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Zero-Waste Garment Pattern Cutting as a Sustainable Practice for Garment Construction Students in Tertiary Institutions in Lagos State, Nigeria.

BOISO MARIA OWODIONG-IDEMEKO, SAMSON ADESHOLA IDOWU,
ATINUKE DORCAS OGUNDELE, BAILIKIS OMOLADE KAKA
Lagos State University of Education, Oto/Ijanikin and Epe Campus, Lagos, Nigeria

Abstract. The study was on Zero Waste Garment Pattern Cutting as a Sustainable Practice for Garment Construction Students in Tertiary Institutions in Lagos State, Nigeria. The area of study was Lagos State. Among three tertiary institutions in the state. Lagos State University of Education, Oto, Ijanikin, Yaba College of Technology, and University of Lagos, Yaba. The study design was a descriptive survey. Two objectives, two research questions, and two hypotheses guided the research. A questionnaire was the main instrument used for the study, containing 35 questions and a three-point Likert scale. Results reveal that out of 150 students, 123 (82) answered yes, wastes are created at every stage of garment construction. 132 (88) answered yes, this is as a result of irregular shape of pattern pieces. 150 (100) answered yes, student pattern makers need to be artistic by using creativity and ingenuity to eliminate waste. 86 (57) answered yes, students need to eliminate waste by drafting simple styles. 150, (100) answered yes, waste, if not properly handled or disposed of, pollutes the environment. 150 (100) answered yes, waste created in the cutting room can be converted to something new to create jobs. 132 (88) answered yes, working with design dimensions while sourcing for textiles prevents waste. 106 (71) answered yes, this prevents unnecessary embellishment. 141(94) answered yes, these practices are sustainable. In conclusion, zero-waste pattern cutting is a sustainable practice. Therefore, simple styles combined with creativity and ingenuity is recommended.

Keywords: Garment construction, garment pattern cutting, students, sustainable practices, tertiary institutions, zero waste.

1. Introduction

Zero waste pattern making is defined as a technique or method for creating patterns without any wasted textile fabric. Zero waste is discarding nothing in the creation of fashion. It can also refer to re-issuing left over fabric scraps or yarn to make new product. (Gel and Xiaohui, 2021, Centuary, 2019). Zero waste pattern making requires a thorough understanding of how to manipulate fabric folds and angles to create three dimensional forms, with little or no waste. It is a delicate balance between design creativity, mathematical precision and acute understanding of fabric behavior (Alana, Roberts and Kuznia, 2024, Anita, 2024, Grasheli, Ratna and Janyfer, 2023, Time, 2019).

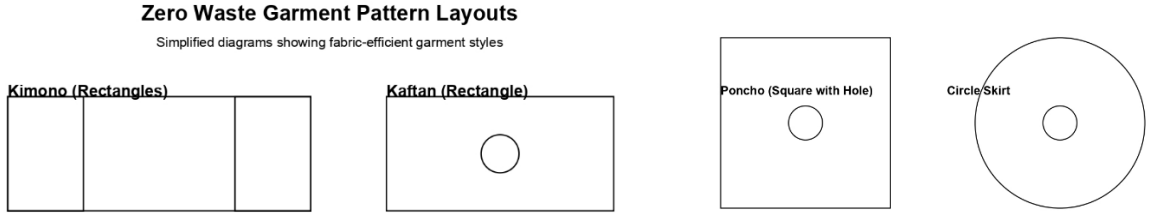
Pattern cutting is the painter's brush for a skilled artist. It entails the transformation of a two-dimensional sketch into a tangible garment that adeptly conforms and moves with the wearer's three – dimensional form, the cutter needs to be able to manipulate the fabric to transform to the contours of the wearer's body using the pattern (Mithlesh, 2025, Steph, 2023, Katherine, 2021) Pattern making serves as the transformative process that turns a sample drawing into a consistent accumulation of garment. (Korri, 2024, Hegge, 2024, Rudd, 2020). Pattern can also be made from 3D form using software tools and also be obtained using the dress form. (Mithlesh, 2025, Shanhul 2024, Einas, Azzam and Zeinab, 2023). When drafting patterns for garments, there are lots of textile waste, this waste can be eliminated by adopting zero waste practice. Textile waste occurs within the fashion cycle either before or after consumer use. In the pre consumer stage, waste originates from fibre, yarns, fabrics and garments.

