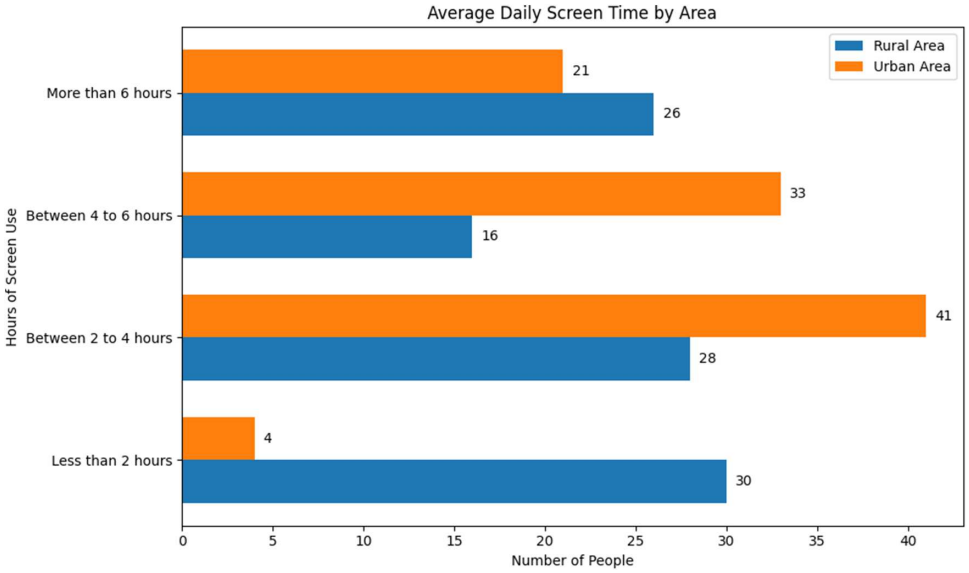
Based on this initial overview, this section presents the main results of the questionnaire, organized into two axes: (i) opinions on the prohibition of mobile phones at school and (ii) perceptions of the benefits of reducing screen time.

Figure 1
Demographic profile of participating students by school locality



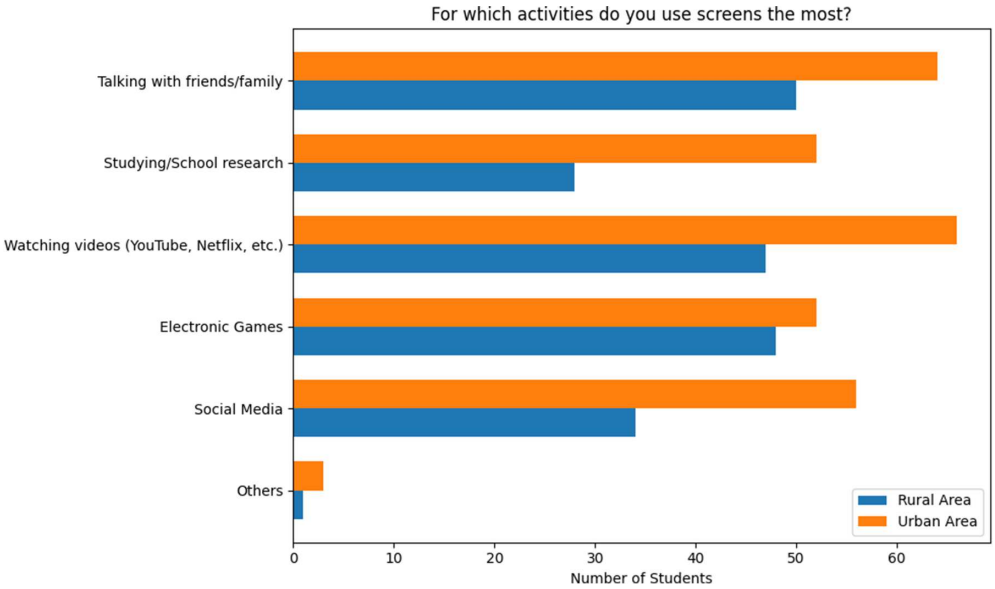
Note: The sample comprises n = 199 students (100 from the rural area and 99 from the urban area).

Figure 2
Comparison of students' daily screen time between rural area (RA) and urban area (UA) groups



Note: Time intervals were categorized as less than 2 h, 2–4 h, 4–6 h, and more than 6 h per day.

Figure 3
Most common activities performed by students during screen use, according to self-reported data



Note: The figure shows the percentage of rural area (RA) and urban area (UA) students who mentioned each activity, including social media, entertainment, study, and communication.

4.1. Students' opinions on the ban of mobile phones in schools

To assess students' perceptions regarding the impact of the mobile phone ban, we employed the Likert scale to identify the degree of agreement or disagreement in different situations (Figure 4). The results show that, in response to the statement "The prohibition of mobile phones at school helps me pay more attention in class," 48% of students from the RA totally agree, whereas 62% of those from the UA totally disagree. This contrast highlights a significant difference between regional contexts.

Furthermore, when asked whether "The prohibition of cell phone use in school is a positive measure," we found that 40% of students from the RA strongly agree, while 67% of students from the UA strongly disagree. These findings align with the overall results, which show that 52.8% (105 out of 199) of respondents disagree or strongly disagree with the measure, whereas only 30.2% (60 out of 199) agree. It is evident that resistance is more pronounced among urban students, while acceptance is more noticeable in RAs.

