ECOINFORMATION STRATEGIES PRESENT IN BRAZILIAN PACKAGING FOR CHILDREN

ESTRATÉGIAS DE ECOINFORMAÇÃO PRESENTES EM EMBALAGENS BRASILEIRAS VOLTADAS PARA O PÚBLICO INFANTIL

ESTRATEGIAS DE ECOINFORMACIÓN PRESENTES EN ENVASES BRASILEÑOS DIRIGIDOS AL PÚBLICO INFANTIL

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ABSTRACT

This paper aims to investigate how packaging design has been incorporated eco-information targeting children, as well as whether the verbal and non-verbal strategies used align with guidelines for promoting sustainability education. The research reported in this article has an exploratory bias and consisted of three phases. Initially, a field study was conducted in 7 supermarkets to collect and document packaging containing eco-information aimed at children. This was followed by data analysis focusing on the location and emphasis of eco-information on packaging surfaces. Lastly, an analysis was conducted using the instrument proposed by the research group to relate eco-information to guidelines for promoting sustainable education. The results highlighted the relation between verbal and non-verbal strategies adopted in packaging design for children and the guidelines for promoting sustainability education. They emphasized packaging as a vehicle for disseminating eco-information and its contribution to changing habits in the children's context.

KEYWORDS

Packing design; Ecoinformation; Design for sustainable behavior; promoting sustainability education.

RESUMO

O presente artigo objetivou investigar como o design de embalagem vem trabalhando a ecoinformação com foco no público infantil, bem como se as estratégias verbais e não verbais utilizadas estão alinhadas às diretrizes para promoção da educação em sustentabilidade. A pesquisa relatada neste artigo tem viés exploratório e consistiu em três fases, sendo inicialmente realizado um estudo de campo em 7 supermercados para coleta e registro de embalagens contendo ecoinformação com foco no público infantil, seguido pelo tratamento dos dados a partir da localização e ênfase das ecoinformações nas superfícies das embalagens e por fim, foi conduzida uma análise a partir do instrumento proposto pelo grupo de pesquisa a fim de relacionar as ecoinformações às diretrizes para promoção de educação sustentável. Os resultados apresentados expuseram a relação das estratégias verbais e não-verbais adotadas no design de embalagem voltadas ao público infantil às diretrizes para promoção da educação em sustentabilidade, enfatizando a embalagem como veículo para difusão de ecoinformação e sua contribuição para a mudança de hábitos no contexto infantil.

PALAVRAS-CHAVE

Design de embalagem; Ecoinformação; Design para o comportamento sustentável; promoção da educação em sustentabilidade.

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RESUMEN

El presente artículo tuvo como objetivo investigar cómo el diseño de envases ha estado trabajando la ecoinformación con enfoque en el público infantil, así como si las estrategias verbales y no verbales utilizadas están alineadas con las directrices para la promoción de la educación en sostenibilidad. La investigación reportada en este artículo tiene un enfoque exploratorio y consistió en tres fases: inicialmente se realizó un estudio de campo en 7 supermercados para la recolección y registro de envases que contienen ecoinformación con enfoque en el público infantil, seguido por el tratamiento de los datos a partir de la ubicación y énfasis de las ecoinformaciones en las superficies de los envases, y finalmente se llevó a cabo un análisis basado en el instrumento propuesto por el grupo de investigación con el fin de relacionar las ecoinformaciones con las directrices para la promoción de la educación sostenible. Los resultados presentados expusieron la relación de las estrategias verbales y no verbales adoptadas en el diseño de envases dirigidos al público infantil con las directrices para la promoción de la educación en sostenibilidad, enfatizando el envase como vehículo para la difusión de ecoinformación y su contribución al cambio de hábitos en el contexto infantil.

PALABRAS CLAVE

Diseño de envases; Ecoinformación; Diseño para el comportamiento sostenible; promoción de la educación en sostenibilidad.

