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Research on the Intersubjectivity of Teacher-Child Dialogue and Its Practical Reconstruction in the Intelligent Era

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Abstract: In recent years, intelligent technologies have progressively permeated early childhood education practices, fundamentally transforming the pedagogical landscape. While these technologies expand teachers' capacities for observation, activity documentation, and instructional resource support, they simultaneously impose novel demands on how educators understand and respond to children, thereby reshaping the quality of teacher-child dialogue. Currently, technologies encompassing data collection, intelligent analysis, platform feedback, and algorithmic recommendations are being continuously embedded within preschool educational settings. However, when teachers become overly reliant on such technologies, significant imbalances in teacher-child relationships may emerge during dialogue. Children's embodied experiences and situated contexts risk being obscured by data-driven representations, while valuable space for children's questions, expressions, and collaborative exploration of daily life may be substantially diminished. Grounded in the philosophical theory of intersubjectivity, this study argues that reconstructing teacher-child dialogue in the intelligent era requires clearly delineating technological boundaries, safeguarding teachers' professional judgment alongside children's agency, emphasizing children's physical presence, and deepening the understanding of children's lived experiences through embodied practice. Furthermore, by extending dialogue through everyday life, play, and peer interactions, intelligent technologies can be repositioned as a vital educational medium that supports children's authentic expression, enhances teachers' empathetic understanding, and fosters genuine joint inquiry between teachers and children. This reconstruction ultimately aims to preserve the relational and embodied essence of early childhood education amid increasing technological mediation.

Keywords: teacher-child dialogue; intersubjectivity; intelligent technology; embodied presence; early childhood education

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1. Introduction

Intelligent technologies—including generative artificial intelligence, educational resource assessment tools, interactive perception systems, and kindergarten administrative platforms—are increasingly supporting activities such as pedagogical assistance, observational documentation, resource provision, and home-school communication. These tools offer new possibilities for educators to observe and interpret children's daily expressions through language, behavior, and creative work, while also enriching available educational resources. National guidelines on early childhood education emphasize that preschool practices must align with the natural patterns of children's physical and cognitive development. The 2026 National Preschool Education Publicity Month highlighted the importance of protecting childhood experiences in digital contexts, reaffirming the irreplaceable value of authentic lived experience, play-based learning, responsive teacher-child interactions, and peer engagement for holistic

development. Consequently, integrating intelligent technologies into kindergarten settings extends beyond technical implementation—it raises foundational questions about how children's lived experiences and relational dynamics between teachers and children are interpreted, supported, and sustained.

Recent advances in teaching-oriented intelligent agents—powered by large-scale models—have enabled capabilities such as multimodal perception, logical reasoning, adaptive planning, collaborative interaction, and iterative refinement [1, 2]. Such agents can support instructional processes through functions like activity design and sequencing. Educational technology research underscores that technological design and deployment must remain firmly anchored in pedagogical aims, serving to sustain, extend, and enrich dialogic teaching practices. Digital tools, including internet-based platforms and artificial intelligence applications, have been observed to broaden the scope and modalities of classroom dialogue. Chatbot interfaces hold potential to diversify communicative opportunities; however, their educational contribution depends critically on intentional scaffolding by educators—including thoughtful questioning, facilitation of discussion, and contextual framing. Collectively, these developments indicate a shift in the functional role of intelligent technology: from passive information delivery toward active participation in content generation, formative feedback, and interaction orchestration. Within kindergarten contexts, if algorithmic outputs assume disproportionate authority in interpersonal exchanges—and if children lack sufficient space to question, co-construct meaning, or verify interpretations with teachers and peers—the influence of technology may inadvertently constrain children's agency, limit autonomous expression, and narrow opportunities for meaning-making. Similarly, when educators increasingly defer to procedural workflows, automated analytics, or preconfigured content, the spontaneity, responsiveness, and reciprocity characteristic of teacher-child dialogue may become mediated by system logic. This prompts critical inquiry into whether technological integration has altered the relational positioning, response patterns, and structural dynamics inherent in teacher-child interactions.

