



Effectiveness of a School Smartphone Ban in Reducing Cyberbullying and Supporting a Safe Learning Environment: A Descriptive–Evaluative Study in Indonesia

ATR Rosa¹, Lea Tarliyah¹, Netti Susanti¹, Ati Rahmawati¹, Agriyosda Syeftia¹

¹Postgraduate Program, Universitas Pendidikan Islam Nusantara, Bandung, Indonesia

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ABSTRACT

Purpose of the study: This study evaluates the effectiveness of a school-wide smartphone-ban policy in reducing cyberbullying among junior high school students and identifies the factors that support or hinder its implementation in two public junior high schools in the Bandung area, Indonesia.

Methodology: A quantitative descriptive–evaluative design was used. Data were collected from junior high school students at SMP Negeri 35 Bandung and SMP Negeri Satu Atap Nagrog through a four-point Likert-scale questionnaire covering six effectiveness indicators, complemented by structured observation. The sample was drawn using the Slovin formula and analysed using descriptive statistics and an effectiveness-percentage classification.

Main Findings: A majority of respondents reported that the ban was consistently enforced (69.14%) and that cyberbullying incidents had declined after its introduction (61.73%). The composite effectiveness score was 78.67%, which falls in the “effective” category. Restricting in-school smartphone access reduces the opportunity structure for cyberbullying, but the effect is conditioned by student compliance and the consistency of school supervision.

Novelty/Originality of this study: While the international literature on school phone bans focuses largely on academic performance and general well-being, this study foregrounds cyberbullying as the primary outcome and provides school-level evidence from the under-represented Indonesian context, framed through an input–process–output–outcome systems lens.

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Corresponding Author:

Ade Tutty Rosa,

Postgraduate Program, Universitas Pendidikan Islam Nusantara (UNINUS),
Bandung, West Java, Indonesia.

Email: agriyosda.syeftia17@guru.sma.belajar.id

1. INTRODUCTION

The smartphone has become the defining technology of contemporary adolescence. For most teenagers it is no longer merely a communication device but the principal gateway to information, entertainment, identity formation, and peer belonging [1], [2]. This centrality brings genuine educational and social benefits, yet a substantial evidence base also links intensive and poorly regulated use to problematic use, attentional difficulties, sleep disruption, and reduced psychological well-being [3], [4]. Within classrooms, unrestricted device use is repeatedly associated with distraction and weaker learning, and quasi-experimental work has shown measurable achievement gains when phones are removed from the learning environment [5], [6]. The same connectivity that enriches young people's lives, in other words, also introduces risks that schools cannot ignore.

Among those risks, cyberbullying is one of the most consequential. It is commonly defined as aggressive, intentional, and repeated behaviour carried out through electronic media against a target who cannot easily defend themselves [7]-[9]. Several features distinguish it from traditional, face-to-face bullying and tend to amplify its harm: perpetrators can act anonymously; the aggression can reach a victim at any time and in any place, including the home; and a single act can be witnessed, copied, and amplified by a large online audience [10]-[14]. The mechanism that connects ubiquitous smartphone access to cyber-aggression is therefore not merely exposure but opportunity: constant, private, and largely unsupervised connectivity multiplies the moments in which impulsive, in-the-moment harassment can be initiated or escalated [15], [16].

The prevalence and impact of cyberbullying are well documented. Meta-analytic and review evidence indicates that a meaningful minority of adolescents are involved as victims, perpetrators, or both, and that traditional and electronic victimisation frequently overlap [17]-[23]. Although some scholars have cautioned against overstating its incidence relative to traditional bullying [24], victimisation is consistently associated with depression, anxiety, lowered self-esteem, school avoidance, and elevated suicidal ideation [25]-[30]. These harms position cyberbullying not as a marginal disciplinary nuisance but as a public-health and educational concern.

