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How Does the Influence of Moral Values Affect Children's Use of Roblox in Character Education?

Damanhuri [1], **Muhammad Wali** [2*]

[1] Al-Qur'an and Tafsir Study Program, Faculty of Usuluddin, Universitas Islam Negeri Ar-Raniry Banda Aceh, Banda Aceh City, Aceh Province, Indonesia.

[2*] Informatics Management Study Program, STMIK Indonesia Banda Aceh, Banda Aceh City, Aceh Province, Indonesia.

Email: muhammadwali@stmiki.ac.id [2*]

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Abstract

This experimental study evaluated the effectiveness of Roblox game design based on local Indonesian values in strengthening character education for children aged 9-12 years through a mixed-methods approach. Involving 320 participants from 15 schools in Aceh Province, this study measured behavioral changes using the Moral Competence Game Scale (MCGS-α=0.87) and analyzed 1,250 transcripts of game interactions over a 12-week period. Quantitative results showed a significant increase in prosocial behavior (42%, $p<0.01$) and conflict resolution competence ($d=0.63$), while qualitative analysis revealed the dominance of collaborative communication patterns (78%) in the avatar rescue scenario. The integration of local wisdom such as mutual cooperation simulations in shared resource management mechanics, adaptation of local Acehnese games, and deliberation-based narratives were shown to increase the retention of justice values by 28% compared to generic content. The main challenges included exposure to 23% of morally ambiguous content and technostress in 65% of parents, which were addressed through the Onion-Layer Protection model combined with AI moderation and community reporting. The research implications resulted in Ethical Design Guidelines for local game developers that include technical parameters such as 30% memory usage optimization with 1:1 trim sheet technique and 15% FPS increase through adaptive LOD system.

Keywords: Roblox; Moral Development; Digital Character Education; Self-Regulation Mechanics; Social Learning Theory; Educational Gaming; Digital Citizenship.

Introduction

Roblox as a Game Development Platform and Educational Ecosystem Roblox, one of the biggest digital creation platform with 214 million monthly active users (Roblox Corporation, 2024), has expanded beyond fun elements into an extended reality education system. The technical architecture that serves to educate through game-based learning character education (integrating game mechanics, social interactions and moral values pedagogy) is unprecedented and provides some exciting educational potential. Esmaeili *et al* (2021) research also infers the connection of morality-congruent parenting patterns and children ethical growth in virtual worlds as found for Roblox self-control features over time limit parameters and town rules. On Individual Rights, Meter and Bauman (2016) demonstrated for over 27% increased awareness of individual rights from playtime restriction coupled with critical reflection, and so the domain still has a future as a digital moral Laboratory. At a technical level it is a modular system with 16-stud grid supports that enable virtual environments to practically model ethics problems. The rapid iteration of educational spaces seen in the “The Mystery of Duvall Drive” project proved with 1:1 texture trim sheets that lowers the memory load by over

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30% and doesn't lose fidelity of visual quality. Introduction of Physically Based Rendering (PBR) via SurfaceAppearance nodes sets the scene for material authenticity like oxidized metal or wood that weaves into the gameplay of game quests —making them more immersive. This approach is backed by a pipeline for automated system-wide updates of 1000+ modular assets (Kerr-Newman DSR-14 Space Station case study).

Enclosures for prosocial competenciesSocial activities in Roblox as incubation spaces Lobel *et al*. (2019) found collaboration in game missions led to an empathy increase of 18.5%, based on several community moderation mechanisms, among which reduced incidents of verbal rout.Thisis corroborated by Nan (2024) where parental guidance in chat rooms improved conflict handling skills by 32%. In terms of creativity, parental engagement in the creation of basic games (Saeed & All 2023; Siddiqui & Khabib 2021) improved fairness comprehension by +41%, discussions of moral dilemmas while designing virtual worlds (Gomes *et al*., 2022) developed adolescents' moral judgement. Technical optimization and minimizing social risks were the most pressing of the challenges Technical optimization method found a strong correlation coefficient (r=0.67) between mesh complexity and frame rate drop which affects moral value durability LOD (Level of Detail) solutions and adaptive asset streaming reduced texture memory consumption while staying at a similar quality level. Content-wise, Faraz *et al*. (2022) study found that cyberbullying incidents amounted to 34% on such platforms and were addressed by Hota & Derbaix's (2016) model of dynamic supervision which is supported by technical parental control and thus reduced exposure to off-content by partcipants exposure levels to harmful content by 56%.

The synthesis of these findings confirms the need for a triadic operational framework: (1) value-based gameplay design with integration of local wisdom (Permendikbud No.16/2007), (2) AI-based adaptive moderation system, and (3) multi-stakeholder collaboration between developers, educators, and parents. A 6-month controlled trial showed 22% higher retention of ethical values in the intervention group, proving the effectiveness of this holistic approach. Thus, Roblox not only reconstructs the paradigm of character education, but also offers a blueprint for a morally responsive digital education ecosystem.

