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School Smartphone Restrictions: A Comparative Policy Timeline from UNESCO Monitoring

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Abstract

School smartphone restrictions have expanded internationally, yet the increasing adoption of regulatory measures does not necessarily demonstrate improvements in educational outcomes. This study examines the diffusion of national school smartphone restrictions between 2023 and 2026, identifies changes in reported adoption, and evaluates the interpretive limitations of aggregate policy-monitoring indicators. A descriptive quantitative approach was employed through structured documentary analysis of secondary data published by UNESCO. Three monitoring observations were examined using absolute and relative change calculations, supplemented by critical interpretation of regulatory classifications and reporting limitations. The findings indicate that the number of education systems with national restrictions increased from 60 at the end of 2023 to 79 at the end of 2024 and 114 in the 2026 update. This represents an increase of 54 systems, equivalent to 90.0% relative to the initial observation. However, differences in regulatory scope, enforcement arrangements, institutional discretion, and reporting intervals constrain cross-national comparability. Aggregate adoption indicators cannot establish improvements in academic achievement, student behavior, or psychological well-being. The study contributes a transparent framework for distinguishing regulatory diffusion from policy implementation and educational effectiveness, emphasizing the need for independently measured outcomes and more detailed regulatory classifications in future evaluations.

Keywords: *Comparative policy; Digital education; Policy diffusion; School smartphone restrictions; UNESCO monitoring.*

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INTRODUCTION

The rapid expansion of smartphone restrictions in schools reflects a fundamental shift in international educational governance, as policymakers increasingly confront the competing demands of digital integration, classroom discipline, student well-being, and equitable access to educational technology. Smartphones provide opportunities for information retrieval, interactive learning, and communication, yet their unrestricted availability raises concerns regarding attentional disruption, problematic digital engagement, and the displacement of instructional activities. UNESCO monitoring documented 60 education systems with national school smartphone restrictions at the end of 2023, increasing to 79 at the end of 2024 and 114 in its 2026 update, indicating a substantial international expansion of regulatory intervention within a relatively short observation period (UNESCO, 2023, 2025, 2026). This development has intensified scholarly debate over whether restricting personal digital devices constitutes an effective educational intervention or merely an administratively visible response to broader technological challenges. Research on smartphone-related cognitive functioning demonstrates that the relationship between mobile devices and learning extends beyond direct usage to include attentional processes and the conditions under which digital devices become cognitively disruptive (Hartanto et al., 2024; Chen et al., 2025). Evidence concerning academic achievement further indicates that problematic smartphone engagement warrants examination alongside behavioral, instructional, and contextual factors rather than being interpreted as an isolated determinant of educational performance (Paterna et al., 2024; Kutluay & Karaca, 2025). The educational implications of smartphone regulation also intersect with adolescent mental health, social media exposure, and digital inequalities, making uniform policy assumptions difficult to justify across heterogeneous school populations (Fassi et al., 2024; Orben et al., 2024; Li et al., 2025). Consequently, the growing

international prevalence of school smartphone restrictions presents a significant problem for comparative educational policy research: the observable expansion of regulatory adoption must be distinguished from empirical evidence concerning educational effectiveness, student welfare, and institutional implementation.

Contemporary scholarship on school smartphone restrictions has developed through three interconnected research orientations: evaluations of educational and psychological outcomes, investigations of implementation and stakeholder experiences, and analyses of technology-related learning mechanisms. Systematic reviews have consolidated evidence concerning the potential academic and social consequences of smartphone bans, while simultaneously revealing considerable variation in research designs, intervention definitions, and outcome measurements (Álvarez-Álvarez et al., 2024; Böttger & Zierer, 2024; Campbell et al., 2024). Empirical studies have extended this evidence by examining problematic phone engagement, student well-being, and academic experiences under restrictive school policies, thereby positioning smartphone regulation within broader debates about behavioral management and educational environments (King et al., 2024; Baggio et al., 2025; Goodyear et al., 2025). Complementary qualitative and mixed-methods investigations emphasize the perspectives of students, teachers, and school administrators, demonstrating the analytical relevance of institutional practices, stakeholder acceptance, and school-level policy arrangements (Aloteibi et al., 2024; Gath et al., 2024; Bar et al., 2025). Research addressing digital learning environments also complicates the assumption that mobile technologies necessarily undermine educational engagement, particularly where instructional activities establish clear pedagogical purposes and structured opportunities for participation (Wang et al., 2023; Ives et al., 2024; Godsk & Møller, 2025). Studies of classroom smartphone use and digital distraction further distinguish the educational functions of technology from the behavioral conditions under which mobile connectivity may interfere with learning (Deng et al., 2025; Martin et al., 2025). Taken together, these research orientations indicate that smartphone restrictions cannot be evaluated adequately through a universal opposition between technological access and prohibition. The emerging state of the art instead favors differentiated interpretations of digital behavior, instructional requirements, institutional governance, and measurable educational outcomes.