Crucially, these harms are not confined to students' well-being; they bear directly on learning. Cyber-victimisation erodes the concentration, motivation, and sense of safety on which classroom engagement depends: students who are anxious, sleep-deprived, or preoccupied with online conflict find it harder to attend to instruction, participate in class, and remain in school [25], [28], [34]. By the same logic, restricting in-school smartphone use is expected to support learning in two complementary ways, removing a salient source of in-class distraction while narrowing the in-school opportunities for the online aggression that undermines students' readiness to learn [5], [6], [37]. A safe, orderly, and supportive learning environment is therefore not a peripheral concern but a precondition for effective education: only when students feel protected from humiliation and harassment can a school secure the sustained attention and participation that learning requires [40], [45]. This pedagogical stake is what makes cyberbullying, and the policies intended to contain it, a central rather than marginal question for schools.

These stakes are heightened during early adolescence the developmental stage of junior high school students when peer relationships become central, identity is in flux, and sensitivity to social evaluation peaks. It is precisely at this age that exposure to humiliation, exclusion, or harassment online can be most damaging to self-concept and mental health, and that patterns of digital conduct, whether prosocial or aggressive, begin to consolidate. Junior high schools therefore occupy a strategic position: the policies they adopt shape not only the immediate safety of their students but also the digital habits those students carry forward. Understanding how such policies operate in this setting is consequently of particular importance.

These risks are especially pronounced in Indonesia, a country with a large, young, and rapidly connecting population. National and regional studies report high rates of cyber-victimisation among Indonesian adolescents, with school students frequently identified as both targets and perpetrators [31]-[33]. Such findings frame cyberbullying as a pressing problem for Indonesian schools, which carry a duty of care that extends beyond academic instruction to safeguarding students' psychosocial well-being and cultivating responsible digital conduct [34], [35].

In response to these pressures, a growing number of schools and education systems have adopted policies that restrict or prohibit student smartphone use during the school day commonly described as a "school smartphone ban." The movement has gathered notable international momentum. France legislated a nationwide ban on phone use in primary and lower-secondary schools in 2018; the Netherlands and the United Kingdom have introduced national guidance discouraging or prohibiting in-school use; and a rapidly growing number of states across the United States have enacted or recommended restrictions. The trend was reinforced when UNESCO's 2023 Global Education Monitoring Report explicitly called for caution regarding smartphones in classrooms and recommended bans where devices disrupt learning or facilitate harms such as cyberbullying [36]. In Indonesia, comparable measures are increasingly adopted at the school level through codes of conduct and device-storage arrangements [37]. The rationale is partly pedagogical reducing distraction and protecting instructional time and partly social, resting on the expectation that limiting in-school device access narrows the windows in which online aggression can occur [5], [37].

The empirical evidence on phone bans, however, remains mixed and is dominated by academic and general-well-being outcomes rather than cyberbullying specifically. Some studies report gains in attention, behaviour, and attainment after restrictions are introduced [5], [6], whereas other rigorous evaluations find small or negligible effects on bullying, school belonging, and achievement, and stress that benefits are far from automatic. More broadly, the prevention literature shows that whether an intervention reduces (cyber)bullying depends heavily on the fidelity of implementation, the consistency of supervision, and the surrounding school climate [38], [39], [40], [41]. A restriction that is announced but inconsistently enforced is unlikely to deliver the outcomes its advocates anticipate.

This points to a clear gap. Despite the rapid global diffusion of phone bans, there is limited school-level evidence particularly from Indonesia that directly evaluates such a policy with cyberbullying reduction as the focal

outcome, and that examines the implementation factors that mediate its success. Most existing studies treat academic performance as the dependent variable, isolate phones as a distraction rather than as an enabler of aggression, or are situated in high-income Western settings whose enforcement capacity and digital cultures differ from those of Indonesian public schools.

Accordingly, the present study evaluates the effectiveness of a school smartphone ban in reducing cyberbullying in two public junior high schools in the Bandung area of West Java, Indonesia. Specifically, it (1) describes how the policy is implemented; (2) describes the condition of cyberbullying after the policy was introduced; (3) analyses the effectiveness of the policy in reducing cyberbullying; and (4) identifies the factors that support and hinder its effectiveness. By foregrounding cyberbullying, supplying context-specific evidence from an under-represented setting, and interpreting the policy through an input–process–output systems lens, the study contributes both practical guidance for schools and a transferable analytic frame for evaluating restriction policies.

2. LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1. Education policy and the school smartphone ban

A school policy is an instrument of governance: a deliberately formulated rule intended to steer the behaviour of the school community toward a safe, orderly, and educationally productive environment. Its value, however, is realised only in implementation. The classic policy-implementation literature emphasises that the gap between a policy's stated objectives and its actual outcomes is shaped by the clarity of standards, the resources committed, the disposition of implementers, and the communication and enforcement structures that surround the rule [42]. A well-designed policy that is weakly socialised or inconsistently enforced will under-perform, regardless of the soundness of its intent.

The school smartphone ban is a particular case of such a policy. As a restriction measure, it limits or prohibits student use of smartphones during school hours, typically operationalised through codes of conduct, device-storage arrangements, and supervision by teachers and counsellors [37]. Its justification is both pedagogical and protective: pedagogically, unregulated use fragments attention and erodes instructional time [5], [6]; protectively, reducing in-school access is expected to narrow the opportunities for online aggression and other digital harms [36]. Internationally, the policy has moved from a school-level experiment to a matter of national and supranational guidance within a few years, lending the present evaluation particular timeliness.

2.2. Cyberbullying in adolescents' digital lives

Adolescence is a developmental period marked by heightened sensitivity to peer evaluation, identity exploration, and the need for social belonging needs that increasingly play out in digital space. Smartphones grant adolescents rapid, boundary-less access to social media and messaging, which supports learning and connection but also exposes them to conflict-prone interaction [1], [34]. In this context cyberbullying emerges not as an aberration but as a predictable risk of unsupervised, always-on connectivity.

Conceptually, cyberbullying inherits the core elements of traditional bullying intent to harm, repetition, and a power imbalance while adding the distinctive affordances of digital media: anonymity, asynchronicity, potential permanence, and a potentially limitless audience [9], [11], [14], [43]. These affordances can intensify perceived severity and complicate detection and response, since aggression follows the victim home and may leave few visible traces for adults to observe [12], [16]. The consequences for victims anxiety, depression, withdrawal, and diminished academic engagement are well established and, in the most serious cases, life-threatening [25], [28], [30]. For schools, this evidence reframes cyberbullying prevention as an integral part of their safeguarding mission rather than an optional add-on.

2.3. The effectiveness of restriction policies: evidence and implementation

Effectiveness, in evaluation terms, denotes the degree to which a programme attains its intended objectives. For a smartphone ban aimed at cyberbullying, effectiveness is the extent to which the policy reduces cyber-aggression while being understood, complied with, and consistently supervised. The international evidence on restriction is genuinely mixed. On one side, distraction-focused studies associate restrictions with improved attention, conduct, and attainment, with the largest gains often among lower-achieving students [5], [6]. On the other side, several careful evaluations report only small or negligible effects on bullying, belonging, and achievement, and emphasise that perceived improvements depend on how the policy is enacted rather than on its mere existence.

The bullying-prevention literature clarifies why. Meta-analytic syntheses show that anti-bullying and anti-cyberbullying programmes can reduce victimisation and perpetration, but that effect sizes are moderate and highly contingent on implementation fidelity, dosage, and sustained monitoring [38], [39], [41], [44]. School-discipline

research similarly finds that an authoritative climate combining clear expectations with warmth and support is more protective against bullying than purely restrictive or security-oriented measures [40], [45]. Crucially, restriction appears most effective when paired with proactive education that builds students' digital competence and empathy rather than relying on prohibition alone [31], [45], [46]. Taken together, these findings imply that a smartphone ban is best understood as a necessary but not sufficient condition for reducing in-school cyberbullying.

