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USING EMOTIONAL DURABILITY FOR SUSTAINABLE PACKAGING DESIGN PRACTICE BASED ON USAGE SCENARIO

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ABSTRACT

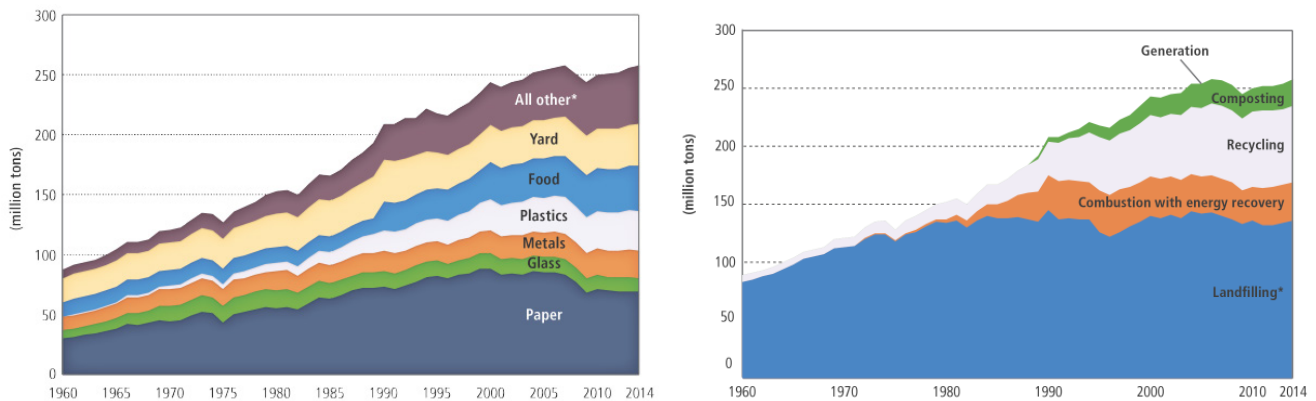
Every day consumers acting replacement purchases online or offline are causing a negative impact on the environment. Enterprises and designers realized the increasingly importance of applying sustainable packaging. This study is aimed at applying the 'emotional durable design' strategy in packaging design practice of Children's Robot DIY Kit, so that the packaging would provide users with additional functions and be reused in a sustainable way. The lecture surveys about emotional durability and reusable packaging cases analysis were both presented in this paper. Additionally, through the observation and interview about the usage scenario of DIY robot kit, the potential needs of children players were found out. Finally, the packaging of robot kit was designed in an emotionally durable way. Giving the ability for user to transform packaging into funny props by hand-made, the product packaging became reusable and promoted experience for product usage.

Key Words: Emotionally durable design, Sustainable Packaging, Usage scenario

1. INTRODUCTION

1.1. Research background and purposes

As a report from EPA (Environmental Protection Agency, US), which talked about current status of garbage disposal, until 2014, recycling rate for other paper and paperboard packaging paper is merely 26% and paper material is the most generated material per year. Plastic packaging is even as low as 15%^[1]. However, most of the generated materials are just landfilled or combusted to energy recovery, which means that a large amount of packaging are wasted and probably used just one time.



[Figure 1] Types and completion of generated materials
(Refer to: *Advancing Sustainable Materials Management: 2014 Tables and Figures 2016*)

Despite that several design principle or strategies have been suggested for creating sustainable products, emotionally durable design is still not widely promoted in practice. Companies care more about their revenues rather than retarding customers' high-frequent replacement purchases. With increasing competition between packaging production enterprises and development of packaging manufacture and printing technology, the packaging of product is promoted to be more attractive and more prolonged for usage life.

In this paper a literature study surrounding emotionally durable design was reviewed and previous cases analysis are presented that were used as initial explorations of emotionally durable design in case practice afterwards. The final design practice was focused on a packaging of DIY robot kit for children to ensure the findings were pertinent to more packaging design situations.

1.2. Process and method of research

The process of this study was mainly set as literature review, case analysis, demand survey and design deliver. Firstly, through the literature review about emotional durable design and cases analysis of life-prolonged packaging, the design pattern and characteristics of the emotional durable packaging were concluded for practical applications afterwards. Secondly, by observing the usage scenarios of DIY robot Kit and interviewing with user and producer, user's potential needs were extracted. During the final step of design deliver, combined with the needs of using additional props under playing scenario and emotional durable design strategy, solution of usage-life-prolonged and multi-functional packaging was proposed.