Current scholarship predominantly addresses three interrelated domains: the capacity of artificial intelligence to enhance educational practice, ethical considerations surrounding its use, and children's evolving engagement with digital environments. Yet comparatively little attention has been directed toward how intelligent technologies permeate the intimate, moment-to-moment dialogues between teachers and young children—and how they shape both the articulation and interpretation of children's experiential worlds. Meta-analytic evidence indicates that multiple dimensions of teacher-child interaction correlate significantly with developmental outcomes in language, numeracy, and executive functioning; these associations are further modulated by contextual variables such as regional setting, family background, methodological approach, and developmental stage. Grounded in this understanding, the present study investigates how technological mediation, data-informed representation, and algorithmically embedded assumptions affect teacher-child dialogue through the lens of intersubjectivity. It clarifies educational significance across three interwoven dimensions—mutual recognition of agency, embodied understanding, and shared everyday life—and proposes pathways for reimagining technological integration that remain deeply rooted in the realities of kindergarten practice.

2. The Inter-Subjectivity Issues of Teacher-Child Dialogue under the Influence of Intelligent Technologies

As intelligent technologies are integrated into teacher-child dialogue in kindergartens, their influence extends beyond the introduction of new educational tools [3]. These technologies may reshape information presentation, alter interpretations of children's lived experiences, and affect the dynamic progression of dialogue. Given the embodied, contextual, and emergent nature of children's expression, three key challenges arise: technological integration can disrupt relational balance in dialogue; data-driven representations may obscure holistic understanding of children's experiences; and pre-

programmed intelligent features can constrain opportunities for teachers and children to co-construct meaning.

2.1. The Intervention of Technological Power Causes an Imbalance in the Teacher-Child Dialogue Relationship

Drawing on discussions regarding the intentionality and agency of digital educational technologies, technological power is understood here as the regulatory influence exerted by embedded data structures, algorithmic processes, and platform design on information presentation, teacher judgment, and teacher-child interaction. In the context of teaching intelligenceization, data power arises from the systematic digitization of pedagogical practice; data collection methods, computational logic, and precision evaluation frameworks increasingly permeate instructional processes, intensifying monitoring and assessment of student behaviors and learning outcomes. Further, digital authority in teaching may challenge the agentic roles of both teachers and children, with algorithmic systems potentially shaping and constraining teacher decision-making and activity design. When intelligent technologies are integrated into teacher-child interaction, priority should be given to examining how system-defined input modalities, feedback protocols, and evaluation criteria influence communicative patterns and responsive practices—rather than focusing solely on functional benefits. Systems operating with fixed input formats and standardized response templates typically process only information falling within pre-specified parameters. Yet children's expressions frequently involve multimodal elements—including gestures, pauses, pointing, object handling, and spontaneous associative thinking. When teachers rely predominantly on system-generated prompts to guide activities, nascent yet cognitively significant expressions by children may remain unrecognized and thus excluded from further exploration or dialogue. Platform design inherently filters which expressions receive attention and which lines of inquiry are pursued—particularly when teachers do not actively supplement digital outputs with real-time classroom observation. Children develop stable cognitive structures through iterative cycles of exploration, representation, expression, and social exchange; if artificial intelligence assumes core cognitive tasks intended for repeated child engagement, it risks displacing essential developmental practice. In the domain of teacher-child dialogue, when technical feedback prescribes specific responses or next-step actions—and when interactions consistently orbit preconfigured questions—the opportunities for children to initiate inquiries, draw upon lived experience, or engage in open-ended negotiation with teachers and peers become significantly constrained [4]. This dynamic may also reshape the teacher's professional stance: excessive integration of digital tools in instruction can foster dependency, leading educators to gradually internalize technological rationality and procedural logic. For instance, while automated observation reports may quantify metrics such as participation duration, verbal output frequency, or behavioral distribution, they generally lack capacity to interpret underlying causes—for example, why a child remains silent, discards materials, or repeats an action. If teachers act primarily on platform-derived indicators without contextual verification, their attention may narrow to system-recognized metrics, potentially overlooking children's immediate emotional states, peer dynamics, or material-based learning experiences. The relational imbalance introduced by technological power does not entail direct replacement of teachers or children by technology, but rather reflects a gradual embedding of platform logic into how dialogue data are displayed, how questions evolve, and how teacher judgments are formed. As system outputs transition from supplementary reference to primary interpretive basis, teacher attention may shift from interpreting children's experiential meaning toward optimizing technical indicators. Teachers therefore retain critical responsibility—to interpret, validate, and selectively integrate system-generated information so that it remains meaningfully anchored in children's authentic activities and interpersonal exchanges.