1. INTRODUCTION

The environmental issue has prompted the development of strategies aimed at making products less harmful to the environment. In design, project guidelines based on the principles of environmental sustainability have led to the emergence of a new category of products known as "ecologically oriented products." These products provide greater environmental benefits or impose lower environmental costs compared to others (Orsato, 2002).

In the context of packaging design, the Brazilian Packaging Association (ABRE, 2023) defines "sustainable packaging" as those that protect the contents through solutions that optimize the use of environmental resources, while also allowing for the closure of the life cycle and the recycling or reuse of raw materials. With this approach, packaging has begun to reduce the damage caused by the high volume of consumption associated with its ephemeral nature.

However, while adopting sustainable design strategies is of great importance, the Akatu Institute (2019) emphasizes the role of information as a means to break down barriers between sustainable products and consumers. According to research conducted by the institute, access to information about sustainability acts as a trigger for conscious consumption.

Packaging design can provide solutions that contribute to promoting conscious consumption through strategies capable of informing consumers about sustainability-related topics. This is possible because packaging design considers not only functional and production aspects but also communicational aspects (Teixeira, 2011).

Eco-information involves strategies aimed at making sustainability-related information visible, understandable, and accessible, enabling users to reflect on their habits (Bhamra; Lilley; Tang, 2011). It falls within the dimension of design for sustainability, which aims to empower and promote responsible and sustainable consumption through education (Bhamra; Lilley; Tang, 2011).

The objective of this paper is to investigate whether and how packaging design has been incorporating eco-information on sustainability, with a focus on children. This is particularly relevant given that "one of the most important actions to protect the environment is to ensure that future generations also seek and practice ways to protect the environment" (Da Silva et al., 2022). To foster such attitudes, the role of early childhood education is crucial, as it is considered by UNESCO as a key period for establishing sustainable habits (Folque, 2017). This article questions whether packaging aimed at children adopts strategies that align with the guidelines for sustainability education through eco-information.

2. PACKAGING DESIGN AND ECOINFORMATION

To promote sustainability education, it is necessary to develop solutions that contribute to consumer learning, enabling them to acquire skills that make them aware of the impacts of their decisions (Santos et al., 2019). This approach is significant for systemic discontinuity, which seeks to shift the norm from the constant growth of production and material consumption to a society capable of developing even with a reduction in the consumption of material goods (Manzini, 2008). Manzini (2008) asserts that it is essential to guide individuals through a long, yet inevitable, process of social learning towards sustainable development. According to Santos et al. (2019), fostering learning about conscious consumption is central to systemic discontinuity, as only then will society truly become sustainable. The authors further state that:

> Opinions, attitudes, and the profile of everyday activities performed by consumers are directly affected by the effectiveness of educational actions. Therefore, actions in this direction have an amplified impact beyond the individual alone, influencing the habits and behaviors of other individuals and communities.

Bhamra, Lilley, and Tang (2011) argue that design can contribute to sustainability education through communicative elements that encourage consumers to reflect on their habits. Santos et al. (2019) suggest that consumer activities, opinions, and attitudes can be positively influenced by information related to social and environmental ethics. As an example, the author cites packaging, which, either subliminally or explicitly, demonstrates the capacity to guide consumers towards less harmful practices through communicative resources such as structural, graphic, and verbal elements - materials, colors, textures, and labels (Santos et al., 2019). This is possible because direct contact with the user has made packaging a valuable communication tool (Mestriner, 2002).

From this perspective, packaging is addressed not only from a functional dimension but also from an informational one, through the adoption of aspects that come together to create a visually perceived product that meets the demands of practical, aesthetic, and symbolic functions (Löbach, 2001). Regarding these aspects, Martins (2014) asserts that packaging permeates various types of communication, as observed in the following table:

Visual communication in packaging	
Types	**Description**
Verbal	Literal components such as: product designation, ingredients, nutritional information, specific characteristics, usage instructions, among others.
Non verbal	Literal components such as: product designation, ingredients, nutritional information, specific characteristics, usage instructions, among others.
Shape	Literal components such as: product designation, ingredients, nutritional information, specific characteristics, usage instructions, among others.