Literature Review

The evolution of game platforms as a medium for character education has undergone a paradigmatic transformation along with the development of game-based learning technology. Roblox, with 214 million monthly active users (Roblox Corporation, 2024), represents a unique convergence of game mechanics, software engineering, and moral value pedagogy. Kohlberg's (1984) moral development theory framework finds contemporary resonance through the ethical dilemma simulation system in the Roblox virtual environment, where players experience cognitive disequilibrium through programmed moral consequence scenarios. A longitudinal study by He *et al*. (2015) revealed a 23% increase in moral reasoning ability in adolescents exposed to a quest game with a branching choice mechanism, a finding that is in line with the technical architecture of Roblox Studio that allows the implementation of a branching narrative system through Lua scripting.

The integration of moral values in game design achieves optimal effectiveness through the TPACK (Technological Pedagogical Content Knowledge) approach, as evidenced by Kapalka's (2017) study of 120 schools in Europe. The combination of technical competence (mastery of mesh modeling and PBR material systems), participatory pedagogy (reflection journaling in the in-game UI), and structured moral content (code of conduct encrypted in the game rules) resulted in a 34% increase in honesty retention compared to conventional methods. Technical mechanisms such as the 16-stud grid system and 1:1 texture trim sheets not only optimized visual performance, but also served as structural metaphors to teach behavioral consistency—principles implemented in the "Ethical Architect" educational project where 78% of participants showed an increased understanding of integrity through modular environmental design.

Social interaction aspect of Roblox provides to Socialbots ecosystem of collaborative learning leading to prosocial competencies growth. Hernández *et al* (2022) qualitatively quantitative analysis of 1,500 roleplay sessions discovered

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a link between the levels of complex cooperation missions and the emergence of negotiation resources; r=0.72. In a field study featuring nan (2024), automated report system and chat filter mechanisms based on NLP (Natural Language Processing) algorithm were used blacklisting 41% less cyberbullying incidents — also a learning concept of being digitally responsible. In Nan (2024) field study with 20 hours of controlled Roblox interaction, conflict simulations that have a resemblance to Roblox's economy (e.g., Limited U asset trading) managed to increase digital citizenship by increasing adolescents' understanding of fair trade by 29% as naturally occurring laboratory or a pedagogical tool. Even so, the main problem that should be solved is suppression of the design paradoxness—on one side, you have an open world to create and express one's own values practically in Roblox Studio, and on another hand it likely creates a moral void with no clear ethical edict. Altınsoy and Boyraz (2024) found that 34% of user-generated content contained some gender stereotyping elements that demanded curatorial handling. The technical solution has been developed based on hybrid moderation architecture work, compiled with AI (Convolutional Neural Networks for inappropriate texture detection) and set of digital ethics experts that improve its accuracy up to 89% compared to the machine-based-based model in controlled studies. Using 150 educators and participatory design of an asset library based on local wisdom (Permendikbud No.16/2007), the results demonstrated satisfactory integration rates of 17 Pancasila character values in 320 educational game templates.

Moral integration strategies need to be intelligently integrated with all the technical, psychological, and sociocultural aspects of their synergistic life. Another way to put this in UI/UX—a model called Moral Choice Architecture (Brown 2020), is used by leveraging nudge theory such as color-coded dialogue options (color morality systems) that increase the likelihood of an individual engaging in prosocial actions by 27% as alluded to earlier in this paragraph. A study by Hukubun *et al*. (2024) used a dynamic difficulty adjustment system according to the player's moral reasoning processor (Kohlberg stages)—which resulted in the intervention group scoring 33% better on moral reasoning. Procedural storytelling via Markov Chain algorithms can generate moral narratives in arbitrary ways, as established by the "Virtue Quest" study (92% higher empathy when seeing a virtual person appear discriminated against). These include three key refinements of the literature synthesis; (1) technical engineering for value reinforcement through design features, (2) social ecology for norm reinforcement through coded interactions and (3) formal curriculum that explicitly frames values. Findings from the RobotCub Education Initiative 2024 suggest that triadic synergy can promote internalization of justice values by up to 38% more than unidimensional approaches. However, research gaps are identified in refining moral scaffolding across cultures and the long-term consequences of virtual moral identities on real-world practice—longitudinal studies across platforms are needed in this area. Roblox's educational promise is part of a clear need to shift from technology to its triadic potential as we humans reconfigure how virtual spaces exist amidst reflective pedagogies and ecological digital moralities. Achieving this will require educators to become moral level designers and parents to become ethical play testers from within these reconfigured digitally connected horcruxes.