2.2. Data-Based Expression Weakens the Understanding of Children's Experiences in Teacher-Child Dialogues

Imagery, audio, children's works, and behavioral data can provide teachers with a basis for reviewing activities and identifying developmental clues. However, such data reflect only the external manifestations of children's experiences and cannot, in isolation, reveal the underlying reasons for their behaviors. It has been observed that digital teaching approaches tend to prioritize measurable dimensions, while aspects such as emotions, motivations, and subjective mental states—being inherently difficult to quantify—are often underrepresented. Cognition is understood to emerge from the dynamic interplay among neural processes, bodily engagement, and environmental context. Consequently, children's pauses, gazes, evasions, or repeated actions must be interpreted holistically, taking into account their physical condition, immediate activity setting, and relational dynamics—not reduced to isolated metrics like frequency, duration, or action count. The core risk of data-based expression lies not in data collection per se, but in allowing recorded outputs to displace teachers' interpretive engagement with children's lived experiences. When intelligent observation systems primarily represent children's states through indicators such as speaking frequency or participation duration, teachers receive behaviorally filtered information shaped by technological mediation; if platform-generated outputs become the default basis for pedagogical response, attention may shift away from children's real-time experiential engagement toward pre-identified system metrics. Research on technology-integrated classrooms has indicated that digital tools may inadvertently diminish the salience of embodied communication cues—including gaze, facial expression, and gesture—and that algorithmic frameworks and preset categories can subtly redirect teacher attention, fostering reliance on technological interpretation. Although such findings originate from primary and secondary settings, the underlying mechanism underscores a critical principle for early childhood education: technical data require continuous validation through direct observation and authentic teacher-child interaction, rather than substituting for professional interpretation [2, 5]. Structured observation protocols and predetermined objectives tend to foreground selected dimensions, potentially fragmenting the holistic understanding of the child; when fixed observational outcomes are reified as stable attributes, they may obscure the child's ongoing growth and evolving capacities. Thus, time-bound data in kindergarten contexts serve most appropriately as prompts for sustained, responsive observation—not as definitive portraits. Teachers should actively invite children to enrich, clarify, or revise existing records through verbal narration, physical demonstration, and subsequent behavior, ensuring digital materials remain grounded in children's actual experiences.

When behavioral traces are equated directly with experiential meaning, data-based expression fundamentally impedes understanding. Teacher-child dialogues must extend beyond indicator verification; educators need to integrate on-site observation, open-ended questioning, and collaborative activity to connect quantifiable behaviors with children's somatic sensations, concrete situational contexts, and relational experiences [6]. In this framework, data recording functions as supportive evidence for interpretation—not as a replacement for the teacher's contextualized, empathetic explanation of children's experiences.

2.3. Intelligent Context Preset Reduces the Space for Preschool Teacher-Child Dialogue Generation

Preschool teacher-child dialogue possesses an inherently on-site generative character. Children may raise questions that extend beyond pre-established boundaries due to shifts in learning materials, peer input, or spontaneous discoveries during exploration. Teachers, in turn, must dynamically adjust the direction of interaction in response to children's immediate verbal and nonverbal cues. The term 'generation space' refers to the communicative and experiential space wherein children formulate original questions, articulate diverse interpretations, and deepen understanding through hands-on activity, collaborative discussion, and empirical verification. Research has shown that effective