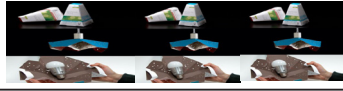




2. LITERATURE REVIEW ABOUT 'EMOTIONALLY DURABLE DESIGN'

Researchers in the field of sustainability mentioned that the end of product lifespan is not all caused by technical issues, but mainly psychological obsolescence.^[2] Thus, emotionally durable design is purposed as a genre of sustainable design strategy for enhancing the durability of the relationship built between users and products, aiming at reducing consumption and waste. In order to achieve emotionally durability, several design guidelines have been purposed by relevant researchers.

The five qualities of emotional durability^[3] were purposed to be used during design practice, which includes involvement, adapt to the user's identity, animacy, and evoke memories and rewarding. A six-point experiential framework was distilled to deal with the occurred issues when practicing product designers design and develop greater emotional longevity in products.^[4] Among this framework, Product attachment was first brought forward as the strength of the emotional bond consumer experience with a specific product, which is designed by creating emotional experience such as self-expression, group affiliation, memories and pleasure, and stimulates sustainable consumption.^[5]

Briefly, emotionally durable design is not merely contributed in reduction of over-consumption or waste, it elevates the product design process to an expansive and holistic design paradigm, which is emotion-centred and service-oriented.

3. CASES ANALYSIS OF LIFE-PROLONGED PACKAGING DESIGN

	Design cases	Description
1		<p>“Never Wasted” shopping bag ^[6] designed by Happy McGarrybowen can be used and reused in 28 different ways, which would keep the customers engaged and excite them long after they’ve left the store.</p>
2		<p>The packaging of mug was designed as coaster box, which can be disassembled and reused as a coaster after the end of packaging function.</p>
3		<p>This packaging designed for light bulb can be reused as lampshades as well as increasing the value of the commodity itself.</p>
4		<p>The paper packaging designed for clothes can be folded as hanger through several steps which were printed on the packaging.</p>
5		<p>The knife produced in Victorinox Company ^[7] was packaged by wooden box which can be reused conveniently as a chopping board.</p>
6		<p>The object called “Dream ball” consists of a cylindrical container for the delivery of aid packaging, can be made into a football by children in developing countries.</p>
7		<p>The packaging of Joco cup was designed to be reusable as a fresh coffee keeper, a pen holder, piggy bank or a snazzy drink bottle holder, and the instructions of reusing were printed on cap.</p>

[Table 1] Title of Example Table

From life-prolonged packaging cases, 3 design rules can be summarized. Firstly, the packaging is functionally complementary to the usage experience of product. In order to be better realization of product function, the packaging is designed to be reusable and multi-functional according to product’s usage scenarios. As the third case above, the bulb packaging can be unfolded and used as a lampshade in period of bulb using. Secondly, involving in transforming the being-wasted packaging is a vital factor for implementing the reusability and upgraded longevity of packaging. Users can disassemble, cut, reorganize, assemble and fold the packaging according to the indications printed on it. The indications use dotted lines or a simple production process, so that users know how to transform packaging into useful and new functional product. ‘Never Waste Bag’ is one of the cases that can be cut and reshaped as practical or funny items such as calendar, bookmark, pen container, ruler, dice, etc. As the conceptual explanation of emotionally durable design, the process of making items by customers themselves would enhance the emotional attachment between user and packaging, and the exciting shopping experience maintains through reusing of items made from shopping bag. Finally, the packaging could be designed to be cognizable for its eco-friendly brand and image by modelling shape or printing sign and pattern. The sustainable packaging encourages users to perceive and form sustainable behaviours and provide users with sustainable life style. For example, the packaging of Joco cup was designed to be reusable as various functional containers and its usage instructions were printed inside the cap, in order to encourage consumers to continually use the packaging. Thus, the survey about users’ demands based on product usage scenario is necessary to be conducted before final design. In this way, the redesigned function of packaging can better help users using product, and bond the prolonging pleasure experience with reused packaging rather than throwing away.

4. DEMAND SURVEY BASED ON USAGE SCENARIO

In this paper, the DIY Robot Kit is targeted at normal children aged from 6 to 12, who are with characteristics of creative, energetic and curiosity for new things. Besides, this age of children is also the best period to improve their manual ability. Users can use the components of DIY Robot Kit to build robots, which can recognize walking paths through photoelectric sensor. Through interviews, the purchasers’ opinions on the appearance and quality of the current packaging and enterprise need for packaging were obtained as following. The interviewed purchasers were Children’s parents. According to interview results, purchasers and enterprise tend to consider with usage of the packaging.

