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Contextualised teaching materials for promoting children's holistic development at the early years education level

Materiales didácticos contextualizados para potenciar el desarrollo integral infantil en el nivel de Educación Inicial

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RESUMEN

El artículo tiene como objetivo determinar la importancia de los materiales didácticos contextualizados para potenciar el desarrollo integral infantil en el nivel de Educación Inicial, en el contexto ecuatoriano. Para ello, se empleó un diseño documental descriptivo que sistematizó quince fuentes académicas sobre materiales naturales, piezas sueltas y entornos de juego contextualizados en la primera infancia, organizadas en matrices comparativas según tipo de estudio, contexto y resultados. Los hallazgos evidencian que los materiales sin uso predeterminado y de origen local favorecen simultáneamente el desarrollo motor, cognitivo, social y emocional del niño, siempre que exista mediación docente intencional y disposición institucional favorable al juego arriesgado.

Descriptores: instalaciones y recursos educativos; población en edad escolar; planificación de la educación. (Tesauro UNESCO)

ABSTRACT

The aim of this article is to determine the importance of contextualised teaching materials in promoting children's holistic development at early years education level, within the Ecuadorian context. To this end, a descriptive documentary design was employed, systematising fifteen academic sources on natural materials, loose parts and contextualised play environments in early childhood, organised into comparative matrices according to study type, context and results. The findings show that materials with no predetermined use and of local origin simultaneously promote children's motor, cognitive, social and emotional development, provided there is intentional teacher mediation and an institutional environment that is conducive to risky play.

Descriptors: educational facilities and resources; school-age population; educational planning. (UNESCO Thesaurus)

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Research Articles

INTRODUCTION

Educational materials are one of the most decisive mediators of learning at the early years education stage, because it is through them that children explore, manipulate and construct meanings about the physical and social world around them; their quality does not depend on sophistication or cost, but on how they are integrated into the cultural, geographical and social context in which the child operates (which is why contextualised educational material becomes particularly relevant for early years education in Ecuador). In line with this approach, Chookah et al. (2024) documented that natural, unstructured materials offer richer and more flexible play possibilities than single-use manufactured materials, because they allow for multiple forms of manipulation and symbolic representation.

In the specialised literature on child development, loose parts have become established as materials with no specific use (stones, logs, fabrics, seeds or containers) that children freely combine during play and transform and interpret; in this regard, Gibson et al. (2017), through a systematic review, established that loose-parts play simultaneously promotes children's cognitive, social and emotional development, because planning, negotiation and creative problem-solving are all required processes.

Because Ecuador has very rich geographical and cultural diversity (both rural and urban environments have easily accessible natural materials), it is important to consider how this contextual richness can be translated into teaching materials for early years education. Cankaya et al. (2023) showed, in their literature review on loose-parts play, that this type of play is associated with improvements in executive function, creativity and problem-solving in early childhood, regardless of where the material comes from.

Contextualised materials, however, are not free of pedagogical and organisational challenges; Spencer et al. (2019) noted that educators recognise the value of loose-parts play in outdoor settings, but also hold concerns about safety, supervision and the use of space. In line with this, Spencer et al. (2021) found that teachers' views on risky play determine how often, and to what quality, these materials are made available to children.

Similarly, the cultural relevance of educational materials is another dimension that goes beyond the physical component of the resource; Shih (2022) showed, in a case study on the design of a local curriculum for preschool education, that when culturally meaningful elements are included in materials and activities, children's early cultural identity is strengthened and emotional connection to learning is fostered. This is directly applicable to Ecuador, given its cultural plurinationality, which offers a broad repertoire of local materials and knowledge that can be used pedagogically.

In other words, this study does not seek to settle the theoretical debate on teaching materials in early childhood, but rather to provide an operational bridge between international evidence and the resources actually available in Ecuadorian school contexts; from this perspective, the relevance of the study lies in the fact that choosing appropriate materials directly affects the holistic development opportunities offered to children (Johnstone et al., 2022b); indeed, Johnstone et al. (2022b) showed that nature-based education in early childhood leads to simultaneous improvement in social, emotional and cognitive development.

In light of the above, the purpose of this article is to determine the importance of contextualised teaching materials in promoting children's holistic development at early years education level, within the Ecuadorian context.

METHOD

As indicated above, the study is presented as a descriptive documentary design that allowed for the systematisation, description and comparison of the published scientific evidence on contextualised teaching materials, loose parts and natural play environments in early childhood, in order to support a pedagogical proposal relevant to Ecuadorian early years education.

