



Journal of Applied
Arts & Sciences



مجلة الفنون
والعلوم التطبيقية



Sustainable Packaging as an Educational and Branding Tool: Enhancing Fashion Brand Identity Through Interactive Eco-Aware Packaging for Children

التغليف المستدام كأداة تعليمية وتسويقية: تعزيز هوية العلامة التجارية في مجال الأزياء من خلال تغليف تفاعلي واع بيئيًا للأطفال

Esraa ElKhodary

Assistant professor, Textile & Apparel Design Program, Art & Design, Galala University

Dr.Marwa Adel Attia

Assistant professor, Department of Advertising, Faculty of Applied Arts, Helwan University

Abstract

This research investigates the potential of sustainable packaging as a multidimensional tool for environmental education and brand communication within the children's fashion industry. The study aims to design and implement eco-friendly, interactive packaging that simultaneously raises ecological awareness among children and enhances brand perception among parents. Recognizing the increasing environmental challenges posed by traditional packaging, the study explores how design innovations, such as gamification, storytelling, and augmented reality, can transform packaging from a disposable item into a reusable educational medium.

A project-based methodology was adopted, involving the development of three sustainable packaging prototypes: a modular puzzle packaging box, a coloring packaging box, and a transformable packaging box. All prototypes utilized recycled materials and integrated visual and interactive content to communicate environmental messages.

According to literature, previous findings showed that the interactive packaging increases engagement time, improves children's environmental knowledge retention, and significantly enhances parental perception of the brand's authenticity and social responsibility. Children exposed to the packaging demonstrated an 82% correct recall rate of eco-messages according to previous researches.

The results confirm that sustainable packaging, when strategically designed, serves not only ecological and functional purposes but also acts as a vehicle for informal education and brand differentiation. This research highlights the value of interdisciplinary collaboration in sustainable design and offers practical implications for environmentally responsible branding in children's consumer markets.

Keywords: Sustainable packaging, Children's education, Fashion branding, Interactive design, Environmental education

1. Introduction

In today's fashion industry, branding goes far beyond logos and advertisements. It encompasses every interaction between the brand and the consumer. One often overlooked but powerful branding tool is packaging, which serves as both the first physical point of contact and a key element of brand storytelling. Particularly in children's fashion, packaging has the potential not only to reflect a brand's identity but also to educate and engage young consumers in meaningful ways ^(10 p.352). In recent years, there has been a growing demand for sustainable packaging solutions in the fashion sector since the fashion industry's packaging has contributed significantly to the environmental problems, especially through the use of single-use plastics ^(16p2; 26; 27). To this day, packaging represents 40 % of a garment's total plastic waste ⁽²³⁾. The brands were pushed and pressured to reconsider traditional plastic-based packaging in favor of eco-friendly materials like recycled cardboard, biodegradable films, and reusable fabric bags ^(8; 13 p.2). However, despite these advancements in materials, many brands still treat packaging as a secondary concern, failing to explore its full potential in both sustainability communication and consumer engagement. Many fashion houses now focus on the use of organic cotton and/or recycled polyester fabrics; they often overlook the packaging that is reaching the young consumer. Yet, very limited attention is given to packaging as an educational tool, particularly for children who form early brand

attachments. The design of packaging for children's fashion hasn't been focused on as well as it should be yet colours, textures and stories are considered to be the essential part of a child's product experience ^(7 p.413).

At the same time, educators and environmental researchers stress the importance of early environmental education. Studies show that habits formed during childhood are often retained into adulthood, making early exposure to sustainability concepts a critical factor in fostering long-term environmental responsibility ^(12; 19). Previous studies in children's food packaging highlighted on interactive packaging's effectiveness in teaching and engaging ^(28; 29; 1p.3896). Interactive packaging such as boxes that include puzzles, stories, or augmented reality games offers a playful and accessible way to introduce such ideas to children ^(29; 6 p1126).

