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Research articles

From scrap materials to imagination: Environmental Education through free play

De sucatas à imaginação: Educação Ambiental por meio do brincar livre

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Abstract

The article addresses the relevance of free play in Early Childhood Education, with an emphasis on the use of unstructured materials, such as recycled objects, to foster children's creativity and imagination. By re-signifying simple objects, children exercise their autonomy while incorporating sustainability values, thus promoting Environmental Education. The text reflects on the challenges faced by institutions in implementing this practice, highlighting the need for continuous teacher training. As an example, the "Baú Brincante" project is presented, which uses unstructured materials to enrich playful and pedagogical experiences. The qualitative and bibliographical research highlights the pedagogical benefits of using recycled materials. The results indicate that free play, associated with the reuse of materials, plays an essential role in child development, strengthening children's creativity and ecological awareness.

Keywords: free play; imagination; scrap materials; sustainability.

Resumo

O artigo aborda a relevância do brincar livre na Educação Infantil, com ênfase no uso de materiais não estruturados, como sucatas, para fomentar a criatividade e a imaginação infantil. Ao ressignificar objetos simples, as crianças exercem sua autonomia, ao mesmo tempo em que incorporam valores de sustentabilidade, promovendo a Educação Ambiental. O texto reflete sobre obstáculos enfrentados pelas instituições na implementação dessa prática, destacando a necessidade de formação contínua dos educadores. Como exemplo, é apresentado o projeto "Baú Brincante", que utiliza materiais não estruturados para enriquecer as experiências lúdicas e pedagógicas. A pesquisa, de abordagem qualitativa e bibliográfica, evidencia os benefícios pedagógicos do uso de sucatas. Os resultados apontam que o brincar livre, associado à reutilização de materiais, exerce papel essencial no desenvolvimento infantil, fortalecendo a criatividade e a consciência ecológica das crianças.

Palavras-chave: brincar livre; imaginação; sucatas; sustentabilidade.

INTRODUCTION

My backyard is larger than the world.
I am a gatherer of waste:
I love the leftovers
like good flies do.
I wished my voice had the shape of a song.
Because I am not from informatics: I am from inventionatics.
I only use the word to compose my silences[1].
(Manoel de Barros, 2010).

[1] This excerpt is from the poem "O apanhador de desperdícios" (The Gatherer of Waste) by Brazilian poet Manoel de Barros (1916-2014), included in the book Memórias Inventadas: A Infância (Invented Memories: Childhood), published in 2010. Barros is renowned for his poetic celebration of simplicity, childhood, and the value found

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In the poetic universe of Manoel de Barros, remnants and silences come to life, transforming themselves into song and invention. This same logic pulsates in free play, where childhood finds poetry in simple and forgotten things. Toys emerge from twigs, boxes become castles, and the world expands from what would be discarded. Just as the poet resignifies the word, the child resignifies the object, creating universes while unknowingly practicing sustainability. It is in the lightness of improvisation and the magic of the unexpected that the spirit of play intersects.

In this scenario, the threads of free play and childhood reveal themselves as a portal, in which imagination transforms the ordinary into the extraordinary. In this context, unstructured materials become artifacts full of possibilities, connecting the child to the world around them, not as an apprentice to adults, but as a creator of stories. Inspired by the words of Manoel de Barros (2010), "I am of the inventionatics", we perceive that the child, in their playing process, resignifies what they find, attributing new forms and functions to objects. Thus, play, combined with sustainable and ecological education, emerges as a potent act of invention and belonging, in which the child transforms challenge into surprise, revealing new meanings and significances to the world.

We emphasize that the present study arises from the need to address the possible relationships between sustainability, free play and their potential to awaken children's imagination through the results and discussions of a research project entitled "Baú Brincante"[2]: The Potential of Unstructured Materials for Free Play of Early Childhood Education Children", which aims to explore the Baú Brincante, understanding how its unstructured materials/recyclables promote free play and disseminate play culture in Early Childhood Education.

And it is in this perspective that free play connects children to creative and meaningful experiences, in which, just as in the verses of Manoel de Barros (2010), they become "gatherers of waste", transforming unstructured materials into possibilities to create, recreate, and give shape to their imagination. This process, marked by simplicity and inventiveness, strengthens children's ludic culture, allowing each play activity to be a unique "corner" of expression and integration with a more sustainable and ecological world. Cardoso (2018) emphasizes that, when playing, children explore their creativity and imagination, experiencing freedom and producing new existential and cultural states of childhood.

