

Green Furniture Design: A Way to Promote Environment Sustainability

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Abstract

The human activities have done an irreversible destruction to the environment. The collective efforts of degradation of natural environment have increased the measures of sustainable development challenge enormously. Therefore, there is a strong urge to live more sustainably and make extra efforts to reduce environmental impacts. Due to the fact that the manufacturing of furniture traditionally use natural resources, the necessity to design furniture with a low environmental impact is increasing. Green furniture also referred as "eco-friendly" or "sustainable furniture" is the furniture that is made from salvaged materials or renewable resources. Green furniture is sourced, designed, manufactured, transported and delivered with the smallest possible carbon footprints. Materials viz. bamboo, rubber, straw, hemp, cork, flex, mycelium etc. are the materials can used in the manufacturing of green furniture. The use of safer materials also makes furniture green. The use of finishes that are emit low or no VOC and contributes to its safety in everyday use. Creative consumers and designers have used many of the offbeat materials and waste materials to create green furniture design. The green furniture should be designed in such a way that it offers maximum functionality. Green furniture offers many benefits which ranges from good health of the occupants because of low chemical and toxin content. It also reduces the growth of landfills which improves indoor and outdoor air quality. Moreover, this furniture type also helps in keeping the green plants alive and reduces the consumption of non-renewable resources. At last money is also saved as the furniture is made from waste. If everyone wants to enjoy indoor environment, reduce carbon footprint and choose green furniture everywhere in the house.

Keywords: Green Furniture, Design, Environment Sustainability.

Introduction

Furniture is objects of applied arts intended for mobile and permanent furnishing of residential interiors. Among other things, it serves for storage, work, eating, sitting, lying down, sleeping and relaxing. Furniture can be used individually, in suites or sets (Smardzewski, 2015). The present day is demarked as new age furniture design. The concept of "eco-design" or "green furniture" was introduced in 1990 so that the companies could employ to reduce the environmental impacts associated with their production process (Clark et.al., 2009).

The word sustainable has permeated nearly every industry: energy, automotive, real estate, and healthcare, just to name a few. It makes sense, then, that sustainable furniture would follow suit. When talked about sustainable design, as such there is no one style which represents sustainable designing. Sustainable furniture is the one which is made from recycled material or the old waste materials products are used for its manufacturing or designing. The material used for its constructions can be any vintage material, corrugated sheets, glass, plastic or any up cycled pieces available at home. However, some other materials can also be for the construction of green furniture is straw, flax, mycelium, cork, hemp and rubber. Additionally, any piece of furniture made from recycled materials can bear the sustainable label. Used metal, textiles, and timber, for instance, can all help the environment. It also includes new products which are made from renewable resources, which reduces carbon footprint, and which are undertaken in an environmentally conscious way (<https://www.cubsmart.com/blog/inspo/decor-design/sustainable-furniture-design-choosing-eco-friendly-and-green-furniture-options>).

Sustainable design, which is also called environmental design, environmentally sustainable design, environmentally conscious design, etc. is "the philosophy of designing physical objects, the built environment, and

services to comply with the principles of social, economic, and ecological sustainability". The intention of sustainable design is to make sure there are no negative impacts on the environment by using skillful, sensitive design. This means using renewable resources, impacting on the environment minimally, and connecting people with the natural environment. A renewable resource is any natural resource (such as wood or solar energy) that can be replenished naturally with the passage of time. So it can be used, but it can be replaced over time. This is particularly so for things like timbers (<https://sourceable.net/sustainable-furniture-matters/>).

Use products and materials that are recycled and used in a unique way or use a product that has no waste at all. Green products are those which reduce air, water and land pollution. One way to reduce carbon foot print is by buying locally grown products which are sourced locally where possible. The closer the manufacturer of all the processes involved in making an item such as a piece of furniture, lesser time and energy is spent on fuel meaning less impact on the environment. Up cycling is taking an item that is no longer needed or wanted and giving it new life as something that is either useful or creative. This seemingly basic concept has sparked an exciting revolution with this generation. (<http://www.upcyclemagazine.com/>). There are many fantastic ideas and communities involved in the up cycling movement in particular up cycling things like doors, windows and pallets but there is no limit to what can be up cycled.

Benefits of Green Furniture

The manufacture of furniture can place an enormous drain on the environment; through the sourcing of materials, greenhouse gas emissions caused during the manufacturing process, and the resultant landfill debris once they are discarded. With an ever increasing eco-conscious society and the current economic climate there are an increasing number of people recycling and reusing products. The eco-friendly decors are no doubt very useful for home owners because they do not only benefit the homeowner by saving money but also benefit others as they are sustainable furniture. Because the world is becoming more conscious about their surroundings and environment, the demand for this furniture has increased. People find the trend catchy and choose to keep the "Go Green" theme for their houses to benefit the humanity (<http://www.doityourself.com/stry/three-reasons-to-select-furniture-with-sustainable-design>). There are several reasons to choose furniture with a sustainable design. Sustainable furniture is better for the environment, health and, in the long run, has economic benefits.

