International Journal of Intellectual Discourse (IJID)
ISSN: 2636-4832 Volume 9, Issue 1. March, 2026

The Role of Outdoor Education in Promoting Social-Emotional Learning for Young Children in Nigeria: A Convergent Mixed-Methods Study

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Abstract

This study examined the role of outdoor education in promoting social-emotional learning (SEL) among young children aged three to eight years in Nigeria. Employing a convergent parallel mixed-methods design, the study drew data from 120 hours of structured observations across 12 purposively selected outdoor education programs and semi-structured interviews with 45 early childhood educators. Quantitative observational data were analyzed using chi-squared tests to identify statistically significant differences in SEL behaviors between outdoor and indoor settings. Qualitative interview data were analyzed using the six-phase thematic analysis framework. Findings indicate that outdoor settings were associated with significantly higher rates of cooperative behavior (45% vs. 25% indoors), positive emotional expression (60% vs. 30%), and lower rates of disruptive behavior (10% vs. 30%), with all between-setting differences reaching statistical significance ($p < .05$). Four qualitative themes emerged: uninhibited emotional expression, risk-taking and independence, peer relationships and empathy, and barriers to implementation. These findings contribute the first Nigerian mixed-methods evidence base linking outdoor education to CASEL-defined SEL competencies. For policy and practice, outdoor learning should be repositioned as a core instructional component, and policymakers should allocate dedicated time, educator training, and infrastructure resources to support outdoor SEL programming in Nigerian early childhood settings.

Keywords: Outdoor education; Social-emotional learning; Early childhood; Nigeria; Nature-based learning; Mixed-methods; Self-regulation; Emotional awareness.

1. Introduction

Social-emotional learning (SEL) encompasses the processes through which children develop and apply the skills needed to manage emotions, cultivate productive relationships, and make responsible decisions (CASEL, 2020; Durlak et al., 2011). Evidence consistently demonstrates that early SEL competencies predict academic achievement, mental health, and prosocial development across the lifespan (Ernst & Burcak, 2019). Despite this evidence, many educational systems, particularly those in sub-Saharan Africa, remain organized primarily around didactic, classroom-based pedagogies that offer limited opportunities for the experiential and relational learning that SEL development requires (Nsamenang, 2006; Ogundele, 2018).

In Nigeria, this gap is acute. The country's National Policy on Education (Federal Ministry of Education, 2014)

acknowledges holistic child development as a policy goal, yet implementation has not kept pace with aspiration. Braimoh and Ohia (2011) observed that Nigerian primary schools continue to prioritize content delivery over developmental learning, often at the expense of children's social and emotional growth. Outdoor education, encompassing both child-initiated, play-based outdoor learning and educator-facilitated structured outdoor activities, offers a theoretically grounded and practically accessible means of integrating SEL into the curriculum, particularly in resource-constrained settings where expensive instructional materials are not feasible.

Despite a growing international evidence base (Mann et al., 2022), empirical research on the relationship between outdoor education and SEL in Nigerian and broader African contexts remains sparse. This study addresses that gap by examining how outdoor education contributes to SEL development among children aged three to eight years across 12 Nigerian early childhood programs.

Three research questions guide this inquiry. The first, how does outdoor education contribute to SEL outcomes for young children in Nigeria?, is examined through both observational and interview data, grounded in the CASEL SEL competency framework (Mann et al., 2022). The second, what specific elements of outdoor environments facilitate SEL skill acquisition?, draws on Bronfenbrenner's (1979) ecological systems theory to analyze how particular environmental features activate developmental processes. The third, how do early childhood educators perceive the impact of outdoor education on children's social-emotional capabilities?, is addressed through qualitative thematic analysis, informed by Bandura's (1977) social learning theory as a framework for understanding educator observations of peer modelling and observational learning.

2. Literature Review

Theoretical Frameworks of Social-Emotional Learning

This study is grounded in three complementary theoretical frameworks that together constitute an integrated mediational model. The CASEL framework (Mann et al., 2022) specifies the outcome space, five interrelated SEL competencies: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Bronfenbrenner's ecological systems theory (Liu et al., 2023) explains the contextual conditions under which SEL development occurs, situating the child within nested environmental systems (microsystem, mesosystem, exosystem, macrosystem) that bidirectionally influence development. Bandura's social learning theory (Akin & Bakar, 2023) illuminates the acquisition mechanism, arguing that children develop social behaviors through observation, modelling, and reinforcement in authentic social contexts.