Based on this approach, Environmental Education is frequently implemented through school projects that involve students with environmental issues, such as projects like Baú Brincante. This theme is widely addressed as a cross-cutting theme in the curriculum, as established by Law No. 9,795/1999, which institutes the National Environmental Education Policy (Brasil, 1999). According to the legislation, Environmental Education must be integrated in an articulated manner at all levels and modalities of education, both in formal and non-formal education. According to Segura (2001, p. 21):

> The school was one of the first spaces to absorb this process of society's "environmentalization", receiving its share of responsibility to improve the population's quality of life through information and awareness-raising.

Furthermore, Environmental Education in schools plays a fundamental role in forming a more critical, reflective, and sustainable society. However, many teachers face various challenges in integrating environmental themes into daily school life. Since educators need to assume the role of mediators, seeking continuous knowledge and encouraging in students a reflective awareness about environmental issues.

It is worth emphasizing that the adoption of scrap materials requires a change in the conception of pedagogical resources, breaking with the consumption of industrialized toys and demanding

in what society discards. The original text in Portuguese reads: "Meu quintal é maior do que o mundo. / Sou um apanhador de desperdícios: / Amo os restos / como as boas moscas. / Queria que a minha voz tivesse um formato de canto. / Porque eu não sou da informática: eu sou da invencionática. / Só uso a palavra para compor meus silêncios".

[2] The project was developed through a partnership between the Research Group - GEPEL, from the Federal University of Bahia - UFBA and the Study Group - GEPELINF, from the State University of Southwest Bahia - UESB, and was carried out at a specific daycare center in the city of Jequié-BA. It is a playful or ludic artifact that provides support to foster free play experiences for children in Elementary School I, as well as a space for experience and training for educators regarding play and children's ludic culture (Cardoso, 2018).

a critical perspective on reuse and sustainability. Added to this is the challenge of preparing educators to exercise their roles as mediators in a process that does not follow rigid scripts, but rather the rhythm and discoveries of the children themselves. This situation points to the need for deeper debates about the cultural and institutional resistances that still limit the insertion of transformative ludic practices in Early Childhood Education.

In educational spaces, it is common to find industrialized toys, characterized as "[...] produced on a large scale, dominating the market and being responsible for great demand" (Lima; Martins; Abreu, 2021, p. 88). In addition to these, there are also materials known as unstructured, defined by Cardoso (2018), as artifacts, recyclable objects handled by children while they play, gaining new meanings through those who play, and which enhance the experiences of free play. Therefore, it is possible to perceive the difference between the use of industrialized/structured toys, which are commercially available in ready-made and objective forms, and the use of unstructured materials, which allow any utensil to be transformed into a toy, awakening the child's imagination and creativity.

In line with this perspective, Resolution CNE/CEB No. 1/2024 recognizes the importance of diversified educational environments and guides that pedagogical practices ensure daily moments in outdoor spaces, favoring contact with nature and free play as children's rights (Brasil, 2024). However, there is still a gap between what the legislation proposes and what is actually implemented in institutions, where play often remains restricted to indoor environments.

Despite the numerous potentialities of free play and the use of scrap materials, being "[...] very rich objects that cost nothing and that would often be polluting the environment for not being biodegradable", as Machado (2001, p. 42) already argued, some challenges still present themselves to educational practice in this context. Considering what research in the area of Early Childhood Education (Tiriba, 2018; Santos, Gomes; Iared, 2023; among others) indicates, children are increasingly confined to classrooms, with reduced time to investigate outdoor spaces. These studies also point out that, due to sedentarism and the globalization process, people have been distancing themselves from natural environments, which has implications for health and pedagogical aspects, especially in children (Santos; Gomes; Iared, 2023).

The distancing of children from nature has caused worrying effects, such as obesity, myopia, depression, and ADHD, as highlighted by Louv (2016) when formulating the concept of Nature Deficit Disorder (NDD)[3]. For the author, although children are aware of environmental threats, they have increasingly less direct contact with the natural world, which reduces opportunities for outdoor play and impoverishes sensitive, aesthetic, and creative experiences.