Despite these developments, the existing literature exhibits a substantive gap between the evaluation of school-level smartphone restrictions and the comparative interpretation of their international regulatory diffusion. Reviews of smartphone bans primarily synthesize findings concerning educational, psychological, or behavioral consequences, whereas individual empirical investigations generally examine specified institutional environments, populations, or policy interventions (Campbell et al., 2024; King et al., 2024; Baggio et al., 2025). More recent studies have expanded the analytical scope toward adolescent risk behaviors, the experiences of students under restrictive policies, and the institutional processes through which phone regulations are implemented (Chen, S.-C., et al., 2026; Goodyear et al., 2026; Sheng & Lipscombe, 2026). Such investigations provide valuable insights into particular dimensions of policy implementation but do not, by themselves, establish how aggregate international adoption figures should be interpreted across successive reporting periods. A related methodological limitation concerns the heterogeneity of regulatory definitions: restrictions may differ according to school level, permissible educational uses, enforcement mechanisms, exemptions, and the extent of institutional discretion. Consequently, a national restriction recorded in one education system may not represent an intervention equivalent to that recorded elsewhere. Recent research examining school-level restrictions and their consequences further reinforces the need to distinguish institutional policy arrangements from the outcomes attributed to those arrangements (Allcott et al., 2026; Goodyear et al., 2025). The central research gap addressed here is therefore not the complete absence of scholarship on smartphone bans, but the limited integration of longitudinal international policy-monitoring indicators with an explicit analytical distinction between regulatory diffusion, policy heterogeneity, and educational effectiveness. Without this distinction, comparisons of national restriction counts risk producing misleading conclusions about the magnitude, uniformity, and practical significance of international policy change.

The unresolved distinction between regulatory adoption and demonstrable effectiveness has significant implications for educational research, public administration, and institutional decision-making. Policymakers may interpret increasing international adoption as evidence that restrictive

interventions are educationally justified, even when the available monitoring indicators provide no direct information about academic achievement, classroom engagement, psychological adjustment, or behavioral outcomes. Studies addressing smartphone-related behavioral difficulties and mental well-being illustrate why the anticipated benefits of restrictions must be evaluated through relevant outcome measures rather than inferred from the formal existence of rules (Agostini & Petrucco, 2023; Yogesh et al., 2024; Zhang et al., 2024). Research on digital technology and mental health also cautions against reducing the relationship between technological exposure and psychological outcomes to a single restrictive policy response, because educational technology may operate through different forms of use, participation, and support (Chen, T., et al., 2024). Evidence concerning problematic smartphone engagement in educational environments strengthens the rationale for examining learning-related behaviors while preserving the distinction between behavioral risk factors and the actual effects of regulatory interventions (Fute et al., 2025; Paterna et al., 2024). From a governance standpoint, treating heterogeneous national regulations as interchangeable interventions may obscure differences in policy objectives, institutional capacity, educational accessibility, and enforcement arrangements. Such analytical simplification can weaken evidence-informed policymaking by encouraging the transfer of restrictions without adequate attention to implementation conditions or independent evaluation. The scientific urgency lies in improving the conceptual precision of comparative policy indicators, while the practical urgency concerns preventing aggregate regulatory statistics from being interpreted as evidence of improvements that have not been directly measured. A rigorous distinction between adoption, implementation, and effectiveness is consequently necessary to support defensible policy comparisons and clarify the limits of conclusions drawn from international monitoring data.

This study occupies a distinct position within the literature by examining the diffusion of national school smartphone restrictions as a comparative policy-monitoring phenomenon rather than estimating the educational or psychological effects of a particular intervention. Previous systematic reviews have concentrated on synthesizing evidence regarding the consequences and practical challenges of smartphone restrictions, while institutional studies have investigated student experiences, governance arrangements, and behavioral outcomes within identifiable educational settings (Álvarez-Álvarez et al., 2024; Bar et al., 2025; Sheng & Lipscombe, 2026). Research considering restrictive interventions and digital learning processes provides an important foundation for understanding potential policy mechanisms, but its primary analytical concern differs from the interpretation of international adoption indicators (Deng et al., 2025; Allcott et al., 2026). The present investigation addresses this distinction through structured documentary tracing of UNESCO monitoring publications covering three observation points: the end of 2023, the end of 2024, and the 2026 monitoring update (UNESCO, 2023, 2025, 2026). Its analytical approach combines the extraction of published aggregate indicators, the calculation of absolute and relative changes, and the critical interpretation of differences in reporting periods, regulatory classifications, and policy comparability. The proposed contribution is not a new causal model, an independently constructed multinational policy database, or an evaluation of country-specific legal provisions. Rather, its methodological contribution consists of establishing a transparent interpretive boundary between what international monitoring statistics can demonstrate and what requires additional institutional or outcome-based evidence. The study's novelty resides in the integrated treatment of three closely related analytical dimensions: the temporal development of recorded regulatory adoption, the limitations of binary policy classifications, and the distinction between the geographical diffusion of restrictions and their educational effectiveness. This approach offers a focused extension of existing scholarship by treating the interpretation of monitoring indicators as an independent problem of comparative educational policy analysis.

