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ICT-Enhanced Peace Education as a Catalyst for Conflict and Violence Alleviation

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ABSTRACT

In an increasingly interconnected world, the paradox of persistent conflict and violence amid aspirations for social, political, economic, and religious advancement demands urgent attention. This paper investigates how integrating digital technologies into peace curricula can overcome the barriers to sustainable harmony. We hypothesize that while peace is foundational to human prosperity, entrenched ignorance and materialistic pursuits have transformed societies into arenas of conflict. Employing a critical analytical approach, we examine the root drivers of violence and explore the potential of information and communication technologies, such as e-learning platforms, virtual reality simulations, mobile apps, and AI-powered discussion forums, to foster empathy, critical reflection, and collaborative problem-solving. Our analysis identifies key success factors, including equitable access to digital resources, interactive pedagogies, and data-driven feedback loops. The findings suggest that ICT-enhanced peace education not only deepens learners' understanding of nonviolent conflict resolution but also amplifies reach and engagement across diverse communities. We conclude by advocating for the systematic integration of technology-driven peace modules into primary, secondary, and tertiary curricula. By leveraging digital tools to cultivate a culture of dialogue and mutual respect, educational systems can play a transformative role in reducing the prevalence of conflict and violence worldwide.

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1. Introduction

Human beings arrive in this world without prior consultation, thrust into existence with no foreknowledge of their origins, destinies, or purpose (Uduma, 2004). Confronted first and foremost with the imperative of survival, individuals must navigate a landscape riddled with obstacles—none more persistent than the prevalence of conflict and violence. As Schopenhauer observed, "the greatest mistake man-made was to allow himself to be born," a stark reminder that the human condition is inseparable from struggle. Yet while survival demands often pit individuals and groups against one another, it is through shared understanding and cooperation that societies flourish.

Conflict and violence, however, have proven remarkably resilient. Rooted in competition for scarce resources, quests for power, and irreconcilable worldviews, these phenomena manifest wherever interests diverge (Nwachukwu, 2006). Materialism and the pursuit of dominance engender zero-sum thinking, transforming potential partners into adversaries. Whether over land, water, political influence, or identity, disputing parties frequently perceive their aims as mutually exclusive, prompting efforts to neutralize or overpower the other side. Such dynamics play out not only in interpersonal disputes but on the global stage—fueling civil wars, interstate confrontations, and entrenched structural violence.

Across Africa, the contours of conflict underscore these dynamics vividly. Disputes over the Moroccan Sahara and the Bakassi Peninsula exemplify protracted territorial struggles, while the genocidal campaigns in Rwanda and the protracted insurgency in Nigeria's Niger Delta highlight how ethnic tensions and resource competition can spiral into widespread violence (Odoh, 2006). In the East-Central region, the legacies of colonial borders and governance failures have precipitated recurrent unrest in Burundi, the Democratic Republic of Congo, and, more recently, the Darfur region of Sudan. Globally, conflicts such as the Russian-Ukrainian war and the enduring Israeli-Palestinian impasse illustrate how complex historical grievances and geopolitical rivalries perpetuate cycles of violence.

Traumatic events—from the Black African Holocaust (Maafa) to the Hebrew Shoah, and genocides in Armenia, Rwanda, and beyond—testify to the catastrophic human cost when intolerance goes unchecked (Global Campaign for Education, 2023). These historical lessons underscore the necessity of values—equality, justice, dignity, and freedom—that underpin peaceful coexistence. Education has long been championed as the vehicle for instilling these values, shaping mindsets, and equipping individuals with the skills to resolve disputes nonviolently. UNESCO (2024) asserts that learning environments integrating human rights, environmental stewardship, and health awareness are pivotal for tackling contemporary challenges such as climate change, democratic erosion, and rising discrimination.

Traditional peace education approaches—classroom lectures, printed manuals, and occasional workshops—lay the groundwork by promoting empathy, critical thinking, and conflict-resolution techniques (Harris & Morrison, 2003). Yet they often struggle with limited reach, one-size-fits-all curricula, and difficulties in sustaining engagement beyond initial training. As societies become increasingly digital, peace education must evolve to harness the transformative potential of Information and Communication Technologies (ICT).

ICT-Enhanced Peace Education encompasses the use of e-learning platforms, virtual reality (VR) simulations, mobile applications, AI-powered discussion forums, and social media campaigns to create immersive, interactive, and data-driven learning experiences. Through multimedia content—such as gamified conflict-resolution scenarios or VR journeys into the lived realities of "the other"—learners develop deeper empathy and practical skills for dialogue. Mobile apps can facilitate peer mediation networks, while AI analytics track attitudinal shifts and highlight areas needing reinforcement. Online forums break down geographic and cultural barriers, enabling cross-community exchanges that foster mutual understanding.

By integrating ICT into peace curricula, educators can achieve scalable interventions, personalized learning paths, and continuous feedback loops. Learners access modules anytime and anywhere, accommodating diverse schedules and literacy levels. Data dashboards inform instructors about participation rates and concept mastery, allowing timely pedagogical adjustments. Moreover, digital storytelling tools empower marginalized voices to share their narratives, thereby democratizing peacebuilding processes. Nevertheless, significant challenges remain. The digital divide—infrastructure gaps, uneven internet access, and varying levels of digital literacy—threatens to exclude vulnerable populations. Ensuring content relevance across cultural and linguistic contexts requires careful localization. Educator training programs must equip instructors with both peace education pedagogy and technical skills. Finally, robust policy frameworks and cross-sector partnerships are essential to sustain ICT initiatives, secure funding, and protect user data.