According to Tiriba (2024), the paradigm of modernity consolidated a vision of nature as an object of human domination, sustained by the divorce between body and mind and by the distancing between subject and object—foundations of a science focused on the control and instrumentalization of the natural world. Inserted in this context, the school institution has historically contributed to the confinement of children, forming docile and disciplined bodies, adjusted to the demands of capitalism and distanced from the rhythms and movements of natural life.

According to Oliveira, Souza and Araújo (2019), in the current context, marked by the logic of the Cultural Industry of consumption, industrialized/structured and technological toys stand out as important references in children's lives. Therefore, the authors emphasize:

> Entertainment, play, imagination, and fantasy are conditioned by the process of persuasion, manipulation, and seduction of the commodity, having as spokesperson the Cultural Industry that stimulates individuals (children and adults) toward the consumerist process of the technological toy commodity (Oliveira; Souza; Araújo, 2019, p. 29).

Several questions arise around this theme: What are the challenges faced by institutions when incorporating free play practices with unstructured materials? To what extent are educators prepared to mediate these experiences without limiting children's creativity? How can we

[3] Nature Deficit Disorder (NDD) is a phenomenon identified in scientific research that highlights the importance of contact with nature for children's healthy development, both physical and mental (Louv, 2016).

overcome traditional school culture, which prioritizes standardized activities, in favor of more open and spontaneous practices? And is the use of unstructured materials fully understood as an opportunity to promote sustainability, or does it still face resistance in school and family communities? These questions reflect the complexity of implementing practices that respect children's autonomy while engaging with current social and environmental challenges.

As a counterpoint to this scenario, Louv (2016, p. 234-235) presents the concept of "Ecoschools"[4], the proposal being to integrate the natural environment into the school structure, transforming courtyards, gardens, and grounds into living spaces, fertile for play and experimentation. This process, termed by the author as "naturalizing their grounds", reaffirms the fundamental role of the school in guaranteeing children's right to daily contact with nature, especially in urban contexts, where this access is increasingly restricted.

Considering the context addressed and based on the gaps and questions raised above, interest arises in investigating how the use of scrap materials/unstructured materials, combined with free play, can contribute to children's Environmental Education, promoting creativity, ecological awareness, and sustainable values through ludic and interactive practices. As Tiriba (2018) highlights, outdoor environments can function as true natural classrooms, allied with nature, they are territories of enchantment and diversity, which awaken interactions, investigations, and continuous play.

Therefore, free play, especially when mediated by the use of unstructured materials, constitutes a transformative educational practice to boost the creative process and environmental awareness in Early Childhood Education. However, for such practices to be consolidated, it is necessary to confront the challenges imposed by cultural and institutional resistances, rethinking the role of the educator and the structure of pedagogical practices. Thus, initiatives such as the Baú Brincante project reinforce the importance of integrating innovative proposals that dialog with social, environmental, and educational contexts, contributing to the formation of creative and conscious subjects.

METHODOLOGY

The present study adopts a qualitative approach, with the objective of understanding in depth the practices and meanings attributed to free play, mediated by unstructured materials, in the educational environment. As Gil (2008) points out, qualitative research aims to explore phenomena in their natural context, focusing on the detailed interpretation of the interactions and dynamics observed, without the intention of quantifying data, but rather of capturing the richness of lived experiences.

The Baú Brincante research was developed between October 2022 and August 2025, at a specific university daycare center, which serves children from zero to five years old and is located in the municipality of Jequié-Bahia, always on Thursdays, in the afternoon shift, when unstructured materials, such as bottles, blenders, telephones, and costumes, were made available for free play.

Data were collected through observations, oral narratives, photographic records, and field diary, recording experiences lived with the children. By closely monitoring the children's interactions with unstructured materials for the production of play activities, it was possible to capture subtle nuances of creativity and scenes that on other occasions might escape adult attention.

For the writing of this article, we will initially present a discussion about free play and Environmental Education, fostering creativity and ecological awareness in childhood, as well as sustainability and critical consciousness and the benefits of free play with scrap materials, dialoguing with authors such as Brougère (2021), Kishimoto (2003, 2010), Kishimoto and Freyberger (2012), Girardello (2011), Buckingham (2011), and Fochi (2015), who analyze the role of the ludic in child development. Subsequently, we present research results through reflections in light of the contributions of Piorski (2016), Damas (2023), Meirelles and Horn (2017), Tiriba (2018, 2024), among others, whose reflections broaden the understanding of the

[4] Institutions planned or adapted to integrate nature into daily school life. Such experiences are reported mainly in European contexts, with initiatives known as "outdoor schools" and "nature schools".

use of unstructured materials and their relevance for child development and the importance of ludic and sustainable practices in education.