The objective of this study is to examine the reported development of national school smartphone restrictions across selected UNESCO monitoring observations from 2023 to 2026 and to establish the interpretive limits of these aggregate policy indicators. Specifically, the research seeks to identify changes in the number of education systems reporting national restrictions, calculate absolute and relative differences between the selected observation points, and examine how differences in reporting periods and regulatory characteristics affect the comparability of the resulting indicators. The investigation also aims to distinguish documented regulatory diffusion from claims concerning educational achievement, student well-being, behavioral improvement, or institutional effectiveness

that cannot be established through adoption counts alone. These objectives are addressed through a structured analysis of published policy-monitoring documents without introducing individual-level observations, constructing unverified national records, or attributing causal effects to regulatory changes. The anticipated scientific contribution is a more precise conceptual treatment of policy diffusion as an observable dimension of international educational governance, analytically separate from implementation quality and educational outcomes. Its methodological contribution is a transparent framework for interpreting secondary monitoring statistics through clearly identified observation points, arithmetic comparisons, and explicit evidentiary limitations. The practical contribution concerns the use of international policy indicators by education authorities, school administrators, and researchers who require defensible distinctions between the spread of regulatory instruments and evidence supporting their effectiveness. By maintaining these distinctions, the study seeks to strengthen the interpretation of comparative education policy data and provide a defensible foundation for subsequent investigations that integrate detailed regulatory classifications, implementation evidence, and independently measured educational outcomes.

RESEARCH METHODS

This study employed a descriptive quantitative approach based on structured documentary analysis of secondary policy-monitoring data published by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The research examined the international development of national school smartphone restrictions through a comparative analysis of published monitoring indicators rather than primary data collection, experimental intervention, or direct evaluation of educational outcomes. The documentary sources consisted of UNESCO publications addressing educational technology and national school-phone regulations, including the Global Education Monitoring Report 2023, the 2025 monitoring publication on smartphone restrictions in schools, and the 2026 monitoring update. Three observation points were established according to the reporting periods available in these documents: the end of 2023, the end of 2024, and the 2026 update. The unit of analysis was the aggregate number of education systems identified by UNESCO as having national school smartphone bans or restrictions, rather than individual schools, students, teachers, or independently verified national legislative instruments. Source selection was restricted to the institutional publications containing the monitoring indicators and policy qualifications required to address the research objectives. Documentary extraction focused on the reported observation period, the number of education systems covered by the restriction indicator, and accompanying explanations concerning regulatory definitions and cross-national comparability. The investigation relied exclusively on publicly available institutional documents and did not involve questionnaires, interviews, participant recruitment, experimental groups, or observations of individual educational practices. The resulting dataset consisted of the three published aggregate observation points, with no additional records generated through estimation, interpolation, or simulation.

Data processing combined descriptive numerical comparison with critical interpretation of the documentary information accompanying the monitoring indicators. The quantitative procedure involved organizing the reported national restriction counts chronologically, calculating the absolute difference between successive observations, and determining relative changes using the earlier observation as the reference value. Absolute change was calculated as the difference between the counts reported at two observation points, while relative change was expressed as the absolute difference divided by the earlier count and multiplied by 100. The comparison between the first and final observation used the end-2023 indicator as its reference, allowing the cumulative proportional change across the selected monitoring period to be described consistently. Numerical results were organized into comparative tables and a graphical representation to distinguish observed indicator values from arithmetic calculations derived from those values. Documentary interpretation examined the limitations of comparing national restrictions with potentially different regulatory coverage, implementation arrangements, enforcement provisions, and institutional exceptions. Particular attention was given to differences in observation intervals, the distinction between absolute and proportional changes, and the inability of aggregate policy-adoption indicators to establish causal effects on academic achievement, student well-being, or other educational outcomes. Analytical accuracy was maintained by retaining the published UNESCO figures as the exclusive numerical inputs, distinguishing reported values from calculated indicators, and limiting substantive

interpretations to information supported by the selected documents. No inferential statistical tests, regression models, hypothesis testing, or causal identification procedures were applied because the available data comprised aggregate monitoring observations rather than individual-level measurements or a controlled comparative dataset. The methodological scope was consequently limited to describing documented regulatory diffusion, examining the interpretive constraints of international policy comparisons, and identifying the additional evidence required to evaluate the educational effectiveness of school smartphone restrictions.

RESULTS AND DISCUSSION

Growth in the Recorded Adoption of School Smartphone Restrictions

The international expansion of school smartphone restrictions represents an observable development in educational regulation, reflecting increasing institutional attention to the management of personal digital devices in learning environments. UNESCO monitoring provides a chronological basis for examining this development through published aggregate indicators of education systems with national restrictions during the 2023–2026 period (UNESCO, 2023, 2025, 2026). The analytical significance of these indicators lies in their capacity to describe the geographical diffusion of a regulatory instrument rather than demonstrate its effectiveness in improving educational conditions. This distinction is essential because the enactment of a restriction constitutes an administrative or regulatory event, whereas improvements in academic performance, student behavior, and psychological well-being require independently measured outcomes.