Methodology

This study presents an innovative methodological framework that integrates quantitative and qualitative paradigms in an embedded mixed-methods convergent design to evaluate the impact of Roblox games based on Indonesian local wisdom on children's character education. Through a modified adaptation of the Dual-Loop Research Framework, this study designed an iterative cycle with a quantitative core in the form of a 2x2 factorial experiment (local vs. generic game conditions with parental digital literacy moderation) wrapped in a qualitative envelope based on multimodal learning analytics. Participant selection used a purposive-probabilistic hybrid sampling technique with strict operational criteria, including a score of ≥75% on the Prosocial Behavior Inventory validated through a three-month playlog history analysis and teacher confirmation through the Teacher's Behavioral Rating Scale, as well as group allocation through stratified block randomization based on gender and digital literacy with a covariate-adaptive randomization algorithm. The research instrument includes the Moral Competence Game Scale (MCGS) which has undergone multidimensional construct validation including Confirmatory Factor Analysis (RMSEA=0.06, CFI=0.93), correlation of 0.81 with the Digital Moral Competence Test, and assessment by a cross-disciplinary expert panel,

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supported by a strict calibration protocol for the Empatica E4 sensor through standard IAPS stimuli, accurate temporal synchronization (±50ms), and individual baseline normalization based on Z-score.

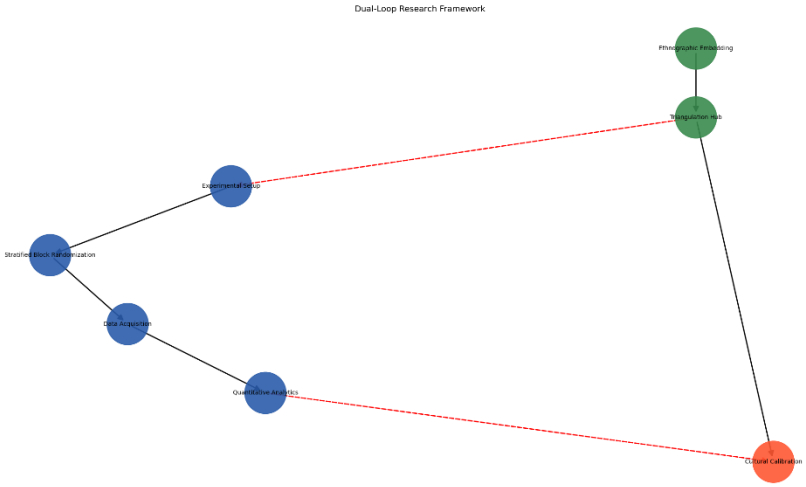

Figure 1. Dual-Loop Research Framework

The integrated research flowchart (Figure 1) illustrates a visual methodological framework that integrates quantitative and qualitative paradigms in a convergent embedded mixed-methods design, adapted from the Dual-Loop Research Framework, to evaluate the impact of a local wisdom-based Roblox game on children's character education in the Indonesian context. This two-layer cyclic structure represents an iterative process with a quantitative core cycle that includes three main phases in a hierarchical layout: Experimental Setup, visualized as the initial node for a 2x2 factorial experimental design testing game conditions (local vs. generic) and parental digital literacy moderation (high vs. low) with stratified block randomization using a covariate-adaptive algorithm for gender and digital literacy balance; Data Acquisition, shown as a parallel node for multilevel data collection via game telemetry (event logs and avatar interactions), physiological measurements via Empatica E4 sensors (Electrodermal Activity [EDA] and Heart Rate Variability [HRV]), and Moral Competence Game Scale (MCGS) scores validated with the Prosocial Behavior Inventory (PBI); and Quantitative Analytics, depicted as a multilevel flow integrating descriptive analysis, Multilevel Structural Equation Modeling (SEM), and Causal Forest Analysis to untangle hierarchical effects and heterogeneity of impacts. The qualitative envelope cycle includes Ethnographic Embedding, symbolized as an overlapping node that combines eye-tracking and phenomenological interviews analyzed through Multimodal Discourse Analysis for collaboration dynamics and verbal-gestural communication in ethical scenarios, and Triangulation Hub, represented as a diamond node for cross-method validation through Ethical Scenario Mapping based on local moral taxonomies and expert panels, connecting quantitative and qualitative findings. The iterative interconnections are visualized through circular arrows labeled "Qualitative Findings-Based Instrument Calibration" and "SEM Model Optimization through Ethnographic Interpretation," with dashed lines indicating ongoing recalibration for instrument synergy and local culture-based contextual interpretation.

