

Green Lifestyle Education for Alpha Generation with Grow Kit Paper

Duwi Rezeki Nur Cahyanti

Department of Visual Communication Design,
School of Creative Industry, Universitas Ciputra Surabaya, Indonesia
drezekinur@student.ciputra.ac.id

Alexandra Ruth Santoso

Department of Visual Communication Design,
School of Creative Industry, Universitas Ciputra Surabaya, Indonesia
alexandra.ruth@ciputra.ac.id

ABSTRACT

Plastic trash is a global problem, with packaging waste accounting for most of it. Switching to packaging made entirely of recycled paper is critical, and seed paper is utilized to achieve a zero-waste environment. Children of the Alpha Generation will face more environmental challenges, thus it is essential to educate them more about sustainable living and zero waste. This project aims to investigate a kit that will teach the Alpha Generation about sustainability through plant growth and zero-waste packaging. The method employs a double diamond strategy and is carried out through user interviews with millennials who fit the description of parents of alpha generation offspring. The results show how excited parents and children are about the exercise, which fosters motor skills in children through practical practice, exciting visuals, and close observation of real-world interactions. More interactive, hands-on educational resources with additional sustainability-related themes should be developed in the future.

Keywords: Environmental education, Early childhood education, Recycling Paper, Packaging, Product Design

INTRODUCTION

Indonesia, with a population of 250 million, has contributed to the second-largest plastic population after China. Indonesia has generated 3,2 million tons of plastic waste, which is left unmanageable, and 1,29 million tons end up in the sea (Jambeck, 2015). The population of Java Island produces around 189.349 tons of plastic every month. Unfortunately, of this amount of plastic, only 11.83% has been collected and managed by waste banks, and 88.17% ends up in the landfill (leaving it unmanaged) or left in the environment (Darus et al., 2020). Compared to other Southeast Asian countries such as Malaysia, Singapore, and Thailand, which all have rates of more than 60 kg/capita/year, Indonesia's present plastic consumption is lower at 22.54 kg/capita/year. Nevertheless, Indonesia's plastic industry keeps growing and is mainly dominated by the significant amount of plastic usage (PET, PE, and PP) in Indonesia for the food and beverages industry. Although some plastic materials have been recycled in the plastic recycling system, most products

still use low-value plastic; therefore, the recycling rate remains low (Ministry of Environment and Forestry, Republic of Indonesia, 2020).

Given the severity of Indonesia's waste problem, manufacturers and consumers need to think creatively and find innovative solutions. Sustainable packaging can play a crucial role in a more comprehensive plan for a sustainable development strategy. It reduces waste and leads to innovation in materials and production processes, which the management system will also support toward a circular economy (Coelho et al., 2020).

The 'pollution-free packaging' or 'environmentally friendly packaging' is well known as 'green packaging'; it should be consistent with the understanding of Reduce, Reuse, Recycle, and Degradable (3R1D). It must break down quickly in the soil without harming people or the environment for its whole life cycle. A sustainable design approach is critical in developing zero-waste products and packaging, which reduce waste by prioritizing the use of recycled materials such as paper. Green paper packaging requires producing ecologically friendly packaging materials, treating effluent from papermaking, and safely recycling packaging after use (Huang, 2017).

The youngest group of children born in the twenty-first century, known as the Alpha generation, have a difficult task ahead of them: assuming a world dealing with urgent environmental problems. These kids must have the knowledge and abilities to address environmental sustainability because they will be the planet's future stewards. Research indicates that early childhood education for sustainability (ECEfS) and learning opportunities in, with, about, and for nature can help young children develop a sense of environmental appreciation and responsibility (Spiteri, 2020). Environmental education should be about spreading knowledge and giving the Alpha generation real-world skills for sustainable living, like gardening, recycling, and trash reduction. By giving them these practical resources, parents can enable their kids to become proactive change-makers and make eco-friendly decisions regularly (Park & Samuelsson, 2017).

Spitery (2020) presented her findings on sustainable education for children, highlighting the need for a reevaluation of an alternative curriculum framework that offers more inclusive and broad worldviews about the environment, including the relationship between humans and other species, even in early childhood education and care (ECEC).

