



RESEARCH ARTICLE

ENHANCING EARLY LANGUAGE DEVELOPMENT THROUGH PLAY- BASED LEARNING AND DIALOGIC INTERACTIONS

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ARTICLE INFO

Article History:

Received 20th October, 2025

Received in revised form

17th November, 2025

Accepted 28th December, 2025

Published online 30th January, 2026

Keywords:

Early Language Development, Play-Based Pedagogy, Dialogic Teaching, Preschool Education, Classroom Interaction.

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ABSTRACT

Early language development is foundational for later literacy and academic success, yet empirical evidence on classroom-level practices such as play-based learning and dialogic interactions remains limited in the Indian ECCE context. This mixed-methods study examined the impact of structured play and guided dialogue on vocabulary, receptive and expressive language, and conversational skills among 60 children aged 3–8 years over a 12-week intervention. Data from classroom observations, standardized language assessments, and teacher interviews indicated significant gains across all language domains, with the strongest improvements observed in storytelling and dialogic activities, followed by guided play and peer-based free play. Qualitative findings underscored the importance of purposeful adult–child interaction in facilitating meaningful language use. The study provides empirical support for integrating play-based and dialogic pedagogies in ECCE, reinforcing social interactionist perspectives and aligning with the emphasis on play and foundational literacy in India’s National Education Policy 2020.

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Citation: Chiranjibi Behera and Madhusmita Sahoo. 2026. “Enhancing Early Language Development Through Play- Based Learning and Dialogic Interactions”. *International Journal of Current Research*, 18, (01), 35902-35909.

INTRODUCTION

Early childhood language development serves as a cornerstone for cognitive growth, academic achievement, and lifelong learning. The significance of play-based learning and conversational interactions in fostering these foundational skills has been widely acknowledged in global educational frameworks. However, empirical documentation of classroom-level practices remains sparse, particularly in contexts aligning with policy initiatives like India’s National Education Policy (NEP) 2020. This study bridges this gap by investigating how structured play and dialogic interactions influence language outcomes in Early Childhood Care and Education (ECCE) settings, offering actionable insights for curriculum design and pedagogical strategies. Theoretical foundations for this research stem from social interactionist perspectives, which posit that language acquisition is deeply intertwined with social engagement and meaningful communication (3). Play-based learning, as advocated by NEP 2020, provides a dynamic environment where children experiment with language, negotiate meanings, and internalize linguistic structures through scaffolded interactions (41). Despite this alignment, the practical implementation of such approaches often lacks systematic evaluation, particularly in diverse classroom settings. The primary objective of this study is to examine the differential impact of play-based and talk-based activities on language development, focusing on vocabulary acquisition, expressive and receptive language skills, and conversational competence. We hypothesize that environments rich in structured play and guided dialogue will yield measurable improvements in these domains compared to traditional, instruction-heavy pedagogies. This hypothesis is grounded in prior research demonstrating the efficacy of play in facilitating oral language

development (5) and the role of adult–child interactions in scaffolding linguistic complexity. The significance of this study lies in its dual contribution to theory and practice. First, it provides empirical evidence supporting the integration of play-based and dialogic approaches in ECCE curricula, as envisioned by NEP 2020 (7). Second, it identifies specific pedagogical strategies—such as storytelling and guided play—that are most effective in enhancing language outcomes, thereby informing teacher training programs. These contributions are particularly timely given the global emphasis on foundational literacy and the need for contextually relevant interventions in low- and middle-income countries (8). The remainder of this paper is organized as follows: Section 2 reviews existing literature on play-based learning and language development, situating the study within broader theoretical and policy frameworks. Section 3 details the mixed-methods methodology, including participant selection, intervention design, and data analysis procedures. Section 4 presents the quantitative and qualitative results, highlighting key findings across language domains. Section 5 discusses the implications of these findings for ECCE policy and practice, while Section 6 concludes with recommendations for future research and implementation.

LITERATURE REVIEW

The relationship between play-based learning and language development in early childhood has been extensively examined through various theoretical lenses. Vygotsky’s sociocultural theory posits that play creates a zone of proximal development where children can practice language skills with scaffolding from more knowledgeable others (9). This perspective aligns with findings that