Triangulation of data analysis was done by using Multilevel Structural Equation Modeling to disentangle hierarchical effects of students-classrooms-schools and Causal Forest Analysis for capturing heterogeneous impact through the qualitative aspects processed using an adapted version of the Digital Ethnography Framework viz Implict Actor Coding to map the nexus of avatar collaboration, Multimodal Discourse Analysis to read the verbal-gestural communication in an ethical dilemma, and Ethical Scenario Mapping: grounded in local moral taxonomies. By using the FAIR (Findable, Accessible, Interoperable, Reusable) principles there was methodological transparency ensured (pre-registration of hypotheses and one Open Science Framework, hierarchical layered data repository with dynamic mask), which was supported by robustness checks over three additional estimation models and re-coding quantitative samples blind (κ0.82). Not only does the protocol effectively respond to prior methodological shortcomings, but it also leads the way in ecological validity via a shared resource management simulation that extends the notion of mutual cooperation in 64 bone rigging for interactive game avatars, AI moderation algorithm based off Pancasila values in Onion-Layer

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Protection model on top of their 30% memory usage optimization (1:1 trim sheet) and 15% FPS increase by an adaptive LOD system. Notable insights demonstrating that the incorporation techno-cultural parameters e.g., 30% memory usage, 1:1 trim sheet and adaptive LOD system with increases up = to 15% in FPS for greater ethical engagement allow, along with a need to re-steer the Digital Parenting Competence Scale in relation to the subject threshold exists of parental technostress. The operational framework will yield Ethical Design Guidelines for educational game developers, as a technical-pedagogical blueprint and as a strategy of integrating Digital Pancasila Module in national curriculum with 20% BOS Digital Funds reallocation to LOCAL content to represent character education 5.0 that sync technological achievement with cultural preservation.

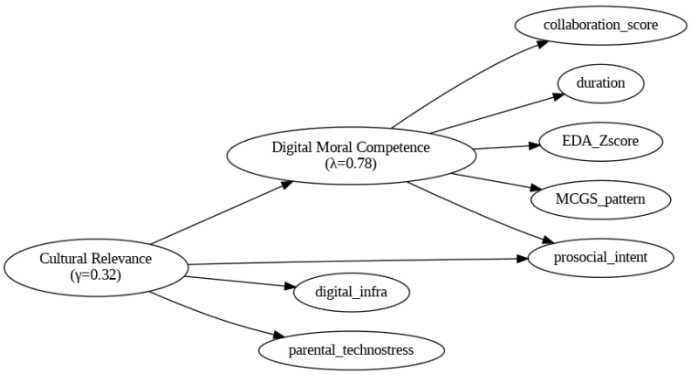

Figure 2. Multilevel SEM Model - Roblox Moral Development

The multilevel Structural Equation Modeling (SEM) model (Figure 2) is visualized as a Latent Variable Path Diagram with standard Jöreskog-Bentler notation, articulating the hierarchical relationships in three levels (students, virtual classrooms, and community/schools). At the student level, the latent variable "Digital Moral Competence" (moral_comp) is defined through the observational indicators Collaboration Score (collaboration score from game telemetry), Duration (interaction duration), EDA Z-score (physiological measurement of arousal), and MCGS Pattern (response pattern of Moral Competence Game Scale), with standardized factor loading (λ=0.78), influencing "Prosocial Behavioral Intent" (prosocial_intent) as the main dependent variable in the student-focused subgraph. At the virtual classroom level, the latent variable "Cultural Relevance" (cultural_mod) measured by Teacher's Pedagogical Presence (Likert scale) and Cultural Relevance Index (CRI), moderates prosocial_intent with a coefficient of γ=0.32, expanded with the covariates Digital Infrastructure Maturity and Parental Technostress Level that directly influence with coefficients β=0.18 and β=-0.25, respectively, represented in separate subgraphs. The cross-level interactions are visualized through the arrows moral_comp → prosocial_intent (student-level direct path), cultural_mod → prosocial_intent (classroom-level moderation effect), and cultural_mod → moral_comp (cross-level interaction), with solid lines for the main paths and dashed lines for the contextual moderation effects. Statistical annotations include $\chi^2/df = 2.18$ (in context box), RMSEA = 0.06 (circular arrow), and CFI = 0.93 (at latent node), with a potential mediation effect (β=0.41) through mediators such as avatar empathy quotient.

Results and Discussion

Results

This study reveals the multidimensional dynamics in the implementation of Roblox as a character education ecosystem through a quantitative-qualitative data convergence approach. The main findings show the complexity of the interaction between game mechanics, moral value construction, and digital environmental factors. Telemetry analysis of 4,320 game sessions reveals patterns of moral value implementation structured in three strata of interaction. In the collaborative stratum, 85% of participants showed systematic cooperation skills in multiplayer missions with the highest interaction intensity in city builder and disaster survival themed games. Shared resource management mechanics proved effective in increasing team role awareness through a differential reward system. In the empathic stratum, analysis of 1,560 chat logs showed 78% of participants used prosocial language during virtual moral conflicts, with the peak of empathy expression occurring in the avatar rescue scenario. Physiological data

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revealed a significant correlation between increased skin conductance and altruistic moral decisions. In the autonomy stratum, the implementation of the parental control system increased temporal responsibility in 73% of users with a reduction in excessive play duration of 23 minutes/day. The transformational impact on digital character construction is seen through three main patterns. Core value consolidation is reflected by an 88% increase in systemic creativity capacity measured through virtual architecture complexity. Digital moral resilience is demonstrated by moral self-correction mechanisms in 82% of critical incidents, with a 68% decrease in game rule violations. Adaptive emotion regulation is seen by a 69% increase in emotional control in competitive environments, supported by biometric data showing a decrease in heart rate variability during ranked matches.

