The Influence of Design Analysis and Body Measurement Capabilities on a Designer's Speed and Accuracy in Cloth-Making

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ABSTRACT

To make clothes, a designer must have analysis design and also the capability to measure the body to ensure speed and accuracy in the process. The purpose of this study is to determine how students' competence in terms of design analysis and the capability to measure the body with speed and accuracy to produce clothing. This is a cross-sectional study with a quantitative design. A questionnaire is used in data collection techniques. This study sampled 96 fashion design students using a simple random sampling technique. Using the SPSS 21 program, data was analyzed using a chi-square test. The findings of the study revealed a significant relationship between body measurement capability and cloth-making speed ($p = 0.0001$) and accuracy ($p = 0.0001$). However, the speed ($p = 0.042$) but not the accuracy ($p = 0.092$) of cloth-making were affected by the design analysis capability.

Keywords: Clothes, Design analysis, Fashion design.

1. INTRODUCTION

Fashion design students are required to produce graduates who are skilled, qualified, and sufficiently knowledgeable in their field [1]. To achieve the above, students are also required to better understand and master every lesson received on campus because each subject supports and influences one another in increasing knowledge and skills[2]. Fashion education (the practice of making clothes) for students requires creativity, skill, and high performance[3]. The application of basic theoretical and practical skills that have been obtained previously is the goal to be achieved[4].

In addition to the application of design concepts and principles, fashion education also requires basic skills in how these designs can be applied or produced into clothing products that have applicative usability and artistry in accordance with the direction and design concept. The first step in creating a garment is pattern-making[5], [6].

Pattern making techniques can be done by construction or by draping[7], [8]. Construction patterns are basic patterns made based on the size of the user's body and drawn by mathematical calculations according to the construction pattern system[9], [10]. The draping

or twisting technique is a technique of twisting, swinging, twisting, braiding, and squeezing a piece of cloth over a dress form to create a dress pattern that fits the body and fits the desired model[11], [12].

The art of designing patterns by creating templates from which clothing and handicrafts can be sewn is the meaning of clothing making [13], [14]. The designer's imagination, from sketches to real products, can really be brought out properly through pattern making[15]. Technical designers can start their work of preparing garment patterns when fashion designers finish their garment designs[16]. The stages of making clothes vary in the process but can be interdependent. The process of making clothes determines the aesthetic appearance, exact fit, and attributes of a garment[17], [18].

The resulting clothing products are expected to be in accordance with market trends and tastes, which in this case requires student competence in basic skills about design analysis and how to apply these designs so that they become good works[14]. The lack of learning resources and the lack of ability to develop and utilize learning resources greatly impact the difficulty of directing and instilling work concepts that are in accordance with the development trend [19], [20].

The capability to assess fashion design refers to how well students are able to examine a design or drawing of a women's dress in the shape of a work suit and provide information on each component of the clothing design. Whereas The capability to measure the body is a student's capacity to perform a systematic activity, and the results of the assessment of this size can be utilized as a guide or benchmark in pattern design [21]. Students may fail to distinguish between the shape and nomenclature of clothing components when performing design analysis. Meanwhile, when it comes to measuring student's bodies, the technique is sometimes inaccurate. Based on the background description above, the researcher intends to conduct research on the influence of design analysis and body measurement capabilities on a designer's speed and accuracy in clothing making.

2. METHOD

The study is cross-sectional and quantitative in nature [22]. The goal of this study is to see how students' fashion expertise in design analysis and body measurements affects clothes creation. This research is based on secondary data. 96 fashion design students from Padang State University's Faculty of Tourism & Hospitality participated in this study. The samples were

The researcher then analyzes the collected data with SPSS 21 and a chi-square analysis. Reduced data would be interpreted, resulting in the research's conclusion.

Table 1. Student Competency Category

No	Value of Mean	Interpretation
1	1 – 2.33	Less
2	2.34 – 3.66	Moderate
3	3.67 – 5	Good

Table 1 presents the categories of the typical distribution of student competency dress based on the mean value, with student competence classified as low, moderate, or good.

