

Textile Waste: From Trash to Trend

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ABSTRACT: The study 'Bedroom Collection- Designed and Developed using Waste Material' was conducted to focus on reusing the textile waste and to augment innovative concepts. The main objective is to reduce the environmental damage being caused by the solid waste, by creatively using it to make a product range.

In first phase, a variety of surplus fabrics and materials were collected from the manufacturing units, to conduct the study.

In second stage, various fabric manipulation techniques were explored on the different fabric base, conforming the properties of the fabrics and were catalogued. Fabric manipulation includes the techniques that refashion the fabric in its physical appearance, by adding value to it. A catalogue of selected techniques was also developed.

During the next stage, a study of trend forecasts was done and inspiration was used to create mood board and colour board. The theme 'Spring' was selected for the product range. In last stage, products were developed using selected fabric manipulation technique. These products were finally evaluated on the criteria of design, quality and price.

KEYWORDS: Reuse, textile waste, fabric manipulation techniques, product development

I. INTRODUCTION

Today, the fashion industry is facing the issues of sustainability. It is of a great concern how the textiles products are produced, (under)used and discarded. The industry is based on fast manufacturing processes, with even faster changing trends. The cycle of buying, using, disposing has a huge impact on the society and environment.

Textile industry can be seen as the fastest growing sector of solid waste. This waste can further be categorized into two-

1) Waste generated at construction level

2) Waste generated at consumer level

First type of waste is being hugely generated during production processes. Either, the cut pieces are adding to the landfills or the surplus fabrics are left untreated to decompose. The other waste is that is generated by the consumers who are discarding the products without using them completely.

With the changing times, the scenario is changing. Consumers are concerned about the environment and they are ready to accept the eco-friendly ways. The R's –Reduce, Reuse and Recycle are seen as the most appropriate direction to control this problem. In the present study, the focus was on the waste being generated during production processes. The efforts were made to reuse waste material in the best possible manner.

Objectives

- To collect the waste material from various manufacturing units
- To explore various fabric manipulation techniques and cataloguing
- To maximize the efficiency of waste material, by designing and developing a bedroom collection

II. RELATED WORK

In order to conduct this study, various trend forecasts were studied, including Heimtextil and MoODs, Brussel. In the Heimtextil forecast Reconnect was predicted as a new direction inclined towards simplicity, nature, culture and highlighting the importance of pure essentials. Under this theme the four style dictions.

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Sobriety – which represents the end of short-lived, seasonal trend and beginning of consistent values. It is characterized by quality, longevity, sustainability and significance. In this context, a new generation of designers are researching forgotten skills and traditional craftsmanship is making a comeback.

Mix Mash – It is a combination of old and new patterns, colours or shapes. When strength and tradition of craftsmanship is coupled with innovation and efficient functionality, to turn something old into something new. It is a mix of modernity with a cultural bonding. Mix Mash emphasizes the contrast between natural and synthetic with an array of unexpected fabrics.

Utility – Huge population is being concerned about the global financial crisis and surplus products. Products marketed aggressively in glossy brochures are being replaced by the untreated and fundamental products. Designed for everyday use, utility products give greater meaning to their relationship with the user and suggest a longer lifespan. The pure, modest and unadorned are celebrated.

Wilderness - luxury is re-addressing craft, with an emphasis on slowing down to promote the understanding that true luxury isn't swift in nature. Rediscovery of long-forgotten skills and craft techniques with a new organic and luxurious feel is the direction of this theme.

1.2 **MoOD Brussels** The home fashion team of MoOD Brussels has forecasted the trends under the theme, 'Renaissance'.

Renaissance is a feast of new opportunities and the prospects of a long and exciting future. However, to be born again implies a period of decline. It is focused towards bringing about an expression of great cultural wealth.

In recent decades, textiles have seemed to have lost their status. Production capacities and technical aspects have been stealing the limelight. The pace at which our industrialised world has changed has left little room for a proper grasp of this slow craft. The economic empires were primarily focused on efficient production processes and large volumes. With this trend feature, we are (re)valuing the subdued power of rich textiles.

Kiss is brimming with little experiments and thus sometimes overshadows the purely technical innovations. KISS is incalculable: much in the way of textiles and then again little, pleated inlays or stretched like a second skin around furniture. Brazen colours intrude brutally into the home concept.

Memento Mori is an unbridled explosion of exuberant, elite, mannerist creations, with heavy fabrics and dramatic volumes full of variegation in surface and shine. They are often inspired by the legacy of the important ancient cultures and introduce a more male-looking interior. But it is a type of luxury that is of this world. 'Luxury' as we knew it was lacking in personality. Textiles can fill this void like nothing else.

III. METHODOLOGY

The study was carried out in different phases, as stated below:

3.1 Phase 1

- Market Review
- Collection of raw material

3.1.1 Market Review

A market overview was done to understand

- Products with surface ornamentation, available in the market
- prevailing styles of the beddings
- various combinations of the products
- price range of similar products available

3.1.2 Raw Material

Amid this stage, waste and leftover material from various manufacturing units was collected.