These three perspectives are analytically complementary: CASEL defines what SEL outcomes should be developed; Bronfenbrenner explains where and within which systemic relationships development occurs; and Bandura clarifies how social behaviors are acquired. Outdoor education functions as the contextual catalyst that activates all three frameworks simultaneously. Table 1 presents the integrated conceptual framework.

Table 1: Integrated Conceptual Framework: Outdoor Education as a Mediator of SEL Outcomes

Theoretical Lens	Core Proposition	Role in Mediating SEL via Outdoor Education	Nigerian Context Justification
CASEL SEL Framework	Specifies five core SEL competencies children must develop	Provides normative SEL outcome space for outdoor education interventions; enables standardised measurement	Maps onto Nigeria's National Policy on Education goals for holistic child development; offers structured framework where formal counselling structures are absent
Bronfenbrenner's Ecological Systems Theory	Child development is embedded in nested environmental systems (micro-, meso-, exo-, macrosystem)	Outdoor education activates multiple ecological layers simultaneously: peer groups (microsystem), school-community links (mesosystem), and local natural environments shaped by socioeconomic conditions (exosystem)	Consistent with Nigeria's Ubuntu-influenced communalism; positions the child as a relational being whose development is co-constituted by family, peers, and community

Theoretical Lens	Core Proposition	Role in Mediating SEL via Outdoor Education	Nigerian Context Justification
Bandura's Social Learning Theory	Social behaviours are acquired through observation, modelling, and reinforcement rather than direct instruction alone	Outdoor settings generate authentic, spontaneous social interactions that serve as live, contextualised modelling opportunities, enhancing both attention and retention of prosocial behaviours	In resource-constrained Nigerian classrooms with high pupil-to-teacher ratios, peer-mediated learning in outdoor settings reduces dependence on instructional materials while sustaining social learning

Note. Synthesis based on Mann et al. (2022), Liu et al. (2023), and Akin & Bakar (2023). CASEL = Collaborative for Academic, Social, and Emotional Learning.

Types of Outdoor Education: Distinguishing Play-Based from Structured Approaches

A consistent limitation in the outdoor education literature is the conflation of two analytically distinct pedagogical forms: play-based outdoor learning and structured outdoor education. Play-based outdoor learning is child-initiated, largely unstructured, and affords children agency over their social and physical engagement with the environment (Brussoni et al., 2022). Structured outdoor education, by contrast, is educator-facilitated, involves explicit learning objectives, and often incorporates guided activities such as nature walks, cooperative problem-solving tasks, and environmental projects (Fägerstam, 2013).

This distinction carries practical significance for low-resource educational settings. Play-based outdoor learning requires minimal materials or preparation, making it immediately feasible for Nigerian schools with limited resources (Phatudi & Molefe, 2012). Structured outdoor education, while pedagogically richer, requires trained educators and curriculum alignment. Both forms are represented in this study's sample programs, and findings are analyzed with attention to which type of outdoor activity generated which SEL outcomes.

Early Childhood SEL Development: Current Research

The evidence base for early childhood SEL interventions is robust. A meta-analysis by Durlak et al. (2011) of 213 school-based universal SEL programs found that participation was associated with an 11-percentile-point gain in academic achievement and significant improvements in social skills, attitudes toward school, and reductions in behavioral problems. More recent systematic reviews extend these findings: Mann et al. (2022), synthesizing 61 studies, reported that outdoor learning was associated with enhanced emotional regulation, improved mental health, and increased prosocial behavior. Ernst and Burcak (2019) documented links between early exposure to nature-based learning and long-term resilience and conflict-resolution skills.

Critically, however, the majority of this literature draws on studies from high-income, Western contexts, primarily North America, Scandinavia, and Western Europe. Methodological weaknesses in many cited studies compound this limitation: small, non-representative samples; cross-sectional designs that preclude causal inference; and reliance on educator self-report rather than behavioral observation (Kroufek et al., 2022). The few studies conducted in African contexts reveal a different picture, with structural factors, resource constraints, cultural norms around learning, educator training gaps, significantly moderating outcomes (Phatudi & Molefe, 2012; Nsamenang, 2006). This study contributes empirical data from a Nigerian context, enabling more contextually valid conclusions.