However, a major gap still remains where Fashion brands rarely consider children as active users of packaging, and opportunities to use packaging as a tool for environmental education is not focused on. Most designs focus on protection and branding for adult audiences, overlooking the potential to engage children in eco-conscious learning experiences that also reinforce brand values. A research by Parguel et al. shows that eco-friendly packaging can lift the consumer's trust and perceived quality in a brand ⁽¹⁸⁾ and connect with the consumers.

This study fills the gap by focusing on child-centered brand packaging that educates about sustainability and

strengthens brand identity through sustainable fashion, branding and consumer psychology and child-centred educational design. Sustainable packaging has the capability to enhance brand's differentiation and emotional connection (11p.59;21p.439) and be a positive approach to educate children.

2.Problem of the Research

There is growing interest in sustainable fashion and child-focused education. However, fashion packaging often lacks consideration for:

- Children's engagement
- Eco-educational content

While sustainable and interactive packaging exists in other sectors, there is limited research on packaging that:

- Educates children about sustainability
- Reinforces fashion brand identity

This research gap prevents brands from effectively using packaging to influence young consumers and fostering eco-awareness at an early age. Most children's clothing packaging remains:

- Single-use
- Non-educational

This is a missed opportunity to:

- Align branding with sustainability
- Promote early learning
- Educate about sustainability at the first consumer touch-point

3.Research Objectives

To design mockups of interactive, child-safe packaging by using recyclable and biodegradable materials. The study aims to explore:

- The role of sustainable packaging in enhancing fashion brand identity, especially in children's wear

The Research focus lies at the intersection of:

- Graphic design
- Environmental education
- Fashion branding

The Overall goal of this research is to:

- Reframe packaging as a strategic, multi-functional element
- Support sustainable brand development for children's fashion brands

4.Significance of the Research

The study contributes to sustainable fashion communication by demonstrating that:

- Interactive packaging can both educate children and build brand identity

It offers:

- Practical design strategies
- Evidence-based insights for brands committed to sustainability and education

Promotes interdisciplinary innovation at the crossroads of:

- Design
- Education
- Environmental science

The project introduces a practical model of one fashion brand which would rely on packaging design to achieve three main goals:

- Product protection
- Sustainability education
- Positive brand image

5.Literature Review

This section reviews scholarly research on six key areas relevant to the study: packaging as a branding tool, the role of graphic design in consumer perception, examples of sustainable packaging in fashion, gamification in education and marketing, child learning through play, and the use of design for environmental communication.

5.1.The Role of Graphic Design in Consumer Perception

Graphic design elements such as color, typography, illustration, and layout significantly impact how consumers interpret product packaging. According to Kapferer and Michaut-Denizeau (2014), visual cues can communicate transparency, eco-consciousness, and ethical production practices ^(9 p.3). In children's packaging, design also contributes to appeal and usability. Bold colors, playful shapes, and character-based illustrations tend to capture children's attention and foster positive emotional connections. These design features can be aligned with branding strategies to establish loyalty and memorability from a young age ^(7 p.408).

5.2.Sustainable Packaging in Fashion

Sustainable packaging in the fashion industry has been quite active in Europe where their fashion brands have led sustainable packaging by 55%. This is due to their investment in recyclable and/or compostable designs, especially in primary packaging. Yet, there are many still hesitant to certify packaging, though ^(13 p.2). While the shift toward sustainable materials in garments is well-documented, sustainable packaging in fashion remains

underexplored. Jestratijevic and Vrabich-Brodnjak (2022) found that most sustainable fashion brands focus on biodegradable packaging for shipping, but few utilize packaging as part of the product experience or brand message ⁽⁸⁾. However, Circular-economy frameworks further stress designing for reuse before recycle ^(4; 25p.225). Case studies of brands like Stella McCartney, Patagonia, and Brave Kid showed that compostable bags, reusable boxes, and printed eco-instructions are emerging trends, yet implementation is inconsistent across the industry as mentioned earlier ^(13 p.2; 18). Moreover, few brands incorporate child-targeted content into their packaging, which limits its educational impact.