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3.2 Phase 2: Cataloging and Development of Techniques

During the second phase, the gathered waste material was used to create the samples of various fabric manipulation techniques. A mix of solid colored, textured and printed fabrics were used. Various fabric manipulation techniques were explored on the different fabric base, conforming to the properties of the fabrics. After initial experimenting, fabric and techniques with best result, in terms of appearance and efficiency, were selected and catalogued.

3.3 Phase 3: Development of Product range

3.3.1 Development of mood boards and colour boards

To develop the products from surplus material, forecasts for home furnishings, texture and colour were studied. With the theme 'Spring', mood boards and colour story were developed using Photoshop - a computer software. From the forecasts, the colours selected for final range were white, red and green.

3.3.2 Layouts and placements using CAD

CorelDraw – a computer software was used to sketch various layouts and placements. The combination of sizes of the products were also sketched using CAD.

3.3.3 Product Development

To develop the product range, a few techniques from the catalogue were selected. Mood board, colour board and forecasts were considered for the selection of colour and texture. The one of placement sketched was selected to place the layered flower on the different products.

3.3.4 Cost and Evaluation

The cost of each product was done separately and cost of complete product range was finally calculated. Further, the constructed products were evaluated by the panel of judges based on the design, finishing and price of the products.

IV. RESULTS AND DISCUSSION

4.1 Phase 1

4.1.1 Market Review

The market review was done, to ensure the authentic information. It was attributed that fabrics like cotton, silk, velvet, satin, etc. were being used for the beddings. It was also found that glass tissue, raw silk, khaddar silk, khadi cotton, khadi polyester, organza, cotton, chenille, etc. are being used for window and door curtains.

The products focussed on were bed covers, shams, pillows and cushions. It was found that cushions were in various size like 8" x 8", 12" x 12", 16" x 16" and 22" x 22". Shams were available in 26 sq. inch and 20" x 30". The size of oblong accent pillows was 12" x 16", 12" x 18" and 12" x 60". The size of the queen size bedcover was 90" x 100". Similarly, the dimensions of king size bedcover is 110" x 96", 110" x 106" and 112" x 116".

It was found that these products had embroidery, patch work, sequence, etc. as surface ornamentation. These techniques were extensively used on available products.

4.1.2 Raw Material

Various manufacturing units were visited to collect the waste material and surplus material. Waste material is categorized as the cut pieces left after the cutting of the complete garments. Surplus fabric is categorized as the balance fabric left, once all the products are shipped to the brand.

To understand the disposal of waste material and cycle of surplus material, meetings with fabric (and accessory) store managers were conducted. It was ensured that material collected was leftovers from the styles that have been shipped at least a month ago.

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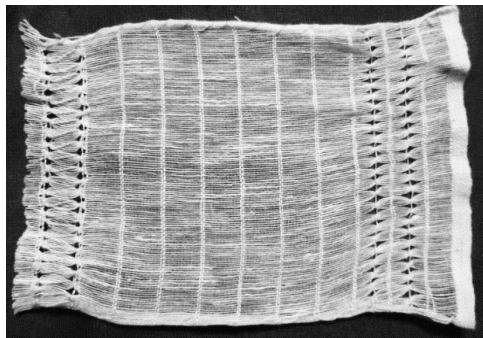
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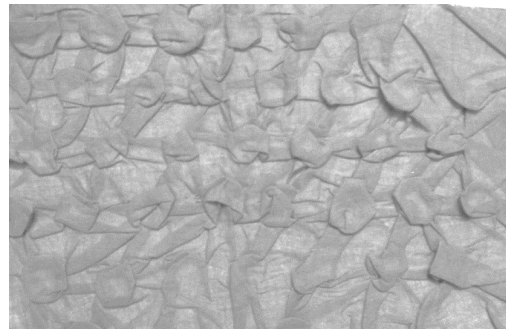
4.2 Phase 2

Cataloguing and Development of techniques

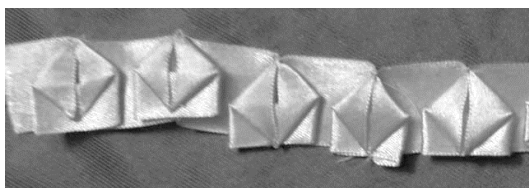
Various fabric manipulation techniques like, shirring smocking, trapunto, cord quilting, fabric weaving, bubbling, pin weaving, origami, etc. were experimented. Cotton yarn, wooden frames, cotton balls, wire mesh, pressure cooker, rubber bands etc. were used as the supporting material. The waste material was procured from various manufacturing units for developing a catalogue of fabric manipulation techniques. The focus was to ensure utilization of waste material in a productive manner and more efficiently. The fabric manipulation techniques were explored on the different fabric base, conforming the properties of the fabrics. Each technique show different effect, in terms of appearance, on different fabrics.