During manufacturing, and postconsumer fabric waste include, garment and discarded household items. (Mithlesh 2025, Nesma, Pammi and Julia, 2022, Naznin and Sammiya, 2022). There is also pre consumer textile waste generated during design and cutting processes (Meherr, 2025, Anita, 2024, Andre, 2017). The fashion industry is one of the creative industries that has developed in the world. High production in this industry result in waste in the form of chemical waste as well as fabric waste, this waste requires proper handling so as not to pollute the environment. As a result of releasing the latest brands by clothing brands and labels which ends up on landfills, incinerator, water channels as well as stack of unsold clothes or cloths no longer worn, increase the amount of fabrics waste that are thrown away causing environmental pollution. (Mithlesh, 2025, Nesma, Pammi and Julia, 2020, Naznin and Sammiya, 2022). One way of reducing this is by not throwing clothes into disposal by designing clothing patterns that leaves no fabric left which is zero waste pattern (Upama, and Rakifull, 2023, Esnart, Anna, Chanda, 2024, Hae, Jennifer, 2020, Dewi, Velthzal, Rismawati, Nurlally, Iwankuriawan and Mansyur, 2020). With the emergence of fast fashion and the increasing rate of fast fashion consumption in the fashion industry, this has impacted negatively on the environment, fashion designers are beginning to challenge the systems linearity and seeking to prevent waste through the elimination of fabric waste during cutting stage of garment manufacture. (Nesma, Pammi and Julia, 2022, Julia, Namkya and Julia, 2020, Lizhaywood, 2019). There is need to tackle the root cause by maximizing fabric cutilization and minimizing waste by adopting zero waste design and also alleviate strain on other resources as well (SVEGEA, 2024, Meherr, 2023, Dewi, Velthzal, Rismawati, Nurlally, Iwankuriawan and Mansyur, 2020, Time, 2019). Traditionally, 15%-25% of fabric required for garment construction becomes wastage due to the well-established and intricate norms in garment design, pattern cutting and production methods, making the zero-method pattern unfeasible due to irregular shapes of pattern pieces (Gee and Younhee, 2023, Alana, Roberts and Kurznia, 2016). This wastage is due to garment style, pattern piece count, size and shape in relation to fabric width, quantity of garment sizes within a single marker, and market expertise. Whether manual or computer aided, in cutting zero waste pattern, the pattern maker needs to be artistic which demands the utmost creativity and ingenuity (Meherr, 2025, SVEGEA, 2024, Nesma, Pammi, and Julia, 2022, Time, 2019).

The pattern cutter must create a pattern for the garment that can equal or suppose a traditional fashion garment without compromising the concept, fit or aesthetics (Gee and Younhee, 2023, Alana, Roberts and Kuznia, 2016). There are many ways to go about making a zero-waste pattern layout. Prototyping and experimentation are at the heart of zero waste pattern making, designers create prototypes to show how fabric manipulation technique influence the overall design. (Grasheli, Ratna and Janyfer, 2023, Sohail, Hernan and Georges, 2023, Centuary, 2019). Another way is to lay the pieces as close to each other so that fabric is not wasted, fit pattern pieces that are similar in shape next to each other, this process is called dovetailing (Upama and Rakifull, 2023, Naznin and Sammiya,, 2022, Dewi, Kelthzal, Rismawati, Nurlally, Iwankuriawan and Mansyur, 2020). A well-planned layout maximizes the use of fabric, minimizing waste. A method for crafting garment patterns is by interlocking elements such as pockets, sleeves, frills, cuffs, collars, gussets and trims like a jigsaw puzzle known as tessellation (SVEGEA,2024, Meherr, 2023,). In tessellation, designers fit pattern pieces together like a puzzle or repeating tiles leaving no gaps, exploring creativity using material at the same time becoming more sustainable (Gee and Younhee, 2023, Nesma, Pammi and Julia, 2022, Ellen, Sunhyimg, Ling, Rachel, Eulanda, 2020, Alana, Roberts and Kuznia, 2016). Tessellation uses numerical mathematics by counting everything in detail and figure out how all parts of the garment should go together. Draft basic block pattern from a set of measurements such as from a dress form, a standard measurements chart or your own body measurement. Using a production, sketching a quick sketch that can help work through the details of the design (Anita, 2024, Esnart, Anna and Chanda, 2024, Pammi and Rakifull, 2023, Nesma, Pammi and Julia, 2022, Andre, 2017, Lizhaywood, 2019). Geometric shapes, can be directly draped onto form models, adjusting the fabrics natural flow without cutting excess, used for fluid and organic garment designs like wraps or Kaftans, it does not conform to a strike rule but that no remnant must remain on the cutting floor after pattern cutting. This method is known as drape-based patterning (SVEGEA, 2024, Meherr, 2023), others start all the patterns on computer with computer aided design tools. The use of 3D digital clothing before cutting allow simulation of fabric usage and testing multiple layouts. These tools are known as digital patterning tools (Meherr, 2023, Grasheli, Ratna and Janyfer, 2023, Nesma, Pammi and Julia, 2022, Time, 2019, Alana, Roberts and Kaznia, 2016). There are the integrated design features by utilizing left over sections of the fabric to create pockets, straps, trims or decorative elements. (SVEGEA, 2024, Anita, 2024, Time, 2019, Andre, 2017). Seamless designing creates patterns that require minimal or no cutting by using