Outdoor Education and SEL: Existing Research and Geographic Gaps

International evidence consistently links outdoor educational experiences to positive SEL outcomes, though the mechanisms vary across contexts. Kuo et al. (2018) demonstrated that nature-based lessons in US schools generated higher levels of student engagement and prosocial behavior. Harun and Salamuddin (2014) found similar patterns in Malaysian contexts, reporting improvements in teamwork, leadership, and empathy following structured outdoor programs. Humberstone and Stan (2011) documented, in UK primary schools, that outdoor learning facilitated more authentic emotional expression and deeper peer relationships than classroom instruction.

Evidence from African and Global South contexts, while limited, points to both the promise and the contextual specificity of outdoor education. Phatudi and Molefe (2012) found that South African early childhood educators valued outdoor play as a vehicle for socialization but faced significant structural barriers to its consistent implementation, including inadequate facilities and insufficient professional development. Nsamenang (2006) argued that African developmental theories, emphasizing communal interdependence, participatory apprenticeship, and learning through social engagement, are fundamentally more compatible with outdoor, activity-based pedagogies than with Western didactic models. This theoretical alignment suggests that outdoor education may be particularly well-suited to African educational contexts, yet empirical research within these settings remains scarce. Joy (2023) offers the most proximate evidence from Nigeria, finding that outdoor classroom interventions positively influenced environmental awareness and engagement, though SEL outcomes were not systematically assessed.

Implications for Nigerian Educational Policy

Nigeria's early childhood education landscape presents both challenges and opportunities for outdoor SEL programming. Braimoh and Ohia (2011)

documented systemic underinvestment in experiential learning approaches across Nigerian public schools, citing policy inertia, inadequate infrastructure, and a culture of examination-focused pedagogy as primary obstacles. Ogundele (2018) noted that behavioral and emotional difficulties among Nigerian children are frequently unaddressed within school settings due to limited counselling services and educator training. Against this backdrop, outdoor education, particularly play-based forms requiring minimal resource investment, represents a potentially high-impact, low-cost mechanism for advancing SEL at scale.

3. Methodology

Research Design and Epistemological Positioning

This study adopts a convergent parallel mixed-methods design (Creswell & Plano Clark, 2018), in which quantitative and qualitative data strands are collected simultaneously, analyzed independently, and integrated at the interpretive stage. This design was selected because the research questions require both quantification of SEL behavior frequencies (addressed through observational data) and explanatory depth regarding educator perceptions and contextual mechanisms (addressed through interview data). The two strands converge to produce a more comprehensive account of outdoor education's role in SEL development than either could provide alone. Epistemologically, the study adopts a pragmatist orientation, prioritizing the research questions as the guide to methodological decisions rather than adhering to a single paradigmatic framework (Creswell & Plano Clark, 2018).

Sampling Procedures

Purposive sampling was employed to select 12 outdoor education programs across six Nigerian states, representing diverse geographic, socioeconomic, and institutional contexts. Inclusion criteria required that programs had: (a) been in continuous operation for a minimum of two years; (b) served children aged three to eight years; (c) incorporated dedicated outdoor learning time of at least 90 minutes per week; and (d) obtained formal institutional registration. Programs serving exclusively children with diagnosed developmental disabilities were excluded, as their distinct needs warranted separate investigation. These criteria yielded a theoretically meaningful and contextually varied sample.

A total of 45 early childhood educators working across the 12 programs were recruited via purposive sampling. This sample size was considered adequate on two grounds: for the quantitative strand, it exceeded the minimum required for chi-squared tests with the observed effect sizes (power = .80, alpha = .05); for the qualitative strand, thematic saturation was confirmed when no new themes emerged in the final four interviews (Guest et al., 2006). Educators provided written informed consent prior to participation.

Participant Demographics

Table 2 presents the demographic characteristics of the 45 educator participants. Participants were drawn from three professional roles: classroom teachers (n = 28), program coordinators (n = 12), and curriculum specialists (n = 5). Child participants observed across the 12 programs comprised approximately 480 children (mean = 40 per program), with an age range of 3–8 years. Gender distribution among observed children was approximately balanced across programs (approximately 51% female, 49% male, based on program records). No systematic demographic screening was applied to child participants, as the study focused on behavioral observation in naturalistic settings rather than individual-level child outcomes.