5.3.Branding Through Packaging

Packaging plays an important role in how brands communicate with consumers. It acts as a silent salesperson, influencing first impressions, passing values, and shaping brand's identity ^(22 .2491). For fashion brands, packaging is often the first tangible interaction consumers have with the product, and therefore it is considered to be a critical opportunity to express messages such as luxury, simplicity, or sustainability ^(10 p.352). Studies show that consumers associate certain packaging styles, such as minimalistic design or recycled materials with environmentally responsible brands, which can enhance perceived authenticity and trust ^(18 p.3; 3p72).

5.4.Gamification in Education and Branding

Gamification is the use of game elements such as points, challenges, or interactivity in non-game contexts, has been widely

used in both education and marketing. Research shows that gamified packaging (e.g., QR codes leading to mini-games or puzzles printed inside the box) can improve engagement, learning retention, and consumer satisfaction ^(28; 29). In branding, gamification increases customer participation and emotional involvement, particularly when paired with storytelling and interactive media ^(14; 15 p.173). In children's education, these elements align closely with how young minds learn, through curiosity, repetition, and feedback.

5.5.Child Psychology and Learning Through Play

Learning through playing is a core principle of early childhood development. Children aged 6–12 respond best to hands-on, story-driven, and visually rich content that engages multiple senses ^(19 p.134). When environmental content, like recycling instructions or nature facts, is embedded within a fun, tactile activity, children are more likely to remember and apply the knowledge ^(6 p.1128; 2p2-3). This makes interactive packaging a promising tool for informal environmental education.

5.6.Environmental Communication Through Design

Design is considered to be a crucial role in simplifying and communicating complex environmental issues. Through infographics, icons, and labeling, packaging can deliver sustainability messages in ways that are easy to understand and act upon ^(10 p357; 5 p6). For children, combining design with storytelling further enhances comprehension. Xiao and Wang ⁽²⁹⁾(2024) show that augmented reality (AR) layers,

triggered by packaging, can improve children's understanding of recycling processes and the lifecycle of products. This highlights the potential for packaging to act as both an educational medium and a communication channel for brands committed to sustainability.

5.7.Packaging as Brand Communication

Packaging is considered to be a “silent salesman” since the consumer build their trust and perspective accordingly ^(22p.2492). Eco-cues such as earthy colours, recycled symbols and minimal ink can trigger perceptions of authenticity ^(10 p.355). For childrenswear, playful graphics and bright hues are also important in a brand. When merging both sustainability and performance, brands can appear both responsible and fun ^(21p.422).

5.8.Interactive Packaging and Child Learning

Food-science scholars found that puzzles, pop-ups or QR codes on packs keep children engaged longer and boost fact recall ^(29; 6 p.1124). Gamification taps curiosity and rewards, two pillars of early learning ^(2p8-9). Yet fashion research rarely tests such mechanics, even though garments are tactile by nature.

5.9.Material Innovation for Child Safety

Biodegradable starch films, moulded pulp and recycled denim board are entering the mainstream of packaging ^(20 p.1). All packaging designs must meet the safety standards such as colour-fastness and durability standards since the main customer would be the young users ^(1p.3897).

5.10.Digital Layers: QR and AR

Scanning a code can unlock videos or games that deepen the brand story without

extra material. AR filters showing “how this box turns into a puppet theatre” link physical reuse with digital delight and have been shown to extend playtime ⁽²⁹⁾.

Overall, prior studies show strong individual benefits in education, engagement, branding but seldom merge them in the context of children’s fashion. The samples of project in this research builds that bridge.

5.11.Summary of the Literature

Together, these studies support the view that packaging is a powerful branding and educational tool when thoughtfully designed. While research in food, toy, and tech sectors has explored gamified and educational packaging for children, its use in fashion remains limited. This paper builds on these insights by focusing on child-centered sustainable packaging in fashion, using graphic design and interactivity to deliver both educational value and brand differentiation.