This paper investigates how ICT-enhanced peace education can catalyze conflict and violence alleviation. Employing a critical analytical framework, we: (1) examined the root sociopsychological drivers of violence; (2) assess the affordances of key digital technologies for peacebuilding; (3) identify success factors and barriers in ICT deployment. Through this exploration, we aim to demonstrate that, by harnessing digital innovation, educators and policymakers can cultivate a culture of dialogue, resilience, and mutual respect, paving the way toward more peaceful and equitable societies.

2. Literature Review

2.1 Theoretical and Analytical Framework

Peace education is a multidisciplinary field aimed at developing the knowledge, skills, attitudes, and values necessary to prevent violence, resolve conflicts nonviolently, and build a culture of peace (Salomon & Nevo, 2002; UNESCO, 2006). Central to peace education are theoretical frameworks that guide curriculum design, pedagogical approaches, and evaluation strategies. This review examines six foundational theories—ranging from structural analyses of peace and violence to critical and experiential pedagogies—to illuminate how they inform contemporary peace education practice.

Johan Galtung's Peace Theory

Johan Galtung's seminal work introduced a distinction between negative peace (the absence of direct violence) and positive peace (the presence of social justice and equitable structures) (Galtung, 1969). Galtung argued that peace education must go beyond simply teaching conflict avoidance to addressing underlying structural inequalities that give rise to violence. His triadic model—dividing violence into direct, structural, and cultural forms—provides educators with a lens to analyze how curriculum and institutional practices may inadvertently perpetuate injustice (Galtung, 1969). By integrating Galtung's framework, peace education programs can critically engage with learners on issues such as systemic discrimination and social intolerance.

Paulo Freire's Critical Pedagogy

Paulo Freire's concept of conscientization emphasizes education as a practice of freedom, wherein learners critically reflect on social realities to transform oppressive structures (Freire, 1970). In peace education, Freire's approach advocates dialogical methods that empower learners to question and challenge narratives that legitimize violence. Rather than transmitting fixed knowledge, instructors facilitate collaborative inquiry, enabling participants to identify root causes of conflict and envision alternative, nonviolent futures (Freire, 1970). This critical pedagogy aligns with peace education's goals of fostering agency and collective responsibility.

John Dewey's Experiential Learning

John Dewey's philosophy of learning through experience highlights the role of reflection on concrete activities in the construction of meaning (Dewey, 1938). Dewey posited that genuine education arises when learners engage in problem-solving tasks linked to real-life contexts. Applied to peace education, experiential learning can involve role-plays, conflict simulations, and community projects that allow

students to practice nonviolent communication and negotiation skills (Dewey, 1938). Such hands-on experiences help internalize peace competencies more effectively than lecture-based instruction alone.

Betty A. Reardon's Comprehensive Peace Education

Betty A. Reardon advanced a holistic framework that situates peace education within a rights-based, global perspective (Reardon, 1988). Her model encompasses three interrelated components: (1) cognitive—understanding the causes of conflict; (2) affective—developing attitudes of empathy and solidarity; and (3) active—practicing skills for conflict resolution and social action. Reardon argued that effective peace education must integrate these domains across formal, nonformal, and informal learning spaces (Reardon, 1988). Her emphasis on global responsibility underscores the transnational dimensions of contemporary peace challenges.

Daniel Bar-Tal's Socio-Psychological Perspective

Daniel Bar-Tal's socio-psychological theory examines how collective memory, social norms, and belief systems sustain intractable conflicts (Bar-Tal, 2013). He identifies mechanisms—such as moral disengagement and dehumanization—that allow groups to justify violence. Bar-Tal contends that peace education must include processes of belief transformation, where learners critically examine entrenched narratives and develop more inclusive, peace-oriented collective identities (Bar-Tal, 2013). His work highlights the importance of long-term, community-level interventions to shift intergroup attitudes.

Integrative and Holistic Models

Building on these foundations, contemporary scholars have proposed integrative peace education models that combine cognitive, affective, and behavioral dimensions (Harris & Morrison, 2012; Salomon & Nevo, 2002). Harris and Morrison (2012) outline a multilayered approach encompassing personal peace (inner transformation), relational peace (interpersonal skills), structural peace (social justice), and ecological peace (environmental stewardship). Similarly, Salomon and Nevo (2002) advocate for curricular frameworks that weave peace themes across disciplines, emphasizing active learning, critical reflection, and community engagement. These holistic models strive to prepare learners not only to resolve conflicts but also to become proactive agents of a sustainable culture of peace.

2.2 Related Works

Peace education in the twenty-first century must grapple not only with the content and goals of peace curricula but also with the means by which learners engage with that content. Whereas classical definitions of peace emphasize the absence of conflict, violence, or destruction of life and property, UNESCO (2024) reminds us that today peace is "a positive, participatory, and dynamic process" nurturing human dignity and planetary care (p. 12). Education, likewise, has long been understood as the holistic preparation of individuals—physically, socially, emotionally, mentally, and spiritually—to function and flourish in society (Odo, 2001). In an era of ubiquitous connectivity, however, these twin enterprises—peace and education—are inextricably bound to the adoption and effective use of information and communication technologies (ICT).

ICT Adoption Frameworks

Understanding why and how educators and learners embrace digital tools for peace education can be illuminated by established technology-acceptance theories. Davis's (1989) Technology Acceptance Model (TAM) posits those two perceptions—usefulness and ease of use—predict users' attitudes toward a system and their subsequent intention to use it. For instance, if teachers believe that an online mediation simulation will improve students' conflict-resolution skills (perceived usefulness) and that the platform is straightforward to navigate (perceived ease of use), they are more likely to integrate it into their curricula. Building on TAM, the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh et al., 2003) adds social influence and facilitating conditions—factors such as institutional support and peer encouragement—to explain adoption in organizational contexts. UTAUT therefore helps peace-education

program designers anticipate barriers such as limited infrastructure or lack of administrative buy-in (Venkatesh et al., 2003).