Table 2: Demographic Characteristics of Educator Participants (N = 45)

Role	N	Female (%)	Mean Years of Experience (SD)	Urban Setting (%)
Classroom Teachers	28	78.6%	6.2 (3.1)	60.7%
Program Coordinators	12	91.7%	9.8 (4.2)	75.0%
Curriculum Specialists	5	80.0%	11.4 (5.6)	40.0%
Total	45	82.2%	7.9 (3.9)	64.4%

Note. Urban/rural classification based on Nigerian National Population Commission (2006) designations.

Data Collection Instruments

Two primary instruments were used. First, a structured observational checklist was developed to assess five CASEL-aligned SEL behavior categories: self-awareness, self-management, social awareness, relationship skills, and responsible decision-making. Behavioral indicators for each category were operationalized based on the CASEL competency framework (Mann et al., 2022) and reviewed by two independent experts in early childhood SEL prior to fieldwork. Inter-rater reliability was established through a pilot phase in which two trained observers independently coded 15 randomly selected 30-minute observation sessions. A Cohen's kappa coefficient of .82 was obtained, indicating strong agreement (Landis & Koch, 1977). All subsequent observations were conducted by trained observers who had achieved kappa ≥ .75 during certification.

Second, semi-structured interviews were conducted with all 45 educators. The interview protocol was developed through iterative review with practitioners and academic peers. Three indicative questions from the protocol are provided below:

(1) How do you integrate outdoor learning into your daily program, and how frequently do children engage in outdoor activities?

(2) What specific changes in children's social or emotional behaviors have you observed during or after outdoor learning sessions?

(3) What barriers, if any, prevent you from implementing outdoor education more consistently, and how have you addressed them?

All interviews were audio-recorded with participant consent and transcribed verbatim. Transcripts were returned to 12 randomly selected participants for member checking to confirm accuracy and interpretive validity.

Data Analysis Procedures

Quantitative data from the observational checklists were analyzed using chi-squared tests of independence to determine whether the observed differences in SEL behavior frequencies between indoor and outdoor settings were statistically significant. An alpha level of .05 was adopted. Effect sizes were calculated using Cramér's V to

supplement significance testing with a measure of practical significance.

Qualitative interview data were analyzed using the six-phase thematic analysis framework described by Braun and Clarke (2006): (1) familiarization with the data through repeated reading; (2) systematic generation of initial codes; (3) searching for themes by grouping related codes; (4) reviewing and refining candidate themes against the data corpus; (5) defining and naming finalized themes; and (6) producing the analytic report. Coding was conducted independently by two researchers, with disagreements resolved through discussion. Peer debriefing sessions were held fortnightly throughout analysis. Trustworthiness was further enhanced through thick description of contexts and participant perspectives, enabling readers to assess transferability.

Ethical Considerations

Ethical approval was obtained from the institutional review board prior to data collection. Written informed consent was obtained from all educator participants, and from parents or guardians of child participants. All participants were informed of their right to withdraw at any time without consequence. Participant anonymity was maintained through the use of numerical identifiers. Observational procedures were designed to minimize disruption to children's natural outdoor experiences.

4. Findings and Discussion

Key Mechanisms Through Which Outdoor Settings Promote SEL

Observational and interview data converged to identify four key mechanisms through which outdoor settings facilitated SEL development among the children observed. These are described below and summarized in Table 3. For each mechanism, a distinction is drawn between behaviors directly observed in the data and the interpretive inferences derived from theoretical analysis.

Table 3: Mechanisms Linking Outdoor Education to SEL Outcomes: Evidence Summary

Mechanism	CASEL Competency	Evidence Type	Prevalence	Theoretical Basis
Unstructured peer play	Self-awareness, social awareness	Observational + interview	Observed in all 12 programs	Bandura (modelling); Bronfenbrenner (microsystem)
Sensory environmental engagement	Self-management (emotional regulation)	Observational	Observed in 9 of 12 programs	Bronfenbrenner (microsystem); Attention Restoration Theory

Mechanism	CASEL Competency	Evidence Type	Prevalence	Theoretical Basis
Peer negotiation and conflict resolution	Relationship skills, social awareness	Observational + interview	Observed in 10 of 12 programs	Bandura (modelling); CASEL relationship skills
Risk assessment activities	Responsible decision-making, self-management	Observational	Observed in 8 of 12 programs	CASEL; Bronfenbrenner (microsystem activation)

Note. 'Observed' refers to documented behavioral instances in the structured observational checklist. Theoretical basis refers to the framework used to interpret each mechanism. CASEL = Collaborative for Academic, Social, and Emotional Learning.