For this purpose, academic sources indexed in databases related to early childhood education, developmental psychology and public health were reviewed (experimental studies, systematic reviews and studies on teacher perceptions of the use of natural and contextualised materials in preschool); on this basis, fifteen sources were selected according to thematic relevance, declared methodological rigour and correspondence with the educational level under study.

As an analytical technique, documentary analysis was used; from each source the following elements were extracted: type of study, geographical context, population served, type of material or intervention described and main results reported. This information was organised into comparative matrices in order to identify common patterns and categories of materials with the strongest empirical support. Given these circumstances, and since the instruction was to include the proposal within the results section, the documentary analysis was structured in two articulated stages: first, systematising the evidence on how contextualised materials affect children's holistic development; second, formulating a proposal of strategies derived directly from this evidence (as a conclusion of the pedagogical feasibility criteria within the results section for Ecuador).

RESULTS

Three main findings emerged from the documentary analysis: those related to the types of contextualised materials reported in the literature; those related to their impact on children's holistic development; and those related to the teaching and institutional conditions that enable their implementation. Table 1 systematises the reviewed studies with the greatest empirical weight for the design of the proposal.

Table 1. *Documentation analysed.*

Author(s) and year	Type of study	Context	Main contribution
Branje et al. (2022)	Randomised controlled multimethod trial	Canada	The outdoor loose-parts intervention improves preschoolers' fundamental movement skills.
Brussoni et al. (2017)	Intervention study	Canada	Natural play landscapes promote nature-based risky play in early childhood centres.
Caldwell et al. (2023)	Randomised controlled multimethod trial	Canada	The outdoor loose-parts intervention improves preschoolers' physical literacy.
Cankaya et al. (2023)	Literature review	International	Loose-parts play is associated with improvements in executive function, creativity and problem-solving.
Chookah et al. (2024)	Observational study	International	Natural materials offer greater play possibilities than single-use manufactured materials.
Gibson et al. (2017)	Systematic review	International	Loose-parts play simultaneously favours cognitive, social and emotional development.
Johnstone et al. (2022a)	Mixed-methods systematic review	International	Nature-based early childhood education improves physical activity and motor competence.
Johnstone et al. (2022b)	Mixed-methods systematic review	International	Nature-based early childhood education improves social, emotional and cognitive development.
Prins et al. (2022)	Systematic review and meta-ethnography	International	Nature play favours holistic development when it is sustained by teacher mediation.
Shih (2022)	Case study	Taiwan	A culturally relevant local curriculum strengthens children's early cultural identity.

Source: Own elaboration (2026).

As Table 1 shows, the international evidence agrees that natural materials and loose parts have positive and consistent effects across domains of child development (motor skills: Branje et al., 2022; Caldwell et al., 2023; cognitive, social and emotional dimensions: Gibson et al., 2017; Johnstone et al., 2022b). Specifically in outdoor settings, Olsen and Smith (2017) showed that outdoor play spaces with loose parts and natural elements provide more sensory and motor experiences than playgrounds with fixed equipment; in this respect, Houser et al.

(2016) established that loose parts in outdoor spaces lead to increases in preschool children's physical activity levels.

Given that risky play is a feature of the use of natural materials, Brussoni et al. (2017) showed that interventions converting outdoor spaces into natural play landscapes increase children's willingness to engage in more challenging, self-regulated forms of play, while Spencer et al. (2021) found that teachers' perception of risk determines the freedom of exploration actually offered to children, so that the availability of materials alone is not enough without a favourable disposition among teachers towards risky play.

With regard to teacher mediation, Smedsrud et al. (2024) established that the educator's position during play in natural outdoor spaces is either one of distant supervision or active participation, and that these positions have different effects on the depth of learning achieved by the child; Prins et al. (2022) likewise showed, through a qualitative meta-ethnography, that nature play favours holistic development only when it is supported by intentional teacher mediation, and not simply when the child is exposed to the environment.

As for the cultural relevance of materials, Shih (2022) showed that when culturally relevant elements (community objects, stories and practices) are included in preschool curricular design, children's early cultural identity is strengthened and the emotional connection with learning activities deepens. This leads us to consider the relevance of using materials from the Ecuadorian environment (seeds, plant fibres, volcanic stones or local craft elements) as part of the pedagogical proposal developed later in this section; as for the categories of materials and practices mentioned in the literature, Table 2 summarises them together with their empirical basis.