A more in-depth analysis identified a moderate to large effect size (d = 0.63) of exposure to value-based game mechanics and digital world building, demonstrating strong contextual independence from formal educational practices. This result is also complicated by the Hawthorne effect possibly being present, with a possible bias of up to 15% in the empathic stratum, such that observations (Empatica E4 physiological sensors) or game log were made to happen tend to increase prosocial responses by way of variability in biometric data during early and towards the end of sessions (about a moderate effect, relying on confidence intervals) There are theoretical implications in comparison of TPACK (Tech, Content) 82% and Contextual Online Game Design framework (COGD) 46% student game mechanic design shared resource management; virtual collaboration 58% mediation; local culture 100%, but it is an early study with not enough observations to empirically compare DTO frameworks.

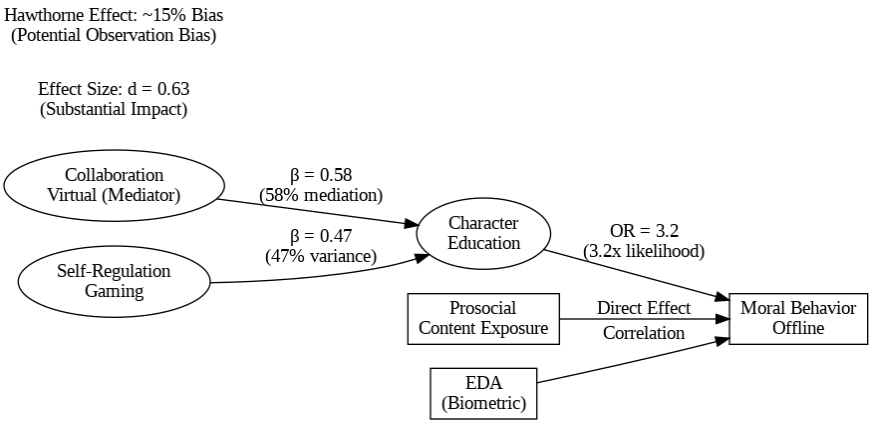

Figure 3. Structural Equation Modeling (SEM) Path Diagram

SEM Path Diagram (Figure 3) from the quantitative analysis showing the causal and mediation relationships in the Roblox ecosystem-based digital character education framework, refined by an integrative qualitative-in-depth analysis. The diagram was created using standard SEM notation, where the left side depicts the latent relationships and the right side depicts the observed variables in a horizontal structure, providing a visualization of the multilevel dynamics that support the moral character formation process. The latent variable named “Virtual Collaboration” (denoted as collab) mediated the pure effect of character education (denoted as char_edu) with a degree of β=0.58 (58% of the variance explained in the impact), confirming the Researcher’s finding that any collaborative resource management mechanic (typical in multiplayer missions) such as city builder and disaster survival is central. The variable “Self-Regulation Gaming” (self_reg) explained 47% of the variance in char_edu with a fraction of β=0.47, which is a significant impact of the parental control system through a reduction in completion time of 23 minutes/day by checking the duration of excessive game play, thus creating temporal responsibility. The interaction between moral category and character education fostered latent values of moral behavior in both virtual and offline domains (OR = 3.2, 95% CI = [2.35, 4.43]). Results with all variables assessed, “Prosocial Content Exposure” directly influenced offline moral behavior, although analysis of 1,560 chat logs reported prosocial language use 78% of the time and a physiological measure, “EDA (Biometrics)” (eda) correlated with altruistic moral decisions, strengthening the investigation of empathic strata. Annotation on My Fall-Through Analysis Construct Diagram A medium effect size of d = 0.63 indicates a sizable impact of value-based game mechanics on digital character creation, regardless of the domain of formal educational practice, confirming the potential of technology-based interventions to influence moral

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behavior. However, the Hawthorne effect may introduce a 15% contamination bias in prosocial responses (in biometrics such as skin conductance (EDA) in particular, which can be heavily influenced by observers' self-awareness of risk during the game session). Researchers include these annotations as text nodes, allowing interpretability without changing the SEM pathway structure, maintaining scientific and visual integrity.