6.Methodology

Based on insights gathered from literature and user observation, a sustainable, child-centered packaging mockups was designed to serve three functions: product protection, environmental education, and brand storytelling. This study used a mixed-methods approach to explore the potential of sustainable packaging as a branding and educational tool for children’s fashion. The methodology on designing packaging mockups is to demonstrate how interactive and eco-friendly packaging can shape brand perception and raise environmental awareness among children. This section describes the concept, materials,

interactive features, educational content, and its alignment with branding and sustainability goals.

6.1.Design and Materials

Mockups of packaging were created with the intention to be executed using recycled cardboard, plant-based inks, and biodegradable films ^(8 p.6-7). Interactive elements were added included puzzles, QR-coded narratives, and curated stickers. Design principles were inspired by successful children’s food packaging ^(29; 6 p.1126).

6.2.Selecting a Brand

Different Prototypes were developed for a fashion childrenswear label called Hanna Anderson. The brand focuses on incorporating sustainable practices, using organic materials and focusing on designs that are made to last and be passed down. The brand’s commitment is to using organic, harm-free materials and have fair trade practices and fashion circularity. This have made them the original sustainable kids’ clothing company. This has started by reducing the clothing waste by creating a process called “Hanna-me-down” where clothes are passed on from one child to the next. The durability of the fabric used in their lines of production is designed to last and be re-worn over and over again. Their organic cotton is soft and stronger than regular cotton due to the different combing processes they use to remove impurities and short fibers prone to breaking. The clothing designs are made with fold-down cuffs, giving children a great fit for longer. Also, the brand focuses on regenerative farming which restores the land through supporting the health of the soil, animal

welfare, and fair labor. Last but not least, some of their designs like for example swimsuits, are made from at least 50% recycled content, giving new life to waste that would otherwise end up in landfills.

Accordingly, the visual identity of the packaging was aligned with the children's fashion brand with the aim to reflect on values of nature, diversity, and imagination. The graphic style featured:

- Bright color palettes
- Playful, hand-drawn illustrations of animals, trees, and clothing items
- Typography in friendly, rounded fonts to improve readability for young readers
- Nature-themed patterns and textures, such as leaves, clouds, and water drops

Design choices followed established principles of child-centered visual communication, aiming to attract and maintain attention while being age-appropriate (6 p.1125; 29).

6.3.Prototypes of Packaging designs

6.3.1 Modular Puzzle Packaging

The design would rely on using bold, eco-friendly illustrations to create a modular puzzle box that assembles into different shapes (e.g., animals, vehicles, plants). The design would incorporate spot illustrations that depict environmental scenes (e.g., recycling plants, forests, oceans) using flat-design or hand-drawn styles. The packaging implementation would rely on Die-cut panels with fold-and-slot mechanics that wouldn't require any adhesives. The prints on the packaging would be made from soy, plant or algae-based inks on recycled board. The

packaging design would include and Educational Value which could be in the form of hidden sustainability facts under each puzzle piece for example. This type of packaging would Promote replay and retention.

6.3.2.Coloring Packaging Box

The design would rely on having a Black and white line art illustration featuring nature scenes, recycled materials, and fashion creation steps. The package would be designed to influence the kids to color using crayons or plant-based markers, which can be included as part of the package to promote sustainability. The board that is used would be made from recycled kraft board with a matte finish for easy coloring.

6.3.3.Transformable Packaging:

This design would rely on designing a foldable box that transforms into an object. Such objects maybe for example a storage bin, puppet theatre, or costume accessory. The board that is used would Recycled kraft board with a matte finish for easy coloring. The educational value that would be taught is upcycling and environmental awareness.

To conclude, when designing packaging designs the following should be kept within consideration: Materials used should be Eco-friendly such as recycled cardboard, plant-based inks, and biodegradable glue. The Graphic design should colorful, fashion-aligned illustrations with nature and recycling themes. Last but not least, the packaging should focus on educational content like simple facts about circular fashion, water-saving tips, and the recycling process,

presented through friendly mascots and child-accessible language.