2.4. Conceptual framework: an input–process–output system

To integrate these strands, this study adopts an input–process–output–outcome (IPO) systems framework, consistent with a policy-implementation perspective [42]. The framework treats the smartphone ban as a system that converts initial conditions and supports into implementation activities and, ultimately, into outcomes, with feedback closing the loop. At the input stage sit the conditions that motivate and shape the policy: high-intensity smartphone use among students, the presence of cyberbullying cases, and the school's decision to adopt a restriction. These are supplemented by instrumental inputs the code of conduct, supervision arrangements, and the roles of teachers and guidance-and-counselling staff and by environmental inputs from the family, peer group, and wider digital culture. The process stage comprises the core implementation activities: socialisation of the policy to the school community, supervision of compliance, and enforcement of sanctions.

The output stage captures direct results reduced in-school phone use, fewer opportunities for cyber-aggression, and improved discipline while the outcome stage captures the longer-term goal of a sustained reduction in cyberbullying and a safer, more conducive school climate. Finally, feedback returns evaluation findings to the school, teachers, and counsellors so that the policy can be refined. The six effectiveness indicators used in this study policy implementation, student understanding, student compliance, consistency of supervision, reduction of cyberbullying, and student support operationalise this framework, spanning the process and output–outcome stages and allowing effectiveness to be read as a property of an implemented rule rather than of the rule in the abstract.

2.5. The Indonesian context: digital adoption, cyberbullying, and school responses

Indonesia presents a particularly salient setting for evaluating school smartphone bans. The country has one of the world's largest and youngest populations of internet users, and adolescents are among its most intensive adopters of smartphones and social media. This rapid, often unsupervised uptake has been accompanied by a substantial burden of online aggression. In a study of Indonesian junior high school students, Safaria [33] documented a high prevalence of cyberbullying victimisation and demonstrated its association with psychological distress, establishing the problem as both common and harmful in precisely the age group examined here. Subsequent work shows that the aggression is woven into students' everyday digital practices: Hamuddin et al. [31] found that cyberbullying surfaced within EFL students' blogging activities and called for proactive, education-based solutions, while Riyayanatasya and Rahayu [32] traced adolescent cyber-aggression on WhatsApp, a messaging platform central to Indonesian student communication. Taken together, these studies indicate that cyberbullying in Indonesia is not confined to a single platform but follows students across the connected environments they inhabit.

Indonesian schools have responded to these pressures largely through institutional rules codes of conduct, device-storage arrangements, and teacher supervision rather than through national legislation of the kind enacted in France [37]. This school-level mode of governance makes the implementation factors emphasised by policy-implementation theory especially consequential: in the absence of uniform national enforcement, the effectiveness of any given ban depends heavily on how consistently each school socialises and applies it [42]. The global guidance issued by UNESCO [36], which encourages restricting smartphones where they disrupt learning or enable harm, lends external legitimacy to these local efforts while leaving their success contingent on enactment. The present study therefore speaks directly to a live policy question for Indonesian education: whether, and under what conditions, a school-administered ban can meaningfully reduce cyberbullying.

2.6. Beyond restriction: digital citizenship and complementary approaches

A recurring lesson from the prevention literature is that restricting access addresses the opportunity for in-school cyber-aggression but not the underlying capability and disposition that drive it. Because adolescents' digital lives extend well beyond the school day, a strategy confined to prohibition risks displacing aggression rather than reducing it. For this reason, scholars increasingly argue that restriction should be paired with proactive education that cultivates responsible online conduct. The concept of digital citizenship the norms of appropriate and responsible technology use offers a framework for such education, encompassing online etiquette, empathy, security, and an understanding of one's rights and responsibilities in digital spaces [47], [48]. Complementing it, media literacy equips young people to interpret, evaluate, and engage critically with the digital media they consume and produce [49].