Unstructured peer play was the most ubiquitous mechanism, observed in all 12 programs. Observationally, children in unstructured outdoor settings were recorded engaging in higher frequencies of spontaneous cooperative behavior, role negotiation, and peer communication than in equivalent indoor observations. The theoretical interpretation, that unstructured play creates conditions for Bandura's observational learning processes, is supported by but not directly evidenced in the observational data; it represents an inferential connection between behavioral patterns and theoretical mechanisms.

Sensory environmental engagement, observed in nine of the twelve programs, was associated with reduced rates of disruptive behavior. Outdoor settings featuring varied natural textures, sounds, and visual stimulation appeared, based on observational data, to capture children's sustained attention and reduce the dysregulatory behaviors more frequently recorded indoors. This finding is consistent with Kaplan and Kaplan's (1989) Attention Restoration Theory, which holds that natural environments restore directed attention capacity, thereby supporting self-regulatory behavior. However, the observational design of this study does not permit causal attribution.

Quantitative Results from Observational Data

Across 120 hours of structured observation, chi-squared analyses revealed statistically significant differences in all five CASEL SEL behavior categories between indoor and outdoor settings (see Table 4). Children in outdoor settings exhibited consistently higher rates of positive SEL behaviors across all competency domains.

Table 4: Chi-Squared Test Results for CASEL SEL Behavior Frequencies: Indoor vs. Outdoor Settings

SEL Behavior Category	Indoor Setting (%)	Outdoor Setting (%)	χ^2 value	p-value	Significance
Self-awareness	37.2	58.6	8.76	.003	**
Self-management	42.1	63.9	9.41	.002	**
Social awareness	45.3	67.8	10.22	.001	***
Relationship skills	51.7	72.4	7.95	.004	**
Responsible decision-making	39.8	59.1	6.82	.009	**
Overall SEL behaviors	43.2	64.4	11.35	<.001	***

*Note. ** p < .01, *** p < .001. Percentages represent the proportion of observed interaction intervals coded as demonstrating the named SEL behavior. Differences are statistically derived via chi-squared test of independence; effect sizes (Cramér's V) ranged from .18 to .26, indicating small to moderate practical significance.*

The most pronounced between-setting difference was observed for social awareness (χ^2 = 10.22, p = .001), with outdoor settings associated with a 22.5-percentage-point increase in socially aware behaviors. Cooperative behaviors, such as sharing, turn-taking, and collaborative problem-solving, were recorded at 45% of observed intervals outdoors compared with 25% indoors. Positive emotional expressions, defined operationally as laughter, verbal affirmations, and expressed enthusiasm, occurred in 60% of outdoor intervals versus 30% indoors. Disruptive behaviors were recorded at 10% of outdoor intervals compared with 30% indoors. These differences are statistically significant; however, given the cross-sectional observational design, directional causality cannot be established. It is plausible, for instance, that children who engage more prosocially are selectively

more likely to be placed in outdoor learning contexts by educators.

Qualitative Themes from Educator Interviews

Thematic analysis of the 45 educator interviews yielded four themes, selected on the basis of both frequency (number of participants raising the issue) and salience (theoretical and analytical significance to the study's research questions). Table 5 presents the themes with illustrative quotations and their linkages to CSEL competencies.

Table 5: Summary of Qualitative Themes from Educator Interviews (N = 45)

Theme	Description	Frequency	CASEL Competency	Illustrative Quote
1. Uninhibited emotional expression	Outdoor environments enable freer, more authentic emotional expression than indoor settings	38/45 (84%)	Self-awareness, self-management	"Outdoors, they can run, shout, and be themselves without inhibition."
2. Risk-taking and independence	Engagement with physical challenge in outdoor settings promotes self-confidence, resilience, and autonomous decision-making	35/45 (78%)	Responsible decision-making, self-management	"When children experience the thrill of climbing and then feel that success, it's not just fun; it's a huge confidence boost."

Theme	Description	Frequency	CASEL Competency	Illustrative Quote
3. Peer relationships and empathy	Outdoor settings foster peer negotiation, conflict resolution, and empathy through collaborative play	41/45 (91%)	Relationship skills, social awareness	"I've witnessed children resolving conflicts more effectively outdoors; they talk it out more compared to the classroom."
4. Barriers to implementation	Resource limitations, safety concerns, and limited training impede consistent outdoor SEL programming	33/45 (73%)	N/A (contextual)	Educators expressed desire for professional development focused on outdoor pedagogy.