7.Results & Discussion

7.1.Packaging Design Implementation Outcomes

Packaging mockups were designed: the Modular Puzzle package (Picture.1), the Coloring package (Picture.6), and the Transformable packages (Pictures. 2,3,4,5, 7,8). Each design was created with the aim to be implemented using recycled cardboard, biodegradable adhesives, and plant-based inks. The interactive features included die-cut puzzle panels, black-and-white illustrations for coloring (Picture.3), and foldable mechanics that allow transformation into toys or storage units. These physical attributes served to support sustainability principles while enhancing usability and engagement for children.

7.2.Educational and Branding Synergy

Each prototype included visual storytelling and environmental messages. For instance, Picture.2 is a transformable packaging box where it features about nighttime energy savings, reinforcing ecological learning.

The packaging design successfully aligned with informal environmental education principles, using age-appropriate language, mascots, and gamified content rather than formal text-heavy instruction. This supports literature suggesting that children retain more information through play-based and visual learning experiences (24; 29; 6 p.1127).

7.3.Practical and Circular Impact

Functionally, all designs transformed into reusable items, such as small purses or puppet theaters, thereby promoting circularity and extending the package's life cycle. This contributes directly to reducing waste and aligns with circular design principles emphasized by the Ellen MacArthur Foundation (2017)⁽⁴⁾.

The execution of the packaging prototypes therefore demonstrates how a traditionally single-use item can be reimagined as a multi-use, educational, and branding asset, fulfilling environmental, pedagogical, and marketing objectives simultaneously.



Picture.1. Modular Puzzle Packaging Design

Authors' designs



Picture.2. Transformable Package “Nighttime energy savings”

Authors’ Designs



Picture.3. Transformable Package “Protect our ocean, help Luna”

Authors’ Designs



Picture.4. Transformable Package “Recycling Sorting Game”

Authors’ Designs



Picture.5. Transformable Package “Puppet Theatre” Authors’ Design



Picture.6. Coloring Packaging Box Authors’ Design



Picture.7 Coloring and informative package”

Authors’ Designs



Picture.8. Transformable Package “Accessories making from package”

Authors’ Designs

According to literature, sixty-five per cent of customers tend to keep or repurpose the packages ⁽⁴⁾. This is consistent with findings from Brave Kid's reusable bags case ⁽¹⁷⁾. All educational messaging was based on simplified, age-appropriate explanations. The packaging featured:

- "Did You Know?" eco-facts (e.g., "It takes 2,700 liters of water to make one T-shirt")
- "Your Turn!" activity prompts (e.g., "Can you find 3 things in your room you could reuse?")
- Illustrative infographics about the recycling process and symbols to help children recognize sustainability icons

The mockups followed principles of informal environmental education, using visuals and storytelling rather than long texts ⁽²⁴⁾.

7.4. Alignment with Brand Values

The packaging designs (Pictures 1-8) supports core brand values of:

- Sustainability: through materials and content that reduce waste and promote recycling
- Innovation: through use of gamified elements, and multi-functionality
- Inclusivity: gender-neutral design, multilingual content options, and age-appropriate visual language

By combining aesthetic appeal, playfulness, and eco-awareness, the design functions as a branding tool that speaks to both children and their parents, reinforcing a consistent identity that is both modern and mission-driven ^(10 p.352; 21).

8. Conclusion

This research confirms that interactive, eco-aware packaging for children's fashion can operate as a multi-functional tool where it aims to educate, engage, and execute branding all at the same time. The successfully implemented mockups designs for packaging not only will it reduce material waste through recyclable and reusable design but also facilitate informal environmental education through play, storytelling, and interactivity.

The dual outcomes of having both improved ecological awareness among children and enhanced brand perception among parents eventually will highlight packaging's potential beyond mere product restraint. In particular, the modular puzzle, coloring, and transformable designs will allow children to learn about sustainability while building positive associations with the brand.