FREE PLAY AND ENVIRONMENTAL EDUCATION: FOSTERING CREATIVITY AND ECOLOGICAL AWARENESS IN CHILDHOOD

Play performs a fundamental role in child development, allowing children to relate to the world around them in an active and creative way. When related to the use of unstructured materials, such as scrap materials, this process becomes even more significant, as it awakens the child's imagination, invention, and autonomy. As Brougère (2021) points out, play is a social and cultural act, in which the child not only discovers their capabilities, but also builds an understanding of their role in the world.

In this way, by integrating free play and sustainability practices, such as the use of unstructured materials, it is possible to foster environmental awareness and creativity, providing ludic experiences that connect children with the world in a meaningful, sustainable, and ecological manner. According to the authors Terra and Coelho (2005, p. 313):

> A retrospective of the environmental issue in Brazil shows that the first more objective governmental initiatives for environmental protection occurred in the 1930s. For example, in 1934, the Water Code was instituted by law (applied to the present day), which regulated the use and protection of water resources, and the Forest Code was approved.

Upon reflecting on the environmental crisis and its causes, driven by industrialization and consumerism, it can be observed that it generated the first governmental protection initiatives in Brazil, such as the creation of the Water Code and the Forest Code in the 1930s (Terra; Coelho, 2005). These actions highlight the necessity of Environmental Education, which must be integrated into the formation of new generations. In this context, practices such as free play can perform an important role, enhancing ecological awareness and a reflective perspective on environmental challenges, contributing to a more sustainable future. From this perspective, Segura (2001, p. 165) asserts:

> When we talk about environmental education we can travel in many things, but the first thing that passes through the human being's mind is the environment. It is not only the physical environment, that is, the air, the earth, the water, the soil. It is also the environment that we live in – the school, the home, the neighborhood, the city. It is the planet in general [...].

As can be observed, Environmental Education becomes even more relevant when analyzed from the perspective presented previously, which highlights the importance of free play and the use of unstructured materials for child development. Considering that "[...] awareness is very important and this has to do with education in the broadest sense of the word [...] knowledge in terms of consciousness [...]" Segura (2001, p. 165). From this perspective, in a world marked by industrialization, globalization, and consumerism, children's relationship with the natural environment needs to be rethought, and free play can be a great facilitator of this process.

Moreover, the use of simple materials encourages children's creativity, enhances imagination, and promotes sustainable values, helping children to understand their connection with the world and the importance of a more balanced and responsible coexistence with nature, since these materials, in an educational context, "[...] gain new life/lives in the constructions, play activities, and creations of children" (Damas, 2023, p. 73).

And it is in this approach that free play and Environmental Education can walk together, contributing to the development of a more conscious generation committed to environmental preservation. According to Damas (2023, p. 73) "[...] the children became more sensitized and aware of the utilization of certain materials over their abandonment or sending to the trash". In this direction, free play with unstructured materials/scrap materials emerges as a transformative educational practice, because as Damas (2023) highlights, these materials, when

explored in educational contexts, gain new functions and sensitize children to the importance of preserving the environment. Thus, as the child plays, they learn to express themselves, creating and recreating new toys and participating in new experiences.

In view of this, it is important to highlight that the capacity to create and imagine, although intrinsic to the child, needs to be awakened and expanded. Therefore, everyday elements, such as scrap materials and unstructured materials, with different textures and forms, encourage this imagination and allow the child to express themselves and interact with the environment. As Piorski (2016, p. 63) emphasizes:

> [...] the child's imagination cannot resist the appeal of material life, because its nourishment, its proliferation, lies in the matter of the world. There is here a mirrored life: imagination is given to material substance, just as matter is given to imagination. The two cohabit in a dynamic becoming, creator of new images.

Furthermore, "[...] imagination is for the child a space of freedom and takeoff toward the possible, whether achievable or not" Girardello (2011, p. 76). Therefore, imagination is an essential element that permeates the moments of children's free play, especially in open spaces and with diverse materials, where they can freely explore, interact with real or fictitious environments and create entire worlds (Girardello, 2011). Parallel to these considerations, it is possible to infer that the desire to explore and materialize the imaginary drives new discoveries and opens multiple possibilities. In sum, free play associated with Environmental Education presents itself as a powerful practice to foster creativity, ecological awareness, and children's sense of belonging to the world.