This paper aims to create and assess a product designed to educate young learners about the environment. This product will use zero-waste packaging of recycled seed paper that can be planted directly in the soil. This will help inspire creativity and a love for the natural world.

LITERATURE REVIEW

Zero Waste dan Zero Waste Packaging / Product Design

The flow rate of non-wasted material is a circular system where no product is wasted. In 1973, Palmer started the idea of “zero waste” to restore chemical waste (Nizar, 2017). Sustainable resource consumption is the primary goal of the zero waste theory. This can only be achieved when resources are consumed effectively to improve the quality of life and reduce environmental damage (Jackson, 2005). To implement zero waste, we must know that all materials and products used are new sources and will only become waste if not properly processed, which can damage the sustainable resource cycle (Fernando, 2018).

By switching to plastic packaging, manufacturers and customers can reuse their packaging without leaving any waste. In other cases, the packaging can be entirely recycled or biodegraded without harming the environment. To reduce the amount of waste generated, it is necessary to raise awareness about the safety of the earth by starting a zero-waste lifestyle. The global lifestyle concept of the 5Rs (refuse, reduce, reuse, recycle, rot) is the amount of waste generated (Johnson, 2013). Implementing ZW means eliminating all discharges in soil, water, or air that harm the Earth, human, animal, or plant health. (ZWIA, 2024).

Sustainable Craft and Recycling Paper

Sustainable means social responses prioritize economic and environmental issues (Meadows, 2005). The concept of sustainability is increasingly developed and used in the context of corporate sustainability. One way to measure business sustainability is by using the Triple Bottom Line (TBL), which consists of three dimensions: environmental, social, and economic (Alhaddi, 2015). Paper, generated by households, schools, and offices, is one of the largest human wastes. Paper is a big problem for the Earth because it is made from natural materials, usually trees. This is because paper contains dry organic waste that soil can decompose. Paper waste seems harmless. However, if a substantial amount of paper appears, it will take up a lot of space, and this problem can be solved by processing it (Arfah, 2017).

Paper recycling is one way to solve the problem of paper waste. Despite its vast potential, only about 70% of paper waste can be recycled or reused. Since paper is considered a valuable resource and should be used carefully, Wahyono (2001) stated that paper waste treatment strategies should be linked to overall municipal waste management. Thus, managing zero waste involves a comprehensive approach to sustainable avoidance and managing resources and trash.

Early Childhood Education in Sustainability

Teaching the younger generation, specifically the Alpha generation, about sustainability and environmental protection is crucial for the future of our planet. This includes educating them on zero-waste packaging, planting, and other eco-friendly practices (Park Samuelsson, 2017). Environmental mindfulness is essential in a student’s education, as it instills a sense of curiosity, appreciation, and compassion for the world around them (Başaran & Erol, 2021).

Spiteri's study on young Maltese children (3–7 years old) revealed five major themes of children's understanding of sustainability: moral reasons for protecting the environment, its effects on human life, endangered species, means of subsistence, and aesthetics. To help young children become knowledgeable and engaged citizens who can help manage and resolve environmental challenges in their local contexts, place-responsive educational approaches in ECEfS are essential. Although this approach does not ensure that kids will behave sustainably now or in the future, exposing them to these experiences may encourage them to at least attempt to act sustainably in some capacity (Spiteri, 2020).

METHODOLOGY

The Design Council (www.designcouncil.org.uk) popularized the qualitative double diamond model approach, also known as the double diamond model method, employed for this creation endeavor. Over the past 20 years, this design approach has been widely utilized. When it comes to developing design innovation concepts that have the potential to bring about meaningful and long-lasting change, the past is still incredibly relevant today. This Double Diamond (Image 1) contains two diamond shapes that represent the stages of concentrated action (convergent thinking) and broad and in-depth study (divergent thinking). The creative process of design is broken down into four phases: explore, define, develop, and deliver.