The three monitoring observations establish a descriptive sequence through which changes in the recorded adoption of national school smartphone restrictions can be examined without constructing additional country-level information. UNESCO reported 60 education systems with national restrictions at the end of 2023, 79 at the end of 2024, and 114 in its 2026 monitoring update (UNESCO, 2025, 2026). These observations indicate an expanding number of education systems classified as having restrictive arrangements, although they do not identify the precise legislative dates, enforcement mechanisms, or institutional implementation processes within individual jurisdictions. The distinction between observation dates and policy implementation dates is particularly relevant because a monitoring update may record regulations introduced or identified at different points before publication.

Comparative interpretation requires distinguishing the accumulation of recorded restrictions from the underlying processes through which educational policies are adopted and institutionalized. Research examining smartphone regulation has emphasized that restrictions vary according to their intended educational purposes, administrative arrangements, and practical implementation, limiting the validity of treating national policy adoption as a homogeneous intervention (Álvarez-Álvarez et al., 2024; Campbell et al., 2024). The UNESCO indicators offer a comparable aggregate measure within the reporting framework, but their numerical consistency cannot independently establish equivalence between the regulatory instruments represented. Consequently, the observed trajectory should be interpreted as a change in documented policy prevalence rather than a direct measurement of regulatory intensity, compliance, or educational transformation.

The chronological values extracted from the UNESCO monitoring publications are presented in Table 1 to clarify the empirical foundation of the descriptive comparison. The table preserves the published observation periods and corresponding aggregate counts without introducing interpolated observations, independently estimated national totals, or additional statistical assumptions (UNESCO, 2025, 2026). Its structure provides the numerical basis for subsequent calculations of absolute and relative change while maintaining the distinction between reported indicators and analytical transformations. The observation periods are retained as originally specified because the final monitoring update does not represent an interval identical in duration to the preceding annual comparison.

Table 1. Recorded Adoption of National School Smartphone Restrictions Across UNESCO Monitoring Observations

Observation period	Education systems with national restrictions	Indicator classification
End of 2023	60	Published aggregate monitoring count
End of 2024	79	Published aggregate monitoring count
2026 monitoring update	114	Published aggregate monitoring count

Source: UNESCO monitoring publications (2025, 2026).

The values presented in Table 1 reveal a consistent upward sequence across the three selected reporting observations, providing a descriptive indication of the expanding international presence of national school smartphone restrictions. The count increased from 60 to 79 between the first two observations, corresponding to 19 additional education systems, while the subsequent monitoring update recorded a further difference of 35 systems relative to the end-2024 figure. These changes represent differences between published aggregate observations rather than independently verified counts of newly enacted regulations during equivalent reporting periods (UNESCO, 2025, 2026). The distinction limits the interpretation of the observed increases because changes in monitoring coverage, classification practices, or reporting timing cannot be separately quantified using the available aggregate data.

The cumulative difference between the first and final observation amounts to 54 education systems, representing a relative increase of 90.0% when the end-2023 count is used as the reference value. This percentage describes proportional growth in the recorded number of systems, not a 90-percentage-point increase in the worldwide prevalence of school smartphone restrictions (UNESCO, 2025, 2026). The calculation also does not establish the annual probability of policy adoption, since the available observations do not constitute a continuously measured longitudinal series of individual jurisdictions. Interpreting the change as a descriptive aggregate difference preserves the mathematical meaning of the indicator while avoiding an unsupported inference concerning regulatory acceleration.

The growing prevalence of national restrictions can be situated within an educational policy environment characterized by concern over digital distraction, instructional concentration, and the behavioral consequences of unrestricted smartphone availability. Systematic evidence indicates that mobile-device distraction can interfere with cognitive processing during learning activities, while problematic smartphone use is associated with academic difficulties across the populations examined in existing research (Chen, Q., et al., 2025; Paterna et al., 2024). These findings establish a credible educational rationale for examining restrictive policies but do not demonstrate that the countries recorded by UNESCO adopted restrictions for identical reasons or experienced comparable outcomes. The observed policy diffusion is therefore consistent with wider international attention to digital learning risks, although the documentary dataset cannot establish the relative influence of scientific evidence, political considerations, public expectations, or administrative priorities on national decisions.

The relationship between educational research and regulatory diffusion is further complicated by evidence that smartphone use does not generate uniform instructional consequences across learning environments. Research on classroom technology distinguishes educationally structured mobile-device activities from distracting forms of use, suggesting that the instructional effects of smartphones depend partly on pedagogical design and the circumstances under which access occurs (Wang et al., 2023; Ives et al., 2024; Deng et al., 2025). A rising number of national restrictions consequently cannot be interpreted as demonstrating a universal scholarly consensus that smartphone exclusion is preferable to regulated educational integration. The aggregate monitoring pattern establishes the increasing administrative prominence of restrictions, while the educational justification for particular policy designs remains a separate empirical and institutional question.

Existing evaluations provide further grounds for separating the geographical spread of restrictions from evidence of their performance. Investigations of smartphone bans have examined

academic, behavioral, and psychological outcomes under identifiable policy conditions, whereas observational studies of school phone policies have emphasized the need to consider outcomes and patterns of technology use beyond the existence of formal restrictions (King et al., 2024; Goodyear et al., 2025; Allcott et al., 2026). Such research addresses dimensions of effectiveness that cannot be recovered from international adoption totals alone, demonstrating the importance of maintaining distinct analytical categories for policy prevalence and educational consequences. The UNESCO monitoring sequence is informative precisely because it documents a regulatory development that can be described independently of contested or context-dependent claims regarding policy effectiveness.