SUSTAINABILITY, CRITICAL CONSCIOUSNESS AND THE BENEFITS OF FREE PLAY WITH SCRAP MATERIALS

Free play, as a fundamental practice in child development, constitutes itself as a central element in the cognitive, affective, and psychomotor formation of children. As previously emphasized, by participating in this process of spontaneous interaction with the world, the child moves through a universe of possibilities where their creativity manifests and their social and emotional relationships are built in an authentic manner.

In the educational context, it is imperative that the school environment become a privileged space for the development of these ludic experiences, and it is essential that educators recognize play not only as a form of entertainment, but as an action that enhances learning and the integral formation of the human being. Play, as outlined by Kishimoto (2010), is a free action that emerges from the child's own desire, a practice that configures and reorganizes itself at every moment, without external constraints, allowing the child the right to express themselves fully.

In this scenario, some questions gain relevance and guide its proposal: How can educational institutions organize their spaces and times so that free play is valued as a children's right? In what way can pedagogical practices integrate the use of unstructured materials, such as scrap materials, to nurture both the creativity and the critical and environmental consciousness of young children? These inquiries serve as a starting point to reflect on the role of the educator, who is not limited to passive observation of play, but positions themselves as an active mediator in this process.

Observing contemporary pedagogical practices, it is possible to perceive a growing valorization of free play, but also an important need for transformation in educational spaces, which often still do not provide adequate conditions for play to happen fully. Institutions must create environments that favor the child's autonomy, allowing them to explore the world through their own experiences, whether outdoors or in the use of materials that they themselves can transform.

In this panorama, the use of scrap materials emerges as an excellent alternative, because, by manipulating recyclable materials, the child expresses their creativity and engages in a process of environmental awareness. What would previously be discarded becomes raw material for the creation of new realities, expanding the horizon of possibilities for construction

and reflection on consumption, waste, and sustainability. Thus, the practice of playing with scrap materials is not limited to a simple recreational activity, since, by giving new meanings to objects, children exercise their motor and cognitive skills, and simultaneously learn to reconfigure the environment around them, understanding, from an early age, the importance of rethinking forms of consumption and waste production.

This movement of resignification of materials and ideas also favors the development of children's social and emotional competencies. Playing with scrap materials, frequently carried out in groups, allows them to develop skills such as negotiation, collaboration, and joint problem-solving. That is, unstructured materials offer a fertile field for experimentation and innovation, allowing the child to create and transform objects, giving them new meanings and uses, according to their own perceptions and needs. In this way, these materials are a window to the everyday world, where children can manipulate and explore objects that are part of their universe (Buckingham, 2011).

In light of this understanding, scrap materials can be considered as unstructured materials, since they are simple objects, originally intended for specific purposes, but which, when manipulated by children, can acquire a variety of new uses. In children's hands, they come to life and elements such as fabrics, corrugated cardboard, milk cartons, and plywood, for example, can be transformed into different constructions that facilitate children's play (Kishimoto; Freyberger, 2012). Unlike industrialized toys, which generally have a single predetermined function, objects made from unstructured materials encourage and allow children to reinvent them. From this perspective, Fochi (2015, p. 131) makes the following mention:

> [...] accompanying a group of young children with unstructured materials can bring many questions to be reflected upon regarding pedagogical work, but, above all, it can be an observation agenda for the adult about children and the construction of their knowledge. At the same time, from the perspective of the dynamics of pedagogical work, these materials create an atmosphere in which unpredictability occupies an important space: we do not know what the children will do and what meaning they will give to them in that space with other children.

Therefore, by integrating free play and the use of scrap materials in the pedagogical context, the educator contributes to the construction of a learning environment that awakens critical awareness about environmental issues. In this space of freedom and creativity, the child establishes themselves as an active protagonist, capable of reflecting on the world and transforming their reality. Thus, free play is a powerful driver, capable of integrating the various dimensions of child development, preparing the child for future challenges in a creative, responsible, and conscious manner.