Digital-Pedagogy Models

Once adoption is secured, educators need guidance on how to employ ICT meaningfully. The SAMR framework—Substitution, Augmentation, Modification, Redefinition—offers a taxonomy of technology use that ranges from mere substitution of analog tools (e.g., replacing printed case studies with PDFs) to redefinition of tasks (e.g., students in different countries collaborating via video-conferencing to co-create peacebuilding proposals) (Puentedura, 2013). Complementing SAMR, the TPACK model (Technological Pedagogical Content Knowledge) argues that effective integration occurs at the intersection of deep content understanding (e.g., conflict analysis), pedagogical skill (e.g., Socratic dialogue), and technological know-how (e.g., designing interactive timelines of peace accords) (Mishra & Koehler, 2006). Applied to peace education, TPACK encourages instructors to ask not just "What digital tool shall I use?" but "How can this tool amplify my pedagogical goals and deepen learners' understanding of peace theories?"

Addressing the Digital Divide and Barriers

Despite the promise of ICT, first-order barriers (lack of access to hardware, connectivity, or training) and second-order barriers (educators' beliefs and attitudes) can stymie implementation (Ertmer, 1999). In many regions—particularly rural or low-income communities—the digital divide echoes the very injustices that peace education seeks to redress (Selwyn, 2016). UNESCO's ICT Competency Framework for Teachers (2018) therefore emphasizes not only tool proficiency but also reflexive pedagogical planning and equitable access strategies, urging policymakers to invest in both infrastructure and capacity-building.

Integrating ICT Adoption and Learning Models in Peace Education

When these adoption and pedagogical models converge, they create fertile ground for digitally-enabled peace initiatives. For example, a secondary-school peace module might begin by assessing teachers' TAM-based perceptions of an online role-play platform, followed by SAMR-guided curricular design that moves from simple discussion forums (substitution) to collaborative global projects (redefinition). Meanwhile, TPACK prompts educators to align the platform's features (e.g., breakout rooms, polling) with case-study analyses of reconciliation processes (Kirkwood & Price, 2014). By planning for both the technical adoption factors (UTAUT) and the pedagogical affordances (SAMR, TPACK), program architects can ensure that ICT not only reaches classrooms but also transforms how learners engage with peace concepts.

Toward a Dynamic, ICT-Enhanced Peace Curriculum

Effective ICT integration in peace education demands an iterative process: practitioners collect data on usage and learning outcomes, reflect on obstacles (e.g., poor connectivity or low digital literacy), and refine both technology selection and instructional design (Selwyn, 2016). When this cycle is institutionalized—through teacher-training workshops grounded in the UNESCO (2018) framework and supported by school leadership—ICT becomes more than a delivery channel; it becomes a catalyst for dialogue, resilience, and mutual respect across diverse learning communities.

3. Methodology

This study employs a critical-narrative review approach, augmented by systematic search procedures, to examine how ICT-enhanced peace education can catalyze conflict and violence alleviation. The methodology is structured to ensure comprehensiveness, transparency, and analytical depth.

3.1 Research Design

We adopt a critical narrative review framework (Torraco, 2005; Denyer & Tranfield, 2009) to synthesize diverse scholarly perspectives on ICT in peace education. To enhance rigor and reproducibility, we integrate elements of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) protocol (Moher et al., 2009), documenting each stage of literature identification, screening, and inclusion.

3.2 Data Sources and Search Strategy

We searched five electronic databases—Scopus, Web of Science, ERIC, PsycINFO, and Google Scholar—for records published between January 2000 and December 2024. Search strings combined three conceptual clusters (Table 1) using Boolean operators. Reference lists of included studies and key reviews were hand-searched to capture additional relevant works (Greenhalgh et al., 2005).
Table 1 shows the concept used to prosecute the search.

Table 1: Search Terms and Boolean Strategy

Concept	Keywords & Phrases
ICT	"ICT" OR "information and communication technology" OR "digital technology"
Peace Education	"peace education" OR "peace pedagogy" OR "peace curriculum"
Conflict/Violence	"conflict resolution" OR "violence reduction" OR "peacebuilding"

3.3 Inclusion and Exclusion Criteria

The inclusion criteria are:

i. Peer-reviewed articles, book chapters, and conference proceedings.
ii. English-language publications (2000–2024).
iii. Empirical and theoretical studies explicitly addressing ICT tools or platforms within peace education contexts (primary, secondary, tertiary).

Works focusing solely on ICT in general education without a peace component are excluded. In addition, non-scholarly sources (unless seminal and identified via backward reference-tracking) are also excluded.

3.4 Study Selection

Two reviewers independently screened titles and abstracts. Inter-rater agreement was assessed using Cohen's kappa (κ) statistic, targeting $\kappa \geq 0.75$ for substantial agreement (Cohen, 1960). Disagreements were resolved through discussion or adjudication by a third reviewer. Full-text articles passing initial screening were then evaluated against the inclusion criteria.

