



## “Loop”

# Innovative Textile Using Unconventional Materials

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### Abstract

Nowadays, the competitiveness of the textile industry and the consumers interest have been increasing the demand for innovative and functional textiles. Along with this, sustainable developments are playing an increasingly important role in the textile industry. This led to a new development strategy based on bio-based wastes and by-products of different industries. These bio-based wastes and by-products come from several industries. These resources present an enormous potential for enhancing in the textile finish due to their intrinsic properties. This research is based on the latest innovation and textile product development through different by-products and wastes.

**Keywords:** Environment, Innovative, Loop, plastic, Sustainable, textile waste, weave, unconventional.

### Introduction

Our project ‘LOOP’, focuses on how materials that are used to make a product are the same materials that end up in waste. Hence to break this vicious cycle/loop we create an extending loop where the waste is our raw material and the natural raw material is preserved.

Left-overs from different sources and industries, such as food, vegetables, textile, furniture, accessories, etc are often sent to the landfills. Due to the current rate of production and consumption a lot of waste is generated which can not be re-used or recycled. However due to the interest of introducing these by-products in textile industry, valorization of these materials have increased.

Innovative or creative weaving is a growing industry, where in a variety of unconventional materials are used. Utilization of these materials that are based on sustainable raw materials present a possible way for the development of functional textiles on a large scale.

As textile students we believe that using these unconventional materials which would rather be trash, will save a large amount of waste materials and will boost the textile industry, grow the economy and will also be seen as a growing trend. This also increases the options of raw materials.

Hence, our collection ‘loop’s’ main goal is to innovate textiles using waste/unconventional materials to make it a perennial trend. Understanding the sources of materials, their chemical, physical and surface properties and their impact on the environment, we create a theme based rendered prototype collection of few product categories in apparel section.

## Impact of Waste on Environment

Material extracted from different sectors like industries and households have a huge impact on the environment that can last for thousands of years. It also causes significant impact on plants, animals and other living beings. These waste materials are dumped in water bodies, plant fills and surround areas in the society which leads to health and safety issues. It also leads to pollution when these waste materials are dumped into the waster bodies and burnt both of which also leads to loss of biodiversity.

As we walk around in our surroundings, we observe materials like plastic bags, food waste like peels, fibers etc which attracts rats, flies, and other pests which help in the spread of numerous life taking viruses and diseases. The waste workers in many countries come in direct contact with these hazardous waste posing serious health threat. This remains to be a very vicious cycle.

Along the road side, lightweight materials having high range of peril, is accidentally swallowed which leads to entanglement or choking. Waste materials that are neither destroyed nor re-used remain on the land for a long period and break down without decomposing. This spoils the quality and strength of a good soil which affects the factors of agriculture, planation, construction and many more sectors.

## Materials

Plastic was found in households, recycling bins, packaging, neighborhoods, shops, etc. Similarly paper was found from old assignments, magazines, leftover newspapers from scrap dealers, packaging, bills, etc. Textile waste of good quality is found in textile industries, tailor shops, leftover assignments, households, neighborhoods, relatives, textile scrap dealers, designers, etc.

Green waste like leaves, twigs, flowers, seeds, stems are found from nearby gardens, roads, plantations, surroundings, etc. Other decorative materials like mirrors, glasses, laces, buttons, stones, piping, were found from our old assignments and wardrobe



Raw materials

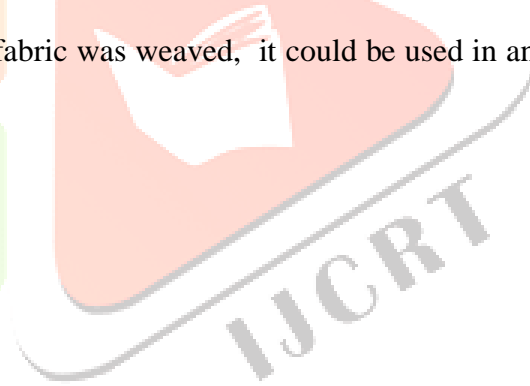
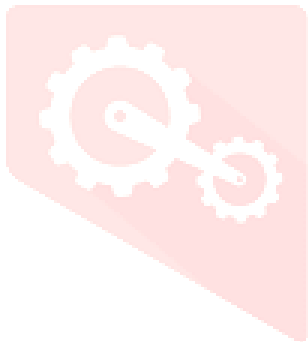
## Methodology

Different sustainability strategies have been developed for effective utilization of these unconventional materials. We need to have a proactive approach towards recycling these materials and re processing clothes, fibers and other scraps in the most efficient way to achieve sustainability and so that the industry will grow.