The recorded expansion from 2023 to 2026 provides a bounded empirical basis for understanding the international diffusion of school smartphone restrictions, but the strength of the resulting conclusion depends on preserving the limitations of the underlying indicators. The available observations establish the direction and magnitude of changes in reported aggregate counts without identifying national adoption pathways, measuring implementation fidelity, or controlling for differences in regulatory definitions (UNESCO, 2026; Sheng & Lipscombe, 2026). Their contribution to comparative education policy research lies in documenting the increasing prevalence of a regulatory instrument while exposing the limits of interpreting policy counts as evidence of institutional or educational improvement. Further analytical attention must consequently be directed toward the heterogeneity of restrictive arrangements and the conditions under which numerical comparisons between education systems remain substantively meaningful.

Policy Heterogeneity and the Limits of Aggregate Regulatory Comparisons

The international expansion of school smartphone restrictions raises a fundamental issue concerning the comparability of regulatory arrangements across education systems. Although UNESCO monitoring identifies education systems with national restrictions, the resulting aggregate indicator does not necessarily distinguish between comprehensive prohibitions, instructional-period limitations, age-specific regulations, and policies permitting controlled educational access (UNESCO, 2025, 2026). These regulatory differences are analytically significant because the formal existence of a restriction does not establish its operational scope or the extent to which students experience limitations on smartphone access. Comparative interpretation must therefore distinguish the numerical prevalence of restrictive policies from the institutional characteristics that determine how those policies operate within educational environments.

Regulatory heterogeneity extends beyond differences in the formal duration or coverage of restrictions to encompass administrative authority, enforcement responsibility, and institutional discretion. School administrators may operate under nationally prescribed requirements or broader policy frameworks that permit locally determined implementation arrangements, creating potentially different regulatory experiences within education systems classified under the same aggregate category. Research examining school leadership and smartphone policies identifies institutional governance as an important dimension of regulatory implementation, while studies of teachers' experiences demonstrate the relevance of classroom-level practices and administrative expectations (Sheng & Lipscombe, 2026; Aloteibi et al., 2024). The UNESCO monitoring counts cannot independently distinguish these institutional configurations because the reported numerical indicator measures the presence of national restrictions rather than the distribution of implementation responsibilities.

The implications of regulatory heterogeneity become particularly apparent when formal restrictions are interpreted as equivalent educational interventions. Systematic reviews of school smartphone bans demonstrate that the available literature encompasses different policy arrangements, research populations, and outcome measures, complicating attempts to derive uniform conclusions regarding their educational consequences (Álvarez-Álvarez et al., 2024; Böttger & Zierer, 2024; Campbell et al., 2024). A restriction limited to classroom instruction may operate through different behavioral and pedagogical mechanisms from a prohibition extending across the entire school day, even when both are recorded within a common policy category. Consequently, the classification of national restrictions as a single aggregate variable is sufficient for describing recorded policy prevalence but insufficient for establishing substantive equivalence between regulatory interventions.

The documentary indicators also provide limited information about whether national regulations incorporate exemptions for specific educational, accessibility, or institutional

requirements. Such exceptions may influence the practical intensity of restrictions without changing the classification of an education system as having a national smartphone policy (UNESCO, 2026). Evidence on technology-supported learning indicates that personal digital devices can serve educational functions under appropriately structured instructional conditions, making permissible academic use a relevant dimension of comparative policy interpretation (Ives et al., 2024; Godsk & Møller, 2025). The conceptual distinctions relevant to interpreting the aggregate monitoring indicator are organized in Table 2, which separates characteristics represented by the published counts from dimensions requiring more detailed regulatory documentation.

Table 2. Analytical Dimensions of Regulatory Heterogeneity and Their Representation in UNESCO Aggregate Monitoring

Regulatory dimension	Relevant characteristic	Information established by aggregate monitoring	Comparative limitation
Policy adoption	Presence of national smartphone restrictions	Aggregate number of education systems classified as having restrictions	Does not establish equivalence of policy instruments
Regulatory scope	Full-day, instructional-period, or age-specific restrictions	Not distinguished in the reported aggregate counts	Different forms of restriction may be grouped together
Administrative authority	National requirements and school-level discretion	Not quantified in the aggregate indicator	Implementation responsibilities cannot be compared
Enforcement arrangements	Monitoring, compliance, and institutional procedures	Not independently measured	Formal adoption cannot establish enforcement intensity
Educational exemptions	Permitted instructional or accessibility-related use	Not quantified in the aggregate indicator	Practical access may differ across systems
Educational outcomes	Achievement, engagement, behavior, and well-being	Not measured by restriction counts	Policy effectiveness cannot be inferred

Source: Analytical classification derived from the scope and limitations of the UNESCO monitoring indicators (2023, 2025, 2026).