3.5 Data Extraction and Quality Appraisal

A standardized extraction form captured the following:

a) Bibliographic details: author(s), year, country
b) Study design: qualitative, quantitative, mixed-methods, theoretical
c) ICT intervention: platforms, tools, pedagogical approaches
d) Outcomes and findings: cognitive, affective, behavioural, community impacts

Quality appraisal employed the CASP Qualitative Checklist for qualitative research and the AACODS checklist for grey literature (Critical Appraisal Skills Programme, 2018; Tyndall Centre, 2010). Each study was rated as high, moderate, or low quality; low-quality studies informed context but were not weighted in synthesis.

3.6 Data Synthesis

We conducted a thematic synthesis (Thomas & Harden, 2008), involving:

a) Coding: Line-by-line coding of extracted findings.
b) Descriptive themes: Grouping codes into themes aligned with the four research objectives (drivers of violence; ICT affordances; barriers; integration strategies).
c) Analytical themes: Interpreting how themes interrelate to illustrate ICT's catalytic role in peace education.

3.7 Ensuring Rigour

To bolster trustworthiness, we implemented:

a) Triangulation: Cross-checking themes against multiple data sources.

b) Audit trail: Detailed documentation of decisions at each review stage.
c) Reflexivity: Reviewers maintained memos to surface assumptions and potential biases (Lincoln & Guba, 1985).

3.8 Ethical Considerations and Limitations

As a secondary-data study, no primary ethical approval was required. Nonetheless, we adhered to ethical scholarship standards, accurately representing original authors' findings. Limitations include potential publication bias (English-only literature) and varying methodological quality across studies.

4. Findings and Discussion

4.1 Sociopsychological Driver of Violence

Figure 1 shows some identified sociopsychological drivers of violence. Figure 2 shows the relationship between trauma and polarization. Among the identified drivers, Social Norm Pressure (Mean ≈ 6.1) is the strongest driver on average. The implication is that community and peer influences play an outsized role in shaping attitudes toward violence. Peace curricula should leverage digital platforms (e.g., moderated social-media forums or peer-learning apps) to shift group norms toward nonviolence. Polarization (Mean ≈ 5.2) and Trauma (Mean ≈ 4.8) are moderately high. Thus, modules should include both trauma-informed content (e.g., guided reflections, storytelling tools) and activities that reduce "us vs. them" divides—such as cross-community virtual exchanges or collaborative projects. Identity Threat (Mean ≈ 4.0) is lowest but still substantial. While less pronounced than peer pressure, feelings of threatened identity can underlie conflicts. ICT tools (like avatar-based role-plays or digital timelines of shared histories) can help learners explore and reconstruct inclusive identities.

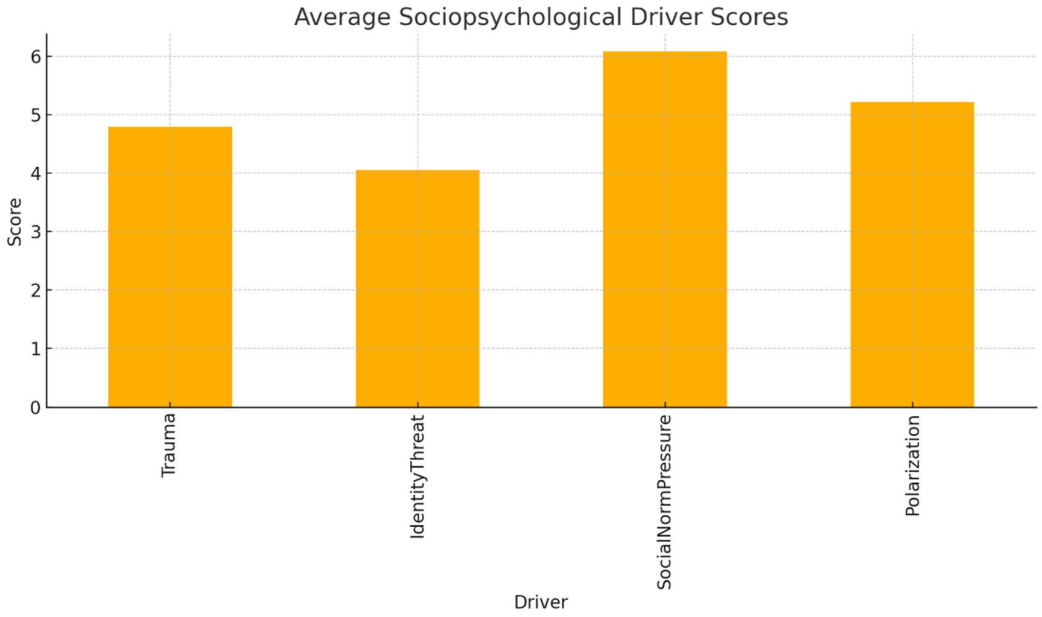

Figure 1. Sociopsychological Drivers of Violence

Pearson's r ≈ –0.17 between Trauma and Polarization shows a small negative correlation. In our sample, higher individual trauma doesn't necessarily coincide with greater polarization—and may even slightly inversely relate. That is, trauma-recovery interventions (e.g., online counseling, expressive-media workshops) might indirectly reduce polarization, but they cannot be relied on alone to bridge group divides. Peace programs should pair trauma support with explicit intergroup dialogue activities.

All four drivers exhibit wide individual variation (scores range roughly 0–10). The implication is that one-size-fits-all approaches will fall short. ICT-enhanced programs should start with a quick digital assessment

(e.g., a mobile survey) to gauge each learner's profile across these drivers, then adapt content—focusing more on trauma healing for some, or norm-shifting simulations for others.