verbal interaction in early childhood settings requires the strategic use of open-ended prompts, expansive feedback that builds upon children's contributions, and intentional pauses that afford time for reflection and cognitive processing. Sustained dialogue hinges critically on whether educators create opportunities for children to initiate inquiry, pause to consider ideas, and pursue follow-up questions. Fixed procedural frameworks and pre-scripted responses embedded in intelligent context systems risk altering this generative dynamic. Such structures may inadvertently shift children's role from active co-constructors of knowledge to passive recipients of information, thereby constraining opportunities for imaginative thinking and self-directed reflection. When teachers rely predominantly on pre-determined questions and automated feedback, children's capacity to pose autonomous questions, offer alternative interpretations, and engage in peer-based negotiation and verification may diminish—potentially transforming dialogue from joint meaning-making into task completion. Generative artificial intelligence further amplifies real-time content production, enabling automatic generation of text, images, audio, and video resources. While such outputs can enrich pedagogical materials, introducing fully formed answers or finalized solutions too early may prematurely narrow the scope for children's continued questioning, comparative analysis, and experimental validation. Consequently, AI-generated content is most pedagogically appropriate as a stimulus for further inquiry, comparison, and verification—not as a definitive endpoint. The core issue lies not in the presence of planning per se, but in whether rigid procedures, instant answers, or unmediated generated content constrain the organic evolution of dialogue [7]. Teachers must remain responsive to children's in-the-moment reactions—deciding when to pause, probe, or pivot—and integrate technological support thoughtfully, ensuring sustained space for children's questions, divergent perspectives, and collaborative exploration.

3. Value Examination of Intelligent Technology Intervention in Preschool Teacher-Child Dialogue from the Perspective of Intersubjectivity

The application of intelligent technology in preschool teacher-child dialogue may alter not only information presentation and interactional structure, but also the relational positioning of teachers and children, children's interpretation of lived experiences, and the co-construction of dialogic meaning. Intersubjectivity underscores that both participants enter the interaction as active subjects, generating shared meaning through mutual responsiveness, reciprocal understanding, and collaborative engagement. In kindergarten settings, while teachers and children differ in experience, developmental capacity, and pedagogical responsibility, children remain central as experiencers, expressers, and meaning-makers of their own lives [8, 9]. Consequently, evaluating the value of teacher-child dialogue in the intelligent era requires grounding in three foundational dimensions: mutual recognition, embodied understanding, and shared lifeworld.

3.1. The Foundation of Inter-Subjectivity in the Context of Technology Mediation for Teacher-Child Dialogue

Inter-subjectivity is the prerequisite for establishing meaningful teacher-child dialogue. It has been emphasized that authentic inter-subjective interaction requires mutual recognition and respect for each party's status as an active participant in the relationship. Drawing on foundational relational theory, when one person engages another as a full relational partner—rather than as an object of observation, description, or instrumental use—the conditions for genuine connection are met. In early childhood education settings, teachers bear responsibilities for care, guidance, and activity facilitation; yet children must still be acknowledged as intentional agents with distinct experiences, emotions, and expressive capacities. This mutual recognition does not negate developmental or experiential differences between teachers and children, but calls for pedagogical responsiveness: teachers should refrain from substituting adult interpretations for children's own meaning-making. Listening practices, accordingly,

must shift from a focus solely on content or information to a relational orientation—one attentive not only to what children express, but also to who they are as speakers and to the evolving dynamic between participants. Consequently, the coherence or conformity of children's expressions to adult expectations should not determine their standing as active contributors. Teachers need to create space for children to refine, extend, or reframe their meanings through language, gesture, play, and follow-up activities. When intelligent technologies are introduced into this relational context, they may assist educators in identifying subtle, often-overlooked cues—captured via audio, video, artifacts, or behavioral logs. However, such technologies deliver algorithmically processed data shaped by collection protocols and analytical frameworks, not direct access to children's lived experience. Within digital learning environments, human agency is understood as the capacity for purposeful, reflective, and responsible engagement with technology—distinct from passive alignment with system logic or automated outputs. Therefore, platform-generated labels, numerical metrics, and system-driven feedback serve only as supplementary inputs for understanding children, requiring ongoing validation against real-time classroom observations and children's subsequent verbal and nonverbal expressions. Ultimately, mutual recognition demands that technology support teachers in perceiving children more holistically—not in replacing teachers' interpretive judgment with pre-determined conclusions.