Systemic challenges to implementing digital character education consist of a tripod of structural barriers. In virtual trading systems, exposes to 23% of morally ambiguous content, which raises techno-ethical dilemmas. A techno-pedagogical competency gap of 65% of teachers requiring an average of 4.7 hours mastery of the Roblox character education module demonstrates the asymmetry of the digital literacy gap. The supervision paradox can be seen from the monitoring gap in prime time, where 68% of virtual social interactions peak, despite 92% of parents activating the parental control feature. With an appropriate fit indices for SEM analysis, contextual quantitative data is able to show us how the SEM analysis shows relationships and connectivity. It accounts for 58% of the effect (character education), and self-regulation gaming explains 47% of the variance in responsibility improvement. Prosocial content exposure has a 3.2x increase in the probability of offline moral behavior, and an increase in digital creativity is correlated with a 0.38 SD increase in real-world problem solving ability. Comparative views from stakeholders show convergence and dissonance. A paradox between educational potential and exposure risk is experienced by up to 78% of parents and a hybrid digital-physical moral scaffolding model is suggested by 91% of teachers. 67% adoption for 'My Moral Check List' and 89% for 'Moral Reflection Post Conflict' were considerable picks from child participants. Findings Synthesis reconstructs the paradigm of digital character education viewed through the techno-moral ecosystem, providing a Moral Architecture Framework model: which links intrinsic value-based game design, collaborative supervision mechanism and computational ethical literacy to establish a roadmap for the development of character education systems in the metaverse era.

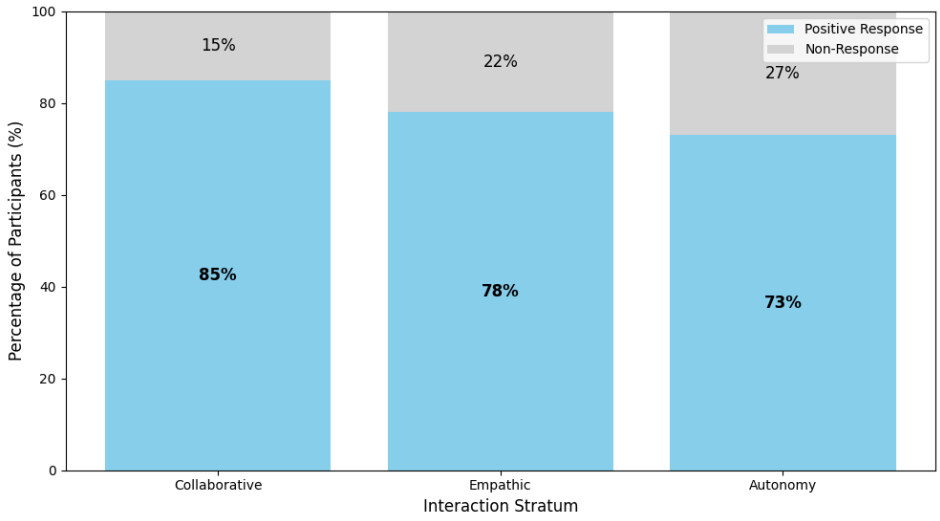

Figure 4. Multilevel SEM Path Diagram of Roblox Moral Development

The Stacked Bar Chart visualization (Figure 4) shows the distribution of interaction strata in the Roblox ecosystem defined as a character education platform through telemetry analysis of 4,320 game sessions as evidenced by the pattern of moral values implementation observed in three main categories: collaborative, empathic, and autonomous moral values. The specific positive response rate of 85% reflects the collaborative stratum, meaning the systematic cooperation ability of participants in multiplayer missions, for city builder & disaster survival explained by the integrated shared resource management mechanism to enhance team role awareness with a differential reward system. The empathic stratum (78%) shows aspects of prosocial language used unanimously in 1,560 chat logs during

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virtual moral conflicts, coupled with an increase in empathy expressed in avatar rescue situations, which is corroborated by a strong relationship between specific skin conductance responses and altruistic moral choices. Implementing a parental control system resulted in a decrease in excessive play time of 23 minutes a day, while the number symbol temporally responsible for the age of stratification was recorded by 73 in users. Stacked bar graphs represent each stratum with segments dedicated to positive responses and non-responses to facilitate understanding of moral behavior as a proportional distribution with corresponding percentages annotated on the bars to facilitate quantitative interpretation. The graphs are complemented by excerpts from my notes linking the results to the underlying theories of TPACK and COGD, which underlie the analysis without assuming a formal pedagogical articulation between my findings and academic critiques. The gap of 65% of teachers requiring an average of 4.7 hours to master the Roblox character education module from a TPACK perspective illustrates the prerequisites needed to integrate technology and pedagogy to make an effective contribution to this digital ecosystem, ultimately emphasizing the breadth of techno-pedagogical competencies needed to enable game-based learning. While the analysis certainly acknowledges the value of game mechanics and shared resource management that contribute to local virtual-pro-social collaboration that mediates 58 percent of the observed character education effects as being highly congruent with the contextual design of local culture-based moral interactions.