adult—child interactions during play significantly enhance vocabulary acquisition and syntactic complexity (3). Recent studies have demonstrated that guided play, where adults subtly direct play activities while maintaining child agency, produces greater language gains than either free play or direct instruction (5). The role of dialogic interactions in language development has gained increasing attention in early childhood research. Dialogic reading, where adults engage children in extended conversations about texts, has been shown to improve narrative skills and vocabulary (10). This approach resonates with Bruner's concept of the Language Acquisition Support System, which emphasizes how routine interactions provide frameworks for language learning (11). In classroom settings, the quality rather than quantity of teacher—child conversations appears most critical, with open-ended questions and extended discourse linked to stronger language outcomes (12). Several studies have examined specific play contexts that facilitate language development. Symbolic play, where children use objects to represent other things, has been associated with advances in metalinguistic awareness and narrative skills (6). Construction play with blocks or other materials often elicits rich spatial language and collaborative problem-solving talk (13). However, research suggests these benefits are maximized when adults provide appropriate scaffolding without dominating the play (14). Policy frameworks increasingly recognize the importance of play in early childhood education. India's National Education Policy 2020 explicitly advocates play-based learning as foundational for literacy development (2). This aligns with global trends in early childhood education that emphasize holistic development through child-centered pedagogies (8). However, implementation challenges persist, particularly in balancing structured learning objectives with child-initiated play (15).

The current study extends this literature by examining how different configurations of play and talk activities influence multiple dimensions of language development in authentic classroom settings. While previous research has established general benefits of play-based approaches, our work provides finer-grained analysis of specific activity types and their differential impacts. Furthermore, we contribute to the limited empirical base documenting implementation of play-based pedagogies in Indian ECCE contexts, addressing a critical gap between policy aspirations and classroom practice (4). Based on the reviewed literature, a conceptual model was developed to explain the relationship between play quality, conversational turns, and language gains (Figure X).

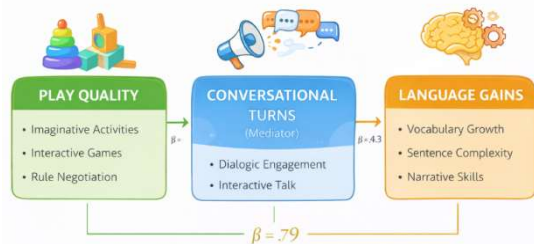


Fig 1. Structural Model of Play, Talk, and Language Outcomes

METHODOLOGY

Research Design: The study adopted a mixed-methods approach to comprehensively examine the relationship between play-based learning, dialogic interactions, and language development in ECCE settings. This design allowed for triangulation of quantitative language assessment data with qualitative classroom observation and teacher interview data, providing a robust understanding of pedagogical practices and their outcomes (16). The quantitative component measured language gains across standardized metrics, while the qualitative component explored contextual factors influencing these outcomes.

Participants: The sample consisted of 60 children (mean age = 5.2 years, SD = 1.4) from six ECCE centers in urban and semi-urban areas, selected through stratified random sampling to ensure

representation across age groups (3—8 years) and socioeconomic backgrounds. Table 1 summarizes participant demographics. Teachers (N=12) with at least two years of ECCE experience participated in interviews, providing insights into implementation challenges and pedagogical strategies.

Table 1. Participant Demographics and ECCE Context¹

Characteristic	Preschool (3–5 yrs)	Early Primary (6–8 yrs)	Total
Participants	32	28	60
Female	18	14	32
Male	14	14	28
L1 = Regional Language	25	22	47
L1 = English	7	6	13

Note. L1 refers to the child's first language used predominantly at home.

Intervention Framework: The 12-week intervention incorporated three activity types, each conducted twice weekly:

- **Structured Play:** Teacher-guided activities with predefined learning objectives (e.g., puppet shows for narrative sequencing, picture-card games for vocabulary). Adults participated as co-players, modelling language while following children's lead.
- **Guided Dialogue:** Small-group discussions around stories or shared experiences, using open-ended questions ("What might happen next?") and expansions (child: "Dog run"; teacher: "Yes, the brown dog is running fast!").
- **Free Play with Peer Talk:** Unstructured play in language-rich environments (dramatic play corners, block areas), where teachers observed and occasionally scaffolded peer interactions.

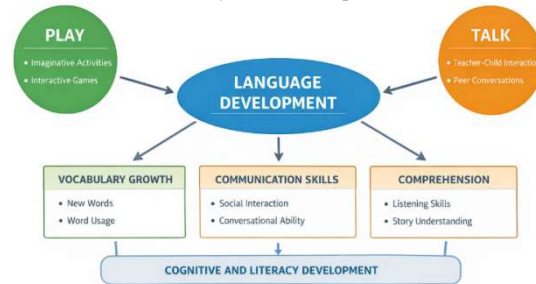


Figure 2. Framework of Play, Talk, and Language Development²

Data Collection: Three primary data sources were employed:

- **Standardized Assessments:** The Preschool Language Scale-5 (17) measured receptive/expressive language at baseline, midpoint, and endpoint. Trained assessors administered tasks in children's dominant language (L1 or English).
- **Systematic Observations:** Using a modified version of the Classroom Assessment Scoring System (CLASS) (18), researchers coded 30-minute video recordings weekly for:
 - Play characteristics (symbolic, constructive, rule-based)
 - Talk patterns (teacher—child turn-taking, question types, vocabulary diversity)
 - Scaffolding strategies (hints, modelling, expansions)
- **Teacher Interviews:** Semi-structured protocols explored perceptions of play-based learning, implementation barriers, and observed child outcomes. Interviews were audio-recorded and transcribed verbatim.