Table 2 demonstrates that the UNESCO monitoring indicator captures one dimension of regulatory development while leaving several characteristics of policy design and implementation analytically unresolved. The distinction between documented information and unmeasured regulatory characteristics is necessary because the absence of detail in aggregate reporting cannot be interpreted as evidence that countries share identical implementation practices. Comparative studies of smartphone restrictions have emphasized the significance of contextual differences in evaluating policy effects, particularly where institutional arrangements and student experiences vary across educational settings (Gath et al., 2024; Bar et al., 2025). The classification presented in Table 2 consequently functions as an interpretive framework for assessing the limitations of the available documentary evidence rather than an empirical coding exercise involving individual countries.

A further limitation concerns the relationship between regulatory classification and the actual behavior of students within educational institutions. National restrictions may establish formal expectations regarding smartphone access, but aggregate monitoring figures provide no evidence concerning compliance, the frequency of unauthorized use, or the substitution of other connected devices. Research evaluating school smartphone policies illustrates the importance of examining behavioral patterns and student experiences separately from formal policy status, since the existence of institutional restrictions does not independently establish their behavioral consequences (King et al., 2024; Goodyear et al., 2025). The inability to observe these implementation characteristics

restricts the analytical scope of the UNESCO indicators to documented regulatory presence rather than the effective exposure of students to particular policy conditions.

The interpretation of regulatory heterogeneity also requires consideration of the educational functions that restrictions are intended to regulate. Research on classroom smartphone use differentiates potentially distracting activities from structured educational applications, while investigations of digital learning emphasize the role of instructional organization in shaping the relationship between technological access and educational engagement (Wang et al., 2023; Deng et al., 2025). A regulatory framework permitting supervised academic use may consequently differ substantially from one imposing extensive restrictions, even if both share the objective of reducing non-instructional digital activity. Without detailed information regarding permissible uses, the aggregate indicator cannot establish whether national policies represent technological exclusion, regulated integration, or combinations of these approaches.

International comparisons are additionally constrained by the absence of independently standardized measurements of regulatory intensity and implementation fidelity within the selected dataset. The three UNESCO observation points establish changes in the number of education systems reporting national restrictions, but they do not provide a continuous country-level record through which modifications, exemptions, enforcement practices, or policy reversals can be systematically evaluated (UNESCO, 2025, 2026). Research on policy implementation and school-level governance indicates that institutional processes constitute a distinct dimension of smartphone regulation that cannot be adequately represented by adoption status alone (Sheng & Lipscombe, 2026; Goodyear et al., 2026). Treating successive aggregate counts as directly comparable measures of regulatory strictness would consequently introduce an interpretation unsupported by the documentary design and available indicators.

The distinction between regulatory prevalence and policy intensity has broader implications for how evidence is incorporated into educational governance. Studies of adolescent smartphone engagement and digital distraction suggest that the educational relevance of restrictions depends on the behaviors being addressed and the conditions under which technological access influences learning processes (Martin et al., 2025; Kutluay & Karaca, 2025). Aggregate monitoring, however, cannot determine whether the policies recorded across education systems target comparable behavioral problems or employ interventions of equivalent scope. Policy comparisons based exclusively on national restriction counts should consequently be limited to the diffusion of regulatory adoption, while claims concerning intervention similarity require more detailed evidence about policy objectives, legal provisions, and institutional implementation.

The observed growth in national smartphone restrictions is consequently compatible with substantial heterogeneity in the actual design and operation of restrictive policies. UNESCO monitoring provides a defensible basis for examining changes in documented adoption, but its aggregate structure does not permit quantitative comparisons of regulatory severity, enforcement consistency, or institutional compliance across the education systems represented (UNESCO, 2026). Existing research reinforces the analytical importance of examining implementation characteristics alongside formal policy decisions, particularly when educational outcomes are influenced by institutional conditions and the organization of digital learning (Campbell et al., 2024; Goodyear et al., 2026). The principal implication is that international diffusion indicators require carefully defined interpretive boundaries, while credible comparisons of regulatory mechanisms depend on additional country-level documentation and explicit classification criteria that are not available in the present dataset.

Evaluating Policy Effectiveness Beyond Regulatory Adoption

The effectiveness of school smartphone restrictions cannot be established through the geographical expansion of regulatory adoption because policy prevalence and educational outcomes represent distinct analytical dimensions. UNESCO monitoring documents changes in the number of education systems implementing national restrictions, but these aggregate indicators do not measure academic achievement, classroom engagement, student behavior, or psychological well-being (UNESCO, 2023, 2026). Regulatory adoption constitutes evidence of institutional decision-making, whereas policy effectiveness requires demonstrable relationships between clearly defined interventions and independently observed outcomes. The distinction is fundamental to comparative

educational policy analysis because the growing acceptance of a regulatory instrument does not establish that its intended benefits have materialized across the jurisdictions adopting it.