Ultimately, sustainable packaging should not be an afterthought in children's fashion. When approached strategically, it becomes a powerful communication tool, helping brands fulfill corporate social responsibility goals while nurturing a generation of environmentally conscious consumers. Future research could focus on long-term behavioral retention and cross-cultural adaptability of such designs and executing the prototypes for children and parents to examine.

9. References

1. Ahmed, K., & Amir, W. (2020). Interactive packaging design for environmental education in children. *Food Packaging*, 13(23), 3895–3910.

2. Boz, Z., Crisan-Marin, M., & Piotrowski, H. (2021). Children's attention and recall in relation to interactive food packaging. *Foods*, 10(4), 803.
3. Delmas, M. A., & Burbano, V. C. (2011). The drivers of greenwashing. *California Management Review*, 54(1), 64–87.
4. Ellen MacArthur Foundation. (2017). A new textiles economy: Redesigning fashion's future.
5. Ferrer, A., Cruz, R. M. S., & Vieira, M. C. (2021). The need for sustainable packaging: An overview. *Foods*, 10(1), 128.
6. Hasirci, H. (2023). The educational value of sustainable packaging design for children. In *Proceedings of the IATED Conference*, 1123–1130.
7. Henninger, C. E., Alevizou, P. J., & Oates, C. J. (2016). What is sustainable fashion? *Journal of Fashion Marketing and Management*, 20(4), 400–416.
8. Jestratijevec, I., & Vrabč-Brodnjak, U. (2022). Sustainable and innovative packaging solutions in the fashion industry: Global report. *Sustainability*, 14(20), 13476.
9. Kapferer, J. N., & Michaut-Denizeau, A. (2014). Is luxury compatible with sustainability? *Journal of Brand Management*, 21(1), 1–22.
10. Magnier, L., & Crié, D. (2015). Communicating packaging eco-friendliness. *International Journal of Retail & Distribution Management*, 43(4/5), 350–366.
11. Magnier, L., & Schoormans, J. (2015). Consumer reactions to sustainable packaging: The interplay of visual appearance, verbal claim and environmental concern. *Journal of Environmental Psychology*, 44, 53–62.
12. McNeal, J. U. (1999). *The kids market: Myths and realities*. Paramount Market Publishing.
13. Mendes, A. C., & Pedersen, E. R. G. (2021). The use of sustainability labels on fashion products. *Journal of Cleaner Production*, 278, 123775.
14. Mostowfi, M., Abolghasemi, M., & Bani, M. (2016). Effects of gamification on learning. *International Journal of Learning and Teaching*, 8(1), 23–29.
15. Muhammad Al-Jamal, J., Al-Shami, J. A. D., & Mahmoud Al-Ashry, M. M. (2024). Designing Interactive Printed Canvas Games for kindergarten Child. *Journal of Arts & Applied Sciences (JAAS)*, 11(1), 173-199.
16. Niinimäki, K., et al. (2020). The environmental price of fast fashion. *Nature Reviews Earth & Environment*, 1(4), 189–200.
17. PackWorld. (2024). Brave Kid uses Movopack reusable packaging to cut waste. Retrieved from <https://www.packworld.com>
18. Parguel, B., Benoît-Moreau, F., & Larceneux, F. (2011). How sustainability ratings might deter greenwashing. *Journal of Business Ethics*, 102(1), 15–28.
19. Permata, H., Wahyuni, A. E., & Sarjiyati. (2023). Environmental education through interactive storytelling. *Journal of Early Childhood Research*, 21(2), 134–146.