Table 01: Visual communication in packaging.
Source: Authors.

Munari (2009) states that visual communication occurs through various messages and can have an intentional character, achieved through prior planning. In this way, it is possible to develop messages aimed at conveying specific information, ideas, or values using visual resources that contribute to the promotion of sustainability education

The potential of packaging design to disseminate sustainability education becomes evident, by crafting messages that encourage consumers to: understand the concept of sustainability and its importance in building a healthy society; adopt conscious attitudes regarding the selection, use, and consumption of products offered in the market; take positions, according to their own value judgments, in relation to the objects that constitute their material culture; understand the implications of human behavior on current social and environmental issues and the environmental impacts generated by human activity (Anthropocene); and comprehend the relationships between society and the environment in modern society (Santos et al., 2019).

The aforementioned guidelines are associated with promoting sustainability education according to Santos et al. (2019). For the authors, these strategies are effective in "altering not only isolated consumption patterns but also in comprehensively adopting new lifestyles".

3. METHODOLOGICAL PROCEDURES

The research presented in this article was guided by a phenomenological approach, aiming to understand the variables and their nature. "Knowledge according to this philosophical perspective is developed from a holistic, socially constructed, and multidimensional viewpoint" (Santos, 2018). As for the nature of the research, it is characterized as applied, aiming to generate knowledge directed toward praxis, focused on solving specific problems (Prodanov; Freitas, 2013), with a focus on eco-information strategies used on packaging surfaces to promote sustainability education among children. In terms of objectives, the research has an exploratory bias, aimed at providing information on the investigated topic, enabling the formulation of hypotheses (Prodanov; Freitas, 2013). The research development occurred through the execution of the following phases:

Methodological Procedures	
Phases	**Description**
1. Data collection	Field study conducted in 7 supermarkets located in the city of Campina Grande for photographic documentation of food packaging, following the parameters: (1) Focus on the child audience; and (2) Graphic, verbal, or non verbal information with an educational appeal regarding sustainability, excluding those that only used labels or certifications.
2. Data processing	Visual organization of the packaging images to highlight the eco-information found on the surfaces and insertion of a code for analysis.
3. Data analysis	Stage 1: Development of an analysis framework based on guidelines associated with the promotion of sustainability education (Santos, 2019). Stage 2: Evaluation of the packaging and classification of eco-information.

Table 02: Methodological Procedures.
Source : Authors.

Data collection consisted in a field study conducted in 7 supermarkets in the city of Campina Grande - PB, from October 2023 to February 2024, with the aim of selecting, among the packaging focused on children available in the market, those that featured eco-information on their surfaces capable of contributing to the promotion of sustainability education. Thus, packaging that only displayed labels and certifications was excluded due to its inadequacy for the objectives of the study.

The selected packaging was documented and graphically processed to generate images that would contribute to the analysis phase, highlighting both verbal and non-verbal eco-information present on the surfaces.

An analysis tool was developed that combines guidelines associated with the promotion of sustainability education with the packaging to be evaluated, with the aim of generating results on strategies used in packaging design that align with the guidelines for sustainability education for children.

Cases	Guidelines				
Nº	A	B	C	D	E
C1					
...					
C17					

Table 03: Analysis tool.
Source : Authors.