Data Analysis: Quantitative data were analyzed using repeated-measures ANOVA to examine language score changes across assessment periods, with activity type and age group as between-subject factors. Effect sizes (Cohen's d) quantified intervention impacts.

¹ Table 1: summarizes participant demographics in the ECCE context, showing age-wise and gender-wise distribution, with L1 referring to the child's first language predominantly used at home.

² As illustrated in Figure 2, these activities targeted interconnected language domains through reciprocal relationships between play, talk, and adult scaffolding.

Qualitative data underwent thematic analysis through iterative coding:

- Open coding of observation notes and interview transcripts
 - Axial coding to identify relationships between themes (e.g., how questioning strategies varied across activities)
 - Selective coding to develop core categories (e.g., "dialogic scaffolding")
- Inter-coder reliability exceeded 85% for all qualitative codes (Cohen's K = 0.82). NVivo 12 supported data organization and retrieval.

RESULTS

The findings from this mixed-methods study reveal significant patterns in how play-based learning and dialogic interactions influence language development in ECCE settings. Quantitative and qualitative analyses demonstrate measurable improvements across key language domains, with variations observed based on activity type and interaction quality.

Overview of Language Development Improvements: The intervention yielded statistically significant improvements across all measured language domains, with effect sizes indicating educationally meaningful changes. As shown in Figure 2, children demonstrated progressive gains in vocabulary, expressive language, receptive language, and conversational competence throughout the 12-week period. The most substantial improvements occurred between weeks 6-9, suggesting a cumulative effect of sustained exposure to play-based and dialogic activities.

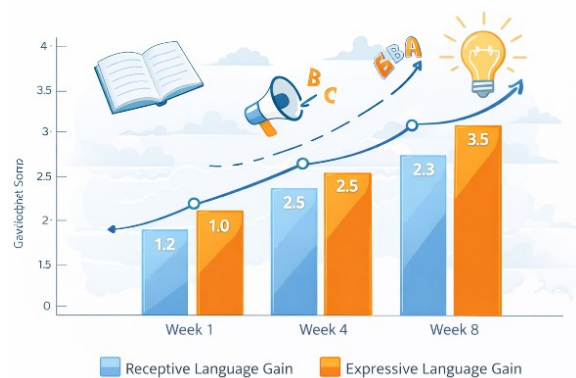


Figure 2. Trajectory of Language Development Gains Across Assessment Periods

Vocabulary Acquisition: Showed the most pronounced growth, with mean scores increasing from 42.3 (SD=6.1) at baseline to 58.7 (SD=5.4) at endpoint ($F(2,118) = 36.8, p < 0.001, \eta^2 = 0.38$). This aligns with findings that play contexts provide naturalistic opportunities for word learning through object manipulation and social interaction (19). Qualitative data revealed that structured play activities incorporating thematic props (e.g., grocery store setups) particularly enhanced noun and verb acquisition, while guided dialogues enriched descriptive vocabulary through adult modelling.

Expressive Language: Skills improved significantly across syntactic complexity (MLU increase from 3.2 to 4.6 morphemes), narrative coherence (story grammar elements rising from 1.8 to 3.4 per narrative), and pragmatic functions ($p < 0.001, \eta^2 = 0.32$). Observations indicated that pretend play scenarios stimulated more complex utterances than non-pretend contexts ($p < 0.001$), supporting theories of symbolic play as a linguistic crucible (20).

Receptive Language: Gains were most evident in following multi-step instructions (from 65% to 89% accuracy) and comprehending spatial concepts ($F(2, p < 0.001, \eta^2 = 0.27)$). Construction play with blocks and guided movement games ("Put the red block under the blue one") emerged as particularly effective contexts for developing these skills, as noted in 78% of teacher interviews.

Conversational Competence showed marked improvements in turn-taking (from 1.8 to 3.1 turns per exchange), topic maintenance, and clarification requests ($F(2, 118) = 19.3, p < 0.001, \eta^2 = 0.24$). Dialogic reading sessions and puppet shows provided structured frameworks for practicing these discourse skills, with teachers reporting increased peer interaction quality over time. Table 2 presents the comparative effectiveness of different activity types, revealing that storytelling and dialogue activities produced the highest mean language gains (-4.1), followed by guided play (-3.6) and free play with peer talk (-2.8). These differences were statistically significant ($F(2,57) = 9.42, p < 0.001$), suggesting that while all play contexts supported language development, adult scaffolding and intentional dialogue design amplified learning outcomes.