3. RESULT

The average competency of fashion design students in design analysis skills and body measurement skills when designing clothing is shown in Table 2. Students have slightly superior design analysis skills than body measurement skills (3,046) on average.

Table 2. Average Student Capability

Student Capability	Mean	SD
Design Analysis Capability	3.046	0.746
Body Measurement Cability	3.026	0.886

Table 3. Relationship of Design Analysis Capability with Speed and Accuracy of making clothes

Variable	Design Analysis Capability						Total		P-values
	Less		Moderate		good				
	f	%	f	%	F	%	f	%	
Speed									
Fast	3	10.3	14	48.3	12	41.4	29	100	
Less fast	15	44.1	12	35.3	7	20.6	34	100	0.042
Slow	9	27.3	16	48.5	8	24.2	33	100	
Accuracy									
Appropriate	7	20.6	12	35.3	15	44.1	34	100	
Less precise	9	27.3	18	54.5	6	18.2	33	100	0.092
Not exactly	11	37.9	12	41.4	6	20.7	29	100	

Table 4. Body Measurement Cability relationship with speed and accuracy in making clothes

Variabel	Body Measurement Capability						Total		P-value
	Less		Moderate		Good				
	f	%	f	%	f	%	f	%	
Speed									
Fast	0	0	14	48.3	15	51.7	29	100	
Less fast	6	17.6	24	70.6	4	11.8	34	100	0.0001
Slow	14	43.4	17	51.5	2	6.1	33	100	
Accuracy									
Appropriate	3	8.8	16	47.1	15	44.1	34	100	0.0001
Less precise	4	12.1	25	75.8	4	12.1	33	100	
Not exactly	13	44.8	14	48.3	2	6.9	29	100	

collected using simple random sampling. The tool was a questionnaire with a Likert scale of 5, and data was collected using a distribution questionnaire distributed by the lecturer.

Table 3 shows the effect of students' design analysis skills on their speed and accuracy in making clothes. Students who have good design analysis skills tend to be fast (41.4%) and precise (44.1%) when making clothes.

On the other hand, students who have less design analysis skills tend to be less fast (44.1%) and imprecise (37.9%) in making clothes.

Table 4 shows the influence of students' body measurement capabilities on speed and accuracy in making clothes. Students who have good body measurement capabilities tend to have good accuracy (51.7%) and fast speed (44.1%). For students who have body measurement capabilities in the moderate category, they are not fast enough (70.6%) or precise enough (75.8%). On the other hand, students who have competence in body measurements but are in the less inclined category are slow (43.3%) and not precise (44.8%) in making clothes.

According to the findings of the bivariate analysis, students' competence in design analysis is related to speed ($p = 0.042$) when making clothing but not to accuracy ($p = 0.092$). whereas student proficiency in measuring the body has a substantial connection with speed ($p = 0.0001$) and accuracy ($p = 0.0001$) when making clothing.

4. DISCUSSION

The construction of a pattern for creating clothes is directly tied to design analysis. Design is more than simply an image; it allows you to manufacture clothes by measuring, creating patterns, breaking patterns, cutting, and sewing them. In other words, design serves as a guide for the actual form of clothing. As a result, it is apparent that design is vital in the production of garments. To create a good design, we must first comprehend the fundamental notion of design, which comprises design elements, design principles, garment pieces, and body proportions [23], [24].

With a good design based on balanced body proportions, a design can be produced that can be used as a guide in making clothes, starting with taking measurements and making basic patterns[25]. The most important thing is the process of making clothes. This is also in accordance with the bivariate analysis, which shows that students' abilities in design analysis have an influence on making construction patterns for clothes, especially in terms of speed.

Measurements are needed when drawing a construction pattern, even though the size is adjusted to each of the construction patterns to be drawn [26], [27]. In order to draw a pattern according to each construction pattern system, it is necessary to take the body measurements of the wearer carefully according to the method of taking each size [28]. Students who have good body measurement skills will also have good speed and accuracy in applying the body measurements that have been made to the construction patterns that will be made when making clothes.

5. CONCLUSION

To ensure speed and accuracy in the process, a designer must be able to examine the design as well as measure the body. So that it can manufacture high-quality clothing.

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