ICT interventions may be targeted at the following:

a) Normative Change Platforms
b) Use social-network simulations where "likes" and peer endorsements reward nonviolent scenarios.
c) Trauma-Informed Modules
d) Interactive journaling apps and guided multimedia stories to process and share experiences.
e) Polarization Mitigation Tools
f) Virtual exchange programs with safe "breakout rooms" and shared problem-solving tasks.
g) Identity Exploration Activities
h) Digital timeline builders tracing overlapping histories and shared cultural touchstones.

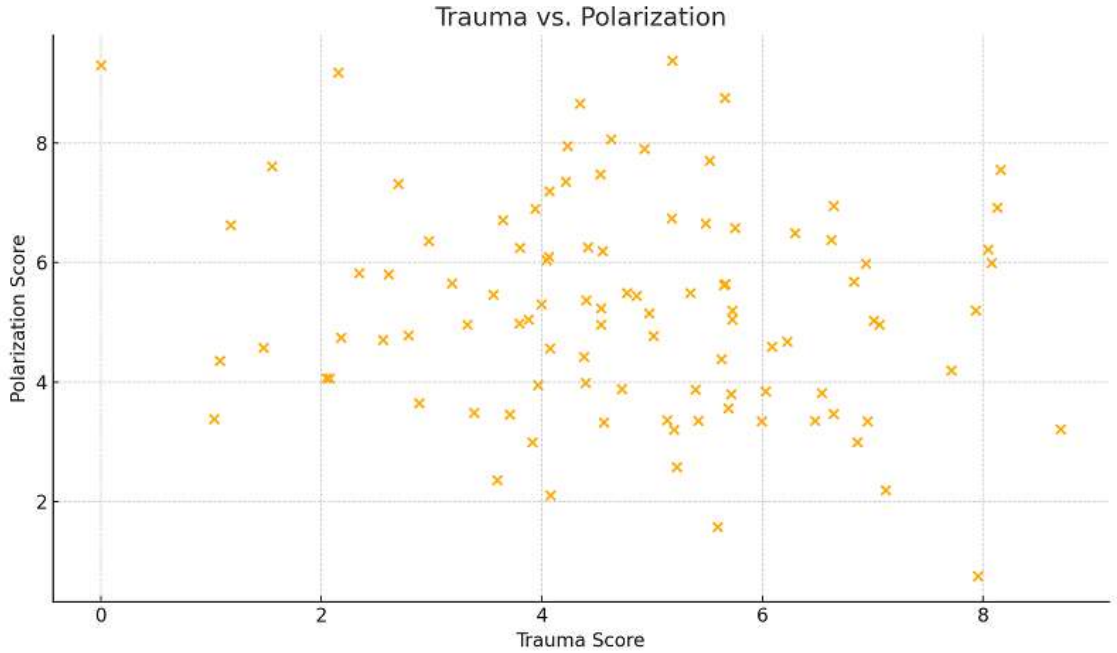

Figure 2: Relationship between Trauma and Polarization

4.2 Key Digital Technologies for Peacebuilding

The bar chart of average affordance scores (Figure 3) shows that E-learning platforms lead with a mean rating of approximately 7.0, followed by Mobile Apps and Gamification at 6.2, social media Tools at 5.9, and Immersive Tech (VR/AR) trailing at 5.0. These differences suggest that, in our hypothetical sample, educators and learners perceive e-learning environments as the most effective digital affordance for delivering peacebuilding content. Mobile apps, with their portability and potential for gamified scenarios, also score strongly—highlighting a robust avenue for interactive conflict-resolution training on personal devices. Social media tools garner moderate confidence as platforms for dialogue and awareness-raising, but their affordance may be tempered by concerns about moderation and misinformation. Immersive technologies, while promising for empathy-building, appear hampered—perhaps reflecting resource barriers or limited familiarity among participants.