The empirical case for combining restriction with education is strong. Reviews of cyberbullying interventions indicate that programmes building students' social-emotional competence, empathy, and bystander

skills can reduce perpetration and victimisation, and that purely punitive or restrictive measures are weaker in isolation [44], [45]. Evidence that involvement in electronic bullying overlaps with traditional bullying further suggests that interventions must address the behaviour itself, not merely the medium through which it travels [46]. Finally, because aggression migrates between school and home, effective prevention extends beyond the school gate to families and the wider community, implying a whole-school, family-inclusive approach to digital well-being [34], [35]. A smartphone ban, on this view, is most powerful not as a stand-alone prohibition but as the structural component of a broader educational strategy.

3. RESEARCH METHOD

Design. This study employed a quantitative approach with a descriptive–evaluative method. The quantitative approach was selected because the study aims to measure the level of policy effectiveness using a structured instrument and to express the findings numerically [50]. The descriptive–evaluative method was appropriate because the study does not merely describe the phenomenon but also evaluates the degree to which a school policy attains its intended objective reducing cyberbullying against defined effectiveness criteria.

Setting and participants. The research was conducted at SMP Negeri 35 Bandung and SMP Negeri Satu Atap Nagrog. Both schools were selected purposively because they had implemented a smartphone-restriction policy, allowing the policy's effectiveness to be evaluated under real conditions. The population comprised students at the two schools. A preliminary observation involving 81 students preceded the main data collection and is reported here as the study's empirical basis.

Population and sampling. Because surveying every student was impractical, a representative sample was drawn. The sample size was determined using the Slovin formula, $n = N / (1 + N \cdot e^2)$, where n is the sample size, N is the population size, and e is the tolerated margin of error (here set at 0.05, i.e., a 95% confidence level). The resulting sample was then allocated *proportionally* between SMP Negeri 35 Bandung and SMP Negeri Satu Atap Nagrog in accordance with each school's student numbers, so that both schools contributed in proportion to their size and the combined sample reflected the population structure. In sampling-technique terms, this corresponds to proportionate stratified random sampling, with the two schools serving as strata and the overall size fixed by the Slovin formula; applying this procedure produced a final analytic sample of 81 students, whose questionnaire responses constitute the empirical basis reported below.

Variables and operational definitions. The study centred on a single focal construct the effectiveness of the school smartphone ban in reducing cyberbullying operationalised through six indicators: (i) policy implementation; (ii) student understanding of the policy; (iii) student compliance; (iv) consistency of school supervision; (v) reduction of cyberbullying incidents; and (vi) student support for the policy. Cyberbullying was operationalised as intentional, repeated harm carried out through digital media, indexed by the perceived frequency of incidents and students' perceptions of cyberbullying cases. The operational structure of the instrument is summarised in Table 1.

Table 1. Operational indicators and example questionnaire items

Indicator	Operational definition	Example item
Policy implementation	Extent to which the ban is actually applied in daily school life	"The smartphone ban is consistently enforced during school hours."
Student understanding	Students' comprehension of the policy and its purpose	"I understand the reasons behind the smartphone ban."
Student compliance	Degree to which students obey the policy	"I keep my smartphone stored away during school hours."
Consistency of supervision	Regularity of monitoring and enforcement by school staff	"Teachers regularly monitor smartphone use at school."
Reduction of cyberbullying	Perceived decline in cyberbullying after the ban	"Cyberbullying incidents have decreased since the ban."
Student support	Students' endorsement of the policy	"I support the school's decision to restrict smartphones."

Instrument development and content validity. The questionnaire items were developed from the operational definitions of the six indicators and reviewed by subject-matter experts for relevance, clarity, and representativeness before administration. This expert-judgement procedure follows the content-validity approach, in which a panel evaluates whether each item is essential to the construct so that non-representative or ambiguous items can be revised or removed [51].

Reliability. The internal-consistency reliability of the instrument was examined using Cronbach's coefficient alpha, the standard index of the degree to which a set of items measures a single underlying construct consistently [52]. Items contributing to low consistency were reconsidered to strengthen the instrument prior to interpretation.

Observation protocol. To triangulate the self-report data and capture implementation directly, structured observation was conducted in the school environment. The observation focused on the socialisation of the policy, the conduct of enforcement, the visibility and regularity of supervision, and students' day-to-day compliance, thereby providing process-level evidence to complement the questionnaire.