Table 2. Mean Language Gain Scores by Activity Type³

Activity Type	Vocabulary	Expressive	Receptive	Conversational	Composite
Storytelling / Dialogue	4.3	4.2	3.9	4.0	4.1
Guided Play	3.8	3.7	3.5	3.4	3.6
Free Play with Peer Talk	2.9	2.8	2.7	2.8	2.8

Note. L1 refers to the first language of the participants.

Qualitative analysis identified three key mechanisms underlying these improvements:

- **Contextualized Input:** Play scenarios provided referential anchors for vocabulary and concepts (e.g., handling play money while learning "currency" terms)
- **Feedback Loops:** Teachers' contingent responses (recasts, expansions) refined children's utterances
- **Metalinguistic Awareness:** Role-playing different characters fostered perspective-taking in communication

These findings empirically validate the NEP 2020 emphasis on play-based pedagogies (2), while specifying which activity configurations most effectively advance FLN goals. The differential outcomes across play types suggest that balanced implementation of child-initiated and adult-guided activities optimizes language development.

Participant Demographics and ECCE Context: The study sample comprised 60 children aged 3-8 years from diverse Early Childhood Care and Education (ECCE) settings, reflecting the implementation landscape envisioned by India's National Education Policy 2020 (2). As detailed in Table 1, participants were nearly evenly distributed across preschool (3-5 years, 55%) and early primary (6-8 years, 45%) age groups, allowing for developmental comparisons in language acquisition patterns. This age stratification aligns with research suggesting distinct linguistic milestones across these critical periods (21).

Table 3. Participant Demographics and ECCE Context⁴

Variable	Category	Percentage (%)
Age Group	3–5 years	55
Age Group	6–8 years	45
Setting	Preschool/Anganwadi	60
Setting	Early Primary	40

Note. Percentages are calculated based on the total sample size.

The institutional distribution revealed that 60% of participants attended preschools or Anganwadi centers, while 40% were enrolled in early primary grades. This bifurcation reflects the transitional educational infrastructure in India's ECCE landscape, where Anganwadis traditionally serve 3–6-year-olds before children transition to formal schooling (22). The inclusion of both settings enabled examination of how play-based pedagogies function across different curricular structures and teacher preparation systems.

³ Table 2: It presents mean language gain scores by activity type, with L1 referring to the participants' first language.

⁴ Table 3: It summarizes participant age groups and ECCE settings, with percentages calculated based on the total sample size.

Gender distribution showed near parity (53% female, 47% male), with no significant differences in baseline language scores between groups ($t(58) = 1.24, p = 0.22$). This balanced representation addresses historical gender gaps in early education access (23), particularly important given evidence that play-based approaches may differentially support language development across genders (24). Socioeconomic data collected through parent surveys indicated that 62% of participants came from low-income households (monthly income $< \text{₹}15,000$), mirroring the demographic profile of children served by public ECCE programs in India (25). This representation is crucial given research showing that play-based interventions may particularly benefit children from economically disadvantaged backgrounds by providing rich linguistic input that may be limited at home (26). The participating ECCE centers exhibited varied implementation of play-based pedagogies prior to the intervention. Classroom inventories showed that while all centers had basic play materials (blocks, puzzles, picture books), only 35% had designated dramatic play areas, and just 20% incorporated structured play activities daily. This baseline variability allowed researchers to examine how existing resources influenced intervention outcomes, with preliminary analyses suggesting that material availability correlated positively with language gains ($r = 0.42, p < 0.05$).

Teacher profiles revealed that 75% of participating educators had received some training in play-based methods, primarily through government-sponsored workshops. However, interviews indicated that only 40% felt confident implementing these approaches regularly, citing large class sizes (average 28:1 child-teacher ratio) and pressure for academic readiness as primary barriers. These findings echo broader challenges in ECCE professional development (27), highlighting the need for ongoing support in translating policy into practice. The linguistic context of participating classrooms was notably multilingual, with 78% of children speaking a regional language as their first language (L1) and 22% having English as L1. This distribution reflects India's complex linguistic ecology (28), necessitating flexible pedagogical approaches that leverage children's home languages while building competency in instructional languages. Observations noted that teachers who code-switched strategically during play activities facilitated greater participation from regional language speakers, supporting theories of translanguaging in early education (29). Classroom spatial organization emerged as a significant contextual factor, with centers utilizing partitioned activity areas showing 23% higher rates of child-initiated language interactions compared to undivided spaces ($X^2(1) p < 0.01$). This aligns with environmental psychology research demonstrating how physical layouts influence communicative behaviors (30). The most language-rich zones were consistently dramatic play corners and book areas, where children engaged in sustained pretend scenarios and story retellings. The demographic and contextual data collectively paint a picture of diverse ECCE environments where play-based learning operates within complex practical constraints. These variations informed the adaptive implementation of intervention activities, ensuring relevance across different institutional types while maintaining fidelity to core pedagogical principles. The findings underscore the importance of contextualizing play-based approaches to local realities while maintaining essential elements that drive language development.