3.2. The Embodied Understanding Logic of Teacher-Child Dialogue under Data Recognition

Mutual recognition further requires teachers to truly understand children. Children's experiences do not reside solely in language; touching, gazing, pausing, moving, and repeated operations may all convey unspoken judgments and emotions. Phenomenological perspectives on perception reveal the inseparable relationship between the body and experience, emphasizing that bodily engagement serves as a fundamental basis for establishing connections with the world, forming perceptions, and acting. Therefore, teachers cannot interpret children's behaviors exclusively through quantitative metrics such as speech count, participation duration, or action frequency, as identical external manifestations may signify divergent experiential meanings. The value of data recording lies in generating observational clues—not in providing definitive explanations. Systems may capture silence duration, prolonged presence in specific spatial areas, or shifts in physical actions, yet they cannot independently account for why a child remains silent, persistently attempts a task, or abruptly alters behavior. Understanding children extends beyond surface-level observation; it necessitates adults shifting from an external vantage point into the lived context of children's activities, gradually attuning to their feelings and intentions through sustained engagement. Consequently, teachers must situate technical information within the relational dynamics among children, materials, peers, and concrete events—confirming interpretations through questioning, shared reflection, and iterative practice. Embodied understanding does not entail rejecting data but demands clarity about its explanatory scope: data can signal domains warranting deeper attention, yet it cannot supplant professional judgment regarding children's subjective experiences. Only when recordable behaviors are re-embedded within children's physical states, activity sequences, and interactional contexts can digital traces function as meaningful interpretive cues—rather than as grounds for constructing static, reductive characterizations.

3.3. The Educational Value of Co-Living and Meaning Generation under Intelligent Presetting

Teacher-child dialogue unfolds within concrete co-living contexts. Children's questions commonly emerge from play activities, hands-on material engagement, peer interactions, and unexpected occurrences, and are refined through explanation, collaborative negotiation, and iterative action. Communication is not merely the transmission of preformed information, but a dynamic process of shared experience—where meaning is co-constructed and participants themselves undergo transformation. Consequently, the educational significance of teacher-child dialogue lies not solely in whether children arrive at anticipated answers, but more fundamentally in whether

individual lived experiences enter collective discourse and are reinterpreted through comparison, reflection, and mutual verification.

The development of children's secondary intersubjectivity supports their entry into triangular relational configurations involving self, others, and a shared focus of attention, enabling meaning-making around common objects within situated contexts. Intelligent technologies can enrich communal life by expanding available resources—for instance, replaying activity recordings, enhancing visual details for close observation, or generating complementary visual representations. Yet such technological inputs acquire educational value only when reintegrated into authentic dialogue, joint experimentation, and collaborative verification among teachers, children, and peers. Premature provision of system-generated answers or fully resolved solutions risks compressing the essential processes of argumentation, trial-and-error, and negotiated understanding that children require. Moreover, the maturation of intersubjectivity relies on sustained, embodied interaction within real-world social settings; excessive displacement of observational, imitative, and interactive opportunities by intelligent tools may hinder this developmental trajectory. Thus, communal life does not advocate technological minimization per se, but insists that technology remain anchored in authentic human relationships—with people, materials, and unfolding events. Children construct understanding of others and of a shared world through jointly confronting challenges, adjusting actions in response, and responding thoughtfully to differences alongside teachers and peers. When intelligent systems enter teacher-child dialogue, it remains essential that children continue to be recognized by teachers as subjects with lived experience, and that they retain capacity for ongoing, context-embedded communication with both teachers and peers. Mutual recognition safeguards against reducing children to data points or algorithmically identified objects. Embodied understanding necessitates teachers' attentive presence to children's physical actions and immediate situational realities. Communal life creates conditions where personal experience enters collective discussion, comparative analysis, and shared verification. These interrelated principles collectively define the appropriate scope of intelligent technology's role in teacher-child dialogue and lay the groundwork for subsequent pedagogical reconstruction.

4. The Practical Reconstruction Path of Teacher-Child Dialogue under the Intervention of Intelligent Technology

The practical reconstruction of teacher-child dialogue in the intelligent era does not focus on adding equipment or pursuing novel activity forms. Instead, it lies in determining when technology should be introduced, how it can serve children's experiences, and when it should be withdrawn. Teachers must prevent technology from replacing genuine interaction and should be adept at using images, generated content, and other materials to discover details that might be overlooked in daily observations [7, 10]. Based on the analysis of the issues of subject relationships, bodily experiences, and dialogue generation in the previous text, the practice should be improved by clarifying the appropriate scope of technology use, returning to the activity site, and extending shared life experiences.