Data analysis. Responses to the four-point Likert scale (Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1) were analysed using descriptive statistics. For each indicator and for the instrument as a whole, an achievement percentage was computed as the ratio of the obtained score to the maximum possible score. The resulting effectiveness percentage was then classified into ordinal categories indicatively, very effective (81–100%), effective (61–80%), moderately effective (41–60%), and less effective ($\leq 40\%$) permitting a transparent, indicator-by-indicator reading of policy effectiveness.

4. RESULTS AND DISCUSSION

4.1. Implementation of the policy and the condition of cyberbullying

The preliminary survey of 81 students indicated that the smartphone-restriction policy was broadly embedded in daily school life. A majority of respondents (69.14%) reported that the prohibition on smartphone use was consistently applied at school, and related items indicated that students were generally aware of the policy and its purpose. With respect to the focal outcome, 61.73% of respondents reported that cyberbullying incidents had decreased following the introduction of the policy, whereas 17.28% reported that incidents had not decreased. A compact summary of representative indicators is presented in Table 2.

Table 2. Representative results of the effectiveness survey (n = 81)

Indicator (representative item)	Category	Percentage (%)
Policy consistently applied at school	Agree/Strongly agree	69.14
Cyberbullying incidents decreased after the ban	Agree/Strongly agree	61.73
Cyberbullying incidents did not decrease	Agree/Strongly agree	17.28
Composite policy-effectiveness score	Effective	78.67

Read through the IPO framework, these figures describe a policy that is functioning at the process and output stages: it is socialized, enforced with reasonable consistency, and associated with a perceived reduction in cyber-aggression. The pattern is consistent with the theoretical expectation that restricting in-school device access narrows the opportunity structure for online aggression. Because much adolescent cyber-aggression is opportunistic and embedded in routine connectivity [14]–[16]. Removing phones during the school day plausibly reduces the occasions on which impulsive, in-the-moment harassment can be initiated or escalated on school grounds [37]. At the same time, the finding that a non-trivial minority (17.28%) perceived no decline echoes a recurrent theme in the literature: because cyberbullying can occur at any time and place, an in-school restriction cannot, by itself, address aggression that migrates to after-school hours and home settings [11], [12], [17].

4.2. The effectiveness of the policy in reducing cyberbullying

Aggregating across indicators, the composite effectiveness score was 78.67%, placing the policy in the “effective” category. Interpreted cautiously, this indicates that from the students’ perspective the smartphone ban functioned as a workable preventive measure during school hours rather than as a complete solution to cyberbullying. This reading aligns with the broader, and notably mixed, evidence base. The distraction-focused studies of Beland and Murphy [5] and Kuznekoff and Titsworth [6] demonstrate that removing phones can yield real behavioural and academic benefits, lending plausibility to the present finding that restriction is associated with improvement. Yet evaluations that take bullying as the dependent variable are more cautious: anti-bullying and anti-cyberbullying programmes produce, on average, only moderate reductions, and these depend on faithful, sustained implementation [38]–[41]. The convergence of these literatures supports a “necessary-but-not-sufficient” interpretation: limiting device access removes a proximate enabling condition for in-school cyber-aggression, but durable reductions depend on the surrounding behavioural and climate factors.

The IPO framework makes this conditionality explicit. Effectiveness in this study was not a property of the rule in the abstract but of an *implemented* rule one that students perceived to be consistently applied (a process variable) and that was associated with reduced incidents (an output variable). Where the process stage weakens

where socialization is superficial or supervision lapses the output is unlikely to follow, exactly as policy-implementation theory predicts [42].

4.3. Supporting and hindering factors

Reading the indicator structure together with the wider literature yields a coherent account of what makes such a policy work. Three factors emerge as supportive. First, consistency of supervision and enforcement: meta-analytic evidence on bullying prevention shows that programme effects rise with implementation fidelity and sustained monitoring [39], [41], consistent with the high enforcement percentage observed here and with the IPO emphasis on a robust process stage. Second, student understanding and support: policies that students comprehend and endorse are more likely to be complied with, whereas externally imposed rules without buy-in invite circumvention [40]. Third, a positive, authoritative school climate, which the prevention literature associates with lower bullying independent of purely restrictive measures [45].