Another relevant point was the issue of allowing mobile phones for pedagogical purposes, in which both groups showed high levels of agreement. The overall consensus indicates that 76.4% (152 out of 199) support the use of the device in educational activities, with even higher rates in the UA (86.9%) compared to the RA (66%). This result highlights students' recognition of the pedagogical potential of technology, which becomes a central aspect in the debate on school policies regarding the use of mobile devices.

4.2. Students' perceptions of the benefits of reducing screen time

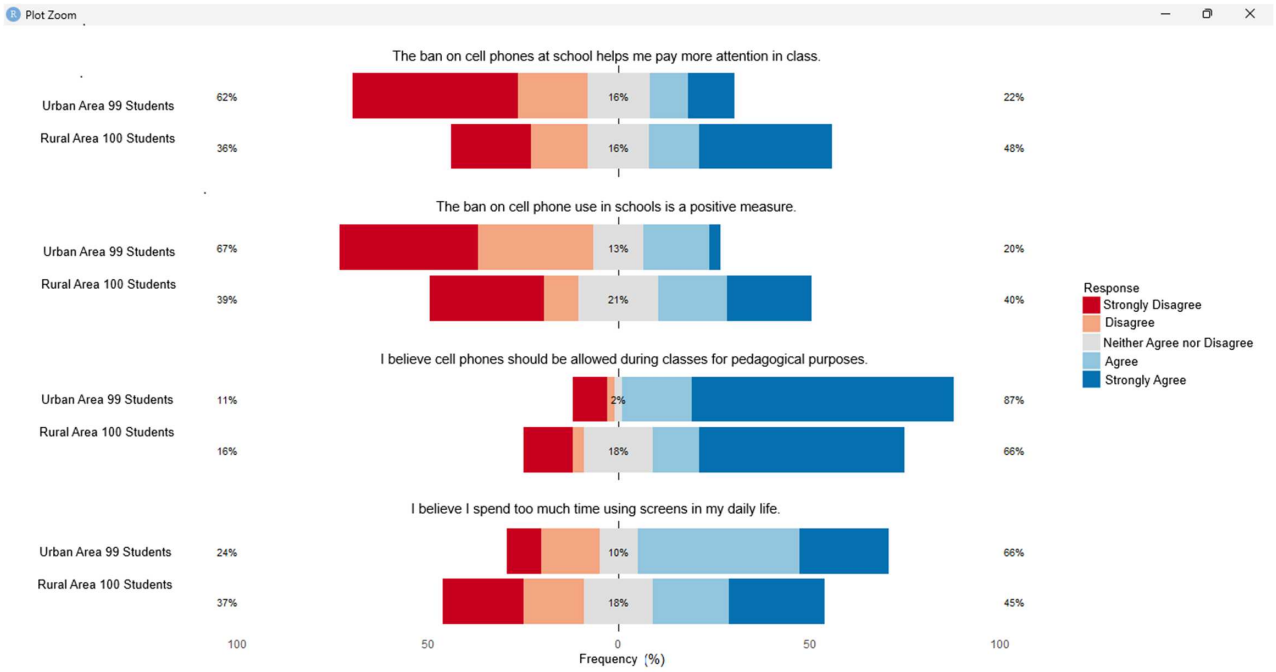
The second dimension investigated concerns the potential benefits of reducing screen time in students' lives (Figure 5). Overall, the data reveal that students recognize positive effects in areas such as concentration on studies, mental health, and sleep quality. When asked whether reduction would help with concentration, 61% of students from the UA and 74% from the RA (partial or total agreement) responded positively. In total, 42.7% (85 out of 199) agreed with this relationship, while 37.2% (74 out of 199) disagreed, indicating a stronger perception among RA students compared to UA students.

Regarding mental health, a majority of 57.3% (114 out of 199) stated that they believe reducing screen time can bring improvements, with 30.2% in total agreement. The RRA showed slightly higher acceptance (60%) compared to the UA (54.5%), with only 25.6% of the total disagreeing. In relation to sleep quality, 45.2% (90 out of 199) of students identified positive impacts from reducing screen time, although opinions were divided, as 35.7% disagreed. Once again, students from the RA showed greater agreement (48%) than those from the UA (42.5%).

Another aspect evaluated was social interaction. In this case, greater skepticism was observed: 43.7% (87 out of 199) disagreed with the statement that reducing screen time improves relationships with friends and family, while only 37.7% (75 out of 199) agreed. The regional difference is again evident: the RA showed higher agreement (46%) compared to only 29.3% in the UA.

