

Recycling of Plastic Waste for Household Decoration in Yola North Local Government Area of Adamawa State

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ABSTRACT

The Study of Recycling of Waste Material for Household decorations was carried out in Yola North Local Government Area (LGA) of Adamawa State. The objective was to produce household decorative items from plastic waste materials by exploring designs of household decorations; flower and flower vase and Christmas tree. The experimental practical design was adopted in the research which involved the production of decorative flowers, Christmas light and flower vase from used plastic materials. Materials for the study were collected from the household dumping grounds that include; used spoons and waste plastic bottle, while Styrofoam cone, beads, uhu or hot glue gum, red spray paint and scissors were obtained from the market. The study revealed that the recycling of waste materials (in general) to produce Christmas tree, beautiful flowers and flower vase was achieved. The researchers concluded that plastic waste material can be resourceful in home management, recreational facilities and in the provision of colourful festive moments like the Christmas and meetings or conferences. This work therefore recommends that Government and relevant agencies, should promote recycling of plastic wastes into decorative items for home, offices, festive areas, etc. which is capable creating wealth and jobs for the youths, hence improve their standard of living. Better tools and machines should be also be provided, to ease and hasten the recycling process of the plastic wastes into products.

KEY WORDS: Recycling, Plastic Waste, Household Decoration, Waste Material, Up-cycle

INTRODUCTION

People use many things like artwork, furnishings, decorative items and other things to improve the interiors of their homes. Most people like to choose very beautiful, expensive and exotic things for this purpose. It may however be surprising to know that some waste materials that we usually throw away such as plastic bottles, plastic spoons, old tyres, broken glasses, old clothing materials and many other wastes can be used for decorating the house. It is an unusual and uncommon idea that beautiful decoration pieces can be made using a little bit of creativity and thinking from trash

or waste to create wealth. This is basically achieved through a process called up-cycle, which can be defined as the repurposing of disposable or disposed materials to create new products that are useful and beautiful (Upcycling Magazine, 2009). Up-cycled pieces retain and often enhance the look and feel of the original discarded materials and are generally used for purposes other than those for which they were originally intended. Sometimes the end result is far better than the item's intended purpose (Canadian Agricultural Adaptation Program, 2013).

To become successful in repurposing, you need to be creative, resourceful and innovative. waste is defined as any material collected by (or on behalf of) an organisation that has no further use or value to the previous owner in its current state and so has been discarded. Waste therefore includes items that may eventually be recycled and/or reused (Access Economics, 2009). Waste is really just the material that is left over, rejected or thrown away from anything we do be it working, playing or eating. Quite simply, it is material that is not wanted by its producer. To many people, waste is known as trash, rubbish, or garbage (Canadian Agricultural Adaptation Program, 2013). Waste production has been an inevitable problem in the history of mankind. As human populations continue to grow, so does the production of waste. Waste production increases faster than the rate of urbanization. Every year, 1.3 billion tons of solid waste is produced globally (Hoornweg & Bhada-Tata, 2012). Waste production is predicted to increase to 2.2 billion tons by 2025 and more than double in low-income countries in the next 20 years (Hoornweg & Bhada-Tata, 2012). In the United States alone, about 250 million tons of trash is produced every year (United States Environmental Protection Agency, 2010).

Waste production increases with a rise in a country's standard of living. As the economic wealth of a country increases, the country's consumption also increases, which results in the potential increase in the amount of waste produced (Achankeng, 2003). Managing waste has always been a problem, but particularly since the Industrial Revolution in the 1800s which marked the introduction of power-drive machinery and the manufacture of consumer goods on a large scale. For a long time, wastes were dumped wherever it was convenient, released directly into waterways, or freely emitted into the air (Al-Sulami, 2016). Fortunately, we have come a long way since then; we now take steps to control, collect and manage our wastes and have cleaned up streams and land that had been polluted by past waste dumping. Today, the bulk of our household waste or garbage goes to garbage dumps or landfills which are large sites that are designed to

isolate the garbage from the surrounding area. Each day, the landfills are covered with soil and compacted with big machines in order to keep garbage blowing around communities.