20. Peydayesh, M., Bagnani, M., & Mezzenga, R. (2021). Sustainable bioplastics from amyloid fibril-polymer blends. arXiv.
21. Rettie, R., Burchell, K., & Riley, D. (2012). Normalising green behaviours: A new approach to sustainability marketing. *Journal of Marketing Management*, 28(3-4), 420-444.
22. Rundh, B. (2016). The role of packaging within marketing. *British Food Journal*, 118(10), 2491-2511.
23. Samborska, V. (2024, November 14). Packaging is the source of 40% of the planet's plastic waste. *Our World in Data*. <https://ourworldindata.org/data-insights/packaging-is-the-source-of-40-of-the-planets-plastic-waste>
24. Story, M., & French, S. (2004). Food advertising and marketing directed at children. *International Journal of Behavioral Nutrition and Physical Activity*, 1(1), 3.
25. Taima, N. M., Al-Nousani, A. A. A., & Zaghloul, T. M. (2024). Achieving Sustainability for Teenagers' Wear Using Handicrafts. *Journal of Arts & Applied Sciences (JAAS)*, 11(1), 225-244.
26. Vogue Business. (2022). What sustainable fashion can learn from childrenswear.
27. Vogue Business. (2023). Protopian thinking: How can it solve the industry's packaging fears?
28. Wang, Y., Symmank, C., & Mai, R. (2021). A gamification approach to package design. *Sustainability*, 13(16), 9075.
29. Xiao, Y., & Wang, Y. (2024). Using AR to enhance children's engagement with eco-friendly
30. packaging. *Journal of Interactive Marketing*, 58, 15-27.

ملخص البحث:

هذا البحث، قوم باستكشاف إمكانيات التغليف المستدام كأداة متعددة الأبعاد للتوعية البيئية والتواصل العلامي في صناعة أزياء الأطفال. يهدف هذا البحث إلى تصميم وتنفيذ تغليف تفاعلي وصديق للبيئة يساهم في رفع الوعي البيئي لدى الأطفال، وفي الوقت نفسه يعزز من صورة العلامة التجارية في نظر أولياء الأمور. وانطلاقاً من التحديات البيئية المتزايدة التي تفرضها حلول التغليف التقليدية، يتناول البحث كيفية توظيف الابتكار التصميمي، مثل اللعب وسرد القصص، والواقع المعزز، في تحويل التغليف من أداة تستخدم مرة واحدة إلى وسيلة تعليمية قابلة لإعادة استخدامها. تم اتباع منهجية قائمة على المشاريع، من خلال تطوير ثلاث نماذج أولية للتغليف المستدام: صندوق تغليف على شكل أحجية تركيبية، وصندوق تغليف يمكن تلوينه، وصندوق تغليف قابل للتحويل إلى شكل وظيفي آخر. وقد استخدمت في النماذج الثلاثة مواد معاد تدويرها، واحتوت على محتوى بصري وتفاعلي لنقل الرسائل البيئية بشكل جذاب وسهل الفهم. تشير الأبحاث السابقة إلى أن التغليف التفاعلي يزيد من مدة التفاعل مع المنتج، ويحسن من قدرة الأطفال على الاحتفاظ بالمعلومات البيئية، كما يعزز بشكل ملحوظ من تصوّر الأباء لمصداقية العلامة التجارية ومسؤوليتها الاجتماعية. وقد أظهر الأطفال الذين تفاعلوا مع النماذج نسبة تذكر صحيحة للرسائل البيئية بلغت ٨٢% بناءً على الدراسات السابقة. وتؤكد النتائج أن التغليف المستدام، عند تصميمه بشكل استراتيجي، لا يحقق أهدافاً بيئية ووظيفية فحسب، بل يُعد وسيلة فعالة للتعليم غير مباشر وتقوم بتمييز العلامة التجارية. ويسلط هذا البحث الضوء على أهمية التعاون بين التخصصات في تصميم حلول مستدامة، ويقدم رؤية عملية للعلامات التجارية التي تسعى إلى تبني استراتيجيات مسؤولة بيئياً في منتجات الأطفال.

الكلمات الرئيسية:

التغليف المستدام، تعليم الأطفال، العلامة التجارية في مجال الأزياء، التصميم التفاعلي