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ZERO WASTE-BASED WOMEN'S BLOUS DESIGN WITH GEOMETRIC PATTERN TECHNIQUE

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Abstract.

The type of research is engineering research which includes fashion design, pattern design, material determination, sewing techniques and fashion finishing. This research focuses on making patterns with the concept of zero waste fashion, which is an effort to create clothing that does not produce waste or waste as much as possible. The fashion product that will be made is designing clothing by reconstructing patterns with zero waste-based geometric pattern techniques on women's blouses. Data collection techniques were carried out through observation, namely direct observation when testing the product until finalizing the product to be ready for use, documentation was used to document all exploration activities of product manufacture from prototyping to product finalization, Focus Group Discussion (FGD) was used to obtain feedback. feedback from the panelists as a reference for product development and improvement. The panelist group consisted of expert panelists, namely a group of 5 fashion lecturers and a group of fashion students as trained panelists of 5 people. The results of the study were women's blouses made of polyester with striped motifs with a fabric width of 150 cm and a fabric length of 150 cm. The final visualization of a women's blouse is a kimono sleeve blouse, a rever collar with a pocket variation. The results of this research can be used as an alternative as environmentally friendly clothing that becomes a reference in the manufacture of women's clothing.

Keywords: Geometry pattern, Zero Waste, women's blouse.

INTRODUCTION

Designing clothes in relation to making clothes is making plans for fashion products. The initial activity in the process of making clothes is choosing a model or style and fashion. Dress makers or designers must choose and make designs as the initial activity of their clothing products. Fashion design is a collection of visual information about a clothing that will be created. As stated by (Senanayake, 2013) that creativity in fashion design can be seen from the characteristics of the country, understanding of the local market, industrial developments and global trends. Fashion designers who meet the requirements should go through a systematic learning process and be able to create sustainable change.

The clothing and textile industry is one of the manufacturing sectors that recorded the highest growth in the third quarter of 2019 at 15.08 percent, this achievement surpassed 5.02 percent economic growth in the same year period. (Kemenprin, 2019). As stated by the Minister of Industry of Indonesia, Mr. Agus Gumiwang Kartasasmita, that the textile industry and national textile products are increasingly competitive in the global arena because they have high competitiveness, this is driven by an integrated industrial structure from upstream to downstream. It was further revealed that the outstanding performance in the textile industry was supported by high demand in the domestic market, which was reflected in the increase in textile and apparel production. (Ministry of Industry, 2019)

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The higher production of apparel is due to the increasingly dense and modern lifestyle so that everyone has different clothing needs on every occasion. The need for clothing is the second basic need after food, so it is considered important that everyone in every family must be provided. The high demand for clothing will of course have an inverse impact on the eco-environmental system. This is because textile production contains more chemicals that do not take into account their impact on the environment.

One of the causes of the high production of clothing is the emergence of international retailers which provide cheaper fashion trends, and change quickly, forcing consumers to change their fashion trends. This encourages manufacturers to make clothing with short fashion trends with low quality or what is widely known as fast fashion. Fast fashion is the clothing industry as a contributor to textile waste which ends up in garbage disposal, while the textiles used are non-biodegradable textiles. (Nidia & Suhartini, 2020). Several scientific studies reveal that in the fashion design process, the garment industry in producing does not consider sustainability, a sense of responsibility towards textile waste generated through pattern making, the production process to the use of clothing is not their concern. (Gwilt, 2012).

The impact of the growing demand for clothing is the increasing waste of textile materials in the form of leftover fabrics from the production of used clothing and apparel. According to the Co-Founder of the Setali Community, Intan Anggita Pertiwi, global clothing waste reaches 90 million tons of unsuitable clothing. Of course this number is very large and can worsen the environment (Febriyani, 2019). The same thing was stated by (Rissanen, 2013) that in the production of clothing, at least 15% of waste is generated from the total materials used. The waste can pollute the environment because the textile decomposition process takes 15-20 years.

A report from the non-profit organization Earth Plegde reveals that at least 8,000 types of chemicals are used to process raw materials into textiles. In addition, 25% of the world's pesticides are used to grow inorganic cotton plants. (Herlinda, 2017). It was further revealed that in 2015, the World Bank projected that 20% of global water pollution cases would come from textile factory waste and dyeing. A total of 72 toxic substances were identified in the textile dyeing process, of which 30 were insoluble or lost from water.

Problems related to waste generated by textile production from pre-production to post-production require serious handling from various parties, especially those who are involved in the fashion sector. One of the steps that can be taken is the practice of zero waste in the fashion environment. Achieving an increasing number of sustainable fashion products will require a new way of thinking about design. Zero-waste design is an option that puts creativity first to create the solution. (Gam & Banning, 2020).