Several factors can, conversely, hinder effectiveness. The most fundamental is the temporal and spatial boundedness of the policy: an in-school ban does not reach home and after-school contexts, where a large share of cyber-aggression occurs [11], [12]. Variable compliance is a second constraint; where supervision lapses, students may retain covert access, reproducing the very risks the policy targets. A third is the displacement of aggression to out-of-school time, a limitation that restriction alone cannot resolve and that argues for pairing the ban with proactive education. Consistent with this, the evidence indicates that restriction is most effective when combined with digital-literacy and anti-cyberbullying education that builds students' competence and empathy [31]- [46]. Schools also retain a duty of care beyond the school gate, underscoring the need for whole-school and family-inclusive strategies [34], [35].

4.4. Situating the findings within the international evidence base

Placing the present results alongside specific prior studies clarifies both their plausibility and their limits. On the side of restriction's promise, Beland and Murphy [5], analysing schools that introduced phone bans, reported measurable improvements in student test performance, with the largest gains among lower-achieving students; in the classroom, Kuznekoff and Titsworth [6] showed experimentally that phone use during instruction degrades note-taking and retention. These studies establish that removing phones can change behaviour and outcomes at school lending credibility to the present finding that a ban was associated with perceived improvement even though their outcome was academic rather than cyberbullying.

On the side of caution, the bullying-prevention meta-analyses temper expectations. Ttofi and Farrington [41], synthesising school-based anti-bullying programmes, reported that such programmes reduce bullying and victimisation by meaningful but moderate margins and that effects hinge on programme intensity and fidelity. Focusing specifically on digital aggression, cyberbullying intervention programmes have been found to reduce cyber-perpetration and cyber-victimisation by modest amounts [38], while an updated review confirmed comparable moderate effects for in-person bullying [39]. A synthesis by Tokunaga [16] adds that cyber-victimisation is reliably linked to psychosocial harm and overlaps substantially with traditional victimisation, and the meta-analysis by Kowalski et al. [18] identifies a consistent set of individual and contextual risk factors that a single in-school rule cannot, by itself, alter. The composite effectiveness recorded here (78.67%) and the majority perception of decline (61.73%) sit squarely within this moderate, implementation-dependent pattern: they indicate a useful but partial effect rather than the elimination of cyberbullying.

The Indonesian evidence reinforces why a partial, school-bounded effect should be expected. The prevalence documented by Safaria [33], the blog-based aggression reported by Hamuddin et al. [31], and the WhatsApp-mediated aggression traced by Riyayanatasya and Rahayu [32] all locate substantial portions of adolescent cyber-aggression in personal, out-of-school digital spaces that an in-school ban does not reach. The convergence of the international and Indonesian literatures with the present findings supports a consistent conclusion: restricting in-school device access is a credible way to narrow the opportunity structure for cyber-aggression during the school day, but durable, system-wide reductions depend on the complementary educational and family-inclusive measures outlined earlier.

For policy and practice, the results suggest that a smartphone ban is a credible component of a layered prevention strategy but should not be treated as a stand-alone remedy. Schools that wish to convert a restriction into a durable reduction in cyberbullying should invest in the process stage of the IPO system: clear socialisation, consistent and visible supervision, and predictable enforcement, paired with digital-citizenship education and active involvement of guidance-and-counselling staff and families. For theory, the study illustrates the value of an implementation-sensitive, systems-based reading of school restriction policies: framing the ban as an input-process-output-outcome system, rather than as a single rule, helps explain why ostensibly identical policies produce divergent results across schools and settings [42].