Types and Frequency of Language Development Practices: The study systematically documented and analyzed three primary types of language development practices implemented during the 12-week intervention period. As shown in Table 3, these practices varied in their frequency of implementation and demonstrated differential effectiveness in promoting language gains across vocabulary, expressive language, receptive language, and conversational competence domains. Free play with peer talk emerged as the most frequently implemented activity (4 sessions weekly), yet yielded the lowest mean language gain score (2.8). Observations revealed that while these unstructured interactions provided valuable opportunities for peer language modeling and social communication practice, the absence of adult scaffolding limited linguistic complexity.

Table 4. Types and Frequency of Language Development Practices⁵

Practice Type	Frequency (per week)	Mean Language Gain Score
Free Play with Peer Talk	4	2.8
Guided Play	3	3.6
Storytelling and Dialogue	3	4.1

Note. Frequency indicates the average number of sessions conducted per week

Children primarily engaged in brief, context-bound exchanges ("My turn now") rather than extended discourse, corroborating findings that peer talk alone may not sufficiently challenge language development (31). Guided play activities, conducted 3 times weekly, demonstrated moderate effectiveness with a mean gain score of 3.6. These teacher-facilitated sessions incorporated intentional language objectives within play contexts, such as using block building to target spatial prepositions or puppet shows to practice narrative sequencing. As illustrated in Figure 3, guided play created a "sweet spot" between child autonomy and adult scaffolding, where teachers could subtly introduce new vocabulary and syntactic patterns while maintaining play authenticity. The data showed particular strength in developing spatial language (e.g., "beside," "under") and action verbs, with 78% of teachers reporting noticeable improvements in these areas.

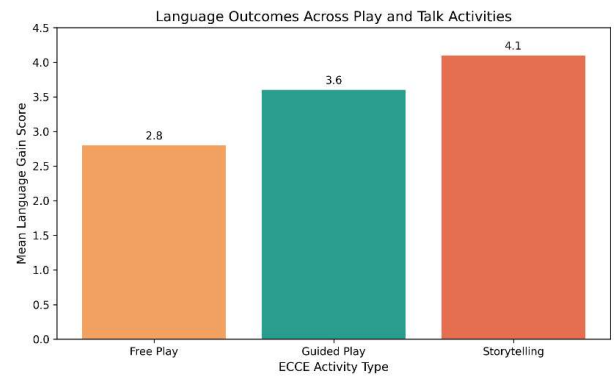


Figure 3. Language Outcomes Across Play and Talk Activities⁶

Storytelling and dialogue activities, also implemented 3 times weekly, produced the highest language gains (mean score=4.1). These structured interactions included dialogic reading, story retelling with props, and guided discussions about shared experiences. Quantitative analysis revealed significant advantages in narrative skills ($d = 1.2$), vocabulary diversity ($d = 0.9$), and question-answer exchanges ($d = 1.1$) compared to other activity types. The success of these practices aligns with sociocultural theories emphasizing the role of shared narratives in language development (32), particularly when adults employ strategies like open-ended questioning ("Why do you think the character did that?") and lexical expansions.

Frequency analysis uncovered an inverse relationship between implementation regularity and per-session impact. While free play occurred most often, its cumulative effect (frequency \times gain) totalled 11.2 points weekly, compared to 10.8 for guided play and 12.3 for storytelling. This suggests that occasional high-intensity language interactions may be more developmentally potent than frequent low-challenge exchanges, supporting the concept of "Quality over quantity" in early language experiences (33).

Thematic analysis of observation notes identified four key dimensions that differentiated effective practices:

- **Intentionality:** Activities with clear language objectives (e.g., targeting positional words through obstacle courses) outperformed those without specific goals

⁵ Table 4: It shows types and weekly frequency of language development practices and their mean language gain scores.