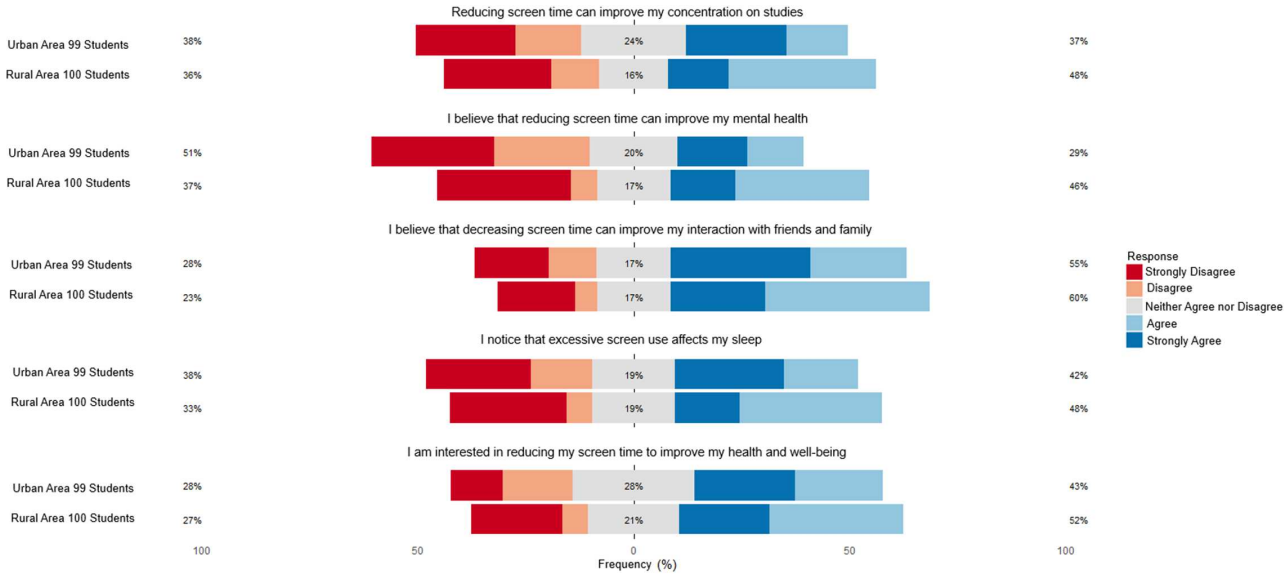
Finally, when asked about their interest in reducing screen time to improve health and well-being, 71% of students from the RA and 79% from the UA agreed (fully or partially). These figures align with the overall finding that 47.7% (95 out of 199) of students expressed a willingness to reduce their screen use, highlighting a growing awareness of the harms associated with excessive screen time. The desire for change, therefore, emerges significantly in both contexts, reinforcing the need for policies and pedagogical practices that promote more balanced habits.

Figure 4
Students' perceptions of the prohibition of mobile phone use in schools



Note: Responses were measured on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). The figure compares rural area (RA) and urban area (UA) students.

Figure 5
Students' perceptions of the benefits associated with reducing screen use following the mobile phone ban in schools



Note: Responses were collected on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree) and compared between rural area (RA) and urban area (UA) students.

Table 1 summarizes the main results, allowing a comparative view of the differences between RA and UA students. Overall, RA showed greater agreement in almost all aspects evaluated, particularly regarding the perceived benefits of reducing screen time on study concentration, mental health, and social interaction. UA, on the other hand, while acknowledging some positive effects, demonstrated greater resistance both to the prohibition of mobile phones and to the direct association between screens and well-being. These findings reinforce the importance of considering the specificities of each context when discussing school policies on technology use and pedagogical strategies that promote a healthy balance between learning and digital practices.

In addition to the objective questions, the questionnaire included two open-ended questions, of which only one was considered for analysis in this article: "Have you ever tried to reduce your screen time? If so, what was the experience like?" The

Table 1
Comparison of the perceptions of 199 students regarding screen use and the reduction of screen time (RA, UA, and total)

Survey item	Rural area (RA) %	Urban area (UA) %	Total %
Perception of excessive screen time	45.0	65.6	55.3
The cell phone ban is a positive measure	40.0	20.2	30.2
The ban helps improve concentration in class	48.0	22.2	35.2
Support for cell phone use for pedagogical purposes	66.0	86.9	76.4
Reducing screen time improves concentration	48.0	37.3	42.7
Reducing screen time improves mental health	60.0	54.5	57.3
Reducing screen time improves sleep quality	48.0	42.5	45.2
Reducing screen time improves social interaction	46.0	29.3	37.7
Willingness to reduce screen time	52.0	43.4	47.7

responses to this question provided relevant evidence regarding the perceptions of students from rural and urban areas, allowing for the identification of qualitative differences in how they experience and relate to screen use.

Among RA students, 48 stated that they had never tried to reduce their screen time, while 52 reported having made such an attempt. Of these, 13 mentioned that the experience was negative, describing it as "difficult, terrible, and anxiety-inducing." On the other hand, the remaining students highlighted that the reduction allowed greater dedication to studies, participation in household chores, and quality time with family and friends.

In the UA, 34 students declared that they had never attempted to reduce screen time, whereas 65 reported having had this experience. Among them, 18 reported difficulties similar to those described by RA students, associating the attempt with feelings of frustration and anxiety. Nevertheless, the majority evaluated the initiative positively, emphasizing benefits such as greater concentration, improved social interactions, and more available time for offline leisure activities.

These findings highlight that, although there is initial resistance and reports of emotional difficulties during screen-time reduction, the predominant perception among students in both contexts is that the decrease favors more balanced experiences, involving studies, household responsibilities, and meaningful social interactions.

Before proceeding to the statistical tests, it is important to emphasize that all analyses are descriptive and exploratory in nature. Given the small number of participating schools (one urban and one rural), the results cannot be generalized to wider populations. The statistical tests were applied only to illustrate tendencies in students' responses and to support pedagogical reflection, not to establish causal or representative inferences. It is important to emphasize that the statistical analyses reported here serve a pedagogical and illustrative purpose within this classroom-based experience, aiming to support reflection on observed tendencies rather than to produce inferential or generalizable claims.