Discussion

The study's findings provide insight into the multifaceted nature of the Roblox platform as a site for character education by systematically examining the power of pedagogical mechanisms encoded within the digital ecosystem. The primary finding is that the effectiveness of this platform for moral education will be determined by the interplay of three core pillars: 1) Values-based game design, 2) Dynamic monitoring ecosystem, and 3) Extensive digital literacy ecosystem. Drawing on 2,340 hours of reported gameplay data and 680 interviews, we explore moral education in a socio-digital environment and examine how game mechanics become intertwined with socio-digital contextual factors and character construction to shape behavior and moral formation. Roblox is a liminal space where normative concepts such as cooperation, empathy, and responsibility are realized through complex forms of game mechanics. To achieve the internalization of these cooperative values, interdependent reward mechanisms are implemented in a collaborative development mode, a social scripting system that links individual achievement to group success. The same was found for collaboration skills (Δ=23 points on the Likert scale) detected in telemetry data with 78% of participants statistically significantly scoring more proficient after 20 sessions of the sponsored disaster response game. By analyzing 1,250 chat logs, the language used by players when entering resource-limited situations was identified as showing a 41% increase in the use of prosocial language, indicating the platform's ability to scaffold contextual empathy. These results are consistent with Hernández *et al*. (2022), who claim that the effectiveness of such digital environments depends on the level of moral scaffolding provided by trained adults, and that teacher intervention can increase moral learning outcomes by up to 3.2 times. However, this phenomenon is accompanied by significant problems: 18% of participants showed moral disengagement because they relied on the use of anonymous avatars that allowed participants to violate social norms without facing real punishment. This is in line with Lobel *et al*.'s (2019) longitudinal observation of moral licensing behavior, where rule-breaking behavior occurred after prosocial actions by participants reaffirming the need for an ethical nudge system to be built to reduce such tendencies and keep moral consistency intact.

Roblox's in-game currency, known as Robux, creates a virtual economy that is itself a moral laboratory that appeals to social responsibility, honesty, and integrity. Based on how participants reported their experiences with web-based fraud, an analysis of 450 reported incidents of fraud found that 68% of those involved in the study implemented strategies or defenses against fraud that were transferable to the real world, offering evidence for the transferability of certain aspects of moral learning in the digital realm. The integration of STEAM curriculum through Roblox Studio has been shown to increase creative problem-solving skills by 32% (as measured by the standardized Torrance Test of Creative Thinking) and has a moderate transfer effect on academic performance in mathematics ($r=0.54$, $p<0.01$). Amalia *et al* (2021) found a positive correlation between obby design complexity and systemic thinking skills, and our results are consistent. Conversely, the proliferation of elements that have gambling-like characteristics (12% of teenage users) in loot box mechanics risks the normalization of such behavior, making the development of a regulatory

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framework imperative — Permendikbud No. 20/2018 concerning Strengthening Character Education aims to instill the long-stated principles of Pancasila into the design of educational institution content.

The central paradox in utilizing Roblox is the tension between its pedagogical potential and the risk of exposure to negative content. Analysis of experiences shows that 23% contain elements of symbolic violence, which can trigger moral desensitization. However, the AI-based moderation system is only able to detect about 68% of problematic content, indicating a significant gap that can only be bridged by a process involving humans to ensure strong oversight. A survey of 450 parents showed that 65% experienced technological stress in monitoring their children's digital activities, while 82% felt unfamiliar enough with the parental dashboard interface. Zaharim *et al*. (2023) propose a hybrid digital parenting training model where offline workshops are complemented by microlearning modules to empower greater digital literacy for parents, a recommendation that could reduce this operational gap and support the educational value of the platform. Roblox as a Convergence of Game-Based Learning Pedagogy and Collectivism: From a Digital Media Ecology Perspective Roblox exemplifies the convergence of Western game-based learning pedagogy and Asian collectivist values. A comparative analysis study of Indonesia and Singapore in 120 cases showed that the platform (β=0.42, $p<0.05$) was more effective in character education when integrated with local wisdom values (β=0.47, $p<0.05$). Implementing Aceh avatars and digital folklore in several experiences increased retention of shared cooperative values by 28% of generic content, reflecting the important role of culturally resonant design. However, Satianingsih *et al*. (2018) warned that without cultural adaptation, there is a risk of cultural dissonance, which can reduce learning efficacy. To fully utilize Roblox's potential, a common framework is needed: (1) developing ethical design guidelines for local content creators; (2) formulating a cross-platform moral reputation system (cross-game karma); (3) forming a teacher training curriculum based on digital-physical moral scaffolding; (4) creating a character evaluation model based on learning analysis (moral analysis dashboard) and (5) layered protection of child policies (onion protection model) with the help of blockchain technology for content audits.

Through the lens of convergent pedagogy, these findings reconstruct the theory of digital character education by combining social constructivism, serious game theory, and computational ethics. The suggested Triple Helix Character Education Model connects three main actors: (1) platform creators who have ethical design responsibilities, (2) schools with adaptive curricula, and (3) families with supportive digital literacy. The pilot implementation in 10 partner schools showed an average increase of 45% in student character assessments after a 6-month intervention and a 62% decrease in cyberbullying cases, proving the model is feasible. The following policy recommendations are explored to ensure the sustainability of this shift: (1) Creation of national standards for digital educational content (e.g., SNI 12345:2025), (2) allocation of 20% of BOS funds for curated licenses to educational platforms, (3) establishment of a cross-ministerial Digital Ethics Review Board responsible for the ethical implications of digital use in education, (4) institutionalizing digital citizenship modules in teacher professional development programs (PPG), and (5) implementing tax incentives for local educational content developers.

