Development of Learning Media: Waste-Free Cullotes as an Effort to Support Green Campus

Agus Hery Supadmi Irianti*, Annisau Nafiah, Sri Rahayu, Ardelia Salsabila, Emalia Rohmaniyah

Fashion Education, Universitas Negeri Malang, Malang, Indonesia
Corresponding author. Email: agus.hery.ft@um.ac.id

ABSTRACT

The manufacture of clothing always produces waste that will damage the environment, because the time needed to decompose waste is 20-50 years. The most appropriate solution to dealing with clothing waste is to introduce Zerowaste fashion. Related to this, it is necessary to make learning media about making waste-free clothing. The aim of this research is to create learning media for making Zerowaste-based culottes as an effort to support a green campus. The type of research used is ADDIE model development research (Analysis, Design, Development, Implementation and Evaluation). The method used in this development research is a mixed method. The results of the study were validated by material experts with the result that Zerowaste-based Kulotte learning media was feasible to be used as learning media. The results of learning media are implemented through small group trials. The trial was carried out on students who had taken a course in the technique of making women's clothing. A total of 30 students. The test results are 90% very useful media, 100% Zerowaste easy to implement, 90% very useful for reducing clothing waste, 100% media can be used in practical fashion courses. Suggestions for learning media should be equipped with detailed manufacturing steps.

Keywords: Learning media, Clothing making, Zerowaste, Greenc campus.

1. INTRODUCTION

Every practicum for making clothes will leave fabric waste. Over a long period of time waste will accumulate and cause problems for the surrounding environment. Zero waste fashion is an effort to create clothing that as much as possible does not produce waste or garbage that pollutes the surrounding environment. An understanding of Zerowaste in fashion making needs to be applied to all students who are taking a fashion making practicum. Every fashion manufacturer will produce 15% waste according to Risannen & McQuilan [1] Recent data shows that at the global level, if not taken seriously, waste stockpile will increase by 70% from 2.01 million tons (2016) to 3, 4 million tons in 2050 according to WB [2] there are efforts.

Practical courses in the fashion education study program account for 70% of all courses. The accumulation of waste in a certain period of time will become a problem that really disturbs the environment. If it is left without finding a solution to solve it, it will be something that is contrary to the ideals of a green campus.

The concept of a green campus is a clean, healthy and beautiful environment. Public participation in the fashion world is needed to maintain a healthy environment [3]. The effect of practice will be to contribute negatively to waste contributors. Trash that has accumulated will make the environment itself uncomfortable [4]

Therefore, a healthy mindset is needed to create a green environment on campus. One of the alternative solutions that can be applied is to introduce the creation of learning media about making Zerowaste clothing. Many types of clothing can be made with the Zerowaste technique. One of them is Culottes. Making media about zerowaste clothing can be disseminated to students who are taking courses, especially practical courses. This method is expected to make a positive contribution to students. Especially about making clothes that don't leave waste.

2. GREEN CAMPUS

A green campus is a necessity that cannot be postponed by universities. Green campus is a continuous

process, in the form of protecting the ecological system in the campus environment. According to Hooi [5]. :The ongoing process towards a green campus involves human resources, the process towards a green campus, their place and well-being. Meanwhile, to create a green campus Darus et al, [6] suggest that better optimization of the socio-political, technological, economic and environmental systems that are formed around the campus . Initiatives and implementation of green campus are different. Some focus on green urbanism, green campus, eco urbanism and green construction [7] In the practice course of making clothes that will produce waste, it should be a concern. Particularly pressing the waste generated. Appropriate decisions in anticipating and suppressing the waste generated need to be initiated so that it can become an example that can be disseminated.

3. CREATING ZEROWASTE CLOTHING LEARNING MEDIA: CULOTTES

Zero waste fashion is an effort to create clothing that as far as possible does not produce waste or residual waste that pollutes the environment. As far as possible generate zero waste. There are two general approaches used in zero waste fashion. Pre-consumption zero waste fashion refers to efforts made to produce clothing that minimizes waste. Post-consumption zero waste fashion is cultivated through the use of second hand fashion and the use of textile waste as raw material for various arts and crafts. In general, zero waste is to achieve sustainable fashion, such as zero waste techniques in the form of a production process by minimizing waste, up-cycling, recycling leftover waste, and reconstruction, making something new out of items that are no longer used, according to Rohim et al. [8]. In the practice course of making clothes that will produce waste, it should be a concern. Particularly pressing the waste generated.