4.3. Hypothesis testing

To explore whether the differences observed between rural and urban students were statistically significant, a set of hypothesis tests was conducted. The goal was not to infer population-level causal relationships but to examine patterns that might reflect contextual particularities. Comparisons of mean Likert-scale responses employed Student's *t*-tests for independent samples, while categorical variables (e.g., gender and screen-time bands) were assessed using chi-square tests. The significance level adopted was $\alpha = 0.05$, complemented by effect-size estimates (Cohen's d for *t*-tests and Cramer's V for chi-square tests) to provide a more informative interpretation of the magnitude of observed contrasts.

The hypotheses formulated were as follows.

1) Null hypothesis (H_0): there are no significant differences between RA and UA students regarding the perceptions evaluated.
2) Alternative hypothesis (H_1): there are significant differences between RA and UA students regarding the perceptions evaluated.

For the comparison of mean Likert-scale responses, the Student's *t*-test for independent samples was applied, considering a significance level of $\alpha = 0.05$. For categorical variables (such as gender and screen time), the chi-square test of independence was employed.

In the analysis of the question "The prohibition of cell phone use in schools is a positive measure," a statistically significant difference was found between RA and UA students. RA reported a higher mean ($\mu = 2.93$, $\sigma = 1.54$, $n = 100$) compared to UA students ($\mu = 2.20$, $\sigma = 1.20$, $n = 99$), where μ represents the mean, σ represents the standard deviation, and n represents the number of students. The *t*-test yielded $t = 3.73$ with $p = 0.0003$, which is below the adopted significance level ($\alpha = 0.05$), leading to the rejection of the null hypothesis of equal means. Furthermore, the 95% confidence interval for the difference between groups [0.34; 1.11] did not include zero, reinforcing the significance of the result. These findings suggest that RA students tend to perceive, to a greater extent, that prohibiting mobile phone use in schools constitutes a positive measure. In the analysis of the question "The prohibition of mobile phone use at school helps me pay more attention in class," a statistically significant difference was also observed between RA and UA students. RA again reported a higher mean ($\mu = 3.26$, $\sigma = 1.57$, $n = 100$) compared to UA students ($\mu = 2.29$, $\sigma = 1.42$, $n = 99$). The *t*-test yielded $t = 4.55$ with $p < 0.001$, a highly significant result, leading to the rejection of the null hypothesis. The 95% confidence interval for the difference was [0.55, 1.39], confirming the existence of differences between the groups. These results indicate that RA students are more likely to perceive mobile phone prohibition as contributing to better attention in class. That is, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_1) is accepted, since statistically significant differences were identified between the two groups.

Although these differences were statistically significant, the corresponding effect sizes were moderate. For the item "The prohibition of mobile phone use in schools is a positive measure," Cohen's d = 0.52, indicating a medium effect. For "The prohibition of mobile phone use at school helps me pay more attention in class," Cohen's d = 0.70, suggesting a moderately big difference in perception. In the chi-square analysis examining the association between gender + locality and screen time, Cramer's V = 0.32, also representing a moderate effect. These magnitudes reinforce that the patterns observed are noteworthy but should be interpreted cautiously, as context-specific rather than generalizable findings.

For other variables, such as sleep quality and mental health, although relevant percentage differences were observed, the tests did not indicate statistical significance ($p > 0.05$). This suggests that, in these aspects, students' perceptions are more homogeneous across contexts.

Thus, the tests reinforce that part of the differences observed cannot be attributed to chance alone, but rather reveal consistent patterns related to the sociocultural contexts in which students are situated.

For categorical variables, such as gender and screen time, the chi-square test of independence was applied. For this purpose, the combination of gender and locality was treated as a single variable (e.g., "Male RA", "Male UA", "Female RA", etc.), crossed with four categories of average daily screen use (< 2 h, 2–4 h, 4–6 h, > 6 h). Table 2 presents the distribution of observed frequencies.