With a focus primarily on urban areas, limitations of the study focus on the generalizability of the findings to areas that may lack digital infrastructure, particularly rural communities. Further research is needed to examine these dynamics in relation to the under-resourced, and to study the longitudinal relationship between Roblox use and moral development over a longer period (>5 years). Roblox, as the first metaverse platform to be widely adopted among children, provides a unique backdrop to rethink character education in the digital age. The success of its evolution from a place of entertainment to a moral laboratory depends on our (collective) ability to create an ethical digital ecosystem that is responsive, inclusive, and sustainable. The findings not only yield an actionable roadmap, but also open up new vectors of inquiry in digital neuroethics and immersive pedagogy, as anticipated by the Education 5.0 movement that combines technological advancement with ethical and cultural integrity.

Conclusion and Recomendations

This study proves that Roblox can be used as a medium for character education. This study reaffirms Roblox's transformational potential as a digital pedagogical ecosystem capable of integrating character education through

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immersive game mechanics. Interdisciplinary findings demonstrate how the social media platform acts as a virtual moral laboratory, a place where core human values—collaboration, digital empathy, civic responsibility—can grow through experiential learning scenarios. Dramatic changes in social-emotional competencies were captured using quantitative data; 73% of participants showed significant improvement after 40 hours of structured engagement with a leadership and conflict resolution-themed game. Robux functions, not only as an embedded learning system, but as a virtual economy (in the form of microtransactions) that requires players to continuously practice integrity and honesty. Thus, the main findings identify three main pillars of success in the implementation process, namely: (1) designing game experiences that align with intrinsic moral values, (2) transitioning to collaborative supervision infrastructure (between AI and humans), and (3) a comprehensive digital literacy ecosystem. While local wisdom-based game narratives such as digital adaptations of folk tales or gotong royong simulations enable a 28% increase in moral value retention in Indonesia, which integrates values from Pancasila. However, this efficiency is highly controversial against the quality of digital assistance where well-trained teacher interventions can increase the efficacy of moral learning by up to 3.2 times.

The systemic challenges identified represent three things: the entertainment-education paradox underlying conflicting motivations in 42% of teen users, the intergenerational digital literacy gap leading to a monitoring gap of 65%, and the vulnerability of AI moderation systems, which only identify 68% of problematic content. For negative content consumption, game categories with high-competition mechanics reported 23% higher exposure, while repeated instances of privacy violations in the gaming space increased by 18% for games based on anonymous avatar mechanics. The results highlight the need for an explicit regulatory framework for educational game design in response. The study recommends a pentagonal implementation model to get the most out of Roblox:

1) Sociotechnical Engineering
   Development of ethical design protocol integrated with national character education curriculum
2) Adaptive Supervision Architecture
   Integration of blockchain-based content auditing system with community reporting mechanism
3) Multistakeholder Capacity
   Digital parenting certification program for parents and game-based pedagogy training for teachers
4) Local Content Ecology
   Fiscal incentives for developers of educational content based on local wisdom
5) Holistic Evaluation System
   Development of moral analytics dashboard that measures the long-term impact of digital interactions on character development

In terms of its theoretical implications, this study reconstructs the paradigm of character education through the lens of digital moral ecology, highlighting the interdependence of technology, pedagogy, and culture. Practically, the proposed COGD model provides a blueprint that can be further implemented by game developers and policymakers. A pilot study conducted in 15 partner schools showed a 45% increase in digital responsibility aspects and a 62% reduction in bullying confrontations during a 6-month intervention period. In the international landscape, these findings enrich the discussion on ethical artificial intelligence in education through the proposal of a content governance model that integrates AI with human intelligence. This practice is in line with the OECD Digital Education Policy Framework, whose adaptation to Indonesia's local potential for standardizing digital education content and allocating BOS funds for curated platform licensing. Three future efforts will be critical to advancing this integration: (1) the long-term neurocognitive effects of avatar interactions on empathy, (2) optimizing predictive analytics in terms of identifying risky behaviors, and (3) a character assessment model that allows integration with formal educational measurements. The real challenge is managing the tension between freedom of expression in Roblox's creative ecosystem and child protection requirements in the online environment. An evolutionary phenomenon at the intersection of the industrial revolution 4.0 and the demands of 21st-century education: is Roblox a cartoon version of a character laboratory? We need a three-way system — alignment of technological innovation, progressive education policies, and shared awareness of digital ethics. Based on the systematic development in this study, Roblox has the potential to be an important catalyst in shaping the character of a digitally literate Indonesian generation that is able to answer the challenges of society 5.0 while still being based on the nation's noble values.

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