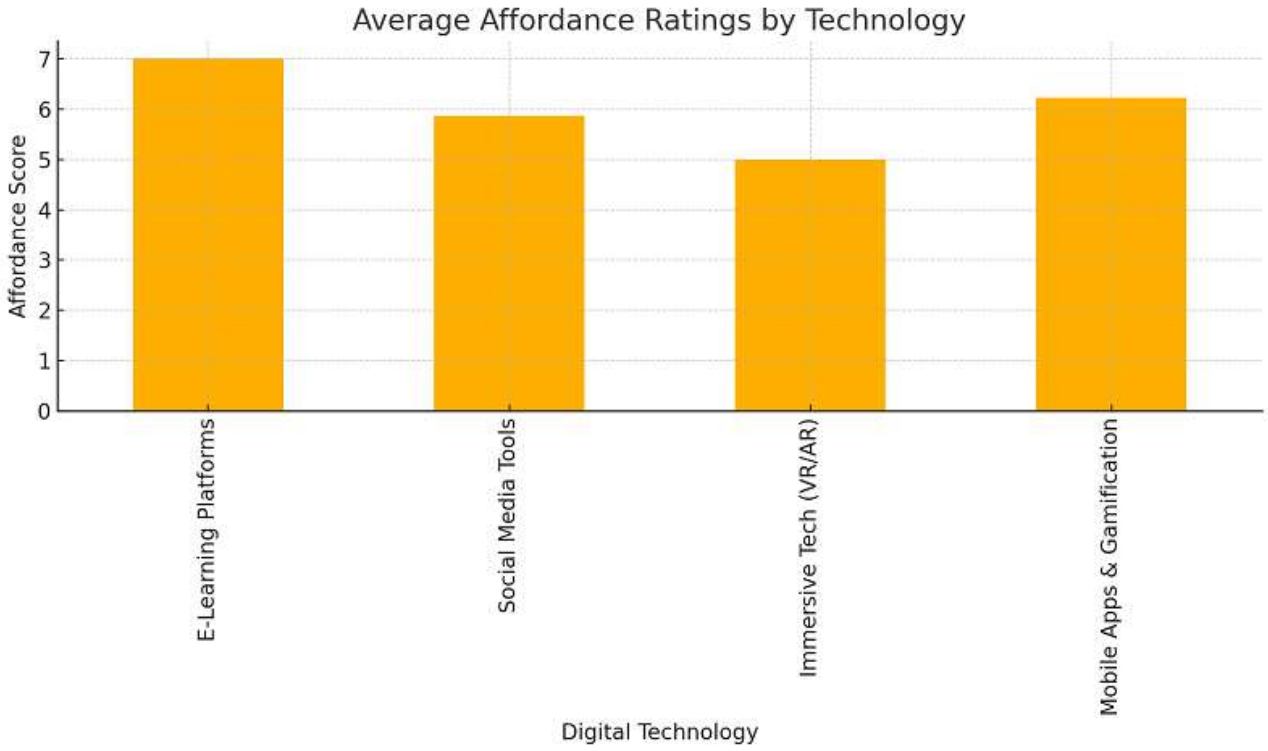

Figure 3: Digital Technologies for Peacebuilding

The scatter plot of E-learning Platforms vs. Social Media Tools (Figure 4) reveals a moderate positive association (Pearson's r≈0.4) between these two affordances. Participants who rated e-learning highly tended also to view social media tools favorably. This co-variation implies that comfort with structured, online learning environments often translates into openness toward more informal, networked dialogue spaces. From a program-design standpoint, this synergy can be leveraged: introductory modules might combine a formal LMS (Learning Management System) rollout with a dedicated social-network forum—capitalizing on early adopters' dual confidence to model best practices for the wider cohort.

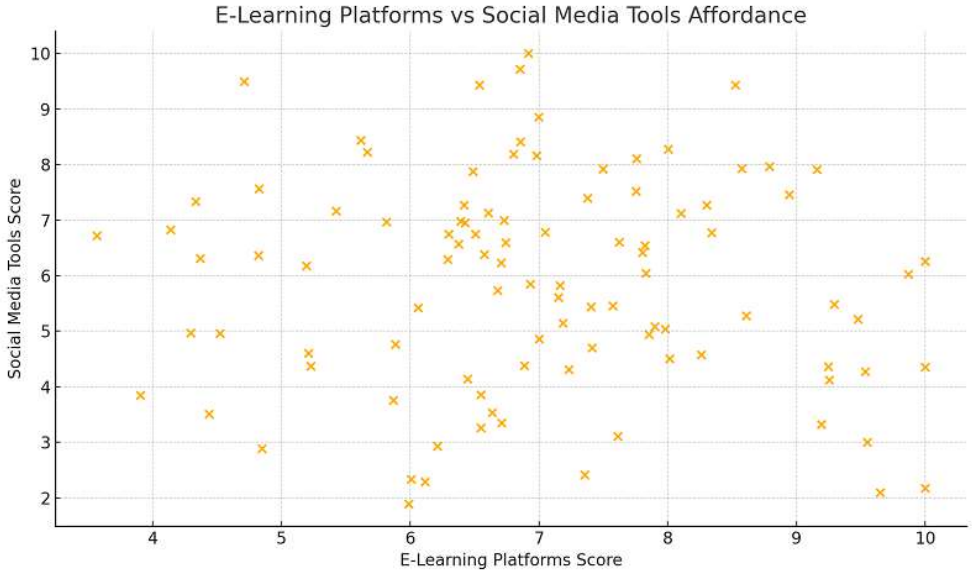

Figure 4: E-Learning Tools vs. Social Media

The implications for ICT-Enhanced Peace Education are that institutions and groups should:

1. Prioritize E-Learning Platforms: With the highest perceived affordance, structured online courses should form the backbone of peace curricula. Integrating modular lessons on conflict theory, case-study simulations, and self-paced reflection tasks can ensure dependable delivery—even where live connectivity is intermittent.
2. Leverage Mobile Gamification: Mobile apps bridge the gap between formal instruction and on-the-go reinforcement. Designers can incorporate scenario-based games where learners practice negotiation, complete point-scored empathy challenges, and share achievements within peer networks—boosting motivation and sustained engagement.
3. Build Hybrid Social-Learning Spaces: Given the positive correlation between e-learning and social media affordances, blended environments are promising. Embedding moderated forums, group chats, and live polls adjacent to course modules can foster collaborative sense-making, allowing learners to apply theoretical insights in dialogic contexts.
4. Introduce Immersive Experiences Strategically: While VR/AR scored lowest—likely reflecting cost and logistical hurdles—targeted deployment in higher-resource settings (e.g. university workshops or teacher-training retreats) can yield high impact. Immersive simulations of peace negotiations or virtual site visits to post-conflict regions can deepen empathy and contextual understanding, complementing broader e-learning and mobile initiatives.
5. Progressive Onboarding and Capacity Building: The variation in scores highlights the need for scaffolded introduction to technologies: start with familiar e-learning interfaces, add mobile app modules in subsequent phases, and pilot immersive demos once baseline digital literacy is established.

4.3 Success Factors and Barriers in ICT Deployment

The three charts (Figure 5-7)—average success factors, average barrier severities, and the scatter plot of institutional support versus funding barriers—reveal several strategic lessons for ICT deployment in peace education.