Note. Frequency counts indicate number of participants who raised the theme independently, without explicit prompting. Themes were finalized through consensus between two independent coders following Braun & Clarke (2006).

Theme 1, uninhibited emotional expression, was the most frequently endorsed theme, raised by 38 of 45 participants (84%). Educators consistently described outdoor settings as liberating children from the behavioral constraints of classroom environments. The quote, "Outdoors, they can run, shout, and be themselves without inhibition",

encapsulates a perception shared widely across contexts, urban and rural, among teachers and coordinators alike. Analytically, this pattern is consistent with both Bandura's theory (authentic emotional contexts enhance attention and retention of social learning) and Bronfenbrenner's microsystem framework (the physical environment constitutes an active developmental context). It also aligns with the observational finding of significantly elevated positive emotional expression outdoors, lending convergent validity to the theme.

Theme 2, risk-taking and independence, was endorsed by 78% of participants and was most prominently raised by educators in programs featuring structured outdoor activities such as climbing structures and uneven terrain navigation. The quote regarding climbing underscores how physical achievement mediates psychosocial development. This maps specifically to the CASEL competencies of responsible decision-making (evaluating risks) and self-management (persisting through challenge). It is noteworthy that this theme was less frequently raised in urban programs with limited access to natural terrain, suggesting that environmental context moderates the mechanism.

Theme 3, peer relationships and empathy, was the most universally endorsed theme (91%). The representative quote, "I've witnessed children resolving conflicts more effectively outdoors; they talk it out more compared to the classroom", points to a shift in communication register that educators attributed to the reduced surveillance and greater autonomy of outdoor settings. This interpretation is analytically plausible but cannot be confirmed from observational data alone; educator perception is itself a form of evidence, not a direct observation of communication register.

Theme 4, barriers to implementation, was raised by 73% of participants and warrants emphasis. Across both urban and rural programs, educators identified limited training, inadequate facilities, and safety concerns as impediments to more frequent outdoor learning. This finding contextualizes the quantitative results: the positive SEL outcomes documented in this study may reflect programs that have overcome these barriers, rather than representing typical Nigerian early childhood settings.

Comparative Analysis of Indoor and Outdoor Learning Environments

Statistically derived comparisons between indoor and outdoor settings revealed consistent advantages of outdoor contexts across all five CASEL domains (see Table 4). Children in outdoor settings demonstrated 30% higher physical activity rates on average, a difference that was associated with reduced disruptive behavior and increased positive effect. Within the CASEL framework, this physical activity differential is most directly relevant to self-management: research indicates that physical activity facilitates dopaminergic and serotonergic regulation, contributing to improved emotional regulation (Brussoni et al., 2022). The observational data support this link, with self-management behaviors significantly more frequent outdoors (63.9% vs. 42.1%, $\chi^2 = 9.41$, $p = .002$).

Peer interaction quality also differed significantly by setting. Positive peer interaction intervals were recorded at twice the rate in outdoor settings (72.4% vs. 51.7% for relationship skills), a finding consistent with Harun and Salamuddin (2014), who documented similar patterns in Malaysian contexts. It is worth noting, however, that the indoor comparison data in this study were collected in the same programs during classroom sessions, not in separate schools. This within-program comparison controls program-level

confounds but does not control for time-of-day or activity-type effects.

Illustrative Vignettes of SEL Development in Outdoor Contexts

The following two vignettes were selected from the observational corpus to illustrate the qualitative texture of outdoor SEL processes. Selection criteria were purposive: Vignette 1 was chosen to illustrate the relationship skills and responsible decision-making mechanisms identified in Table 3; Vignette 2 was selected to exemplify social awareness and self-management. These vignettes are offered as illustration, not as generalizable evidence.

Vignette 1: Collaborative Construction. A group of six children aged five to six years was observed building a structure from branches and leaves in the program's outdoor area. The activity, which was unplanned and child-initiated, required the children to negotiate roles (who gathered materials, who assembled the structure), resolve disagreements about design, and cooperate to maintain structural stability. Over a 25-minute observation period, seven instances of explicit role negotiation were recorded, and two peer conflicts were independently resolved without adult intervention. This vignette illustrates CASEL relationship skills (collaborative work, communication) and responsible decision-making (evaluating structural solutions and their consequences).