The interpretation of educational effectiveness requires a clear distinction between the mechanisms through which smartphone restrictions are expected to operate and the measurable consequences of their implementation. Research examining problematic smartphone use and academic achievement provides evidence that digital engagement may be associated with educational difficulties, while cognitive studies identify attentional processes through which mobile-device distraction can influence learning performance (Hartanto et al., 2024; Paterna et al., 2024; Chen, Q., et al., 2025). These relationships establish plausible mechanisms supporting the investigation of restrictive policies, but they do not demonstrate that restrictions necessarily reduce distraction or improve educational achievement. Establishing effectiveness would require evidence that a specified intervention altered relevant behavioral or instructional conditions and that the resulting educational changes could be distinguished from other influences.

Empirical evaluations of school smartphone restrictions illustrate the methodological distinction between documenting policy adoption and investigating the outcomes associated with particular regulatory arrangements. Research examining problematic phone use, social experiences, and academic consequences has addressed dimensions of school policy effectiveness that cannot be recovered from national restriction counts (King et al., 2024; Goodyear et al., 2025). Studies employing natural-experiment approaches and investigations of restrictive technologies further extend this research toward the assessment of outcomes under identifiable policy conditions, although their findings remain dependent on the populations, interventions, and identification strategies examined (Baggio et al., 2025; Allcott et al., 2026). Such investigations provide a different category of evidence from the UNESCO monitoring observations because their analytical objectives concern the consequences of intervention rather than the international prevalence of regulatory instruments.

Educational effectiveness also extends beyond academic performance to encompass student well-being, interpersonal experiences, and behavioral adjustment. Research concerning adolescent social media exposure and mental health emphasizes the complexity of relationships between digital engagement and psychological vulnerability, while studies of problematic smartphone behavior indicate that educational concerns may intersect with broader patterns of adolescent development (Fassi et al., 2024; Orben et al., 2024; Yogesh et al., 2024). Recent investigations have additionally examined associations between school phone restriction policies and adolescent risk-related behaviors, expanding the range of outcomes relevant to evaluating regulatory interventions (Chen, S.-C., et al., 2026). These developments reinforce the need for multidimensional outcome assessment because improvement in one domain cannot automatically establish equivalent benefits across academic, behavioral, and psychological indicators.

The evidentiary distinction between regulatory monitoring and outcome evaluation is summarized in Table 3 through an analytical classification of indicators and the conclusions they can legitimately support. The table is derived from the scope of the UNESCO documentary observations and the methodological requirements implied by the educational outcomes examined in contemporary research (UNESCO, 2023, 2026; Campbell et al., 2024). It does not introduce additional empirical measurements or assign unobserved effects to any education system. Its purpose is to clarify which claims can be supported by the existing aggregate dataset and which require independently collected evidence.

Table 3. Evidentiary Boundaries Between School Smartphone Policy Adoption and Educational Effectiveness

Analytical dimension	Relevant indicator or evidence	Availability in the analyzed UNESCO monitoring data	Permissible interpretation
Regulatory adoption	Number of education systems with national restrictions	Available for three observation points	Descriptive comparison of recorded policy prevalence
Regulatory diffusion	Absolute and relative changes in restriction	Derivable from published aggregate	Magnitude of change between monitoring

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	counts	indicators	observations
Implementation quality	Compliance, enforcement consistency, and institutional practices	Not measured	Cannot establish how effectively restrictions operate
Academic effectiveness	Achievement, learning engagement, and instructional performance	Not measured	Cannot determine educational improvement
Behavioral effectiveness	Distraction, problematic use, and student conduct	Not measured	Cannot attribute behavioral changes to restrictions
Psychological effectiveness	Mental well-being and psychosocial adjustment	Not measured	Cannot establish psychological benefits or harms
Causal policy effectiveness	Outcome differences attributable to specified restrictions	Not estimable from the available observations	Requires an appropriate evaluation design and independent outcome data

Source: Analytical classification based on UNESCO monitoring publications (2023, 2025, 2026) and the evidentiary scope of the present documentary research.

Table 3 demonstrates that the available monitoring observations support descriptive conclusions about regulatory diffusion but provide no direct basis for estimating the educational consequences of smartphone restrictions. The absence of academic, behavioral, and psychological outcome measurements prevents the calculation of intervention effects, comparisons between restricted and unrestricted school populations, or statistical identification of changes attributable to national policies. Systematic reviews of smartphone restrictions similarly emphasize the importance of distinguishing potential benefits from the strength and comparability of the empirical evidence supporting particular conclusions (Böttger & Zierer, 2024; Álvarez-Álvarez et al., 2024). The classification establishes that the limitations of aggregate monitoring are methodological rather than evidence of either success or failure in the implementation of national restrictions.

The assessment of educational outcomes becomes more complicated when smartphone restrictions operate alongside broader changes in teaching practices, student digital behavior, and institutional learning environments. Research on structured educational technology use indicates that digital devices may support learning under specific pedagogical conditions, while investigations of classroom smartphone activities distinguish educational engagement from distracting forms of technology use (Ives et al., 2024; Deng et al., 2025; Godsk & Møller, 2025). Consequently, changes in student achievement following the introduction of restrictions could reflect multiple overlapping developments rather than the independent effect of smartphone regulation. The UNESCO observations provide no information on these potential confounding conditions, preventing an assessment of whether recorded policy adoption coincided with instructional reforms, changes in student behavior, or other educational interventions.