(a)



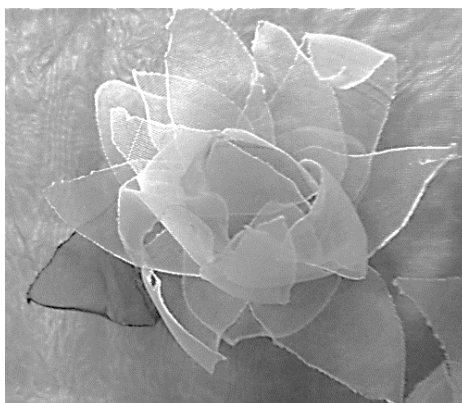
(b)



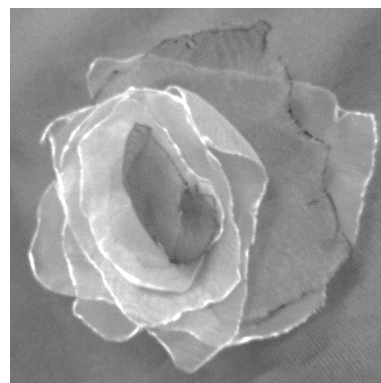
(c)



(d)



(e)



(f)

Figure 1 Various Fabric Manipulation Techniques (a) pulled work (b) bubbling (c) fabric origami (d) twisting of zipper tape (e & f) layering

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In figure 1, a number of fabric manipulation techniques were developed for the catalogue. Figure 1 (a) represents, pulled work, where number of yarns of loosely woven fabric were held together. A threaded needle is then passed through it, to form a loop around the yarns. In figure 1 (b), bubbling effect was given to the fabric, using mesh. Later, it was heat set and fusing was used to keep up the shape.

In figure 1 (c), origami was done on a sati tape. Figure 1 (d) where a single tape of zipper is twisted to form a flower. Figure 1 (e & f) represents layering of burnt glass tissue fabric, to create fabric.

4.3 Phase 3: Development of Product Range

4.3.1 Development of Mood Board & Colour Board

A computer software Photoshop was used to develop a number of mood boards, of the theme 'Spring'. For the development of the product range white, red and green colours were selected from the mood board and the forecasts referred.

4.3.2 Layout and Placement using CAD

Various combinations and placements of shams, pillows and cushions were tried. Layouts for curtains and bed cover were also worked out. These layouts and placements were sketched on computer, using Photoshop and Corel Draw.

4.3.3 Product Development

After sketching of various layouts, the researcher constructed the products according to the theme. Mainly, glass tissue and chenille fabrics were chosen for the fabric manipulation techniques. Poplin was used for the base and back of the product.



Fig. 2 Product range developed using fabric manipulation techniques

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One Bedcover, a set of curtains, set of Euro shams, set of standard shams, and set of accent pillows, two cushions, along with coordinated lampshade and a photo frame were developed in the product range.

To construct the bedcover 9 different panels were made, the panels on the edge or the skirt part were quilted with red glass tissue borders around it. Chenille was used on all the four side, in front smocking was done and all the other three sides were plain. The center part was again quilted in checkerboard pattern with flowers attached. Finally, a layer of white glass tissue was place on the top of it.

The base of shams and cushions was also developed by quilting, where a layer of 0.5 mm foam was sandwiched between a layer of poplin (outside) and cotton voile (inside). The topmost layer was white glass tissue on which red border was stitched on two sides. Further, these were decorated by stitching differently shaped flowers and leaves.

The curtains were developed using white glass tissue fabric as a base on top of which flowers and leaves stitched. A lamp shade and a photo frame were also made to accessorise the collection.

4.3.4 Costing

To calculate the price of the products, the cost of fabric (as per the consumption) and accessories, CMT (cost of cutting, making and trimming) and overhead expenses were calculated.

4.3.5 Evaluation

The product range was presented to a panel of judges to evaluate on the criteria of design, finishing and cost.

Design	Finishing	Cost
4.5	3.5	5

Table 1. Aggregate scores recorded during evaluation (on the scale of 5)

As shown in the table above products were rated on the scale of 5 by each evaluator. The aggregate score for design was 4.5, which included visual appearance and design elements both. On the basis of quality and finishing, the aggregate score was 3.5. From the price point, evaluators appreciated the products a lot and the score was 5.

V. CONCLUSION

A large amounts solid textile waste is the matter of concern. This waste is not only harming the environment but also requires ample resources for disposing. To overcome this problem, the waste can be reused. It is important to understand that waste generating industry can reuse it, in innovative manners. In this study, the researcher has tried a step forward to present the new and creative idea for the utilization of the waste available in the textile industry. The entire bedroom range was well appreciated by the experts. It might not be used as a whole but could be used as a part of the product depending upon the type and size of fabric waste.

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