The instrument established the following understanding of the guidelines for promoting sustainability education, in order to align the analysis:

Guidelines for promoting sustainable education (Santos et al., 2019)	Understanding of the guidelines
(A) Understanding the concept of sustainability and its importance for the formation of a healthy society	Strategies that assist in educating consumers by presenting concepts/terms related to sustainability, such as "conscious consumption," "sustainable materials," among others
(B) Adopting conscious attitudes regarding the selection, use, and consumption of products available in the market	Strategies that encourage practical actions in favor of sustainability, such as reuse and recycling
(C) Taking positions, according to one's own value judgment, regarding the objects that constitute one's material culture	Strategies that stimulate positions aligned with sustainable attitudes and/or sustainable lifestyles
(D) Understanding the implications of human behavior on current social and environmental issues and the environmental impacts generated by human activity (anthropocene)	Strategies that present the positive or negative implications/effects associated with individual actions
(E) Understanding the relationships between society and the environment in modern society	Strategies that invite reflection on the existing relationships of exploitation and collaboration between society and the environment

Table 04: Guidelines for promoting sustainable education and understanding of the guidelines.
Source : Authors.

The tool was expanded to include various types of verbal and non-verbal communication, aiming to identify which strategies are being used in the Brazilian market. The tool was also enhanced to specify on which panel of the packaging the eco-information was positioned, in order to compare with previous studies that observed only small spaces allocated for sustainability-related information (Clementino and Silva, 2016). The tool was adopted by the researchers to thoroughly understand the presented issue.

4. RESULTS ANALYSIS

Based on the conducted study, 17 packages were selected that featured eco-information targeted at the child audience. These included categories such as gelatins, dairy drinks, juices, snacks, cookies, and cereals.

All types of foods found are part of the daily diet of children, which reinforces the potential of packaging as a tool for disseminating eco-information capable of positively guiding children towards behavioral change regarding sustainability, as observed in the following cases:

Figure 1: C1 to C5 - Dr. Oetker Powdered Gelatin.
Source : Authors.

The first case presented (C1 to C5) involves the Dr. Oetker Powdered Gelatin packages, which feature both verbal and non-verbal eco-information on all available flavors about sustainable practices, guiding children on how to behave/act to achieve a more sustainable lifestyle (Figure 1).

Similarly, the Betânia Dairy Drink packages (C6 to C8) also display a series of eco-information on the back portion of the product, which complement each other and provide continuous access to suggestions for more sustainable behaviors for children.

Figure 2: C6 to C8 - Betânia Dairy Drink.
Source : Authors.

Other cases found in the beverage category include Toddynho Dairy Drink (C9), which features eco-information related to the brand's strategies for making the product less harmful to the environment, as well as suggestions for adopting more sustainable behaviors; Vigor Apple Juice (C10), with indications for more sustainable actions regarding packaging disposal; and Piracanjuba Dairy Drink (C11), which also provides suggestions for environmentally correct disposal practices.

Figure 3: C9 – Toddynho Dairy Drink; C10 - Vigor Apple Juice; C11 – Piracanjuba Dairy Drink
Source : Authors.

In the savory snacks segment, eco-information was also found on the Elma Chips Snack packaging (C12), which clarifies the type of material used and specifies the correct color of the bin for disposal; Kró Semalo Snack (C13) emphasizes the importance of selective waste collection for city maintenance; and Pippo's Snack (C14) focuses on disposal information, as demonstrated in the figure:

Figure 4: C12- Elma Chips Snack s; C13 - Kró Semalo Snack; C14 - Pippo's Snack
Source : Authors.

In the biscuit segment, two cases of eco-information were identified. The Passatempo Cookie (C15) encourages reflection on attitudes, linking this message to information about the recyclability of the packaging; the Marilan Cookie (C16), on the other hand, addresses disposal. Lastly, the Sucrilhos Original Cereal packaging (C17) highlights the use of sustainable materials in its composition and also provides a recycling alert, as shown in the following image:

Figure 5: C15 - The Passatempo Cookie; C16 - Marilan Cookie; C17 - Sucrilhos Original Cereal.
Source : Authors.

4.1. Analysis of ecoinformation based on guidelines for sustainable education

In order to characterize the approaches to eco-information found on packaging as strategies associated with the guidelines for promoting sustainability education, analyses were conducted using the instrument developed by the research group leading this study.