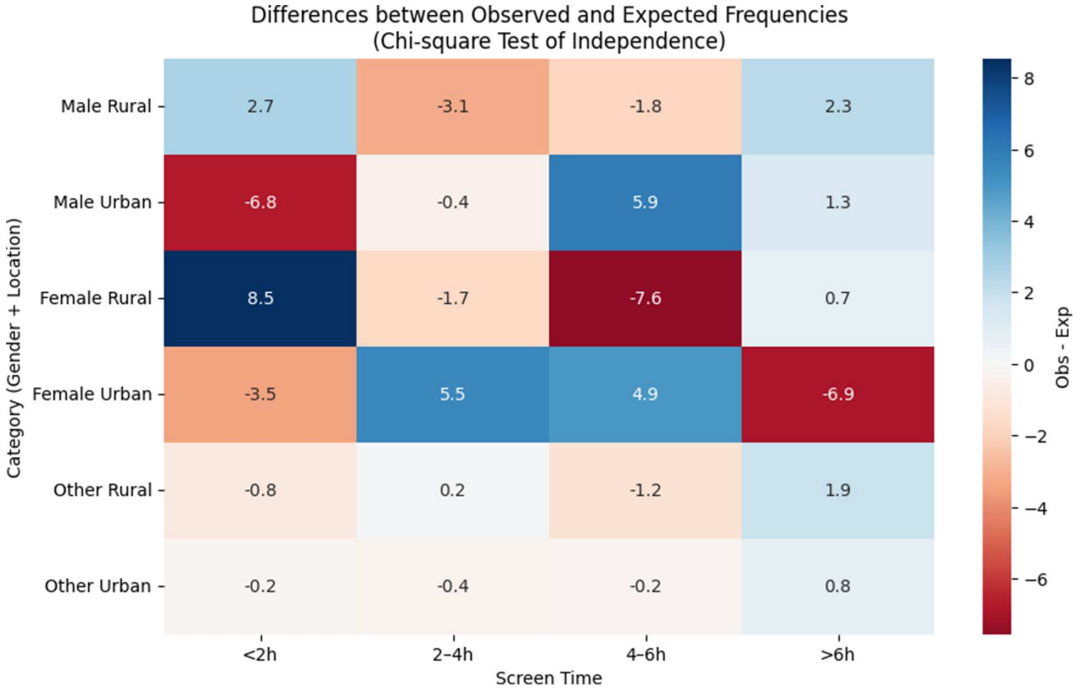
The chi-square test of independence indicated $\chi^2 = 43.26$ with 15 degrees of freedom and $p = 0.00014$. Since the p-value is below the adopted significance level ($\alpha = 0.05$), the null hypothesis of independence was rejected. Therefore, it can be concluded that there is a statistically significant association between gender + locality and screen time.

Figure 6 presents a heatmap showing the differences between observed and expected frequencies. Blue tones indicate categories where the number of cases was higher than expected, while red tones indicate values lower than expected. For example, the "Female RA" group showed more cases than expected in the "< 2 h" category, whereas the "Male UA" group concentrated more cases than expected in the 46 h range. This pattern suggests

Table 2
Distribution of participating students by gender and school locality, along with their self-reported average daily screen time

Gender	Locality	< 2 h	24 h	46 h	> 6 h	Total
Male	RA	10	13	9	12	44
Male	UA	2	19	19	13	53
Female	RA	17	17	5	12	51
Female	UA	4	22	16	3	45
Other	RA	0	2	0	3	5
Other	UA	0	0	0	1	1
Total		33	73	49	44	199

Figure 6
Differences between observed and expected frequencies of daily screen use across categories of gender and school locality



Note: Results are based on a chi-square test of association, highlighting contextual variations between rural area (RA) and urban area (UA) students.

that both gender and locality influence the average daily exposure to screens.

Overall, the statistical tests reinforce that the differences observed are not due to chance alone. The Student's *t*-test indicated that RA tend to value mobile phone prohibition more positively and recognize it as a factor that contributes to concentration in the classroom. The chi-square test of independence, in turn, demonstrated that gender and locality significantly influence screen time, with a higher frequency of rural female students in the "< 2 h" category and a concentration of urban male students in the 46 h range. These findings reveal that students' perceptions and practices regarding screen use are strongly associated with their sociocultural context.

4.4. Experience report

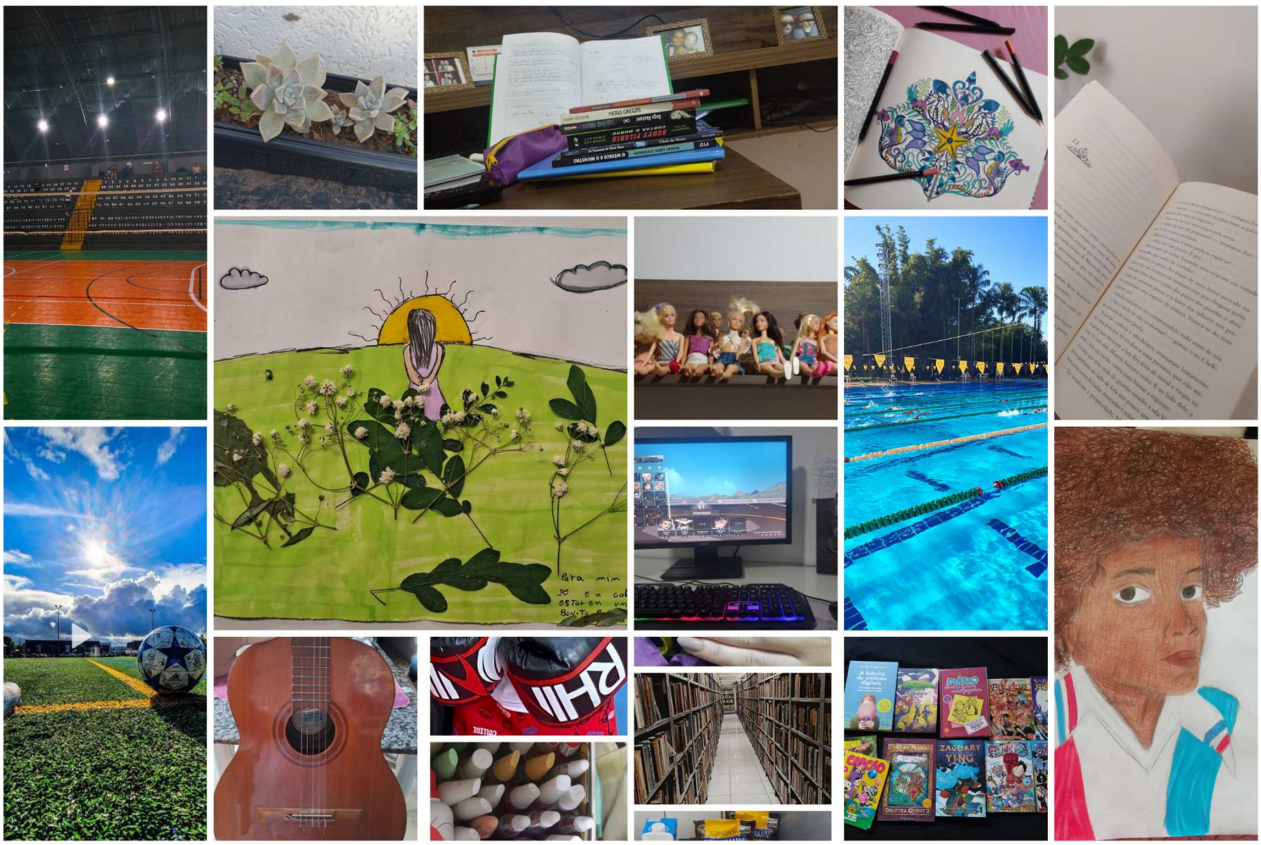
In the week following the data tabulation, we conducted a specific session to share the results with the students and to listen carefully to their thoughts regarding the research. This stage was carried out in a participatory manner, valuing students' voices and encouraging collective reflection. During the presentation, we highlighted some aspects that deserved closer attention, such as the fact that, in the UA, most students reported spending between 2 and 4 h per day in front of screens, while 66% stated that they believed they spent an excessive amount of time on such digital activities. These findings sparked relevant discussions, as they indicated a critical awareness of their own technology use habits. Based on this scenario, we invited the students to reflect on the hypothesis that the ban on mobile phone use in the school environment might not be as harmful as it initially seemed but could, on the contrary, provide new opportunities for engagement in more productive practices.