Zero waste fashion is an effort to create clothing that as far as possible does not produce waste or garbage that pollutes the environment. (Rissanen, 2013) It was further revealed that there are two general approaches used in zero waste fashion, namely Pre-consumption zero waste fashion referring to the efforts made to produce clothing that minimizes waste. These businesses include the manufacture of fabric patterns and designs, as well as the use of environmentally friendly textile materials. Post-consumption zero waste fashion refers to

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efforts to use clothes after they are worn. Post-consumption zero waste fashion is pursued through the use of second hand fashion and the use of textile waste as raw material for various arts and crafts.

Zero waste movement or minimizing waste that is applied to fashion production can be done through pattern cutting, namely the technique of cutting or cutting materials to determine the dimensions of textiles in arranging patterns as carefully as possible so as to minimize waste generated in clothing production. (Afrilia, 2019). Zero waste pattern cutting is often associated with sustainability and has the potential to trigger creative collaboration within the design team, resulting in alternative production models for the fashion industry. (James, Roberts, & Kuznia, 2016).

Thus the process of making patterns and arranging patterns on materials is part of the initial process to minimize textile waste in clothing products. Someone who is engaged in fashion, especially the fashion education environment, can contribute to saving energy, water, chemicals, and other resources to save the environment from pollution caused by textile waste. Based on this, making clothing without waste provides new opportunities for designers to be considered in creating fashion designs as part of environmental sustainability.

RESEARCH METHODS

The type of research is engineering research which includes fashion design, pattern design, material determination, sewing techniques and fashion finishing. This research focuses on making patterns with the concept of zero waste fashion, which is an effort to create clothing that does not produce waste as much as possible. The fashion product that will be made is designing clothing by reconstructing patterns with zero waste-based geometric pattern techniques on women's blouses.

Data collection techniques were carried out through observation, namely direct observation when testing the product until finalizing the product to be ready for use, documentation was used to document all exploration activities of product manufacture from prototyping to product finalization, Focus Group Discussion (FGD) was used to obtain feedback. feedback from the panelists as a reference for product development and improvement. The panelist group consisted of expert panelists, namely a group of 5 fashion lecturers and a group of fashion students as trained panelists of 5 people.

RESULTS AND DISCUSSION

The concept of the resulting fashion is to use the concept of zero waste with geometric pattern techniques, which is to produce clothes without waste but still have a fashionable model. The results of the exploration of this study resulted in a semi-formal tunic blouse made of polyester. The amount of material needed is 150 cm x 150 cm, using striped motifs that are placed horizontally and vertically on several parts of the clothing. The hallmark of the fashion design is the over slag on the front using a kimono sleeve with a rever collar.

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1. Sketch Design

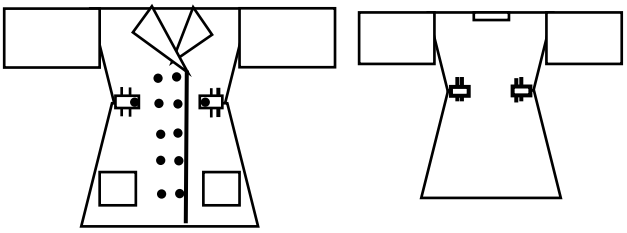

Figure 1: Women's Blouse Sketch Design

2. Pattern Design

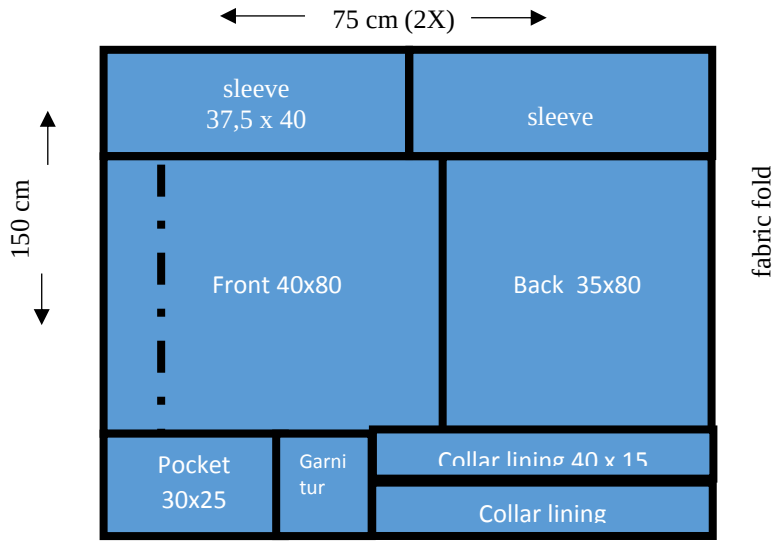

Figure 2: Pattern design

Based on the sketch design in Figure (1), the trial pattern made is a geometric pattern. The concept of the pattern is determined based on the dimensions of the fabric to be used. The technique of laying the pattern on the fabric is that the fabric is folded twice. The patterns are arranged geometrically with the distribution of patterns as follows: (1) the sleeve pattern in the form of a kimono sleeve measuring 40 x 37.5 cm is made in two pieces; (2) front pattern 40 x 80 cm; (3) back pattern 35 x 80 cm; (4) the pattern of pockets, layers and materials of belts and buttons is arranged on a material with a size of 30 x 75 cm.