fabric width and length as it is ideal for Ponchos, capes or tube dress (Upama, and Rakifull, 2023 Centuary, 2019). Mathematical or modular patterning is based on mathematical calculations to ensure all parts fit within a specific fabric width common in contemporary fashion design with a focus on efficiency (Dewi, Velthzal, Rismawati, Nurtally, Iwankurniwan, and Mansyur, 2020, Sahail, Hernan, Georgi 2023, Centaury, 2019). Zero waste pattern can also use pattern layering technique this is by layering smaller pieces on large ones by overlapping fabric areas. Useful in creating multi-functional garment, (SVEGEA, 2024, Steph, 2023, Catherine, 2021). Designing for disassembly, create garment with minimal stitching or seams that can be easily deconstructed and reused. This technique supports circular fashion (Upama and Rakifull, 2023, Meherr, 2023, Lizhaywood, 2019). Shirring, technique is also zero – waste clothing method. (Inneta, Nadiia, Merija and Valentina, 2024, SVEGEA, 2024, Upama and Rakifull, 2023). In contrast when cutting zero waste pattern and fabric meticulously plan the layout of each piece of fabric ensuring that every inch is utilized. This approach can involve intricate designs, geometric shapes and innovative sewing to fit the pieces together like a puzzle resulting in garment that uses all the fabric with minimal to no waste, nor subjected to the conventional practice of pattern grading. (Inneta, Nadiia and Merija, 2024, Gasheli, Ratna, and Janyfer, 2023, Alan, Roberts and Kuznia, 2016)

However, what makes zero–waste garment pattern cutting as a sustainable practice is that the fashion industry is notorious for its environment foot print from water consumption to carbon emission, the production of clothing has significant impacts on the planet. Zero waste pattern offers a practical solution to one of these issues which is fabric waste, by reducing fabric waste, the method helps in conserving resources. It means fewer raw materials are needed, reducing the demand for water, energy and chemicals involved in fabric production, additionally less waste means fewer textile ends up in landfills, decreasing environment pollution (Inneta, Nadiia and Merija 2024, Sohail, Hernan and George, 2023, Hea and Jennifer, 2020). Fast fashion over supplied large quantities of products to consumers and due to the mass production system of fast fashion, the vast amount of textile waste generated in the production process also has a huge adverse effect on the environment, the industry had largely been blamed for the greenhouse gasses emissions of between 28% of the world's total emissions. As a result, zero –waste pattern making will minimize waste generated in the production process by many designers (Gee and Younhee, 2023, Nesma, Pammi and Julia, 2022, Ellen, Sunhyimg, Ling, Rachael, and Eulanda, 2020) By simply reducing dumping of fabric waste in landfill or destroyed in an incinerator as well as encourage circular fashion, the health of the communities are protected. Zero waste supports local circular economy and creates job where one person "waste is a source for something new. Creating good green jobs as resources are endlessly recirculated through the economy, instead of being used once and then discarded reducing and reusing material create even more jobs such as repair and tailoring and reuse business, local money is spent on local jobs and stay within the community instead of leaving the community to buy imported product. It also results in fashion brands needing less Yardage of fabric to produce the same number of garment (Mithlesh, 2025, Md. Ahshan and Md. Shamsul, 2024, Einas, Azzam and Zeinab, 2023, Roberts, and Kuzinia, 20216). Zero waste techniques lead to substantial cost savings. Moreover, as consumers become more conscious of sustainability, there is growing market, for eco-friendly product brands that adopt zero waste practices which can attract environmentally conscious customers willing to pay a premium for sustainable fashion. This shift not only helps the planet but also makes good business sense. (SVEGEA, 2024, Meherr, 2023, Mart, 2016). Zero waste pattern cutting helps keep an open mind regarding the final outcome, with the same goal of making beautiful garments allow the designer to explore and invent new outcomes which is the space to create zero waste, the designer need to know the textile dimensions to be able to design the garment, likewise the design dimensions to source for the textile this is very vital for the designer, who needs to work with set of textile dimension to prevent creating unnecessary embellishment and compromise the design to increase and improve the garment sustainability. Zero waste pattern cutting represents a significant step toward the journey in challenging the status quo, pushing designers to think creatively and responsibly, (Anita, 2024, SVEGEA, 2024, Time, 2019, Andre, 2017).