The instrument includes criterion A as strategies capable of assisting in the education of children through the presentation of concepts/terms related to sustainability, such as "conscious consumption," "sustainable material," among others; criterion B as strategies that encourage practical actions for sustainability, such as reuse and recycling; criterion C as the stimulation of positions aligned with sustainable attitudes and/or sustainable lifestyles; criterion D as strategies that present the positive or negative implications/effects associated with individual actions; and criterion E as strategies that invite reflection on the relationships of exploitation and collaboration between society and the environment. Both verbal and non-verbal communication strategies were considered for the analyses, with the results presented below:

Cases	Guidelines				
Nº	A	B	C	D	E
C1		■	■	■	
C2		■	■		
C3		■	■	■	
C4	■	■	■	■	
C5	■	■	■	■	
C6		■	■	■	
C7		■	■		
C8		■	■		
C9	■	■	■		
C10		■	■		
C11		■	■		
C12		■	■		
C13		■	■	■	
C14		■	■		
C15		■	■		
C16		■	■		
C17	■	■	■		

Legend: Cases found

C1 to C5 - Dr. Oetker Powdered Gelatin; C6 to C8 - Betânia Dairy Drink; C9 – Toddynho Dairy Drink; C10 – Vigor Apple Juice; C11 – Piracanjuba Dairy Drink; C12 – Elma Chips Snacks; C13 - Kró Semalo Snack; C14 - Pippo's Snack; C15- Passatempo Cookie; C16 – Marilan Cookie; C17 - Sucrilhos Original Cereal

Table 5: Analysis of strategies found in packaging for children.
Source : Authors.

From the analysis, it is observed that the packaging features strategies aligned with the guidelines for promoting sustainability education. All of them included visual verbal and non-verbal information related to adopting conscious attitudes (Criterion B) and presented approaches capable of encouraging favorable positions towards environmental sustainability through the handling of the product (Criterion C).

Some packaging provided information that aids in understanding terms/concepts related to sustainability (C4, C5, C9, and C17), contributing to "educating" children about the topic. Some packaging presented information on the implications associated with sustainable and unsustainable attitudes/actions (Criterion D), alerting children to the impacts of choices regarding consumption, use, and disposal of the packaging, thus enabling children to see themselves as part of the process of moving towards a more sustainable society. No eco-information associated with Criterion E was found. This is summarized in the following chart:

Figure 6: Guidelines chart.
Source : Authors.

Throughout the analysis, six strategies were identified among the types of visual communication on packaging, with two of them being verbal and four non-verbal. Among the verbal strategies, conative expressions and informational texts were found. The non-verbal strategies included the presence of icons, illustrations, characters, and symbols, aiming to identify which strategies are being most utilized. The following table shows the types and strategies of visual communication found:

Types	Strategies	Understanding of strategies
Verbal	Conative expression	A type of linguistic expression aimed at influencing the receiver, used to persuade, convince, direct, or affect the actions, attitudes, or emotions of the interlocutor, through direct commands that induce them to perform a specific action, such as "place the straw inside the box" or "throw the trash in the correct place"
	Informational text	A type of text whose main purpose is to provide information on a specific subject in a clear, objective, and precise manner. This type of text aims to convey knowledge, explain concepts, report facts, describe events, or outline procedures in a way that is understandable to the reader.
Non verbal	Icon	A graphic or pictorial representation of an object, concept, idea, or entity
Non verbal	Ilustration	A visual representation that accompanies or complements a text, concept, or idea. The purpose of illustrations can vary widely, from providing visual examples of abstract concepts to demonstrating step-by-step procedures, explaining complex information in a more accessible manner, or simply making the content more engaging and appealing to the audience. Illustrations are a part of visual communication.
	Character	A fictitious or imaginary entity that plays a role within a narrative. Characters contribute to conveying the message, developing themes, or engaging the audience
	Symbol	An object, image, word, or concept that represents something beyond its literal meaning. Symbols are widely recognized within a specific culture or community and have meanings shared by a group of people.

Table 6: Types, strategies and understanding of visual communication in packaging.
Source : Authors.