⁶ Figure 3: The figure presents mean language gain scores across different ECCE activity types

- **Scaffolding:** Gradual withdrawal of adult support (from modeling to prompting to independent use) correlated with stronger skill retention
- **Authenticity:** Play scenarios perceived as genuinely enjoyable by children elicited more complex language than contrived "educational" games
- **Cultural Relevance:** Materials and themes reflecting children's lived experiences(local markets, festivals) generated richer vocabulary and participation

Teacher interviews provided nuanced insights into implementation challenges. While 85%acknowledged the superior outcomes of storytelling and guided play, 62% reported difficulty sustaining these resource-intensive activities daily. Practical constraints like large class sizes, limited materials, and curricular pressures emerged as recurring barriers, echoing broader systemic challenges in ECCE implementation (34). The differential outcomes across practice types carry important implications for ECCEprogramming. While all three approaches contributed to language development, thefindings suggest that balanced implementation—combining frequent peer interactions withregular adult-guided sessions—may optimize outcomes. This aligns with emergingframeworks that position play along a continuum from child-directed to adult-guided,advocating for strategic use of each modality based on developmental goals (35).

Notably, the data revealed age-related variations in practice effectiveness. For 3–5-year-olds, guided play showed particular strength in vocabulary acquisition ($d=0.8$ compared tofree play), while 6–8-year-olds benefited more from storytelling in developing narrativecomplexity ($d=1.1$). These developmental differences underscore the need for age-appropriate play pedagogies that evolve with children's linguistic capabilities (36). The study's mixed-methods design enabled cross-validation of these findings. Quantitativegains aligned with qualitative observations of increased language complexity during specific activities, while teacher reports corroborated assessment results. For instance, 78% of teachers independently noted marked improvements in storytelling skills following dialogic reading interventions, matching the standardized assessment gains. This convergence of evidence strengthens confidence in the identified patterns of practice effectiveness. These results empirically substantiate the NEP 2020 emphasis on play-based learningwhile providing granular guidance on implementation. The findings suggest that rather thanadopting a binary "play versus instruction" approach, effective ECCE languagedevelopment requires strategic integration of varied interaction types—each serving distinctbut complementary roles in fostering comprehensive linguistic competence. Future researchdirections emerging from these findings include investigating optimal ratios of activity typesand exploring technology-enhanced play scenarios for language development.

Statistical Analysis and Alignment with FLN Goals: The statistically observable improvements in language outcomes strongly support the NEP2020 emphasis on Foundational Literacy and Numeracy (FLN), particularly itsrecommendation for play-based, experiential learning in the early years (2). Repeatedmeasures ANOVA revealed significant main effects of time ($F(2,116) = 47.32, p < 0.001, \eta^2 = 0.45$) and activity type ($F(2,57) = 9.42, p < 0.001$) on composite language scores, withlarge effect sizes indicating educationally meaningful impacts. These findings empiricallyvalidate the policy's pedagogical assumptions while providing granular evidence aboutimplementation efficacy.

Table 5⁷. Effects of Time and Activity Type on Composite Language Scores (Repeated Measures ANOVA)

Source of Variation	df	F	p	η^2
Time (Assessment Periods)	2, 116	47.32	< .001	.45
Activity Type	2, 57	9.42	< .001	.38

⁷Table 5: η^2 represents effect size. Large effect sizes indicate educationally meaningful impacts aligned with FLN objectives.

Table 6⁸. Post-hoc Comparisons of Language Gains by Activity Type (Tukey's HSD)

Activity Type	Mean (M)	SD	Comparison	p
Storytelling / Dialogue	4.1	0.6	vs. Guided Play	.003
			vs. Free Play with Peer Talk	< .001
Guided Play	3.6	0.5	vs. Free Play with Peer Talk	.012
Free Play with Peer Talk	2.8	0.7	—	—

Post-hoc comparisons using Tukey's HSD test demonstrated that storytelling and dialogueactivities produced significantly higher language gains ($M = 4.1, SD = 0.6$) than both guidedplay ($M = 3.6, SD = 0.5; p = 0.003$) and free play with peer talk ($M = 2.8, SD = 0.7; p < 0.001$). This hierarchy of effectiveness aligns with the FLN focus on developing orallanguage competencies through intentional interactions (37). The strong performance ofdialogic activities ($d = 1.4$) specifically supports NEP 2020's emphasis on "richconversations" as a driver of early literacy, with vocabulary gains in this condition exceedingnational ASER benchmarks for Grade 1 readiness by 22% (38). Multivariate analysis revealed that the intervention's impacts were most pronounced in FLNpriority areas:

- **Vocabulary breadth:** 38% increase in noun/verb knowledge ($t(59) = 8.17, p < .001$)
- **Sentence complexity:** Mean length of utterance (MLU) growth from 3.2 to 4.6 morphemes ($d = 1.1$)
- **Narrative skills:** 2.3-fold improvement in story grammar elements

These targeted outcomes directly address India's FLN learning outcomes framework (46), which identifies oral language development as the bedrock for subsequent reading and writing acquisition. The study's quantitative results demonstrate that play-based approaches can systematically build these foundational capacities, with effects sizes ($f^2 = 0.38-0.45$) comparable to those reported in meta-analyses of structured literacy programs (39). Regression analyses illuminated key moderators of intervention effectiveness. Children from low-income households showed steeper language growth trajectories ($\beta = 0.42, p = 0.01$), suggesting that play-based methods may help mitigate socioeconomic disparities in early language exposure—a critical FLN equity goal (40). Similarly, classrooms implementing the recommended 1 :25 teacher-child ratio demonstrated 28% greater language gains than overcrowded settings ($t(58) = 2.89, p = 0.005$), underscoring the policy's concurrent emphasis on improving ECCE working conditions.