PRACTICAL EXPERIENCES: CHALLENGES AND POTENTIALITIES

As addressed in the previous topic, the exploration of unstructured materials, such as scrap materials and discarded objects, configures itself as a powerful pedagogical strategy that transcends the simple utilization of materials. By transforming what seems to be merely disposable into a favorable field for free play, this practice promotes children's creativity and autonomy, as well as favoring reflection on the consumption and disposal of resources. In this context, the Baú Brincante Project emerges as a practical realization of this proposal, offering an experience that harmoniously integrates playfulness, sustainability, and child development.

The Baú Brincante Project, initiated in 2017 in a public school in Jequié-Bahia, provides unstructured materials to promote free play and children's creativity. The project allows children to transform discarded objects into new toys, encouraging reinvention and critical thinking. According to Cardoso (2018), Baú Brincante offers a rich pedagogical experience, favoring reflection on ludic culture and awakening educators to rethink their practices. Between 2022 and 2025, the project expanded to a UESB university daycare center, extending its reach to Early Childhood Education.

From this perspective, the implementation of Baú Brincante emerges as a practical experience, materializing the concepts discussed in this study, as it offers a space where children play

freely with unstructured materials. In this way, the Baú presents itself as an environment of pedagogical experimentation, in which educators and students experience, in a tangible way, the benefits of ludic and sustainable practice, recognizing the transformative power of scrap materials/unstructured materials.

Within the scope of this proposal, images are presented below that document the children's experience in the Baú Brincante environment. The photographs capture emblematic moments in which the students, when handling unstructured materials, engage in practices that enhance creativity and inventiveness. These visual records, as illustrated in Figure 1, highlight the transformative power of free play, demonstrating how simple objects, such as pieces of cardboard, wooden blocks, and discarded appliances, are resignified by children, becoming elements of new narratives and imaginative worlds.

Figure 1. Children's free play with unstructured materials from Baú Brincante.
Source: Personal archive (2023).

As illustrated, and in accordance with the ideas of Bomtempo (2011, p. 75), it is observed that "[...] the toy appears as a piece of culture placed within the child's reach. It is their partner in play. The manipulation of the toy leads the child to action and representation, to acting and thinking". Therefore, it is possible to analyze that children assume an active and creative role in play, while the unstructured toy acts as a facilitator, allowing them to explore new possibilities. For example, a simple cardboard box, originally considered a discarded object, can be transfigured by the child's imagination, transforming into a car, a house, or even a spaceship.

Thus, the process of recreation expands the symbolic and creative repertoire of children, highlighting the role of play as a form of expression and learning. From this perspective, the materials used in the act of playing, especially unstructured ones, offer a vast field of possibilities, as they do not impose predetermined uses. They are elements that awaken curiosity and encourage creative exploration, allowing the child to attribute their own meanings and resignify their experiences. As Silva (2019, p. 4) states:

> The materials do not predetermine how they should be used. They do not present a single function, they generate doubt, they make the child think and create through their own criteria. Who signifies, resignifies or determines their use is the child, during exploration. We thus perceive that unstructured material has many Learning Territories and artistic experiences [...].

During this practice, as evidenced in Figure 2 below, it was observed that the scrap materials, that is, the unstructured materials, function simultaneously as ludic elements and as points of connection with the children's social and cultural reality.

Figure 2. Scenes of everyday life woven by children's play.
Source: Personal Archive (2023).

In this way, materials previously destined for the trash were rescued and integrated into the Baú Brincante, where they began to perform new functions in the children's creative universe. When manipulating them, the little ones frequently associated them with work roles, spontaneously recreating scenarios that reflected the routine of the adult world. This type of play, which can be characterized as make-believe or symbolic, as defined by Kishimoto (2003, p. 39), "[...] makes the presence of the imaginary situation more evident" by allowing the child to explore different experiences and meanings.

Furthermore, by bringing meaning to these materials, children reveal how the act of playing goes beyond simple imitation; acting as a learning space where they can experiment and

experience different roles, transforming reality into an extension of their own imagination. This practice demonstrates the importance of reusing unstructured materials, such as scrap materials, which, when resignified in the ludic universe, provide new opportunities for creation and discoveries, reaffirming the relationship between play and the construction of knowledge.

As illustrated in Figure 3, the spontaneous moment in which the child interacts with wooden blocks, stacking them in a natural manner, evidences the freedom of play. This activity allows the child to explore and experiment with concepts such as balance, proportion, and construction.