The process of using waste to make something that is once more useful is called recycling. In its simplest definition, recycling is converting waste product into reusable material. Instead of being taken to a landfill to sit and rot the Earth for years to come, it gets singled out and repurposed for another use (*Al-Wafi, 2016*). Recycling is a key component of modern waste reduction and is the third component of the "Reduce, Reuse, and Recycle" waste hierarchy. (*Lienig & Bruemmer 2017 and European Commission, 2014*). Thus, recycling aims at environmental sustainability by substituting raw material inputs into and redirecting waste outputs out of the economic system (*Martin, Paulo, Nancy, Hultink & Jan, 2017*).

A survey of household decoration market by the researchers reveals that, recycling waste materials have not well been exploited in decoration/household industry. Although waste materials has been recently used, reused and recycled for different purposes, yet their applications in household decorations are limited due to limited knowledge on the potentials and possibility of recycling waste materials for household decorations and for economic benefits. Generally waste has a huge negative impact on the natural environment. Harmful chemicals and greenhouse gasses are released from rubbish in landfill sites. Huge amounts of energy are used when making products from raw materials. Recycling requires much less energy and therefore helps to preserve natural resources

Objectives of the study

Considering the menace and the possibility of reusing the waste materials, this project specifically, seeks to:

1. Design and produce some household products like Christmas tree from waste plastic materials for household decoration.
2. Produce suitable plastic flowers by recycling plastic waste materials for household decoration.
3. Produce a suitable flower vase from waste plastic materials for household decoration.

Methodology

The Research Design was an experimental practical design. This study involved the production of decorative flowers, Christmas light, flower and flower vase from used plastic materials. The experiment was carried out in phases:

1. Procedure for making Christmas tree from used plastic spoon

Step 1: *Materials collected include*; used spoon Styrofoam cone, beads, uhu or hot glue gum, red spray paint and scissors (Plate 1).

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Plate 1: Materials needed for making Christmas tree

Step 2: *Cleaning of materials;* used spoons were cleaned by washing with detergent and allowed to dry.



Plate 2: Washing used spoons

Step. 3: *Cutting materials into pieces;* the handles of the spoons were cut.



Plate 3: Cutting of plastic spoon handle for Christmas tree

Step 4: Fixing of the pieces of spoon; cut spoons were glued to cone starting from the bottom



Plate 4: Cut spoons glued to Styrofoam cone

Step 5: Gumming of the pieces of spoons; uhu gum was used to add spoons in the cone starting from bottom to top.



Plate 5: More spoons added with uhu gum to the cone from bottom to top

Step 6: Fixing additional pieces of spoons; more spoons added from bottom to top in layers to create symmetrical shape.



Plate 6: More spoons were added from bottom to top layers to ensure symmetrical shape.

Step 7: *Painting*; the spoons were painted red

Step 8: *Gluing*; Star was glued on top of the tree

Step 9: Silver beads were glued to the spoons

2. Procedure for making plastic flower

Step 1: *Materials collected*; five used plastic bottle (3 large and 2 small) and other materials needed: uhu or hot glue gum, green spray paint, cutter and scissors (Plate 8).



Plate 8: Materials for making plastic flower

Step 2: plastic bottles were washed (Plate9)



Plate 9: Washing of plastic bottles for plastic flower

Step 3: the plastic bottles were cut (Plate 10).



Plate 10: Cutting of plastic bottle

Step 4: Petals were made and pulled back towards the bottle cap (Plate 11).

Step 5: The petals were shaped as desired (Plate 12).



Plate 11: Pulling of plastic bottles towards the cap

Step 6 the petals were glued together (Plate 13).



Plate 12: The petals were shaped as desired



Plate 13: Gluing of petals together

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Step 7: Smaller rose flowers were glued to the flower (Plate 14).



Plate 14: Gluing of smaller rose flowers together

3. Procedure for making Flower Vase

The following entails procedures for making the flower vase

Step 1: *Materials were collected:* Two used plastic bottles and other materials needed were collected as follows; uhu or hot glue gum, green spray paint, cutter, lace material and scissors were acquired.

Step 2: The bottles were Cleaned and dried.

Step 3: The plastic bottles were cut at the top for making the flowers (Plate 16).