Zero-waste styles

Patchwork

Drape style

(Researcher's work 2025)

1.1 Statement of the Problem

Garment construction students in the tertiary institutions in Lagos state are not aware that waste generated in the cut room during garment production are dangerous to the environment, the health of the community and can even be a source of income to others. Moreover, they are not aware of the techniques to use in achieving the zero-waste pattern cutting. Also, not aware that zero waste is a more sustainable practice than the traditional pattern cutting, this and many more is the focus of this research work.

1.2 Objective of the Study

The objective of the study was on zero waste pattern cutting as at sustainable practice for garment construction students in tertiary institutions in Lagos state, Nigeria. Specifically, the study sought to:

- Examine techniques to be employed in the cutting room during garment pattern cutting practice to eliminate waste by garment construction students in tertiary institutions in Lagos state Nigeria
- Examine the sustainability of zero-waste garment pattern cutting practice for garment construction students in tertiary institutions in Lagos state Nigeria.

1.3 Research Questions

Therefore, the following research questions were formulated:

- What are the techniques to be employed in the cutting room during garment pattern cutting practice to eliminate waste by garment construction students in tertiary institutions in Lagos State, Nigeria?
- What is the sustainability of zero waste garment pattern cutting practice for garment construction students in tertiary institutions in Lagos state, Nigeria?

1.4 Hypothesis

Hypothesis 1: There is no significant technique employed in the cutting room during garment pattern cutting practice to eliminate waste by garment construction students in tertiary institutions in Lagos state.

Hypothesis 2: There is no significant sustainability of zero waste garment pattern cutting practices for garment construction students in tertiary institutions in Lagos state

2. Methodology

Research Design: Descriptive Survey design was adopted for the study.

Area of Study: The area of the study was Lagos State, comprising three tertiary institutions where garment construction is taught. These are Lagos state University of Education, Oto/Ijanikin, Yaba college of technology and University of Lagos Akoka, Lagos.

The population of the study: consisted of 150 respondents. From the Home Economics Education department, Lagos state University of Education. 60 respondents, Yaba college of technology 50 respondents, fashion and design department, University of Lagos Home Economics Unit 40

Method of Data Collection: A structured questionnaire was the main instrument used in the collection of data for the research titled Zero – Waste Garment Pattern Cutting as a Sustainable Practice for Garment Construction Students In Tertiary Institutions In Lagos State, Nigeria. In which respondents were to answer yes, no and undecided. The questionnaire was divided into two sections, section A and B. Section A was on the bio-data of the respondents, while section B had 35 questions, 15, were on techniques to eliminate waste in the cutting room, 20 were on zero waste pattern cutting sustainable practices, totaling 35 questions.

Validity: The questionnaire was given contact and face validity by 2 experts in the course.
Method of data Analysis: All the responses were collected using Google form and analyzed using Chi-square and Friedman's test. The results are presented below.

Hypothesis 1: There is no significant technique employed in the cutting room during garment pattern cutting practice to eliminate waste by garment construction students in tertiary institutions in Lagos state.

Table 1: Techniques to eliminate waste in the cutting room

S/N	Statement (n=150)	Yes(%)	No(%)	u(%) Rank	Mean ue)	X^2 (p-val
1.	As a student when constructing garments, you draft pattern	150(100)	0(0)	0(0)	7.09	429.048 * (<0.001)
2.	Aware pattern drafting can turn a simple drawing into Accumulation of garment waste by students	129(86)	14(9)	7(5)	8.21	
3.	These wastes are created at every stage of the garment construction stage by students	123(82)	14(9)	13(9)	8.70	
4.	They come as cut-off or garment created by students	111(74)	19(13)	20(13)	9.23	
5.	This is as a result of irregular shape of pattern pieces produced by students	132(88)	12(8)	6(4)	8.11	
6.	Student pattern makers need to be articles by using their creativity and ingenuity to eliminate wastes	150(100)	0(0)	0(0)	7.09	
7.	Student needs to eliminate waste by drafting simple style like Kaftan when constructing garments	86(57)	58(39)	6(4)	10.25	
8.	Student pattern cutters can draft fabric directly on a dress form to eliminate waste	98(65)	52(35)	0(0)	9.68	
9.	Technology can be used by garment construction students to plan pattern layout before cutting fabric	150(100)	0(0)	0(0)	7.09	
10.	Left over from fabric can be utilized to create some decorative element by students	150(100)	0(0)	0(0)	7.09	