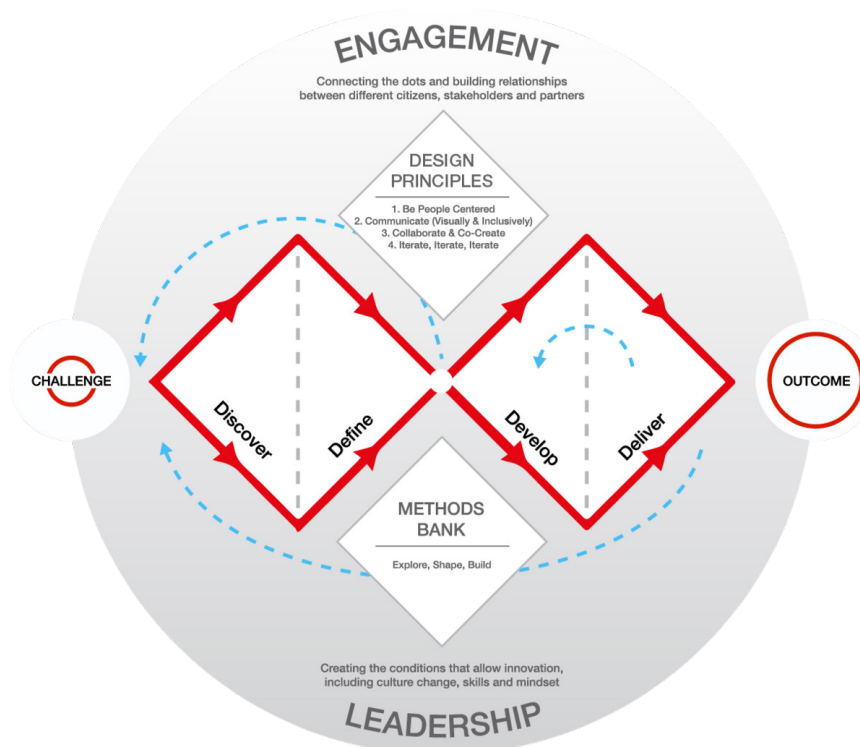


Image 1 Double-Diamond. (Source: www.designcouncil.org.uk)

1. Discover, is the first step in the process when researchers and designers try to understand the problem. Typically, this is done by interviewing people engaged in the issue or doing desk research to obtain the necessary data

- and spark ideas.
2. Define, highlighting the outcomes of the preceding phase, focusing on and determining the issues and requirements for the subsequent development stage.
 3. Develop, at this point, the designer could create a prototype that will allow it to be tested, examined, and improved by various individuals with diverse expertise (multidisciplinary).
 4. Deliver, involves developing and finishing successful ideas, discarding ineffective ideas, and testing small-scale solution concepts or prototypes.

Using the double-diamond approach to create innovative ideas may not always result in a linear process. It may return to the previous phase and fill gaps with more data to improve the overall result. Within the discovery phase, we interviewed six parents from the millennial generation who currently have children considered to be the Alpha generation, ranging from age 2 to 10, with a structured interview method. We conducted the second interview (Deliver Phase) with the same sample to test the product and get feedback.

RESULT & DISCUSSION

The discussion section will elaborate on the innovation design ideas based on the steps from the Double Diamond method as follows:

1. Discover

During the desk research phase, which involved gathering literature studies, several trash-related concerns arose in Indonesia, the majority of which were packaging waste. This research focuses on teaching children the importance of sustainability and green living from an early age, especially to youngsters of the Alpha Generation, in addition to environmental challenges. Therefore, structured interviews were also carried out with five parents in the millennial generation, aged 32 to 44, who currently have alpha-generation children, aged 3 to 10, to gain a deeper understanding of the process of environmental education in families. From this, several significant ideas that developed into crucial knowledge included:

Reduction of Waste and Management of Waste

The interviews' findings indicate that millennial parents frequently train their kids to throw away trash in the proper location and even teach them how to sort garbage to lead an ecologically conscious lifestyle. In addition, some parents teach their kids to always finish their meals (a practice known as "anti-food waste"), water saving, and to always take their own drinking bottles or food containers wherever they go to decrease the amount of organic and plastic trash generated.