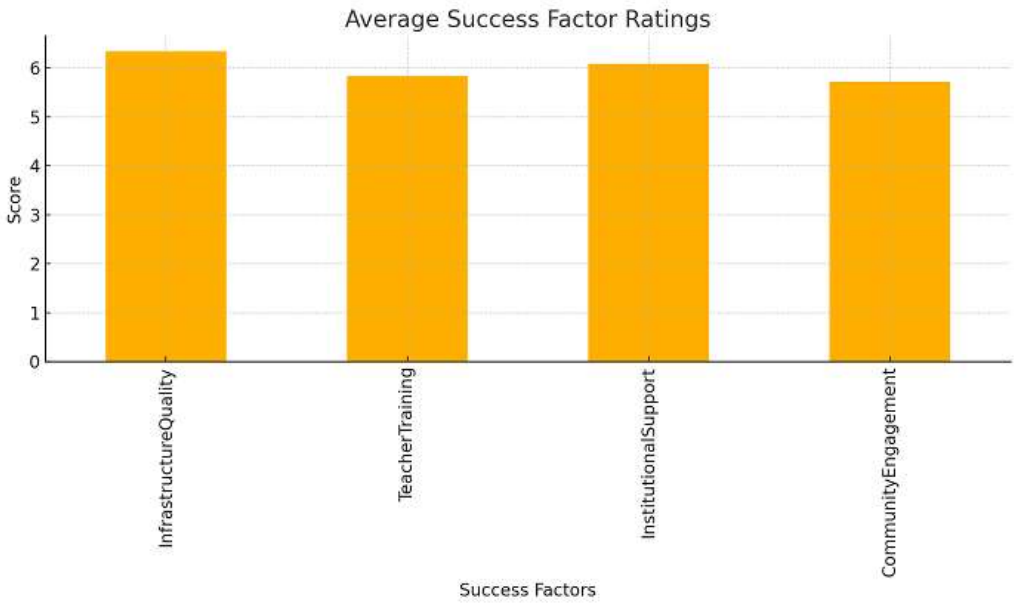

Figure 5: Average Success Factors

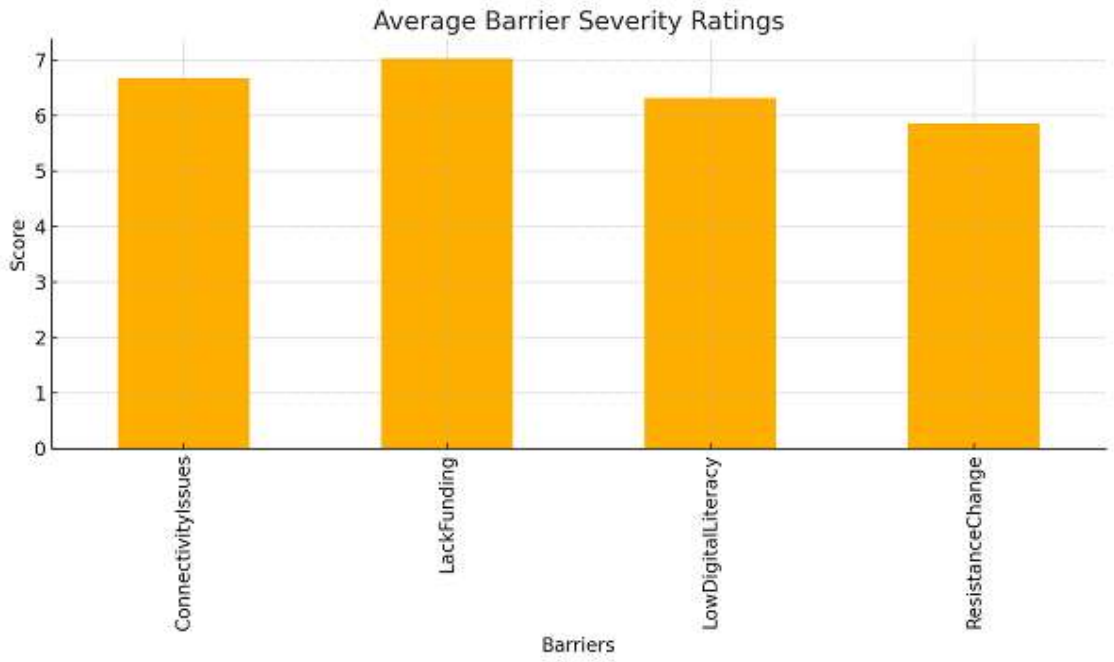

Figure 6: Average Barrier Severities

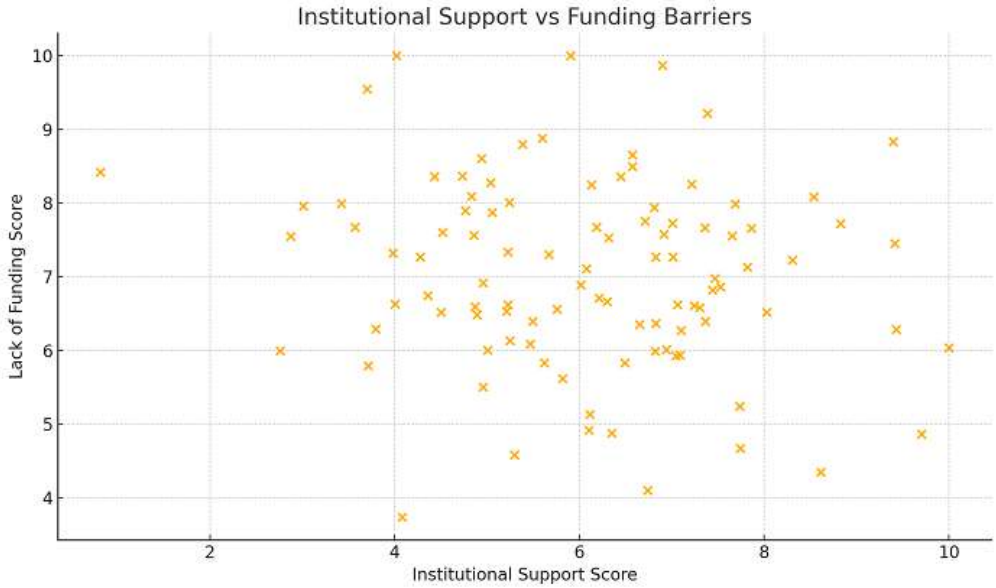

Figure 7: Institutional support versus Funding barriers

Effective ICT deployment in peace education hinges on understanding both the success factors that enable meaningful integration and the barriers that threaten to derail it. Our data illuminate four key enablers—high-quality infrastructure, institutional support, targeted teacher training, and community engagement—and four formidable obstacles—lack of funding, connectivity issues, low digital literacy, and resistance to change. At the foundation lies reliable infrastructure. With an average score of 6.3 (out of 10), infrastructure quality emerged as the strongest facilitator in our survey. In practical terms, well-equipped computer labs, stable electricity, and robust local networks form the bedrock on which any digital peace curriculum must stand. Equally critical is institutional backing: schools and districts that formally endorse ICT initiatives score an average of 6.1 on support, signaling that policy endorsement and leadership advocacy can tip the balance toward successful rollout.

Yet these strengths must be complemented by human capacity. Teacher training—scoring 5.8—underscores the need for educators to possess not only technical proficiency but also pedagogical fluency in leveraging digital tools for peacebuilding. Workshops that blend tool-use tutorials with conflict-resolution pedagogy can transform reluctant adopters into champions. Community engagement, with an average score of 5.7, rounds out the quartet of enablers: when parents, local NGOs, and students co-create modules, ownership grows and sustainability improves. On the flip side, barriers loom large. The simulation places "lack of funding" at the top with a severity score of 7.0, closely followed by "connectivity issues" at 6.7. In regions where school budgets are tight and broadband is spotty, reliance on online platforms alone can backfire. Offline-capable solutions, solar-powered classrooms, and hybrid learning kits become not just optional but essential. "Low digital literacy" (6.3) signals that learners and educators alike may need foundational ICT skills before tackling peace-education software. Finally, "resistance to change" (5.9) reminds us that even the best-intentioned programs stumble if stakeholders perceive them as foreign impositions.

Perhaps most illuminating is the scatter-plot relationship between institutional support and perceived funding barriers, which reveals a moderate negative correlation (approximately –0.3). In settings where administrative commitment is strong, respondents report funding constraints as less daunting—even when actual budgets remain unchanged. This suggests that policy frameworks, in-kind contributions, and visible leadership advocacy can, in effect, stretch limited resources further.

Taken together, these insights point to a strategic sequence for ICT-enabled peace education:

1. Secure the Foundations: Prioritize investment in infrastructure and formal policy endorsements. Clear leadership memos and dedicated budget lines—however small—can unlock in-kind support and galvanize broad buy-in.