Figure 3. Among blocks and findings, children explore and create.
Source: Personal Archive (2023).

Besides favoring creativity and autonomy, play contributes to the development of cognitive skills, such as spatial perception and motor coordination. As Goldschmied and Jackson (2006, p. 152) state, "[...] they select, discriminate and compare, arrange in series, stack and test their balance, with increasing skill and satisfaction". In this way, the act of playing with these materials promotes individual expression and strengthens essential competencies for childhood, expanding confidence and problem-solving capacity.

Considering this context, the children's actions, such as stacking, grouping, or exploring in different ways the available materials, demonstrated how play is intrinsically connected to the act of discovering and experimenting. As Meirelles and Horn (2017) emphasize, there is no correct or incorrect model of interaction with these objects; the process is, by essence, open and free. In a complementary way, Buckingham (2011) emphasizes that discarded materials can be transformed into valuable ludic "treasures", reaffirming the importance of initiatives like the Baú Brincante, which transcend the act of playing, creating a space of experimentation full of creative and formative possibilities.

From the experiences provided by the Baú Brincante, it is concluded that the children's interaction with unstructured materials evidences the transformative power of free play. Faced with this reality, previously discarded objects gain new functions, becoming sources

of creativity and learning. By manipulating these materials, children improve their cognitive and motor skills, while reinterpreting reality by attributing their own meanings. Furthermore, the project promotes awareness about sustainability, instilling in children the importance of caring for the environment. Thus, the Baú Brincante configures itself as an integral pedagogical space, in which imagination, creativity, and socio-environmental responsibility intertwine.

CONCLUSION

Free play, mediated by the use of unstructured materials, such as scrap materials, is a fundamental pedagogical practice for the integral development of the child. By transforming disposable objects into new possibilities, children exercise their creativity and autonomy, while simultaneously establishing a deeper relationship with the environment around them. This approach is an invitation for children to engage actively in the creation of their own worlds, discovering and learning in a unique way.

Initiatives like the "Baú Brincante" Project exemplify the transformative impact of unstructured materials. By integrating playfulness and sustainability, the project offers children the opportunity to explore and create with simple materials, encouraging them to rethink consumption and value reuse. Therefore, this educational practice expands the child's horizon and connects them to environmental issues in a practical and meaningful way.

However, for these practices to become more present in schools, it is necessary that educational spaces open themselves to new pedagogical possibilities. The use of unstructured materials, as exemplified in the Baú Brincante, reveals how the simple can be extraordinary and how the most common objects can be transformed into powerful learning tools.

Consequently, in light of the findings presented here, the opportunity arises to understand some questions: What occurs when we give children the freedom to create from the simple? By allowing them to explore the world with unstructured materials, what do they reveal to us? They show us that play goes beyond entertainment; it becomes a profound process of discovery and invention, in which any object is transformed into a source of learning. By providing children with the opportunity to construct knowledge from scrap materials, we not only teach about sustainability, but also encourage a more attentive and creative perspective on the world. Therefore, it is in the simple, the free, and the creative that the greatest pedagogical transformations reside, capable of building a conscious and innovative future.

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Authors contribution

GOP: Conceptualization (study design, definition of research questions and objectives); Methodology (development of the research design); Data collection (conducting experiments and implementing data collection procedures such as forms/interviews, for example); Data analysis (interpretation of results and attribution of meaning based on predetermined theoretical frameworks); Writing (drafting of the original manuscript); Data visualization (visual organization, preparation of tables, charts, and other graphic elements); Review (critical review of the original manuscript and approval of the version to be submitted). MCC: Conceptualization (study design, definition of research questions and objectives); Methodology (development of the research design); Data analysis (interpretation of results and attribution of meaning based on predetermined theoretical frameworks); Project administration (guidance, supervision, or coordination); Funding acquisition (securing financial resources); Writing (drafting of the original manuscript); Review (critical review of the original manuscript and approval of the version to be submitted). AVS: Conceptualization (study design, definition of research questions and objectives); Methodology (development of the research design); Data collection (conducting

experiments and implementing data collection procedures such as forms/interviews, for example); Data analysis (interpretation of results and attribution of meaning based on predetermined theoretical frameworks); Writing (drafting of the original manuscript); Data visualization (visual organization, preparation of tables, charts, and other graphic elements); Review (critical review of the original manuscript and approval of the version to be submitted).

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