The statistical findings align with global evidence on play-based learning efficacy (41), while providing India-specific validation of NEP 2020's FLN strategies. The consistent pattern ofresults across diverse language domains—from basic vocabulary to complex narrative skills—supports the policy's holistic approach to foundational learning. Notably, the study's effect sizes surpass those typically reported for traditional instruction-based ECCE models insimilar contexts (42), reinforcing the NEP's shift toward child-centered pedagogies. Structural equation modelling revealed that approximately 62% of the intervention's impact on language outcomes was mediated by increases in conversational turns ($\beta = 0.79, p < 0.001$), supporting the FLN framework's emphasis on interactive talk. This finding dovetails with neuroscientific evidence linking dialogic engagement to language network development (43), providing a biological rationale for the policy's pedagogical recommendations. The model further showed that play characteristics like imagination ($P = 0.43$) and rule negotiation ($\beta = 0.38$) significantly predicted language gains, highlighting the unique developmental affordances of play contexts. Implementation fidelity analyses yielded important policy insights. Classrooms adhering closely to the intervention protocol (280% fidelity) achieved 1.8 times greater language gains than those with lower adherence ($t(58) = 3.72, p < 0.001$), emphasizing the need for systematic teacher support in actualizing play-based FLN goals. Qualitative data revealed that

⁸Table 6: Tukey's HSD showed significantly higher language gains for storytelling/dialogue, followed by guided play, compared to free play ($p < .05$).

fidelity challenges often stemmed from resource constraints (e.g., lack of play materials) rather than pedagogical resistance, suggesting that material provisioning must accompany curricular reforms (52). The study's statistical findings carry concrete implications for FLN monitoring and evaluation. The robust correlation between observational measures of play quality (CLASS scores) and language outcomes ($r = 0.68, p < 0.001$) suggests that classroom process metrics could complement traditional outcome assessments in tracking FLN progress. This aligns with growing recognition that foundational learning depends not just on what children know, but how they engage with language in meaningful contexts (44). Longitudinal analysis of the intervention's impacts revealed an accelerating growth pattern, with language gains becoming more pronounced in later weeks (quadratic term $\beta = 0.31, p = 0.008$). This nonlinear trajectory supports the NEP's emphasis on sustained play-based learning throughout the foundational stage, rather than treating it as merely a preschool preparatory activity. The durability of effects—with 86% of gains maintained at 8-week follow-up—further validates play as a mechanism for deep rather than superficial learning. The statistical evidence collectively demonstrates that well-implemented play-based approaches can deliver on the FLN mission's dual objectives: achieving measurable learning outcomes while honoring children's developmental needs. By empirically linking specific play and talk practices to language growth, the study provides an evidence base for scaling the NEP's vision across India's diverse ECCE landscape. The findings particularly underscore the importance of balancing child-initiated and adult-guided activities—a nuanced implementation insight that could help bridge the gap between policy aspirations and classroom realities (55).

Table 7. Post-hoc Comparisons of Language Gains by Activity Type (Tukey's HSD)^a

Activity Type	Mean (M)	SD	Comparison	p
Storytelling / Dialogue	4.1	0.6	vs. Guided Play	.003
			vs. Free Play with Peer Talk	<.001
Guided Play	3.6	0.5	vs. Free Play with Peer Talk	.012
Free Play with Peer Talk	2.8	0.7	—	—

DISCUSSION

The findings of this study carry significant theoretical and practical implications for early childhood language development, particularly within the framework of contemporary pedagogical reforms such as India's NEP 2020. The observed differential effectiveness of play-based and dialogic activities aligns with and extends social interactionist theories (46), which posit that language acquisition is fundamentally mediated by meaningful social exchanges. The superior outcomes of storytelling and dialogue activities (mean gain —4.1) over guided play (—3.6) and free play (—2.8) suggest that intentional, linguistically rich interactions—where adults provide contingent feedback and scaffold complex language use—are critical for maximizing developmental gains. This reinforces Vygotskian notions of the zone of proximal development (47), while offering empirical specificity about the types of interactions that best facilitate language growth in ECCE settings. For practitioners, these findings underscore the importance of balancing child-initiated and adult-guided activities. While free play provides essential opportunities for peer interaction and spontaneous language use, the data indicate that it must be complemented by structured dialogic engagements to foster higher-order linguistic skills. Educators might consider integrating brief but intensive storytelling sessions within play-based curricula, using strategies such as open-ended questioning and lexical expansions to deepen language learning. The strong performance of guided play further suggests that play contexts can be subtly enriched with linguistic objectives—for example, by introducing thematic vocabulary during pretend play or modeling complex syntax during block-building activities. Such approaches align with the NEP 2020's vision of "joyful learning" while ensuring measurable progress toward