After this stage of dialogue and analysis of the collected data, we proceeded to propose a concrete activity entitled "My Disconnected World." The core of the proposal was to launch a photographic challenge, encouraging each student to produce an image that symbolized an enjoyable, meaningful, or relaxing activity carried out without the use of digital screens. The possibilities were broad and included activities such as reading a book, playing outdoors, drawing, cooking, practicing sports, or even playing a board game with family.

The process involved the conscious choice of a photograph that should authentically represent a personal experience. After capturing the image, each student was required to select their preferred photo, access a QR code provided by the school, complete a form with basic information, and finally upload the chosen photograph. As an inclusive alternative, students who did not have the resources to submit the image digitally or who encountered difficulties in the process were given the option to produce a hand-drawn illustration and deliver it to the school within a period of up to fifteen days. This adaptation ensured the participation of all, avoiding exclusion and promoting equity.

As the days went by following the launch of the challenge, numerous images produced by the students began to arrive,

Figure 7
Examples of photographs and drawings produced by pupils from schools in urban and rural areas during the classroom activity



Note: All materials were anonymized and used strictly for illustrative and educational purposes.

revealing a wide diversity of practices carried out outside the virtual environment. The photographs portrayed leisure moments that went far beyond the digital space, including activities such as horseback riding, playing cards, swimming, attending church, reading different types of books, playing with pets, cooking, fishing, or sharing family meals. This variety demonstrated not only creativity but also the richness of everyday experiences lived by young people in offline contexts.

In addition to the photographs, we also received a significant collection of artistic illustrations: a total of 16 drawings—one from the UA and 15 from the RA—which likewise depicted hobbies, pastimes, and enjoyable activities of the students. These graphic records revealed the students' sensitivity, expressiveness, and dedication, further broadening the repertoire of representations of what it means to live disconnected.

Once the deadline had passed and all the images were collected, we began to organize the material collectively. We edited a video that compiled the submissions and screened it in the classroom, allowing all students to view the activities developed by their peers and to recognize the plurality of existing experiences. Subsequently, we printed the photographs and arranged a mural in both schools, titled "My Disconnected World." The mural was placed in a high-traffic area so that not only students but also teachers, administrators, families, and other members of the school community could observe and reflect on the richness of experiences lived away from screens.

This symbolic gesture demonstrated that many meaningful, creative, and enjoyable experiences can take place in an unplugged world. Figure 7 illustrates a small sample of this material, combining submitted photos and drawings. From a pedagogical perspective, the activity also highlights that the cellphone, when guided by clear educational objectives, can be redefined as a useful and innovative tool—one capable of integrating school and out-of-school experiences, expanding learning horizons, and encouraging students' active, critical, and creative participation.

Overall, the statistical analyses serve a descriptive purpose within this experience report. They highlight meaningful tendencies between the two participating schools while acknowledging the limitations of the sample size and design. The inclusion of effect sizes provides additional interpretive value and aligns with current recommendations for transparent quantitative reporting in educational research.

5. Conclusion

This study sought to investigate elementary school students' perceptions regarding the prohibition of mobile phone use in schools (RQ1), the perceived impacts of screen time on well-being (health, sleep, academic performance) (RQ2), and the differences between students from rural and urban contexts (RQ3). The findings revealed that RA students tended to value the prohibition more positively, associating it with improved concentration, whereas UA demonstrated greater resistance to the measure. At the same time, both groups acknowledged the negative effects of excessive screen use on mental health, sleep, and study focus, while also expressing interest in practices that promote balance and digital well-being.