Opinions from Purchasers	<ol style="list-style-type: none"> 1. Sometimes, the packaging was directly discarded, because it takes up a lot of space at home and useless. Sometimes the packaging will be reused. 2. As a creative and educative toy for children, the usage or appearance of packaging lacks interesting and creativity. 3. From the perspective of brand, there is no obvious difference from other products on the market.
Opinions from Enterprise	It is necessary to highlight the brand image of the enterprise through packaging while showing the product characteristics to the purchasers.

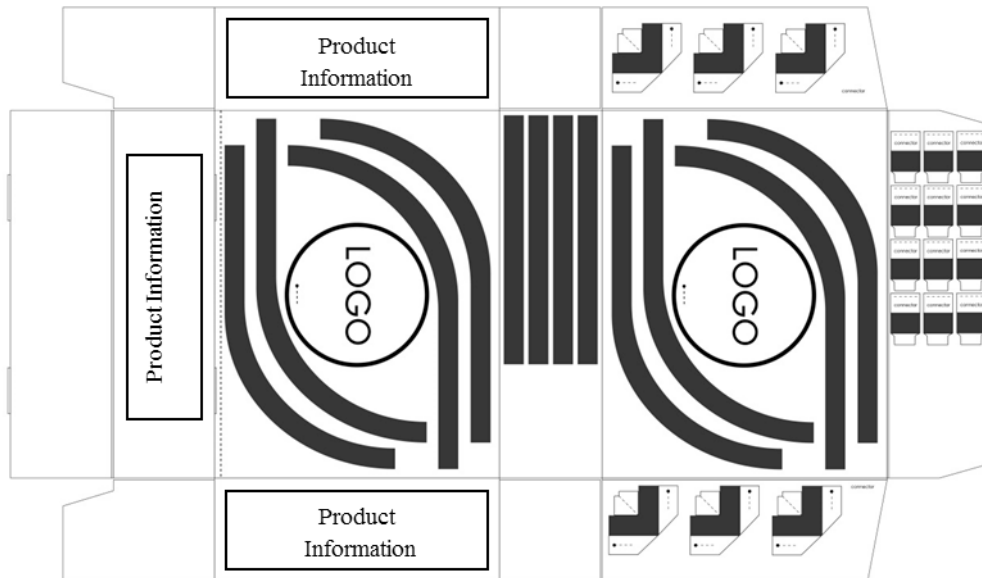
[Figure 2] Results of interview

Observing the usage scenario of DIY Robot Kit, we found that some additional props would be needed to assist the realization of product functions. For example, if a robot was to realize the function of path recognition, it would need a road map with black tracks on the ground for sensor to identify.



[Figure 3] Product usage scenario

5. PACKAGING DESIGN FOR CHILDREN DIY ROBOT KIT



[Figure 4] Packaging design of Children DIY Robot Kit

According to the previous demand survey, the concept of emotional durability was appropriately applied in this project. Product designer brought forward the idea of “Props + Packaging” for DIY Robot Kit. As for the tentative ideas, according to the cutting line of the outer packaging printing, users can involve in cutting the packaging box and reforming it as the props that would be needed in the product usage scenario, and its unfolded drawing is shown as figure 4.

6. CONCLUSION

This research introduced the concept of emotionally durable design and conducted practical application in packaging design, which was bound to users' needs in usage scenario. The invention of props not only connected the improvement of children users' hands-on ability to usage scenario, but also increased the durability of packaging emotionally instead of throwing away. Additionally, the involvement of reforming the packaging into props strengthened the connection between handmade props and users, and also prolonged the service life of packaging.

REFERENCE:

1. United States Environmental Protection Agency. (2016). *Advancing Sustainable Materials Management: 2014 Tables and Figures*. Retrieved from www.epa.gov
2. Fabrizio Ceschin, Idil Gaziulusoy (2016). *Evolution of design for sustainability: From product design to design for system innovations and transitions*. *Design Studies*, 47, Pages 123-124.
3. Van Krieken, B. , Desmet, P. M. A. , Aliakseyeu, D. , & Mason, J. . (2012). *A sneaky kettle: emotionally durable design explored in practice*. *Industrial Design Engineering*.
4. Chapman, & Jonathan. (2009). *Design for (emotional) durability*. *Design Issues*, 25(4), 29-35.
5. Mugge, R. (2007). *Product Attachment*. PhD Thesis. The Netherlands: Delft University of Technology, 12, 122-128. Retrieved from www.happymgb.com/2018/06/07/never-wasted-bag/ Retrieved from www.packagingoftheworld.com/2016/02/victorinox-knife-reusable-packaging.html.