11. Style requiring minimal or no cutting can be made using the entire length and width of fabric by students	124(83)	0(0)	26(17)	8.66
12. Styles for minimal stitching are appropriate to eliminate waste during construction by students	117(78)	13(9)	20(13)	8.95
13. Shirring techniques is also zero waste method for students	96(64)	26(17)	28(19)	10.10
14. Pattern layout practice must be calculated and precise by laying larger pattern before the smaller pieces	144(96)	0(0)	6(4)	7.45
15. Prototype of fabric manipulation must be made to be sure of the final garment design by student	144(96)	6(4)	0(0)	7.33

* Significant at 596 level; U=Undecided

The chi-square value (X2 = 429.048, p<0.001) from the Friedman's test shows that there are significant techniques employed in the cutting room during garment pattern cutting practices to eliminate waste by garment construction students in tertiary institutions in Lagos state (p<O. 05). These techniques include: drafting simple style like Kaftan, drafting fabric directly on a dress form, using technology to plan pattern layout before cutting fabric, utilizing left over from fabric to create some decorative element, using the entire length and width of fabric for s tyle requiring minimal or no cutting, using styles for minimal stitching, use of shirring techniques, calculating pattern layout and be precise by laying larger pattern before the smaller pieces, and make use of prototype of fabric manipulation to be sure of the final garment design.

Hypothesis 2: There is no significant sustainability of zero waste garment pattern cutting practices for garment construction students in tertiary institutions in Lagos state

Table 2: Zero waste pattern cutting sustainable practices

S/N	Statement (n=150)	Yes(%)		No(%)	u(%)	Rank	Mean	X^2 (p-value)
	Aware that high production of garments result in waste for the environment	150(100)	0(0)	0(0)	9.61		300.558	*(<0.001)
	The waste if not properly handled or disposed pollutes the environment	150(100)	0(0)	0(0)	9.61			
	Aware the blocked channels of water Causing flooding	133 (89)	17(11)	0(0)	10.60			
4.	The dyes can leak into drinking water causing health issues	141 (94)	0(0)	9(6)	10.30			
5.	When incinerated causes climate change	132(88)		9(6)	9(6)	10.8		
6.	zero waste clothing construction is one of the ways of eliminating waste by students	88(59)		9(6)	53(35)	14.19		
7.	This reduces the number of wastes sent to Landfills by students		133	(89)	8(5)	9(6)	10.75	
8.	It eliminates the number to be incinerated and reducing carbon emission	124(83)		0(0)	26(17)	11.57		
9.	Reducing carbon emission helps to protect the health of the communities		132(88)		0(0)	18(12)	10.96	
10.	By reducing fabric waste resources are also conserved by the students		142(95)		8(5)	0(0)	10.12	
11.	Waste created in the cutting room can be converted to something new by student creating jobs		150(100)	0(0)	0(0)	9.61		
12.	When jobs are created local money remains within the community		123 (82)	9(6)	18(12)	11.59		
13.	Fashion brand by garment construction student will need less yardage to produce the same number of garments	123 (82)	27(18)	0(0)	11.23			
14.	Resulting in less chemicals and water usage by garment industry	123 (82)	18(12)	9(6)	11.56			
15.	Zero waste garment pattern practice by students will help to create eco-friendly fashion products for the makers	132(88)		9(6)	9(6)	10.96		
16.	Zero waste garment pattern cutting practice allows garment construction		132(88)		18(12)	0(0)	10.72	

	students to explore new outcomes				
17.	Zero waste is working with design dimensions to source for textiles by students	132(88)		18(12)	0(0)	10.72
18.	Zero waste is working with design dimensions to source for textiles by students	123 (82)	9(6)	18(12)	11.65	
19.	Working with textile dimensions prevent creating unnecessary embellishment by students	106(71)		18(12)	26(17)	12.89
20.	All these practice makes zero waste pattern cutting by garments construction students sustainable.	141 (94)	0(0)	9(6)	10.30	

* Significant at 596 level; U=Undecided

The chi-square value (X2 = 300.558, p<0.001) from the Friedman's test reveals that there are significant sustainability of zero waste garment pattern cutting practices for garment construction students in tertiary institutions in Lagos state (p<0.05). Some of the sustainability practices are, waste created in the cutting room can be converted to something new, resources conservation, reduction in number of wastes sent to landfills, protection of the health of the communities, less yardage to produce the same number of garments, creation of eco-friendly fashion products for the makers, and exploration of new outcomes.