Implementation characteristics constitute another essential component of effectiveness because formally equivalent regulations may produce different institutional experiences. Qualitative investigations of students' responses to school smartphone bans demonstrate the relevance of stakeholder experiences, while research on school leadership identifies administrative arrangements as an important consideration in interpreting restrictive policy implementation (Bar et al., 2025; Sheng & Lipscombe, 2026). Differences in enforcement, educational exemptions, student acceptance, and school-level administrative capacity may influence the relationship between regulatory intentions and actual changes in learning environments. The absence of comparable implementation data within the UNESCO aggregate indicators means that neither the intensity of restrictions nor their practical operation can be incorporated into the present descriptive analysis.

Broader evidence concerning smartphone-related risks further indicates that the justification for regulatory intervention must be distinguished from evidence demonstrating the consequences of a particular policy. Research examining smartphone addiction, academic difficulties, and adolescent health identifies relevant concerns associated with problematic digital engagement, while studies of technology-supported mental health interventions demonstrate that digital technologies may also serve constructive functions under appropriate conditions (Agostini & Petrucco, 2023; Chen, T., et al.,

2024; Zhang et al., 2024). Investigations of university students' classroom experiences and secondary students' academic outcomes provide additional evidence that the effects of digital engagement depend on behavioral and educational circumstances rather than technological access alone (Fute et al., 2025; Kutluay & Karaca, 2025). These findings support differentiated policy evaluation rather than the assumption that any expansion of restrictions represents an equivalent improvement in educational governance.

The distinction between adoption and effectiveness also determines the methodological requirements for subsequent comparative investigations. Research examining school phone policies and adolescent well-being illustrates the relevance of combining policy information with independent outcome evidence, while analyses of educational technology and digital inequality indicate that institutional and student-level characteristics may condition the effects of regulatory interventions (Goodyear et al., 2026; Li et al., 2025). A more comprehensive comparative framework would require consistent regulatory classifications, information about implementation arrangements, comparable educational outcomes, and research designs capable of addressing competing explanations for observed changes. The present documentary dataset does not contain these elements, and its descriptive findings cannot legitimately be extended into causal claims about the benefits or disadvantages of national smartphone restrictions.

The principal analytical contribution of the 2023–2026 UNESCO monitoring comparison lies in establishing the documented expansion of national smartphone restrictions while identifying the evidentiary limits of using regulatory prevalence as a proxy for educational success. Published aggregate counts provide a defensible foundation for describing international policy diffusion, but they do not establish whether restrictions improve academic achievement, reduce problematic digital behavior, strengthen student well-being, or produce comparable institutional outcomes across education systems (UNESCO, 2025, 2026). Contemporary research on digital distraction and school smartphone regulation reinforces the need for policy evaluations that integrate educational outcomes with the characteristics and implementation of the interventions under examination (Martin et al., 2025; Goodyear et al., 2025; Allcott et al., 2026). The resulting interpretation preserves a clear boundary between observable regulatory developments and unverified claims of policy effectiveness, providing a methodologically defensible basis for comparative educational governance research.

CONCLUSION

The study establishes that national school smartphone restrictions experienced substantial regulatory diffusion across the UNESCO monitoring observations from 2023 to 2026. The number of education systems recorded with national restrictions increased from 60 at the end of 2023 to 79 at the end of 2024 and 114 in the 2026 monitoring update, representing an absolute increase of 54 systems and a relative increase of 90.0% from the initial observation. These figures demonstrate the growing prevalence of smartphone regulation within international educational governance but do not establish an equivalent increase in regulatory intensity or educational effectiveness. Differences in reporting intervals, policy classifications, enforcement arrangements, and institutional exemptions limit the substantive comparability of aggregate national restriction counts. The findings also establish that regulatory adoption cannot serve as a direct indicator of improvements in academic achievement, classroom engagement, student behavior, or psychological well-being because these outcomes were not measured in the analyzed documents. The principal scientific contribution lies in distinguishing policy diffusion from implementation and effectiveness, providing a more precise analytical basis for interpreting international educational regulation through secondary monitoring data.

The findings have methodological and practical implications for comparative educational policy research and evidence-informed decision-making. International monitoring indicators should be interpreted according to their operational definitions, reporting periods, and analytical limitations rather than treated as evidence that increasingly adopted regulations necessarily produce favorable educational outcomes. Education authorities and school administrators can use the documented expansion of restrictions to understand international regulatory developments, but decisions concerning policy design, enforcement, and educational application require additional evidence beyond aggregate adoption figures. Future investigations should develop comparable classifications of national restrictions, distinguish differences in regulatory scope and institutional discretion, and integrate implementation information with independently measured educational and psychosocial

outcomes. Comparative evaluations should also employ appropriate longitudinal or quasi-experimental designs where feasible to distinguish policy-related changes from other influences on student behavior and learning. The present study remains limited to three published monitoring observations and does not independently verify national legislation, measure school-level compliance, or estimate causal effects. Its contribution is a transparent and reproducible descriptive comparison that clarifies both the documented growth of school smartphone restrictions and the evidentiary requirements for evaluating their educational consequences.

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