Table 2. *Emerging documentary categories.*

Category	Material or practice	Basis
Natural loose parts	Stones, logs, seeds, shells and plant elements with no predetermined use	Gibson et al. (2017); Cankaya et al. (2023)
Repurposed loose parts	Containers, fabrics, tubes and low-cost recycled materials	Chookah et al. (2024)
Naturalised outdoor environments	Play spaces with natural elements instead of conventional fixed equipment	Olsen and Smith (2017); Brussoni et al. (2017)
Supervised risky play	Activities involving moderate physical challenge under flexible teacher supervisión	Spencer et al. (2019); Spencer et al. (2021)
Culturally relevant materials	Community-specific objects, stories and elements incorporated into teaching material	Shih (2022)
Active teacher mediation	Intentional educator accompaniment during play with natural materials	Prins et al. (2022); Smedsrud et al. (2024)

Source: Own elaboration (2026).

As Table 2 shows, the categories of materials with the strongest empirical support share two common features: no prior use (which favours symbolic flexibility in play) and proximity to the child's immediate natural and cultural environment (which favours the contextual relevance of learning). Building on the evidence systematised in the preceding paragraphs, and bearing in mind that this is an applied study, we set out below a proposal of strategies derived directly from these results for integrating contextualised teaching materials into early years classrooms in Ecuador; the proposal is organised around four interrelated components: provision of local natural materials, naturalisation of outdoor spaces, inclusion of culturally relevant elements, and strengthening of teacher mediation in risky-play situations.

The first component, accordingly, the provision of local natural materials, starts from the premise that Ecuador (in both rural and urban areas) has a wide availability of natural elements that can be used pedagogically without being costly. We therefore propose building a basket of contextualised loose parts made up of seeds from different species, river stones, wooden pieces, dried leaves and plant fibres, kept in accessible containers within the classroom. This

measure responds directly to what Gibson et al. (2017) and Chookah et al. (2024) showed: materials with no fixed use are more malleable for symbolic manipulation than manufactured materials with a single function.

The second component, in turn, is the gradual naturalisation of outdoor spaces in early years institutions; within the available yard or outdoor area, it is suggested that a section be set aside with logs, large stones and gentle changes in ground slope, so that children have more varied forms of motor play than those provided by fixed equipment (Olsen and Smith, 2017; Branje et al., 2022). This strategy draws on the work of Olsen and Smith (2017) and Branje et al. (2022), who showed that such environments increase the sensory variety of play and preschoolers' basic motor skills.

In addition, the third component is the intentional inclusion of culturally relevant elements in the educational materials already available in the classroom (objects, seeds and other elements specific to the local community, collected with the support of families; traditional stories and knowledge associated with these materials incorporated into play activities). This line of action was also documented by Shih (2022), who showed that the cultural relevance of educational materials strengthens children's early identity and makes learning more emotionally meaningful.

Accordingly, the fourth component concerns increasing teacher mediation when risky play with natural materials occurs; this involves running brief workshops for teaching staff aimed at distinguishing between acceptable risk and real danger during outdoor play, so as to reduce safety and supervision concerns (Spencer et al., 2019). This training draws on what Spencer et al. (2021) documented: a more informed perception of risky play among teachers increases their willingness to give children greater freedom of exploration.

Specific activities that can be incorporated into the daily routine include, for example: a nature corner (a permanent classroom space with natural loose parts

sorted by type and size); a sensory path (a short outdoor route with different natural textures that children walk barefoot under the teacher's supervision); and a knowledge box (a rotating container in which families place, week by week, an object or material representative of their community, accompanied by a brief oral story). This type of activity is consistent with the contribution of Smedsrud et al. (2024), who showed that active teacher mediation during play in natural spaces increases the depth of learning achieved.

In order to clarify the feasibility of implementation, Table 3 organises the proposal into sequential phases, indicating activities, those responsible and the estimated timeframe.

Table 3. *Feasibility of the proposal.*

Phase	Main activity	Responsible party	Estimated duration
Diagnosis	Inventory of natural materials and outdoor spaces available at the institution	Classroom teacher	2 weeks
Resourcing and preparation	Assembly of the loose-parts basket and preparation of the naturalised outdoor area	Pedagogical coordination	3 weeks
Teacher awareness-raising	Workshop on the mediation of risky play and the pedagogical use of natural materials	Pedagogical coordination	1 week
Implementation	Development of the proposal's four components within the classroom's daily routine	Classroom teacher	1 academic term
Family and community engagement	Collection of local materials and knowledge through the knowledge box	Teacher and families	Throughout the term
Monitoring and adjustment	Qualitative evaluation of material use and adjustment of the proposal	Pedagogical coordination	At the close of each two-month period

Source: Own elaboration (2026).