3. Discussion of Findings

Table I was on the techniques to eliminate waste in the cutting room all the 150 (100) respondents answered yes, as student when constructing garment they draft pattern. This is line with (Mithlesh, 2025, Korri 2024, Hegge, 2024,). 129 (86) answered yes, they are aware pattern drafting can turn a simple drawing into accumulation of garment waste by students, 14 (9) answered no ,13 (9) was undecided. As opined by (Korri ,2024, Hegge, 2024, and Rudd, 2020). 123 (82) answered yes, this waste crated at every stage of the garment construction by students, 14 (9) answered yes, 13(9) were undecided. As supported by (Meherr, 2025, Mithlesh, 2025, Anita, 2024, Nesma et al, 2022). 111(74) answered yes, they come as cut-off of garment created by students 19(13) answered no, 20(13) were undecided. As observed by (Meherr, 2025 Anita, 2024, Andre, 2017). 132 (88) answered yes, this is as a result of irregular shape of pattern pieces, produced by the students, 12(8) answered no, 6(4) were undecided as stated by (Gee and Younhee, 2023, Alana et al 2016). 150(100) answered yes, student pattern makers need to be artistic by using their creativity and ingenuity to eliminate waste, this is in line with, (Mithlesh, 2025 SVEGEA, 2024, Nesma et al, 2022, Naznin et al, 2022). 86(57) answered yes, students need to eliminate waste by drafting simple style like kaftan when constructing garments, 58(39) answered no, 6(4) were undecided. this was supported by (Gee et al, 2023, Alana et al, 2016). 98(65) answered yes, student pattern cutters can drape fabric directly on the dress form to eliminate waste, 52 (35) answered no. As observed by (Mithlesh,2025, Shansul,2024 Einas et al, 2023). 150(100) answered yes, technology can be used by garment construction students to plan pattern layout before cutting fabric, this is in line with (Meherr, 2023, Grasheli et al, 2023, Nesma et al, 2022, Time, 2019, Alana et al, 2016). 150(100) answered yes, leftovers from fabric can be utilized to create some decorative elements by students. As noted by (SVEGEA,2024, Anita,2024, Time,2019, Andre,2016). 124(83) answered yes, style requiring minimal or no cutting can be made using the entire length and width of fabric by students. 26(17) were undecided as supported by (Upama et al, 2023, Centuary, 2019).117(78) answered yes, styles for minimal stitching are appropriate to eliminate waste, during construction by students 13(9) answered no, 20(13) were undecided. As opined by (Upama et al, 2023, Meherr,2023, Lizhaywood, 2019). 96 (64) answered yes, shirring techniques is also zero waste method for students,26(17) answered no,28(19) were undecided. As noted by (Inneta, et al,2024, SVEGEA, 2024, Upama et al,2023). 144(96) answered yes, pattern layout practice must be calculated and precise by laying larger pattern before the smaller pieces,6(4) were undecided, as observed by (Grasheli, et al,2023, Sohail et al,2023, Centuary,2019). 144(96) answered yes, prototype of fabric manipulation must be made to be sure of the final garment design by students,6(4) were undecided. As supported by (Grasheli et al,2023, Sohail et al, 2023, Upama, et al,2023, Rismawati et al,2020, Centuary,2019).

Table 2, was on zero waste pattern cutting as sustainable pratices.150(100) respondents answered yes, they are aware, high production of garments result in waste for the environment as supported by (Mithlesh, 2025, Meherr, 2025, Anita, 2024, Naznin et al, 2022, Nesma et al, 2022).150(100) answered yes, the waste if not properly handled or disposed pollutes