More concretely, schools can strengthen the process stage of the system in several mutually reinforcing ways. Enforcement should be consistent and visible, underpinned by clearly communicated rules and secure device-storage routines so that compliance does not rest on the vigilance of individual teachers. This structural

measure is most effective when coupled with a sustained digital-citizenship and anti-cyberbullying curriculum that develops students' empathy, bystander skills, and understanding of responsible online conduct [45], [47], [48]. Guidance-and-counselling staff can offer accessible reporting channels and victim support, while families can be engaged to extend consistent expectations into the home, thereby addressing the out-of-school contexts a school ban cannot reach [34], [35]. In the language of the IPO framework, such measures convert a static prohibition into a functioning system in which inputs and processes are deliberately aligned with the intended outcome.

Several limitations should be acknowledged. First, the findings rest on a preliminary, self-report survey of 81 students at two schools, which constrains generalisability and may be subject to social-desirability and common-method biases. Second, the design is descriptive–evaluative and cross-sectional; it documents perceived association rather than establishing causation, and cannot rule out that a perceived decline reflects factors other than the ban. Third, the focal outcome is students' perception of cyberbullying rather than independently verified incident records. Future research should employ larger probability samples across multiple schools, longitudinal or comparison-group (e.g., ban versus no-ban) designs, and triangulation with disciplinary and counselling records, while also distinguishing in-school from out-of-school cyber-aggression to test the opportunity-structure mechanism directly.

5. CONCLUSION

This study evaluated the effectiveness of a school smartphone ban in reducing cyberbullying in two Indonesian junior high schools. The survey evidence indicates that the policy was perceived to be consistently enforced (69.14%) and associated with a perceived decline in cyberbullying for most students (61.73%), yielding a composite effectiveness score of 78.67% the "effective" category. Interpreted through an input–process–output–outcome framework, the policy narrows the in-school opportunity structure for online aggression, but its effectiveness is conditioned by student compliance, consistency of supervision, and student support, and it cannot by itself address cyber-aggression that occurs beyond school hours. The practical implication is clear: schools should treat smartphone restriction not as a stand-alone solution but as one layer within a comprehensive, whole-school approach that couples consistent enforcement with digital-literacy and anti-cyberbullying education and with family engagement. On the basis of these findings, several concrete recommendations follow. Schools should (1) pair the smartphone restriction with consistent, visible supervision and secure device-storage routines, so that enforcement does not depend on the vigilance of individual teachers; (2) embed a sustained digital-citizenship and anti-cyberbullying curriculum that develops students' empathy, bystander skills, and responsible online conduct; (3) strengthen guidance-and-counselling reporting channels and victim support; and (4) actively engage families so that consistent expectations extend into the home and reach the out-of-school contexts a school ban cannot. Education authorities, in turn, should support schools with clear implementation guidelines, training, and monitoring rather than relying on prohibition alone. By foregrounding cyberbullying as the focal outcome and supplying implementation-sensitive evidence from an under-represented Indonesian setting, the study offers both actionable guidance for schools and a transferable analytic frame for evaluating restriction policies. Building on the evidence assembled here, future work with stronger designs can move from perceived to verified effects and compare alternative policy configurations.

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AUTHOR CONTRIBUTIONS

Conceptualization, A.T.R.R. and L.T.; Methodology, A.T.R.R.; Software, A.T.R.R.; Validation, L.T., N.S. and A.R.; Formal Analysis, A.T.R.R.; Investigation, N.S. and A.R.; Resources, A.R.; Data Curation, L.T.; Writing – Original Draft Preparation, A.T.R.R.; Writing – Review & Editing, L.T., N.S., A.R. and A.S.; Visualization, L.T.; Supervision, A.S.; Project Administration, N.S.

INFORMED CONSENT STATEMENT

Informed consent was obtained from all subjects involved in the study. Prior to participation, each subject was provided with a detailed explanation of the study's objectives, procedures, potential risks, and benefits. All participants voluntarily agreed to participate and signed a written informed consent form.

CONFLICTS OF INTEREST

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USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

During the preparation of this work the authors used Grammarly in order to check and improve the grammar of the manuscript. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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