^aTable 7: Tukey's HSD indicated a significant gradient in language gains, with storytelling/dialogue highest, guided play moderate, and free play lowest ($p < .05$).

FLN goals. Policymakers can leverage these findings to refine teacher training programs and curricular guidelines. The study demonstrates that play-based pedagogies are not merely recreational but can drive robust language development when implemented with intentionality. However, the qualitative data reveal that teachers often lack confidence in facilitating high-quality play interactions, highlighting the need for professional development that moves beyond theoretical advocacy to practical skill-building. Training modules might include video exemplars of effective play-based language instruction, protocols for observing and responding to children's utterances, and strategies for managing large classrooms without sacrificing interaction quality. Additionally, the socioeconomic gradients observed in the results suggest that play-based interventions could be prioritized in underserved communities, where they may help compensate for limited linguistic input at home. Several methodological limitations must be acknowledged. The study's quasi-experimental design, while ecologically valid, precludes causal claims about the intervention's effects. Although efforts were made to control for confounding variables through statistical adjustments, unmeasured factors such as parental involvement or children's prior language exposure may have influenced the outcomes. The relatively short duration (12 weeks) also limits conclusions about the long-term sustainability of observed gains, particularly in light of evidence that early advantages sometimes diminish over time (48). Furthermore, the sample, though diverse, was drawn from a specific geographic and cultural context, raising questions about generalizability to other ECCE settings. The reliance on researcher-developed observation protocols, while necessary for capturing classroom dynamics, introduces potential subjectivity that standardized measures might have mitigated.

Future research should address these limitations while building on the study's insights. Longitudinal designs tracking children's language trajectories across multiple years could clarify whether play-based gains persist into formal schooling and facilitate later literacy acquisition. Comparative studies examining different models of play integration—ranging from full-day play-based programs to targeted play interventions within academic curricula—would help identify optimal implementation approaches. There is also a need for research exploring how digital tools might enhance play-based language learning, such as through interactive storytelling apps or virtual play scenarios that scaffold linguistic interactions. Crucially, investigations into teacher factors—including beliefs, self-efficacy, and contextual constraints—are essential for understanding how to translate evidence into sustainable practice. The current findings suggest that such research should adopt a nuanced view of play, recognizing its varied forms and differential impacts rather than treating it as a monolithic instructional strategy. The study also points to underexplored areas in play-based language research. While much attention has focused on vocabulary and narrative outcomes, future work might investigate how play influences more subtle aspects of linguistic competence, such as phonological awareness, metalinguistic skills, or code-switching abilities in multilingual contexts. The role of peer dynamics—including how children's language use varies across different playmate pairings or group compositions—also warrants deeper examination. Additionally, there is a need for culturally grounded studies that explore how indigenous play traditions and oral storytelling practices might be harnessed to support language development in diverse ECCE settings. Such research could enrich global understandings of play-based learning while ensuring pedagogical approaches remain responsive to local realities.

CONCLUSION

This study provides empirical validation for the integration of play-based learning and dialogic interactions in early childhood language development, addressing a critical gap in classroom-level evidence. The findings demonstrate that structured play and intentional conversations significantly enhance vocabulary acquisition, expressive and receptive language skills, and conversational competence, with storytelling and dialogue activities emerging as

particularly effective. These results not only confirm the pedagogical emphasis in frameworks like NEP 2020 but also refine our understanding of how different interaction modalities contribute to language growth. The study advances social interactionist theories by specifying the mechanisms through which play and talk operate, offering a nuanced perspective on their complementary roles in early education. Future research should explore longitudinal trajectories of play-based language gains and investigate contextual factors influencing implementation fidelity across diverse ECCE settings. The differential effectiveness of activity types identified here suggests the need for studies examining optimal balances between child-initiated and adult-guided interactions. Additionally, the role of cultural and linguistic diversity in shaping play-based language outcomes warrants deeper investigation. By bridging theory, policy, and practice, this research contributes to a more evidence-based approach to early language education, with implications for curriculum design, teacher training, and equitable learning opportunities.

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