3.1. Learning Media

According to Black & Horalsen in Sutirman [9] media is a channel of communication to convey messages from communicators to communicants. all the tools that are actually used to assist the learning process according to Briggs in Sadiman, et al. [10]. The function of learning media according to Harry C. Mc. Kown in Jennah [11], learning media functions to change learning conditions that are abstract in nature to become more efficient, and concrete, so as to motivate students to be more active and focus attention on things learned, besides that the material presented can be more clear and arouse curiosity about the material. According to Levie & Lentz [12] the function of visual media is to attract attention, make it easier to achieve learning objectives and help students who are less quick to understand what is explained. In this study, the learning media used to introduce zero waste was in the form of a 3-minute video of making culottes. and Powerpoint steps for making Zerowaste: Culottes.

3.2. Zerowaste clothing manufacturing

Zero waste is the application of the circular Economy concept according to Jackson [13] or a sub-section of the Eco-City concept according to Zaman & Lehmann [14] fashion is an attempt to create clothing that as much as possible does not produce waste or residual waste that pollutes the environment. As far as possible generate zero waste. There are two general approaches used in zero waste fashion. Pre-consumption zero waste fashion refers to efforts made to produce clothing that minimizes waste. This business includes pattern making and fabric design, as well as the use of environmentally friendly textile materials. Post-consumption zero waste fashion refers to efforts to use clothes after they are worn. Post-consumption zero waste fashion is cultivated through the use of second hand fashion and the use of textile waste as raw material for various arts and crafts [15]. In general, zero waste is to achieve sustainable fashion, such as zero waste techniques in the form of a production process by minimizing waste, up-cycling, recycling leftover waste, and reconstruction, making something new out of unused items, Rohim et al. [8]. Eugenia is a US designer who uses the concept of sustainability in each of her designs by using up-cycling techniques, every waste. The requirement for making zero waste clothes is not to leave residue [16].

3.3. Making Cullotes that don't Leave Trash

Culottes are pants that widen at the bottom to resemble a skirt. In the following presentation is the manufacture of culottes that leave no waste. Look at picture 1 of the pattern for making culottes that leave no waste:

Figure 1 Picture of culottes front and back.

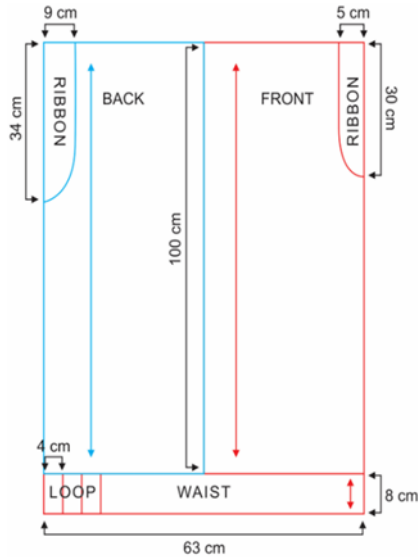Evidence of the manufacture of culottes leaving no waste can be seen in the pattern shown in Figure 2 below:

Figure 2 Culottes pattern that leaves no waste.

The material requirements for making culottes can be presented in table 1 as follows: Table 1.

Table 1. Material Requirements for making Culottes.

Material	Specification	Size
Sateen	Width 110 cm	126 cm
elastic rubber	Width 2 cm	90 cm
Sewing thread	Cotton thread	1
Beads	Flat shape	enough

The steps for sewing culottes are as follows:

a. Cut the fabric according to the pattern that has been made.
b. Finish the lint-free fabric by overlapping the sides and the seams of the culottes.
c. Sew both sides of the culottes.
d. Sew a seam by joining the two pieces of culotte together with a double stitch.
e. Sew the waist of the culottes with a 2.5 cm elastic.
f. Sew under the belt 6 pieces.
g. Sew the hem under the culottes.
h. Sew on embellishments (belt with beaded trim).
i. Pressing (ironing).
j. Fittings.
k. Packing

4. RESEARCH METHODS

The type of research is development research, so the method chosen is research and development using the ADDIE model (Analysis-Design-Development-Implementation-Evaluation). The ADDIE model is a development research model that provides an organized process that can be used for both face-to-face learning and online learning. In addition, the ADDIE model provides an opportunity for learning design developers to work together with content, media, and learning design experts to produce good quality products.