After brain storming, mind mapping and understanding waste materials, their sources and their impact on the environment, “LOOP” came into ideation, wherein creative and innovative weaves and it’s by-products will be made

### Birth process of 'LOOP' :

- Collection of materials- After hunting down the materials and understanding the sources we divided the materials among ourselves and collected the materials wherever possible. While collecting the materials we made sure that the surrounding was clean enough and the materials didn't contain any fungus or infection.
- Assembling materials according to the types- After collecting the materials we decided to divide the materials according to the categories and origin. We separated the food waste material with green waste material, papers and brown waste materials together, all the plastic materials together and textiles on one side. Apart from this, mirrors, glass, bottles caps, laces, buttons, etc were segregated as decorative materials.
- Sterilization- Sterilization is necessary because it destroys all microorganisms on the surface of an article or in a fluid to prevent disease transmission associated with the use of that item. There are various methods of sterilizations, we followed the basic process i.e. sanitization of the materials or boiling in hot water.
- Trimming and cutting- After completing method of sterilization, materials were kept for drying for a day or two. Trimming and cutting was a necessary step to make sure all the materials are in equal size and shapes to make it easy for weaving.
- Weaving into fabric- Once all the materials were trimmed equally, it was used for weaving into fabric. Again due to lack of equipments, we used frame looms of different shapes and sizes. The frame looms were made using different materials like cardboards, wood, canvas, etc. We made sure that we weave all the materials precisely to make it look like a fabric.
- Utilization of the fabric into product- Once the fabric was weaved, it could be used in any accessory or apparel products, etc.

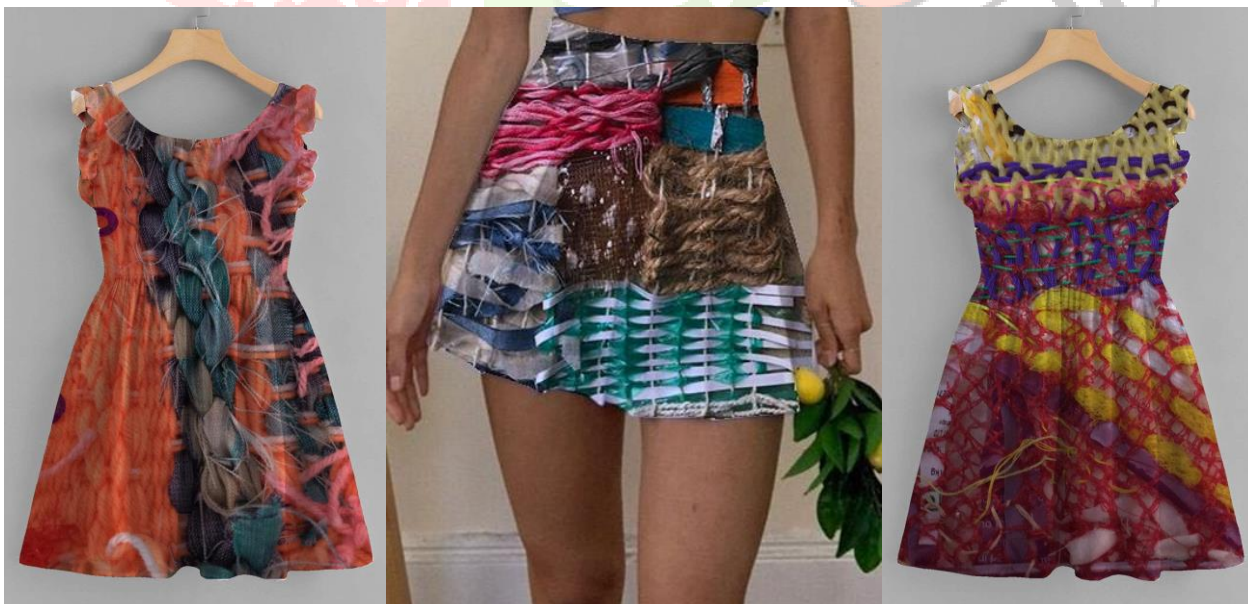


## Weave Design



### PROTOTYPES

The following images are digital rendered im



Innovation is the core factor for creating a sustainable environment. Futuristic technologies are designed, developed, and marketed around the world. The speed of innovation has increased and technological landscape is going through rapid changes. They say “ Innovation and sustainability go hand in hand .” Sustainability addresses the trends adopted by countries so as to make sure, the need of their people are met

without much damage to the environment. Any designer or innovator of futuristic textiles should have sustainability in their mind .

The potential for reusing natural by-products and wastes from different sources was reviewed in this report , describing their most attractive properties and characteristics. As Ecological considerations become important factors in the selection of consumer goods all over the world, consumers want quality product with no harm to the ecology and can prove to be attractive and functional as well . With the environmental awareness and scarcity of space of landfills , waste or by- products utilization becomes an attractive alternative to direct disposal.

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