the environment. As noted by (Mithlesh,2025, Naznin et al, 2022, Nesma et al,2022). 113(89) answered yes, they are aware fabric waste block channels water causing flooding,17(11) answered no. In line with Mithlesh,2025, Naznin et al,2022, Nesma et al,2022).141(94) answered yes, dyes can leak into drinking water causing health issues, 9(6) were undecided. As opined by (Inneta et al 2024, Sohail et al ,2023, Hae et al,2020). 132(88) answered yes, when incinerated cause climate change,9(6) answered no, 9(6) were undecided. As supported by (Gee et al,2023, Nesma et al,2022, Ellen et al,2020). 88(59) answered yes, one of the ways of eliminating waste is by constructing zero waste clothing by students, 9(6) answered no, 53(35) were undecided. As supported by (Meherr, 2025, SVEGEA, 2024, Nesma et al, 2022, Time, 2019). 133 (89) answered yes, this reduces the number of wastes sent to landfills by students, 8 (5) answered no, 9 (6) were undecided, as observed by (SVEGEA, 2024, Meherr, 2023, Dewi et al, 2020, Time, 2019). 124 (83) answered yes, it eliminates the number to be incinerated thereby reducing carbon emission, 26(17) were undecided. As noted by (Gee et al, 2023, Nesma et al, 2022, Ellen et al, 2020). 132 (88) answered yes, reducing carbon emission helps protect the health of the community, 8 (21) were undecided. As opined by (Mithlesh, 2025, Md Ahshan and Md, Shamsul, 2024, Roberts et al, Kuzinia, 2016). 142(95) answered yes by reducing fabric waste resources are also conserved by the students, 8 (5) answered no. As noted by (SVEGEA, 2024, Meherr, 2023, Mart, 2016). 150 (100) answered yes, credited in the cutting room can be converted to something new by students creating job. As observed by (Mithlesh, 2025, Md. Ahshan et al, Ge et al, 2021, Centuary, 2017, Einas, 2016). 123 (82) answered yes, when jobs are created local money remains within the community 9(6) answered no, 18 (12) were undecided. As supported by Mithlesh, 2025, Md. Ahshan et al, 2024, Einas, et al, 2016). 123 answered yes, fashion brand by garment construction students will need less yardage to produce the same number of garments, 27(18) answered no. As noted by (Mithlesh, 2025, Md, Ahshan et al, 2024, Einas, et al, 2016). 123 (82) answered yes, this will result in less chemical and water usage by garment industry. 18(12) answered no, 9(6), were undecided as supported by (Inneta et al, 2024, Sohail et al, 2024, Hae et al, 2020). 132(88) answered yes, zero waste garment pattern practice by students will help to create eco-friendly fashion products for the makers, 9(6) answered no, 9(6) were undecided, as noted by, (SVEGEA, 2024, Meherr, 2023, Mart, 2016). 132 (88) answered yes, zero waste garment pattern cutting practice allow garment construction students explore new outcomes, 18(12) answered no, as noted by (Anita, 2024, SVEGEA, 2024, Time, 2019, Andre, 2017). 139(88) answered yes, zero waste is working with design dimensions to source for textile by students, 18(12) answered no. As opined by Inneta et al, 2024 Gasheli et al 2023, Alana et al 2016). 106 (71) answered yes, working with textile dimensions prevent creating unnecessary embellishment by students 18(12) answered no ,26 (17) were undecided, as noted by (Anita, 2024, SVEGEA, 2024, Time ,2019, Andre, 2017). 141(94) answered yes, all these practices make zero waste pattern cutting by garments construction students sustainable, 9 (6) were undecided. As observed by (Anita, 2024, Inneta et al ,2024 Grasheli et al, 2023, Sohail et al, 2023, Alana, et al, 2016).

4. Conclusion

Traditionally, garment construction becomes wastage due to intricate design patterns, cutting, and production methods as a result of irregular shapes of pattern pieces. There are various ways of reducing fabric waste. These include the use of technology, such as computer-aided design, prototyping, and experimentation, draping fabric directly on the dress form, placing larger pieces first before smaller pattern pieces, designing clothes with minimal stitching and seams, shirring, pleats, and designing simple styles.

5. Recommendations

- Zero-waste is a sustainable practice. As such, garment construction students in Lagos State tertiary institutions should:
- Buy the exact yardage needed for the style.
- Plan layout of pattern before cutting fabric.
- Make prototype of styles to be sure of the final garment design.
- Design styles with minimal stitching and seams.
- Students to be creative by using their ingenuity when cutting fabric
- Convert waste created in the cut room for something new.

References

Alana, J., Roberts, B.M. & Kuznia, A (2016), Transforming the sequential process of fashion production: Where zero waste pattern cutting takes the lead in creative design. *International Journal of Fashion Design Technology and Education*. Reseachgate. Dor: 10.1081/17543266.2216.116225.www.reseachgate.net

Andre, E. (2017), Fair fit studio: learn how to sew and make your own clothing, fairfitstufio.com

Anita, M, (2024), pattern puzzle from Carmencita. B. www.studiofair.com

Centaury, H. (2019), Fashion creativity in zero - waste pattern making: Advance in social science, education and humanity research. vol 423. 2nd International Media Conference 2019 (IMC 2019). www.reseachgate.net

Dewi, U.W, Velthzal, R,.Z, Rismawati, W., Nurlally, E. Y, Iwankuriawans, S., & Mansyur R.M (2020), Effect of characteristics, competence, competitive creativity on motivation and success of sewing, SMES *Journal of XLAN University of Architecture and Technology,* Vol 12 (2): 2655.2662> reseachgate. www.researchgate.net.

Ellen, M, Sunhying, S, Ling, Z. Rachael E, & Eulanda, S., (2020), Analysis of zero waste pattern making approaches for application to apparel industry IOWA State University, https://dr.lib – lasta – edu.