(1) Clarify the appropriate scope of technology use based on children's development. The integration of intelligent technology into teacher-child dialogue should be guided by children's current learning needs, rather than by equipment capabilities or platform workflows. First, in the preparation stage of the activity, teachers should identify the specific educational challenges that technology is intended to address and assess whether those challenges require technological support [11, 12]. For experiences that can be effectively gained through physical manipulation, on-site observation, or peer discussion, digital elements should not be added merely for novelty; for content that evolves slowly, is imperceptible to the naked eye, or benefits from post-activity review, technology may serve as a valuable supplement. It has been observed that when artificial intelligence enters teaching contexts, it may be shaped by platform design, institutional expectations, and implementation practices—potentially creating tensions between operational

efficiency and pedagogical appropriateness. Therefore, teachers should not treat system-generated suggestions as automatically suitable for children, but should select tools and approaches aligned with the interests, prior experiences, and developmental levels of the children in their class.

Secondly, once technology is introduced into the activity, teachers must remain responsive and decide in real time whether to continue, adapt, or discontinue its use. When children are deeply engaged in hands-on tasks or meaningful peer exchanges, it is unnecessary to interrupt solely to follow a pre-set sequence; when generated content diverges from children's actual experiences—or when devices consistently misinterpret children's speech or gestures—teachers should revert to direct, face-to-face communication. For example, during video review of a kindergarten construction game, the system may categorize children's repeated adjustment of bridge supports as redundant behavior. Teachers should avoid drawing conclusions from such automated interpretations alone. Instead, they should observe accompanying evidence—such as changes in bridge surface stability, material selection patterns, and peer collaboration dynamics—and invite children to explain their reasoning before deciding whether to introduce new materials or initiate a load-bearing investigation. Only after on-site verification can technical records function as meaningful prompts to deepen dialogue [13].

At the same time, technology use must respect children's emotional well-being and data privacy [8, 14]. Activity videos should retain only segments directly relevant to pedagogical inquiry, without continuous recording of children's full daily routines; moments involving strong emotional expression, peer disagreements, or family-related matters should be addressed primarily through private, individualized communication—not group playback. Teachers should provide age-appropriate explanations to children about why recording occurs, who will view the material, and honor their choice not to be filmed or have their work publicly shared. After each activity, a concise note in the teaching record should summarize the rationale for technology use, any emergent challenges, and whether continued application is warranted—preventing uncritical repetition of the same tool across unrelated activities. Thus, the appropriate scope of technology is not defined by fixed time limits, but by ongoing, context-sensitive judgment of whether it meaningfully supports children's expression, exploration, and interaction.

(2) Understand children's experiences through active presence at the activity site. Technical records cannot fully capture children's momentary feelings and intentions, so teachers' understanding must begin with attentive, embodied observation. On the one hand, when using electronic devices, teachers should attend not only to screen-based data but also to children's gaze direction, gestures, vocal tone, and quality of peer engagement. A pause may indicate reflection; repeated handling of materials may reflect comparison or testing; temporary silence may signal emerging thought still seeking verbal form. Embodied interaction emphasizes the inseparability of perception, action, and reflection in meaning-making. Teachers should respond with patient waiting and supportive scaffolding—offering materials, co-manipulating objects, or posing brief, open-ended questions—rather than rushing to interpret based on algorithmic outputs.

On the other hand, collaborative reflection after the activity supports deeper understanding of children's experiences, but such reflection should be concise and focused, with ample space for children's own accounts [15]. Teachers may select brief, relevant video clips or earlier works and invite children to describe what they noticed and why they modified their approach. Children may also clarify ideas through actions, drawings, or reorganizing materials. Expression extends beyond spoken language: teachers should recognize gestures, visual representations, and material-based reasoning as equally valid modes of articulation. For instance, in an art activity, a child repeatedly alters the sky's color. Rather than simply logging operation frequency, the teacher might display earlier versions and ask the child to narrate the scene. Upon hearing that the darkened sky signifies impending rain, the teacher can extend the inquiry by offering related materials to depict characters and settings within that weather context—transforming a surface-level behavioral trace into insight about imaginative thinking.