The proposal described above is based on low-cost local materials, making it more feasible for institutions with limited resources (a common situation in many Ecuadorian contexts); in this sense, the feasibility of the proposal depends mainly on the institution's willingness to prepare outdoor spaces and on teacher training in risky play, rather than on the purchase of costly or imported materials. The

evaluation of the proposal should therefore be both quantitative and qualitative (frequency of spontaneous use of the nature corner; diversity of loose-parts play forms observed; teachers' and families' perceptions of changes in the group's overall development), while the monitoring system allows the proposed strategies to be progressively adjusted according to each institution's conditions.

DISCUSSION

The systematised results of this study allow us to discuss, first, what role materials with no predetermined use play in child development; although the international literature is clear that loose-parts play has benefits (Gibson et al., 2017; Cankaya et al., 2023), this does not depend solely on the nature of the material, but on institutional and teacher willingness to provide sufficient space and time for such play. This consideration is consistent with what Spencer et al. (2019) found: teachers' safety concerns determine how effectively these materials are made available.

Second, the relationship between teachers' perception of risk and the quality of the outdoor play offered to children needs to be discussed. Spencer et al. (2021) confirmed that this relationship is direct: a more informed perception of risky play leads to greater willingness among teachers to offer freedom of exploration. This relationship matters for Ecuador because initial training for early years teachers does not always include content on the pedagogical management of risk, hence the need to strengthen this component both in undergraduate training and in ongoing institutional professional development.

The evidence reviewed also allows us to discuss the importance of naturalised outdoor environments compared with conventional play spaces; Olsen and Smith (2017) and Brussoni et al. (2017), from different geographical contexts, agree that environments with natural elements offer richer play possibilities than fixed equipment. The proposal presented in this study therefore prioritises the progressive naturalisation of outdoor spaces over recommending the acquisition

of costly structured equipment, reflecting both the empirical evidence and the economic feasibility conditions of many Ecuadorian institutions.

The limitations of the evidence reviewed in terms of its direct applicability to Ecuador must also be addressed; all of the systematised studies were carried out in contexts other than Latin America (Branje et al., 2022; Johnstone et al., 2022a; Shih, 2022), with climatic, institutional and cultural conditions very different from those found in early years institutions in Ecuador, so that the uncritical transfer of these strategies without contextual adaptation could reduce their relevance.

The approach proposed here therefore prioritises locally sourced materials and community knowledge (Shih, 2022), as documented in her study on the design of a culturally relevant local curriculum, in which community-specific elements strengthen both children's early cultural identity and the relevance of the pedagogical proposal. Similarly, teacher mediation must be discussed as a necessary but not sufficient condition for contextualised materials to produce the effects described in the literature; Prins et al. (2022) and Smedsrud et al. (2024) agree that play in natural environments promotes holistic development only when it is supported by intentional teacher mediation, which explains the methodological choice to include, within the proposal itself, a specific teacher-strengthening component, rather than limiting the intervention solely to the provision of materials.

Contrary to a purely material view of pedagogical contextualisation, the evidence reviewed shows that the relevance of educational material is not only physical (its origin), but also the cultural and relational meaning it acquires in classroom practice; Johnstone et al. (2022b) synthesised that early childhood education in natural environments leads to simultaneous improvements in social, emotional and cognitive development, so that contextualisation is a holistic approach that goes beyond the strictly motor or physical dimension.

With regard to motor development and natural materials, we also observe that the benefits are not only physical (Caldwell et al., 2023; Branje et al., 2022): preschool children's physical literacy and basic motor skills improved following outdoor loose-parts interventions (Caldwell et al., 2023; Branje et al., 2022), which means that the proposal presented in this study could have benefits beyond the cognitive and cultural domains described above. It is worth noting that the proposal was formulated within the results section rather than as a separate section precisely because the systematised evidence supports it directly, so that each component formulated is explicitly backed by the studies reviewed previously (ensuring traceability between the documentary diagnosis and the recommended strategies).

CONCLUSION

The documentary analysis showed that contextualised teaching materials are a key mediator of children's holistic development at the early years education level in Ecuador, because the systematised evidence demonstrated that natural, reusable loose parts simultaneously improve the child's motor, cognitive, social and emotional dimensions, regardless of the cost of the resource used. Accordingly, the proposed approach was directly aligned with the stated objective, articulating four components based on patterns systematised in the results: a basket of contextualised loose parts; the progressive naturalisation of outdoor spaces; culturally relevant elements through family participation; and the strengthening of teacher mediation in risky-play situations. The feasibility of this proposal thus depends less on institutions' financial resources than on the willingness of teachers and institutions to prepare spaces and train staff, which is a precondition for the freedom of exploration offered to children. Contextualising educational material with resources from the immediate environment and local cultural heritage is therefore not an alternative, but a sustainable and viable transformative strategy for holistic development in early years institutions in Ecuador.

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CONFLICT OF INTEREST

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