Green Plantation and Nature Knowledge

Most parents also stated that they had either asked their kids to play outside and plant trees or had taught them how to take care of plants. Encourage kids to participate in gardening tasks like planting flowers or herbs and upkeep tasks like asking them to water the plants daily. Children will be highly delighted and

passionate about growing plants if you inform them about the benefits of plants in the environment, such as providing oxygen, avoiding flooding, decreasing pollution, and serving as a food source. This is done to foster a caring attitude toward the environment in kids. Parents impart knowledge about maintaining human health and safety, preserving animal habitats, and making the environment safe and comfortable.

Other significant insights from the interviews include the realization by all parents of the significance of instilling in their kids an early understanding of the value of conserving the environment so that they can grow up knowing it. Parents want their kids to grow up as kind, responsible adults who care for their surroundings. Parents also acknowledge difficulties when encouraging and motivating their kids to protect the environment. Kids frequently have many questions about why they have to do these things, which is good because it demonstrates the kids' interest in these things.

Parents will immediately explain things to their kids, and some will even encourage them to practice independently by showing them educational videos with content that interests them. On the other hand, parents believe they require a learning tool that allows their kids to practice right away. Furthermore, parents concur that the home and the school have complementary and significant roles to perform. Schools offer the facilities and resources to teach fundamental ideas and an organized curriculum. In the meantime, the family reinforces these ideals via everyday encounters and authentic role models. Children who work together can lay a solid basis for developing environmentally conscious attitudes and behaviors.

2. Define

An initial conclusion that can be made after gathering all the information required during the discovery stage is that millennial parents are teaching their alpha-generation children to care for the environment by processing their waste and encouraging them to grow and take care of plants in their homes. Aside from that, it is still regretted that little instruction is offered in schools, making it imperative to keep teaching about eco-friendly living at home. However, they require a media strategy to educate their kids about environmental issues.

3. Develop

The researcher attempts to explain the issues raised by this study by designing a product that might serve as a tool for teaching kids and parents about environmental matters. The concept encompasses trash management, living a zero-waste lifestyle, and farming. As a result, a farming kit was developed, with recyclable materials used to make the packaging that could be planted (Image 2).



Image 2 Grow Kit Paper Design. (Source: Author Duwi Rezeki)

This kit consists of the following essential parts:

1. Recycled paper packaging that can be planted
2. Biodegradable planter that can break down in the ground
3. Fertilizer and soil as planting medium
4. Reusable mini gardening equipment

The packaging material is made from recycled paper, into which vegetable seeds, such as spinach, lettuce, or celery, are inserted during recycling. Adorable mascots are placed in the packaging cover design, as the main target of the users is the alpha generation, currently in kindergarten and elementary school. Besides, a minimal printed design is applied to maintain the value of the natural product. The gardening kit included some biodegradable planters made from recycled paper pulp that can be degradable in soil. This kit is also completed with the soil and fertilizer as the planting medium and the reusable gardening equipment suitable for children.

A planting guide is included in the packaging design to assist parents in teaching youngsters. Children can exercise their motor skills by ripping packaging during the first procedure. At this point, it's also necessary to teach kids about recycled paper and offer them a foundational knowledge of the significance of sustainable principles. Subsequently, the youngsters were engaged in an activity that involved soaking the paper and planting it in a biodegradable pot using the given soil media. We build a prototype at this stage of development so that parents and kids may try it. After that, we conduct more observations and interviews to get feedback.

4. Deliver

A follow-up interview with the parents was done based on the outcomes of the experiments performed with the prototype in the earlier phase. Parents claimed that utilizing this kit to engage in exciting activities with their kids might be the beginning

of introducing them to the idea of zero waste. Children love to shred paper, pour water, and pour dirt, among other activities that might help them learn without requiring a lot of verbal explanation. Through this hands-on learning, children may develop a feeling of commitment via processing and learning to appreciate and care for the plants they grow. Children can experience pride and happiness when they witness their labors' tangible consequences—watching their plants flourish. However, the challenge in teaching children environmental concepts and green lifestyles is often building their interest and enthusiasm. Lack of support from the surrounding environment, such as a lack of facilities or infrastructure that supports environmental learning, can also be an obstacle. Therefore, the two primary environments of children must play an important role, namely school and family. Schools can provide a structured curriculum and facilities that support learning about the importance of planting. At the same time, families play a role in reinforcing these values through direct examples in everyday life.