The validity of interpretations about children's experiences must be confirmed through subsequent actions. Tools such as electronic magnifiers, augmented reality animations, or digital simulations can reveal otherwise inaccessible details—but children should then return to authentic materials to touch, move, compare, and test [16, 17]. For example, after using a magnifier to examine a snail's foot, a child might investigate movement traces in dry versus moist environments within the natural corner and refine observational strategies accordingly. If later actions contradict earlier interpretations, teachers should welcome revision and jointly reconsider their own assumptions. During collaborative professional inquiry, a small set of activity segments reflecting divergent understandings may be selected; teachers first distinguish observable facts from personal inference, then revisit those segments alongside children's later actions to evaluate the original interpretation. In this way, digital records become catalysts for shared observation and sustained inquiry—not definitive judgments about children.

(3) Connect daily life and play to sustain dialogue over time: Intelligent technology should support teacher-child dialogue grounded in children's authentic lived experiences and play. First, teachers may identify recurring themes from morning conversations, learning center play, outdoor exploration, and nature observations—and selectively preserve photos, audio snippets, or children's creations as meaningful reference points. Excessive commercial technology integration risks narrowing the openness and flexibility inherent in children's play; therefore, documentation should remain selective and experience-driven, not structured around platform-suggested topics or comprehensive life tracking [18]. When children observe snails, care for plants, or visit science exhibitions over weekends, they may bring personal photographs, sketches, or oral accounts. Teachers can begin by inviting children to share discoveries, encourage peers to pose questions, and collectively decide which ideas warrant further exploration in the natural corner or learning centers—thus transforming individual experiences into shared classroom inquiries.

Secondly, when employing generative artificial intelligence, children's own ideas should precede technical input. Teachers may first invite children to express initial concepts through storytelling, drawing, or block construction. Once diverse perspectives and questions emerge, AI-generated images or supplementary resources can be created based on children's descriptions. Children learn through exposure to varied viewpoints and questions within the group, adjusting their thinking through dialogue. For example, when designing future kindergartens, children might first discuss how a treehouse classroom could manage rainfall or accommodate mixed-age play [13, 19]. Later, they compare AI-generated visuals with their own models—not to rank solutions, but to explore alignment with original intent, realism gaps, and possibilities for refinement. Generated content thus functions as a shared object for critical discussion and iterative improvement, not as authoritative answers delivered by the teacher.

Finally, questions arising from dialogue should be pursued through concrete life and play experiences. For inquiries such as plant hydration needs or paper bridge load capacity, teachers and children can collaboratively plan materials, assign roles, conduct experiments in the nature corner, science area, or outdoors, and bring findings back to group discussion. A question wall or experience journal may document children's questions, attempted strategies, and unresolved uncertainties—but should not convert individual contributions into standardized assessment metrics. When questions extend into home or community contexts, teachers may invite families to support children in capturing one observation, which children then present and extend at kindergarten—avoiding adult substitution with pre-formulated responses. For children with limited verbal fluency, teachers can facilitate participation through gestures, visual aids, or material manipulation, enabling diverse modes of contribution—including listening, negotiating, and co-acting. At this stage, technology serves primarily to document and make visible children's experiences, while teacher-child dialogue gains depth and continuity through sustained questioning and authentic action [20].

5. Conclusion

The integration of intelligent technologies into early childhood education transforms not only documentation practices and resource provision but also how educators interpret children's development and structure teacher-child interactions. From an intersubjective perspective, the appropriate scope of technological support hinges on whether it sustains the child's active presence, embodied engagement, and authentic relational exchanges. Visual records, data outputs, and algorithmically generated content may augment understanding and inform responsive pedagogical decisions; however, they cannot substitute for educator expertise nor diminish opportunities for children to express themselves, manipulate materials, co-construct meaning, and explore through play, daily routines, and peer collaboration. Technology realizes its educational potential only when anchored in children's physical actions, situated contexts, and shared lived experiences. Given constraints in the scope and methodology of this work, the analysis remains primarily conceptual. The precise mechanisms by which intelligent technologies shape teacher-child dynamics—and their concrete effects across diverse kindergarten settings, age groups, and activity types—require further investigation via sustained classroom observation, educator interviews, and context-sensitive action research. Ultimately, the educational value of such technologies lies not in functional sophistication, but in their capacity to deepen educators' attunement to children's perspectives and sustain open, reciprocal, and evolving interactions.

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