Vignette 2: Rule Negotiation in Play. During a game of tag in an open outdoor area, a group of eight children aged six to seven years spontaneously renegotiated the game's rules after a disagreement about tagging boundaries. The negotiation involved four children taking turns to propose rule modifications, with the group reaching consensus within three minutes. Two children who initially withdrew from the disagreement re-engaged after peers solicited their views. This vignette illustrates CASEL social awareness (perspective-taking, attending to peers' viewpoints) and self-management (regulating frustration and returning to cooperative engagement).

Children with Behavioral Regulation Challenges

Educators across programs were asked to identify children whom they considered exhibiting behavioral regulation challenges, defined in this study as children scoring in the borderline or abnormal range on the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997), as assessed by their class teacher in the month prior to data collection. Seventeen children across the 12 programs met this criterion (approximately 3.5% of the total observed population). Educators were asked to comment specifically on their observations of these children in outdoor versus indoor settings.

Educators in 10 of the 12 programs reported observing more positive social engagement among SDQ-identified children during outdoor sessions than during equivalent indoor sessions. One educator described a child who consistently withdrew during classroom activities but took on a leadership role during outdoor group play. These observations are consistent with the broader outdoor vs. indoor comparison data. However, given the small subsample size (n = 17), the retrospective identification method, and the absence of pre-post measurement, these findings are explicitly exploratory and should not be interpreted as evidence of a therapeutic effect of outdoor education for children with behavioral regulation challenges. Targeted longitudinal research with this population is warranted before policy recommendations can be made.

Discussion

Interpreting the Evidence: Outdoor Education as SEL Catalyst

This study's convergent findings, statistically significant between-setting differences in all five CASEL domains, supported by educator perceptions across three independently endorsed qualitative themes, constitute the most systematic mixed-methods evidence to date of outdoor education's association with SEL development in a Nigerian context. The pattern of findings is theoretically coherent: the integrated CASEL-Bronfenbrenner-Bandura framework proposed in Table 1 provides a principled explanation for why outdoor settings, in contrast to classroom environments, should generate conditions conducive to SEL.

Bronfenbrenner's framework is particularly useful here. Outdoor settings activate multiple ecological layers simultaneously, peer group interactions (microsystem), school-community linkages (mesosystem), and locally available natural environments shaped by economic conditions (exosystem), in ways that classroom instruction typically does not. This multi-layer activation may explain not only why positive SEL behaviors are more frequent outdoors, but also why the effects appear particularly pronounced for social awareness and relationship skills: these competencies depend on complex, multi-party social interactions that bounded outdoor spaces facilitate more readily than teacher-led classroom activities.

The Attention Restoration Theory (Kaplan & Kaplan, 1989) provides an additional, non-mutually-exclusive explanation for the observed reductions in disruptive behavior outdoors. Natural environments are hypothesized to restore involuntary attentional capacity depleted by the demands of directed indoor attention, thereby reducing the behavioral dysregulation associated with attentional fatigue. This theoretical account is consistent with the observational pattern but cannot be directly confirmed from the study's data. The observational design permits documentation of behavioral differences; it does not permit identification of the psychological mechanisms producing them.

An alternative explanation for the observed between-setting differences deserves consideration. It is possible that selection effects partially account for the pattern: educators in this study's sample were self-selected into programs with outdoor learning components, which may mean that children whose behavioral profiles are more conducive to outdoor expression are disproportionately enrolled. The within-program, within-child design of the observational comparisons partially mitigates this concern, but cannot eliminate it. Future experimental or quasi-experimental designs are needed to establish causal claims.

Contextual Factors: The Nigerian Educational Landscape

The barriers theme that emerged from educator interviews, cited by 73% of participants, provides important contextual qualification for the quantitative findings. The programs sampled in this study represent a self-selected group that has, to varying degrees, overcome the systemic obstacles to outdoor learning. The positive SEL outcomes documented here may not be representative of the broader Nigerian early childhood sector, where resource constraints, safety concerns, and training gaps remain prevalent (Braimoh & Ohia, 2011; Ogundele, 2018). Generalization from this study's sample to the Nigerian early childhood sector as a whole is not warranted.

Equally important is the finding that the Ubuntu-inflected communalism characteristic of Nigerian social culture, theorized by Nsamenang (2006) as foundational to African child development, appears compatible with, and potentially amplifying of, the social learning processes

observed in outdoor settings. Children in the observed programs demonstrated a readiness for cooperative negotiation and peer leadership in outdoor contexts that educators attributed partly to the cultural value placed on collective social engagement. This cultural alignment is a potential asset for outdoor SEL implementation in Nigerian schools that has not been systematically theorized in the international literature.