From a practical perspective, the results suggest that schools and teachers should avoid purely restrictive approaches and instead adopt intentional pedagogical strategies that integrate mobile technologies with clear educational objectives. For policymakers, the evidence indicates the importance of considering regional specificities when implementing mobile phone regulations, ensuring that such measures are aligned with broader educational and cultural contexts.

This study advances the debate on digital well-being in education by providing empirical evidence on how students themselves perceive mobile phone restrictions in school life. By combining quantitative and qualitative approaches, the research highlights the coexistence of both resistance and acceptance among adolescents, showing that regulatory measures are not uniformly experienced but mediated by contextual factors such as rural and urban settings. In doing so, the study not only enriches the empirical literature on mobile phone policies in education but also contributes to the design of pedagogical practices that foster healthier, more balanced, and context-sensitive uses of digital technologies in schools.

While the results reveal interesting contrasts between rural and urban groups, these should be interpreted as context-specific observations rather than population-level generalizations. The study is limited to two schools within a single municipality, and as such, the findings are illustrative of local realities. The intention of this report is not to infer causal relationships but to share a meaningful educational experience that integrates statistical reflection, student voice, and pedagogical practice. Future research may expand this work by including additional schools, longitudinal follow-ups, and multivariate analyses, which could provide stronger evidence of how students' digital habits and attitudes evolve over time. Nonetheless, as a classroom-based experience report, this study contributes practical insights for teachers and policymakers seeking to promote conscious and balanced uses of technology in education.

Acknowledgment

Danielli Araújo Lima and Franciely Pereira Moreira thank the Federal Institute of Education, Science and Technology of Triângulo Mineiro, Patrocínio and Uberaba campuses, as well as the Graduate Program in Technological Education (PPGET), for supporting the execution of this project.

Funding Support

Danielli Araújo Lima thanks FAPEMIG (Foundation for Supporting Research in the state of Minas Gerais) for funding this research.

Ethical Statement

This study involving human participants was reviewed and approved by the Ethics Committee of the Federal Institute of Education, Science and Technology of Triângulo Mineiro (Uberaba Campus), Brazil (Approval No.: 8.054.542). All potential respondents were fully informed about the survey, and participation was voluntary.

Conflicts of Interest

The authors declare that they have no conflicts of interest to this work.

Data Availability Statement

Data are available from the corresponding author upon reasonable request.

Author Contribution Statement

Franciely Pereira Moreira: Conceptualization, Methodology, Investigation, Data curation, Writing – original draft. **Danielli Araújo Lima:** Validation, Formal analysis, Writing – review & editing, Visualization, Supervision, Project administration, Funding acquisition.

References

[1] Lei Nº 15.100. (2025). *Dispõe sobre a utilização, por estudantes, de aparelhos eletrônicos portáteis pessoais nos estabelecimentos públicos e privados de ensino da educação básica [Provides for the use, by students, of personal portable electronic devices in public and private basic education institutions]*. Retrieved from: https://www2.camara.leg.br/legin/fed/lei/2025/lei-15100-13-janeiro-2025-796892-publicacaooriginal-174094-pl.html

[2] dos Santos, A. F., Casagrande, A. L., & de Moraes, E. F. (2024). Ensino médio, juventudes e cultura digital: A questão da proibição dos celulares nas escolas [High school, youth, and digital culture: The debate on cell phone prohibition in schools]. In *Anais do XXXII Seminário de Educação* (pp. 335–344). https://doi.org/10.5753/semiedu.2024.32686

[3] de Moraes, E. F., Casagrande, A. L., & Maieski, A. (2024). Tecnologias digitais e ensino médio em mato grosso: O impasse entre a proibição e o estímulo [Digital technologies in high school in mato grosso: The impasse between prohibition and stimulus]. *Perspectivas em Diálogo: Revista de Educação e Sociedade*, *11*(27), 352–368. https://doi.org/10.55028/pdres.v11i27.20126

[4] Seth, S., & Kaushik, H. (2025). Linkages among AI elements affecting quality and value of education. *International Journal of Changes in Education*, *2*(3), 172–180. https://doi.org/10.47852/bonviewIJCE52023973

[5] Sharma, R. C. (2024). Transformative horizons in education: Navigating challenges, embracing innovations, and shaping global landscapes. *International Journal of Changes in Education*, *1*(1), 1–3. https://doi.org/10.47852/bonviewIJCE42022702

[6] Creely, E., & Janssen, K. (2025). Onto-epistemological understandings of generative artificial intelligence in education. *International Journal of Changes in Education*, *2*(2), 55–65. https://doi.org/10.47852/bonviewIJCE52024380

[7] Pereira da Cunha, N. (2025). A identidade fluida e fragmentada na sociedade híbrída [The fluid and fragmented identity in a hybrid society]. *Revista Tópicos*, *3*(19), 1–37. https://doi.org/10.5281/ZENODO.15055379

[8] da Silva, V. O.., dos Santos Scarpitta, A., Oliveira, R. S., & de Oliveira, F. K. (2025). O impacto do uso recreativo de dispositivos e mídias digitais no desenvolvimento infantil [The impact of recreational use of digital devices and media on child development]. *Revista Semiárido de Visu*, *13*(1), 583–599. https://doi.org/10.31416/rsdv.v13i1.1371