Table 2. Steps to develop learning media.

ANALYSIS	• Identification of lesson plans, strategies, media, teaching and learning activities. • Analyzing the gap between the green campus and practical courses • Analysis of needs to support a beautiful and clean environment, • Choosing a zero waste mode that will be realized in learning media • Analyzing the materials or materials to be compiled in the book
DESIGN	• designing innovative learning products: • video tutorial • set Zerowaste material as video tutorial material • determine the material for writing teaching materials
DEVELOPMENT	• Develop products according to design, • product development : 3 video tutorials • Product validation by experts in their field.
IMPLEMENTATION	Implement the product through Trials
EVALUATION	Evaluation is carried out referring to the results of expert validation and trials for the need for product revisions with the aim of determining the feasibility of the final product

5. RESULTS AND DISCUSSION

The results of the development of learning media are in the form of a 3-minute tutorial video. In the video, it is explained about making culottes that leave no waste. Includes: design making, pattern making, cutting and sewing as well as the final result of Culotte products. Some of the steps in the learning video can be seen in figure 3.

The products that have been made have been tested for validation by material experts and media experts. The validation test is intended to obtain product eligibility before use. After being validated, it was tested on students who had taken fashion making courses. While the trial results show the results presented in table 3.
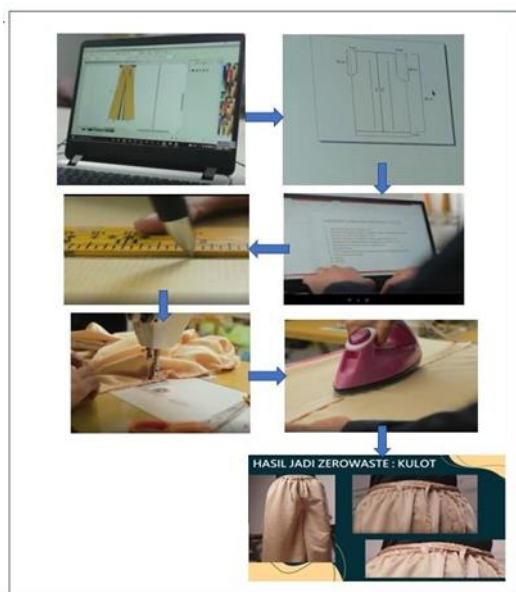
Figure 3. Multiple Views in a video

The results of the video media were validated by material experts with the result that Zerowaste-based Culotte learning media was feasible to be used as a learning medium. The results of learning media are implemented through small group trials. The trial was carried out on students who had taken a course in the technique of making women's clothing. A total of 30 students. The results of the trial were 90% very useful media, 100% Zerowaste easy to implement in courses, 90% very useful for reducing clothing waste, 100% media can be used in learning. Suggestions for learning media should be made every step of the way to completion.

6. CONCLUSIONS AND SUGGESTIONS

Conclusion: Making zerowaste clothing media is very useful not only as a medium that can be used as an example in practical learning, Zerowaste is easy to implement in practical courses, useful for reducing waste and can be used in learning. This is in accordance with what Utami wrote that one of the successes in disseminating information is through education [17]. Apart from that, making culottes has the potential to produce fabric waste even though fabric is an organic waste, as written by Widiarti [18]. Regarding learning media, video is a suitable medium for use in learning as stated by Pamungkas and Koeswanti [19].

While the suggestion is to perfect each step until it is complete and the duration can be longer.

AUTHORS' CONTRIBUTIONS

The author's contributions can be described as follows: Author 1: Formulates the title and outline of the content, Author 2: develops writing content, Author 3 is translating into English, Authors 4 and 5 assist in finding references and editing the writing according to the template.

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