Plate 16: Cutting of plastic bottles at the top for making flower

Step 4: Marker was used in making design along the edge of the bottle before trimming.



Plate 17: Making designs along edge of plastic bottle using marker before trimming.

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Step 5: The lines were trimmed to create designs on the bottle.



Plate 18: Trimming of lines to make design on plastic bottles to make flower vase.

Step 6: She bottles were painted in red, white and red and white combined.



Plate 19: Painting of plastic bottle Flower vase.



Plate 20: Plastic bottle Flower vase painted white.

Step 7: stickers and lace materials were placed around the bottle for extra decoration

RESULT AND DISCUSSION

This study presents the results and discussions categorically using sub headings as follows:

1. Production of Christmas-tree from waste plastics materials

The findings revealed that production of Christmas trees from waste plastic materials for household decoration was successful. This is similar to the findings of Al-Wafi, (2016) who made a survey on a different designs of shelves, and then sketched the shelves. She used different

collected waste materials to create different sketch ideas such as plastic containers, spoons, newsletter, crushed plates and cups. Christmas tree was produced with specifications (Dimension, Media and Colour) from waste plastic materials for household decorations as presented in the Plate 22.



Plate 22. Christmas tree produced

Dimension: 30 X 7 inches

Media: Plastic spoon, beads

Colour: Red and white

2. Production of Plastic Flower from waste plastic materials for household decorations

The findings also revealed that production of plastic flower from plastic waste materials for household decoration was carried out intended. This findings is also in corroboration with the work of Al- Sulami, (2016) who used waste products (buttons, CDs, magazines, wires, plastic straw, water bottles, and Burlap), applied the design process and made different sketches to achieve the recycled wall mirror. The Plastic Flower was produced from waste plastic materials for household decorations which was presented on plate 23 as finished product with its dimension, media and colour.



Plate 23 Plastic Flower Produced

Dimension: 22 X 16 inches

Media: Plastic bottles, Yarn & white polyethylene bag

Colour: green, red and white

3. Production of Flower vase from waste plastic materials for household decorations

Beautiful flower vase was produced from waste plastic materials for household decoration. This is also similar to that of Al Qurayi, (2016) design using wastes such as; water bottles, clothes and Burlap. In it, also applied the design process and made different sketches to achieve the recycled wall mirror. Getty, (2011) designed and made kitchen shelf unit suitable for storing coffee, tea, plastic spoons and sugar. The design background was covered with newspapers in the form of vertical and horizontal columns to form symmetrical background. A yellow highlights to form contrast with the black writing colour, pink plastic covers and the white background. Repetition of plastic containers, cups, broken dishes, black spoons to exhibit hierarchy and unity to the design. Additionally, a stark contrast in colour to provide alertness, attention, objectivity and clarity to the created idea.

Flower vase was produced from waste plastic materials successfully as presented on plate 24 finished Flower Vase is produced with indicated dimension, media and colour.



Plate 24: Fantastic coloured Flower vase Produced
Dimensions: 9.5X2.3 inches, 7.6X5 inches and 8X2.3
Media: Plastic bottles, stickers and lace material
Colour: red and white

Conclusion

This study concluded that recycling of plastic wastes for producing home decorations products is a practical way of beautification of environment particularly in the festive or ceremonial periods like Christmas, conferences, schools, offices, etc. The collection of the plastic wastes for festive, home decorations and other products make the industry ecologically-friendly process as it serves as dumping site which hitherto would have been a menace to the community. In the course of the research,

Recommendations

From the Findings of this study, the following recommendations are being proffered:

1. Government and relevant agencies, should promote recycling of plastic wastes and turning of these recycled plastics into decorative items for homes, office, companies, institutions, hotels, etc. as this can to a large extent create jobs and improve standard of living for those who venture into it.
2. Better tools and machines should be provided, in order to hasten the recycling process of these plastic wastes and production process of the decoration products.

3. The teaching of recycling of waste as a means of diversifying income should be emphasised in the curriculum of Vocational and Technical Education.
4. Government should see the technique as a component of public health process and therefore should make huge investment in the recycling of the waste plastic material to protect the environment.

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