A total of 43 types of strategies were found across the 17 analyzed packages, with 22 of these being verbal strategies and the remaining 21 being non-verbal strategies, as presented in the following chart:

Figure 7: Chart of verbal and non verbal strategies.
Source : Authors.

Among the verbal strategies, both conative expressions and informational texts were utilized, with each being used in equal measure.

Figure 8: Chart of verbal strategies.
Source : Authors.

On the other hand, the non-verbal strategies predominantly featured characters, followed by illustrations and symbols, with icons being the least used.

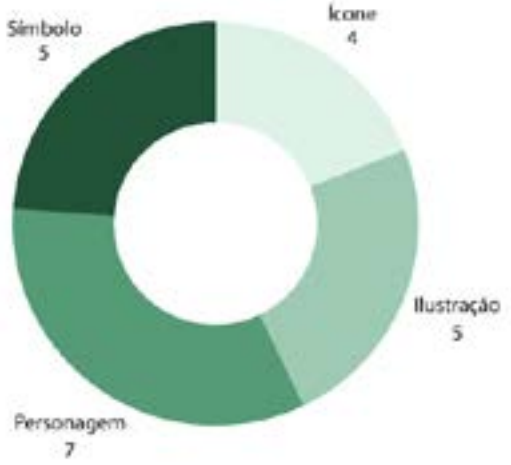

Figure 9: Chart of non-verbal strategies
Source : Authors.

Another important finding was related to the space allocated for ecoinformation on the surfaces of the packages. This indicated a shift in the sector, which previously reserved small areas for sustainability-related information, typically limited to small sections on the rear panels (Clementino and Silva, 2016). Currently, there is a trend towards using other faces of the packaging (Figure 10), as well as adopting larger dimensional spaces on surfaces for ecoinformation display.

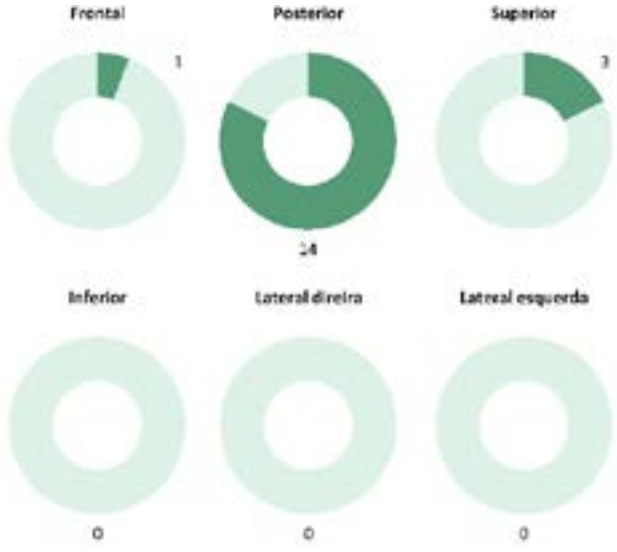

Figure 10: Chart of ecoinformation positioning.
Source : Authors.

In some of the analyzed samples, entire faces of the packaging were used to display ecoinformation, usually located on the rear panel, as exemplified by the packages shown in Figure 5, where each package featured ecoinformation covering the entire dimension of the rear face, incorporating both verbal and non-verbal elements associated with the guidelines for promoting sustainability education:

Figure 11: C1 to C5 - Dr. Oetker Powdered Gelatin.
Source : Authors.

In other examples, ecoinformation was distributed across multiple faces of the packaging, as seen with the Vigor apple juice, which included sustainability-related information on both the front and rear faces.

Figure 11: C10 - Suco de maçã Vigor.
Source : Authors.

This observation suggests an increasing interest among companies in using packaging as a means to disseminate ecoinformation, thereby contributing to the promotion of sustainability education and adding environmental and social value to their brands.