Regarding the product, the materials used have a simple design but are attractive and informative for children. Parents advised that more explanation is needed to teach big concepts about the importance of planting. They also suggested applying colorful packaging to make the design more attractive to children. Some parents also suggested providing a wider variety of pot sizes and designs and plant variants that are easy to pick, such as cherry tomatoes, to provide further helpful learning.

CONCLUSION

This study identified several key concepts kids need to learn, such as waste management, zero waste, conserving water, farming and caring for plants, and appreciating natural environments. In addition, this study discovered that encouraging children's motor abilities through hands-on practice, engaging visual media, and direct observation of natural interaction is an efficient way to teach these ideas. This study found that, with parents acting as companions, families have a critical role in a child's development of environmental awareness, particularly throughout the kindergarten and primary school years. On the other hand, parents also want assistance from the surroundings, including facilities or infrastructure that promote environmental education at home and in schools. This helpful learning media bundle is thought to assist parents in introducing and teaching their kids about a green lifestyle at an early age. In light of this, interactive practical learning materials should be created in the future with various themes, such as trash sorting or others that are thought to be able to support ecosystem sustainability to stimulate curiosity and excitement about young Alpha Generation members.

REFERENCES

- Alhaddi, H. (2015). Triple bottom line and sustainability: A literature review. *Business and Management studies*, 1(2), 6-10.
- Arfah, M. (2017). Pemanfaatan limbah kertas menjadi kertas daur ulang bernilai tambah oleh mahasiswa. *Buletin Utama Teknik*, 13(1), 28-31.
- Başaran, M., & Erol, M. (2023). Recognizing aesthetics in nature with STEM and STEAM

- education. *Research in Science & Technological Education*, 41(1), 326-342.
- Coelho, P. M., Corona, B., ten Klooster, R., & Worrell, E. (2020). Sustainability of reusable packaging—Current situation and trends. *Resources, Conservation & Recycling: X*, 6, 100037.
- Darus, N., Tamimi, M., Tirawaty, S., Muchtazar, M., Trisyanti, D., Akib, R., ... & Raggi, K. (2020). An overview of plastic waste recycling in the urban areas of Java Island in Indonesia. *Journal of Environmental Science and Sustainable Development*, 3(2), 402-415.
- Fernando, D. M. R. (2018). Penerapan Sistem Zero Waste dengan metode Bank Sampah di Balikpapan, Kalimantan Timur. Magister Teknik Sistem, Universitas Gadjah Mada.
- Huang, J. (2017). Sustainable development of green paper packaging. *Environment and Pollution*, 6(2), 1-5.
- Jackson, Tim. (2005). "Motivating Sustainable Consumplit." *Sustainable Development Research Network*, 154.
- Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrady, A., ... & Law, K. L. (2015). Plastic waste inputs from land into the ocean. *Science*, 347(6223), 768-771.
- Johnson, B. (2013). *Zero Waste Home: The ultimate guide to simplifying your life*. Penguin UK.
- Ministry of Environment and Forestry (2020): National Plastic Waste Reduction Strategic Actions for Indonesia, Republic of Indonesia
- Nizar, Muhammad. (2017). "Manajemen Pengelolaan Sampah Kota Berdasarkan Konsep Zero Waste: Studi Literatur." *Lisensi Creative Commons Atribusi 4.0 Internasional*. Vol 1 (2): 102. <https://doi.org/10.32672/jse.v1i2.500>.
- Samuelsson, I. P., & Park, E. (2017). How to educate children for sustainable learning andforasustainableworld. *InternationalJournalofEarlyChildhood*, 49, 273-285.
- Sparnicht, C. (2022, September 7). Zero Waste Definition - Zero Waste International Alliance. Zero Waste International Alliance. <https://zwia.org/zero-waste-definition/>
- Spiteri, J. (2021). Why is it important to protect the environment? Reasons presented by young children. *Environmental Education Research*, 27(2), 175-191.
- The Double Diamond - Design Council. (n.d.). Design Council. <https://www.designcouncil.org.uk/our-resources/the-double-diamond/>
- Wahyono, S. (2001). Pengelolaan sampah kertas di Indonesia. *Jurnal Teknologi Lingkungan*, 2(3).