From the experiment with the distribution of patterns there are fabrics so that the material used is to use a fabric length of 150 cm and a fabric width of 150 cm. The results of geometric pattern placement after going through several trials so as to produce pattern placement without leaving any wasted material or 0% waste as shown in figure (2)

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3. Illustration Design

Figure 3: Women's blouse designs

Specifications of clothing products designed for the manufacture of women's clothing is an H silhouette with a center line of the face made using 5 cm overslag, using a rever collar, kimono sleeves. As an accent on this outfit are pockets, belts and buttons. The body size used is size L, namely body circumference: 98 cm, waist circumference: 78 cm and hip circumference: 108 cm. All materials used in this trial are polyester fabrics with a selection of black and yellow striped motifs placed vertically and horizontally.

4. Final Product Results

Figure 4: Final Product

The results of women's blouse products after going through the production process are starting from fashion design, placing patterns on fabric without waste, cutting, sewing by machine to finishing clothes so as to produce semi-formal women's clothing. During the production process there are several things that become difficult, namely the placement of patterns, namely it is difficult to arrange the layout of the fabric motifs because it focuses on minimizing waste so that it does not pay attention to the elements of the width and length of the fabric. But even

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so, trials using striped motifs provide an interesting model feel because it can give a model effect on the clothes made.

5. Panelist Assessment Results on women's blouse products

Table 1: FGD Results Assessment panelists feedback on fashion results

No	Rated aspect	Criteria				
		Very good	Good	Ordinary	Not good	Bad
	Score	5	4	3	2	1
1	Model/design	4	5	1	-	-
2	Pattern setting	3	4	3	-	-
3	Quantity of ingredients	5	4	1	-	-
4	Material color and pattern	4	4	2	-	-
5	Fashion sewing technique	4	4	2	-	-
6	The final result	3	5	2	-	-
Amount		23	26	11	-	-

From table 1 shows that the panelists' perceptions of the aspects assessed against women's blouses with the zero waste concept are in the pretty good category, although in some aspects there are a few panelists who say they are not good for certain parts, and this remains a focus for further improvement. . Meanwhile, from the results of the discussion through the FGD, several inputs were obtained including: 1) the model was further developed to make it more attractive, creative, productive, innovative to try out new 'fashionable' creations, 2) Pay attention to finishing in certain parts, because the quality of clothing remains the same. determined by the overall result. Thus the experimental results in the form of making women's blouses with a zero waste-based geometric pattern technique can be well received among lecturers as a team of experts in the field of fashion, students as intellectuals to be considered as a study in the learning process of fashion making.

DISCUSSION

This study aims to create women's blouses by applying the concept of zero waste starting from design, pattern construction and cutting of blouse materials that are effective so as not to leave a lot of fabric waste during the production process. The results of clothing products in the form of women's blouses obtained in this study are clothing with a zero waste concept, namely minimizing waste as part of the process of making environmentally friendly clothing. Geometric patterns are applied to the manufacture of clothing because they facilitate the process of compiling patterns on materials, thus helping to minimize fabric waste. As stated by (Rissanen, 2013) that this geometric pattern pattern is considered the most effective in reducing clothing waste because its geometric shape can facilitate the process of compiling the pattern on the sheet of cloth that will be used. This geometric pattern technique is adapted from the technique of making Japanese kimono clothes that have been applied since ancient times.

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The results of the fashion products obtained after going through the production stage are women's blouses with the characteristic kimono sleeves, the center line of the overslag face equipped with a rever collar with accents on pockets and a belt using a wrap button garniture of the same fabric. The results of this fashion do not leave waste or 0% waste as a form of implementing zero waste in fashion making. Making clothing by implementing zero waste requires participation from all lines, including designers or those who are engaged in the fashion sector. The same thing was stated by (Gam & Banning, 2020) that to increase the number of environmentally friendly and sustainable apparel requires creativity and innovation in fashion design for designers or those engaged in fashion education, the application of zero waste in fashion design in the learning process. is the right solution in overcoming the waste problem caused by the production of clothing. The results of the pattern with the concept of zero waste can be used as a guide for pattern makers and producers for a more objective selection and to support the development of methods for making patterns without waste. (Jalil & Hosseini, 2020)

CONCLUSION

The concept of the resulting fashion is to use the concept of zero waste with geometric pattern techniques, which is to produce clothes without waste but still have a fashionable model. The results of the exploration of this study resulted in a semi-formal tunic blouse made of polyester. The amount of material needed is 150 cm x 150 cm, using striped motifs that are placed horizontally and vertically on several parts of the clothing. The hallmark of the fashion design is the over slag on the front using a kimono sleeve with a rever collar. The concept of clothing with geometric patterns is a solution in reducing textile waste in clothing production which includes pre-production, production processes, distribution and post-production. The results of this study also reveal that making clothes with a zero waste concept can be used to make clothes as creative as possible that produces clothes with the desired model.

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