4.2. Ecoinformation Strategies: Guidelines A, B, C, and D

During the analysis of the packaging, ecoinformation related to Guidelines A, B, C, and D was identified. Packaging that included Guideline A presented concepts/terms associated with sustainability, such as "sustainable alternatives" and "conscious consumption," among others (Figure 12).

Figure 12: Guideline A - Adopting conscious attitudes towards selection, use, and consumption.
Source : Authors.

The use of Guidelines B and C was manifested through invitations to practical actions in favor of sustainability, such as "Let's adopt conscious consumption?" or instructions like "Place the straw in the recycling box," thereby encouraging positions aligned with sustainable attitudes and/or sustainable lifestyles (Figure 13).

Figure 13: Guideline B - Adopting conscious attitudes towards selection, use, and consumption of products and guideline C - Taking positions on objects
Source : Authors.

Packaging featuring Guideline D presented the positive or negative implications associated with consumer actions, prompting reflection on the impact of their choices (Figure 14).

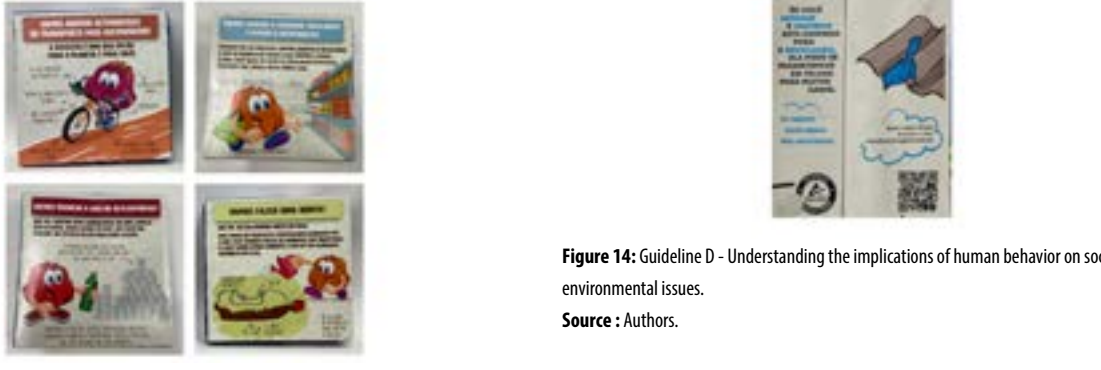

Figure 14: Guideline D - Understanding the implications of human behavior on social and environmental issues.
Source : Authors.

5. CONCLUSION

From the analysis conducted using the proposed instrument, it was possible to relate the verbal and non-verbal strategies adopted in packaging design aimed at the child audience to the guidelines for promoting sustainability education. This demonstrates the packaging as an important vehicle for displaying ecoinformation on various topics and thus capable of contributing to the social change required for systemic discontinuity.

The ecoinformation displayed on the packaging employed strategies designed to make sustainability information visible, understandable, and accessible to children, allowing them to learn and reflect on sustainable habits in a playful manner. Various visual strategies were adopted from this perspective, such as using characters practicing sustainable behaviors or teaching about sustainability through informational texts, and making the content more attractive and engaging for the audience. Visual strategies were also found where graphic elements emphasized ecoinformation and strategies involving terms related to the theme.

The parper indicates that the presence of packaging with ecoinformation in children's daily lives can have a positive impact on sustainability education and contribute to changing this audience's behavior, helping children engage with information aligned with the demands for improving the relationship between humans and the environment.

This paper is part of the research conducted by the Packaging and Sustainability research group at UFCG, aiming to relate the ecoinformation present on packaging to criteria for promoting sustainability education. However, ongoing research aims to conduct visual analyses to understand the behavior of ecoinformation associated with each guideline for promoting sustainability education within the context of packaging design. This will expose packaging designers to existing strategies based on applicable design guidelines, effectively addressing the demands for sustainability education targeted at children.

Furthermore, future research is suggested to apply learning evaluation methods to investigate the real impact of ecoinformation on the education of individuals interacting with these packages.

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