Limitations

Several limitations should be acknowledged. First, the cross-sectional observational design cannot establish causal relationships between outdoor education participation and SEL development. Longitudinal designs tracking individual children's SEL trajectories over sustained periods of outdoor education exposure are needed. Second, the purposive sample, while informative, is not representative of Nigerian early childhood programs nationally. Programs that had implemented outdoor education sufficiently to meet inclusion criteria are likely better resourced and led than average. Third, observational data were collected at the program level rather than the individual child level, precluding child-level inferential analysis. Fourth, the SDQ-based identification of children with behavioral regulation challenges was conducted retrospectively and by single informants; multi-informant, prospectively designed studies are needed to robustly examine this subgroup.

5. Recommendation and Conclusion

Practical Recommendations

Short-Term Recommendations (0–2 Years)

The following recommendations are actionable within existing resource constraints and can be implemented without major curriculum reform.

First, school administrators should commit to a minimum of 90 minutes of outdoor learning per week, across both structured and unstructured formats. This recommendation is directly supported by the finding that positive SEL behaviors were observed in all 12 programs that met the 90-minute threshold for inclusion, the strongest programmatic evidence from this study that threshold outdoor exposure is associated with detectable SEL benefits.

Second, educators should receive basic training in the use of the Strengths and Difficulties Questionnaire (SDQ) to identify children with behavioral regulation challenges. This recommendation is aligned with the study's finding that SDQ-identified children showed observable social engagement differences across settings, and with the broader evidence that early identification enables earlier support (Ogundele, 2018). SDQ training can be delivered cost-effectively within existing teacher professional development structures.

Third, school-level outdoor learning coordinators should be designated, a low-cost structural change that the program coordinator demographic data (Table 2) suggests is feasible within existing staffing models.

Long-Term Recommendations (3–5 Years)

The following recommendations require systemic investment and policy commitment but are warranted by the strength of the evidence.

First, curriculum reform should embed outdoor learning objectives explicitly within early childhood education standards. The quantitative evidence that all five CASEL competencies were significantly higher in outdoor settings across all 12 programs provides a robust empirical foundation for this recommendation. Curriculum reform should specify minimum outdoor learning time, designate SEL competency targets

for outdoor activities, and align assessment frameworks accordingly.

Second, state-level governments should establish regional outdoor learning resource centers to provide training, materials, and professional development support for early childhood educators. The barriers theme, endorsed by 73% of participants, identified training deficits as the primary impediment to outdoor SEL implementation. Centralizing support infrastructure addresses this barrier more efficiently than school-by-school capacity building.

Third, community partnerships between schools, local governments, and civil society organizations should be facilitated to develop and maintain safe outdoor learning environments. This recommendation is supported by the ecological framework: mesosystem activation, linking school and community resources, is a theoretically grounded mechanism for sustaining outdoor SEL programming beyond the boundaries of individual school capacity.

Conclusion

This study makes three contributions to the early childhood SEL literature. First, it provides what is, to the authors' knowledge, the first convergent mixed-methods evidence from Nigeria documenting statistically significant associations between outdoor education participation and CASEL-defined SEL outcomes across a multiprogram sample. The consistency of findings across all five CASEL competencies, corroborated by independent qualitative evidence from educator interviews, strengthens confidence in the association despite the study's cross-sectional limitations.

Second, the study proposes and empirically illustrates an integrated CASEL-Bronfenbrenner-Bandura conceptual framework that explains outdoor education's mediational role in SEL development within the specific socio-cultural and institutional context of Nigerian early childhood education. This framework extends existing theoretical accounts by foregrounding the ecological compatibility between outdoor, community-linked learning environments and Ubuntu-inflected communalism, an alignment that warrants further theoretical development and empirical examination.

Third, the study provides a concrete, tiered implementation framework for outdoor SEL programming that is calibrated to the resource realities of Nigerian schools, distinguishing between immediately actionable short-term recommendations and longer-term systemic investments. Taken together, these contributions suggest that outdoor education represents not merely an enrichment activity but a potentially transformative pedagogical approach with measurable implications for social-emotional development in early childhood. Future longitudinal research, experimental designs, and broader sampling across Nigerian states will be essential to consolidate and extend these initial findings.

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