[9] Selfa-Sastre, M., Pifarré, M., Cujba, A., Cutillas, L., & Falguera, E. (2022). The role of digital technologies to promote collaborative creativity in language education. *Frontiers in Psychology*, *13*, 828981. https://doi.org/10.3389/fpsyg.2022.828981

[10] Reed, J., & Dunn, C. (2025). Postdigital young people's rights: A critical perspective on the UK government's guidance to ban phones in England's schools. *Postdigital Science and Education*, *7*(2), 376–385. https://doi.org/10.1007/s42438-024-00464-6

[11] Cherif, K. M., Azzouz, L., Bendania, A., & Djaballah, S. (2024). The teachers' ban or permission of smartphone use in Algerian secondary school classrooms. *Educational Dimension*, *11*, 176–192. https://doi.org/10.55056/ed.727

[12] Kovari, A. (2022). Digital transformation of higher education in Hungary in relation to the OECD report. In *14th International Scientific Conference on Distance Learning in Applied Informatics*, 229–236.

[13] Livingstone, S., Mascheroni, G., & Stoilova, M. (2023). The outcomes of gaining digital skills for young people's lives and wellbeing: A systematic evidence review. *New Media & Society*, *25*(5), 1176–1202. https://doi.org/10.1177/14614448211043189

[14] Twenge, J. M., & Campbell, W. K. (2018). Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. *Preventive Medicine Reports*, *12*, 271–283. https://doi.org/10.1016/j.pmedr.2018.10.003

[15] Dwyer, R. J., Kushlev, K., & Dunn, E. W. (2018). Smartphone use undermines enjoyment of face-to-face social interactions. *Journal of Experimental Social Psychology*, *78*, 233–239. https://doi.org/10.1016/j.jesp.2017.10.007

[16] Jeong, Y. J., & Gweon, G. (2021). Advantages of print reading over screen reading: A comparison of visual patterns, reading performance, and reading attitudes across paper, computers, and tablets. *International Journal of Human–Computer Interaction*, *37*(17), 1674–1684. https://doi.org/10.1080/10447318.2021.1908668

[17] Suryasa, W., Mendoza, J. R. Z., Mera, T. M., Martinez, M. E. M., & Gamez, M. R. (2020). Mobile devices on teaching-learning process for high school level. *International Journal of Psychosocial Rehabilitation*, *24*(04), 330–340. https://doi.org/10.37200/IJPR/V24I4/PR201012

[18] Goundar, S. (2011). What is the potential impact of using mobile devices in education? In *Proceedings of SIG GlobDev Fourth Annual Workshop*, 16. Retrieved from: http://aisel.aisnet.org/globdev2011/16

[19] Liu, M., Navarrete, C., Maradiegue, E., & Wivagg, J. (2014). Mobile learning and English language learners: A case study of using iPod touch as a teaching and learning tool. *Journal of Interactive Learning Research*, *25*(3), 373–403.

[20] Gil, A. C. (2008). *Métodos e técnicas de pesquisa social [Methods and techniques of social research]* (6th ed.). Brazil: Editora Atlas S.A.

[21] Alabi, A. T., & Jelili, M. O. (2023). Clarifying Likert scale misconceptions for improved application in urban studies. *Quality & Quantity*, *57*(2), 1337–1350. https://doi.org/10.1007/s11135-022-01415-8

[22] Abbasnasab Sardareh, S., Brown, G. T. L., & Denny, P. (2021). Comparing four contemporary statistical software tools for introductory data science and statistics in the social sciences. *Teaching Statistics*, *43*(S1), S157–S172. https://doi.org/10.1111/test.12274

[23] da Conceição Ferreira, D., Rodrigues, A., Silva, C., & Soares, L. (2015). O ensino de computação na educação básica apoiado por problemas: Práticas de licenciandos em computação [Computer science education in basic education supported by problems: Practices of computer science undergraduate students]. In *Anais do XXIII Workshop sobre Educação em Computação* (pp. 130–139). https://doi.org/10.5753/wei.2015.10229

[24] Moreira, F. P., & Lima, D. A. (2024). Experimental analysis to assess the effectiveness of team-based blended learning in

teaching computational thinking. In *Anais do XXXII Workshop sobre Educação em Computação* (pp. 114–126). https://doi.org/10.5753/wei.2024.2424

[25] Teunissen, P. J. G. (2024). *Testing theory: An introduction*. Netherlands: TU Delft OPEN Publishing. https://doi.org/10.59490/tb.96

[26] Shatz, I. (2023). Assumption-checking rather than (just) testing: The importance of visualization and effect size in statistical diagnostics. *Behavior Research Methods*, *56*(2), 826–845. https://doi.org/10.3758/s13428-023-02072-x

[27] Martín-Ortega, J. L., & González-Sánchez, M. (2023). Sectoral composition of GDP and greenhouse gas emissions: An empirical analysis in EU27. *Environment, Development and Sustainability*, *27*(2), 3899–3926. https://doi.org/10.1007/s10668-023-04048-5

How to Cite: Moreira, F. P., & , D. A. L. (2026). My Disconnected World: A Study on Students' Perceptions of Mobile Phone Ban and Digital Well-Being in Urban and Rural Schools. *International Journal of Changes in Education*, *00*(00), 1–13. https://doi.org/10.47852/bonviewIJCE62027593