Esnart, M., Anna, P. & Chanda, C. T. (2024) The effect of teaching and promoting creativity in sewing among vocational skills – students from selected colleges in kitwe district of copper belt province, Zambia. *International Journal of Novel Research in Education and Learning*. Vol 11 (5) :21-32. reseacrhgate. https://researchgate.net.com

Einas, M., Azzam, A. & Zeinab, A, (2023), computerize pattern making in garment manufacture. I*nternational Journal of Polymer and Textile Engineering*. Vol 12 (2):1-8. Researchgate. Doi:10.14445/23942592/IJPTF – V10ZPIOI. www.researchgate.net

Gasheli, A., Ratna, D.P. & Janyfer (2023), Implementing zero waste pattern cutting for sustainable fashion collection. Proceedings of the 3rd Asia Pacific International Conference on Industrial Engineering and Operations Management, Johor Bahru, Malaysia grasheli and hini@binus edu. rparamita at binus edu. IEOM society. httpi//ieomso city:org.

Ge, L. & Xiaohui, L. (2021), A pattern making approach to improve zero waste fashion design. *Fashion Practice*. Vol 13 (3):443-463. Researchgate. Doi I 10.1081/17569310.2021,1982503. www.researchgate.net.

Gee, Y.H. & Youehee, L (2023), What is the next step for zero for – waste fashion? *International Journal of Costume and Fashion*. IJCF Vol23(2): 45-57. https://doi.org/1017233/1jcf.2023.2312.045

Hae, J.G.&, Jennifer, B. (2020), Teaching sustainability in fashion design course through a zero – waste design project. *Clothing and Textile Research Journal* Vol 38 (3) *Journals*, https://doi.org/10.1172/0887302*20906470. sagapub.com

Hegge, S. (2024), I hear how to make a saving pattern: Pattern drafting resources for beginners. The craft bloggers.com

Inneta, N., Nadiia, P.B, Merija. P.& Valentina, B. (2024), Zero waste clothing using fabric shirring technique. https://SVEgea.se.

Julia, V.N, Namkya, C. &. Julia, D.A. B.S. (2020), Failed expectations, successful distributions: Experimenting pattern cutting from student centered learning perspective. *International Journal of Fashion Design Technology and Education*. Vol13(2):238-246, Taylor & Francis. https://doi.org/10.1080/17543266.2020.1778798. www.tandfonline.com

Katherine, S, (2021), All about pattern drafting https://www.Katherinesewing.com

Korri, B.U &. Jessica, G (2024), how to make your own sewing patterns www.wikihow.com

Lizhaywood (2019), The craft of clothes: A sewing and fashion blog.lizhaywood.com

Mart, L, (2016), Zero waste fashion, www.drmarkliu.com

Maura, R, (2020), How can i make a pattern for dress, www.quora.com

Md. Ahshan, H. & Md, Shamsul, A. (2024), A comparative study of 3D virtual pattern and traditional pattern making. Journal of textile and sciences and technology. Vol 10(1). Scientific Research. *An academic Publisher*. Home>journal > articles. www.scrip.org.Doi:10.4326/Jtst. 2024.10.1001

Meherr, K. S. (2023), zero waste fashion: Exploring zero-waste pattern cutting to eliminate fabric waste into garment manufacturing. Latest trends in textile and fashion designing. LUPINE Publishers. Doi:10.3247//LTTED. 2026106.000226.

Mithlesh, B, (2025), The development of a garment: Fit and pattern making. Ff fiber 2 fashion

Nazmin, K.N. & Sammiya, S. (2022), process and effective methods of pattern making for the RMG (READY Made – Garment Sector). 10SR. *Journal of Research, & Methods in Education* (10SRJRME) Vol 7 3):36-48.

research gate. Home > software engineering > Pattern www.researchgate.net

Nesrna, E, Pammi, S, &. Julia, A.B(2020), A comparative review of zero-waste fashion design thinking and operational research on cutting and packing optimization. *International Journal of Fashion and Design Technology and Educational*. Vol 15 (2):187 – 199, Taylor & Francis group https://www.tandfonline.com /action/journal information? *Journal code* tfdroo.

Sohail, A.S, Hernans, & Georgi, V.G. (2023), Makerspaces fostering creativity. A systematic literature review. *Journal of Science Education and Technology*. Vol 32 :530 – 548, Articles. Springer nature link. Link springer.com

Steph, T. (2023), Apparel pattern making: A guide for fashion designer, Tech packer: techpacker.com

SVEGEA of Sweden (2024), zero waste pattern cutting: A revolution in sustainable fashion. Bias system sustainable textile machine. Textile trends. SVegea.se

Tea. Toronto environmental alliance.... w.torontoenvironment.org

Time, R. (2019), Zero – waste design techniques https://hamah-lane-h18.n.squarespam.com

Upama, N.H & Rakifull, A. S. M. (2023), Implementing circular economy principles in the apparel production process: reusing pre-customer waste for sustainability by environment and economy cleaner waste system. Vol 6. *Sciencedirect* https://doi.org/10.1016/.clwas2023.100108. www.sciencedirect.com