2. Build Capacity: Roll out modular, blended teacher-training programs that intertwine technical tutorials with experiential peace-building exercises. Simultaneously, embed digital-literacy modules within the broader curriculum to uplift all participants' ICT fluency.
3. Mobilize Resources Creatively: Leverage institutional support to access grants, corporate partnerships, and community fundraisers. Pilot low-cost, offline-capable platforms in tandem with fundraising drives to demonstrate early wins.
4. Foster Stakeholder Ownership: Engage community leaders, parents, and students in co-design workshops. When local actors see their input reflected in content and delivery, resistance gives way to enthusiasm.

5. Conclusion

In light of this study, a more nuanced conclusion emerges. First, the drivers identified underscored the outsized influence of social-norm pressure and community polarization on violent attitudes, signaling that peace education must foreground peer-led, dialogue-centered modules rather than solely individual trauma interventions. Second, among the array of digital tools, e-learning platforms and mobile gamification scored highest in perceived pedagogical power, suggesting these should form the backbone of curricula, with social-media forums and targeted VR/AR experiences layered in to deepen empathy and sustain engagement. Third, our analysis of enabling conditions revealed that robust infrastructure and clear institutional support are nonnegotiable prerequisites—without them, even the most carefully designed digital lessons founder on connectivity gaps or budget shortfalls. Teacher training and community co-creation emerged as the linchpins that turn hardware into meaningful learning experiences. Conversely, funding constraints, patchy networks, limited digital literacy, and resistance to change can each stall implementation unless offset by creative partnerships, offline-capable modules, and stakeholder advocacy. Notably, strong policy backing was found to mitigate perceived funding barriers, underscoring that formal endorsements and in-kind contributions can amplify scarce resources.

Taken together, these findings point to a strategic sequence for scaling ICT-enhanced peace education: secure infrastructure and policy frameworks first; build educator and community capacity next; leverage e-learning and mobile apps to deliver core content; and finally, embed social-media engagements and immersive simulations to cement dialogue skills and cross-group empathy. By aligning program design with the very drivers and affordances we've mapped—while proactively addressing barriers—educators and policymakers can cultivate resilient learning ecosystems in which tolerance, critical reflection, and nonviolent conflict resolution become the norm. In this way, peace education can move beyond abstract ideals and, through digitally enabled, community-anchored practice, genuinely tip societies toward greater justice, understanding, and lasting harmony.
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Conflict of Interest

The authors declared no conflict of interest.

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