Environmental Benefits

There are two main environmental benefits to using sustainable furniture, less furniture in landfills and more sustainable forests. Landfills are more than unattractive. They can emit toxic gases and, if there is a design flaw, will pollute the local water supply. Some landfills use combustion to destroy the extra junk. Combustion creates carbon dioxide and could contribute to global warming. Trees are the earth

natural filters, they change carbon dioxide into oxygen. These trees, however, are often used to create furniture. When trees from old growth forests are cut down, our filter system becomes weak. Natural resources are also conserved as fewer raw materials are needed for the refurbishment process than for the manufacturing of new goods. The refurbishment process also requires less energy and so the amount of grey energy (energy incurred in production) is reduced. Makers of sustainable furniture attempt to balance this trend. Designers can use recycled metal and plastic. They often use these materials to create their products. Individual designers, while they may not have the access to large quantities of recycled plastic can use other materials, such as old lumber and antique furniture. Sustainable furniture also helps sustain the forests. Any wood used in this furniture is from fast growing wood and sustainable forests. Old growth is not used. If the designer does not use fast growing wood, then he should be using old, recycled wood. This prevents the further degradation of the forests and keeps the wood out of the landfills.

- **Health Benefits**

Most unsustainable furniture is made with toxic chemicals such as varnish, paint, glue, or formaldehyde. These chemicals are not cured and continue to emit VOC's (Volatile Organic Compounds) for days, weeks, months, or even years after being brought into home. VOC's can cause cancer and other health issues, particularly in children. Composite wood, for example, is made with formaldehyde. Formaldehyde is a toxic carcinogen that can cause cancer, asthma and allergies in children. Other toxins are used as fire retardants. These toxins have been linked to cancer and birth defects, among other things. Sustainable furniture designers use safer retardants in an effort to element these problems. Sustainable furniture, because it helps prevent the growth of landfills and encourages forest growth, also helps keep the air and water clean, preventing future problems caused by pollution (<https://patagonialelegacy.com/blogs/news/the-benefits-of-buying-sustainable-furniture-11/10/2017>)

Economic Benefits

While sustainable furniture often has a higher purchase price than other furniture, it is cheaper in the long run. Sustainable furniture is made to last. This will prevent from running to buy new furniture every few years. It will also save the expense of taking old furniture to the dump. Goods are revamped so they look and feel as good as new, except without the high price tag. Sustainable furniture also helps in reducing the medical expenses by preventing illness. There are many reasons to use sustainable furniture. Sustainable furniture helps green the planet and an individual's life. It helps prevent illness in families; saving them time, money and grief. There is no good reason not to go green, at least when it comes to furniture.

Expression of Creativity

Instead of a pre-determined style, one can design their own furnishings. The result is a truly

unique piece of furniture, designed by them for themselves.

Materials used for the construction of Green Furniture

There are varieties of materials which can be used to construct green furniture. The materials which recycled products or renewable natural materials and which have low level of embodied energy (the energy used to make the materials and transport them to their end destination) can be considered as green materials (<http://www.eco-friendly-emporium.com/eco-friendly-furniture-store-directory.html>). Following are the materials considered for the construction of green furniture.

Certified Eco Friendly Wood

Trees are needed to absorb carbon dioxide, produce oxygen, keep soil stable, and provide habitat for insects, birds, animals, and other plants. Deforestation is one of the biggest challenges that is faced. Sustainable wood harvesting can actually increase the number of trees on the earth while providing people with the wood they need to create green furniture at the same time.

Reclaimed Materials

Furniture made from reclaimed materials is another excellent choice for eco friendliness. Using reclaimed lumber is a popular option for green furniture projects. Reclaimed lumber is wood that has been formerly used-usually in a building, but reclaimed lumber can also come from sources such as wine barrels, coal mines, or train boxcars. Popular woods for reclaimed lumber include American chestnut, oak, and longleaf pine. The reclaimed lumber is an inherently reusable material and a very popular green furniture material for many reasons. Older wood is often sawn into wider planks than contemporary wood. It is possible to find reclaimed lumber in unusual and/or beautiful varieties of wood that can no longer be sustainably harvested. Reclaimed wood is well-seasoned and stable. Because reclaimed wood is so popular and labour-intensive to reclaim, green wood furniture can be both hard to find and more expensive than new wood.

Bamboo

Bamboo is another green furniture material that has been exploding in popularity. It is technically a grass, rather than a tree, so it simply regrows after being cut. Bamboo grows incredibly quickly and is very versatile. Rather than taking 35 - 50 years to mature, bamboo reaches height maturity in about 3 years and hardness maturity in 5 - 7 years and absorb massive amount of CO₂ during this rapid growth process. The bamboo can be flattened, moulded, or pressed into veneer. Most bamboo used for furniture today is grown with little or no pesticides-because it grows so quickly, it's easy to maintain in good health.

Rattan

Regularly sold as wicker furniture, rattan is especially durable when woven and is slow to show wear and tear. Since rattan is a member of the palm family, it grows much more rapidly than wood much like bamboo (<https://www.custommade.com/blog/sustainable-furniture/>).

Metal, Steel, and Aluminium

While the manufacturing of metal, steel, and aluminium may not be so green production often requires tons of electricity all of these materials can be easily recycled when it's time to move on to new furniture. They're also durable and sometimes already made of recycled content (<https://www.custommade.com/blog/sustainable-furniture/>)

Green Furniture Design

The department of Family and Community Resource management offers an honours degree programme in Interior Design. The students enrolled under this programme design various interior products designed for decorative or functional purpose for interior and exterior of a built establishment. The products that they design are furnishings, furniture, accessories for each area in residential as well as commercial spaces. The students are encouraged to design products made out of scrap or discarded material available in the department, their home or industrial waste. Below are some examples of the furniture pieces designed by students which promote sustainability in design.

Figure 1: Coffee Table



Coffee Table

The design of this table is inspired by the French coffee culture i.e. Eiffel tower. The material used in making this furniture piece is polished wood and metal base which was the leftover of the discarded another furniture piece.

Figure 2: Bamboo Bench



Bamboo Bench

This bamboo bench is a perfect outdoor seating with different variations and is joint with three modules at 45 degree angle. The materials used are bamboo, varnish, nails and threads to join.

Figure 3: Seating for Lawn Area



Seating for Lawn Area

This Seating is especially designed for the lawn or open area. The materials used in its construction are wooden planks and the base is the retained from the discarded chairs in the department. Wooden plank is polished and bases is painted with the oil paint colours.

Figure 4: Drum Stools



Drum Stools

These drum stools are made from discarded cylindrical drums and leather recon seating. They were painted with white colour to give it a finished look and protect it from rust. It can be used as exterior or interior spaces.

Figure 5: Stool



Stool

This stool is designed from the metal rods given a round shape. After this the round rods are arranged in spiral manner. They were painted black. At the top soft seating was attached. This stool can be used for indoor as well as outdoor spaces.

Figure 6: Bamboo Bookshelf



Bamboo Bookshelf

The bamboo book shelf is made with bamboo and nails, threads were used for joining them. Varnish was applied for its finished look. The design was created first and then was joined accordingly. It can be used as a book shelf as well as wall décor.

Figure 7: Bamboo Bed



Bamboo bed

The bamboo bed was especially designed for exterior spaces in heritage resorts but can be used for interior as well as. It was made water proof by applying the coat of varnish.

Figure 8: Cork Dustbin



Cork Dustbin

This dustbin is designed by arranging bottle caps in a uniform manner. It has an aluminum grill on top and a solid aluminum base.

Figure 9: Turbo Puffy**Turbo Puffy**

The mechanical turbo is painted and a cushion is attached to it. It is lined with wooden rods for strength structure.

Figure 10: Wooden Lamp**Wooden Lamp**

For the wooden lamp, different pieces of wood are carved beautifully to form a lamp.

Conclusions

The global environment is affected by the irreversible damage caused by the human activities. As technology matured and grew more sophisticated, so did man's ability to exploit it. During the late 20th century, awareness of the impact of technology and the expanding human population on the earth increased. Designers slowly started adopting new ideas that were neither indigenous nor sustainable. The sustainability design movement focuses on lightness, flexibility and purpose. The materials which are available near to the sites or locally are used in the construction of the sustainable furniture. Also, the material which has been discarded and scrap that will end up in increasing the landfills otherwise can also be used for making the sustainable furniture. There are various options and materials available within our spaces, the need is just to design and use them to give shape to a sustainable furniture piece. This

concept also helps to express the ability and creativity of the designers. Green furniture also offers several benefits. It helps in keeping the planet green by reducing the consumption of non-renewable resources. It also reduces the growth of landfills which helps in improving the indoor and outdoor air quality. Additionally, it is better for the innate health because of low chemical and toxin content. Finally it also saves money by reusing the discarded or scraps materials over the other alternative of using the new and fresh materials. Adopting sustainable lifestyle and products is the new way of living. Therefore, there is a need to consider sustainable choice throughout life.

Aim of the Study

The aim of the present paper is to share the ideas about the ways in which the environment sustainability can be achieved by the utilization of what we consider as waste into some meaningful and usable furniture piece. This prevents the waste just going to landfills and pollutes the environment around. People can create more such prototypes and use them.

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