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The Relationship Between Pattern Making and Pattern Alteration Skills and Students' Learning Outcomes in Tailoring

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ABSTRACT - Basic pattern making and pattern alteration skills are essential competencies that must be mastered by students in the Tailoring course. These skills serve as the foundation in the tailoring garment production process, which requires accuracy in measurements, proportions, and pattern construction. This study aims to determine the relationship between the level of basic pattern making and pattern alteration skills and students' learning outcomes in the Tailoring course. This research employed a quantitative approach with a correlational method. The research subjects were students of the Fashion Education Study Program who were enrolled in the Tailoring course. Data on basic pattern making and pattern alteration skills, as well as tailoring course scores, were obtained from students' academic records. Data analysis was conducted using correlation analysis. The results of the study indicate that there is a positive and significant relationship between the level of basic pattern making and pattern alteration skills and students' learning outcomes in the Tailoring course. This finding suggests that the higher the students' skills in basic pattern making and pattern alteration, the better the learning outcomes achieved. Therefore, basic pattern making and pattern alteration skills need to receive greater attention and reinforcement in the Tailoring learning process to improve students' learning outcomes.

Keywords: Skills, pattern making, learning outcomes, tailoring.

INTRODUCTION

A quality education system is one of the key factors in achieving progress and development in Indonesia as well as in other countries. Through education, individuals are able to explore and develop their potential, both for personal growth and for participation in social life. According to Muhammad (2019), education is a conscious and well-planned effort to create learning environments and instructional processes that enable learners to actively develop their potential, including personality, intelligence, spiritual and religious strength, self-control, noble character, and skills that are useful for themselves and for the community in need. Furthermore Asrul et al. (2020) state that education is a process through which learners adapt as effectively as possible to their environment. This process leads to changes within individuals that allow them to function adequately in social life. The purpose of education is a set of educational outcomes achieved by learners after the implementation of educational activities.

Vocational education in Fashion Design at Universitas Negeri Semarang is one of the government's efforts to produce competent and skilled educators in this field. One of the stated objectives of Universitas Negeri Semarang is to produce graduates who possess educational competencies and strong character, and who are professional, competent, and competitive. In addition, vocational education in Fashion Design also aims to produce graduates who are competent both theoretically and practically, particularly in pattern-making and tailoring skills.

Pattern making, which refers to the process of creating basic patterns and pattern alterations, is a core competency in structured garment production, as patterns serve as the foundation of the entire clothing construction process.

According to Permatasari & Suhartini (2020) in the *Journal of Fashion & Textile Design Unesa*, a basic pattern is a pattern created based on body measurements and is used as an initial template before being developed into garment patterns according to the designed model. Patterns are used as the basis for cutting fabrics that will be sewn according to the desired design. As the foundation of garment production, patterns are formed through various combinations (Suryani et al., 2018). These patterns are designed and adjusted according to body parts so that, when developed, they produce garments that fit the intended design and measurements. In fashion education, basic pattern making is a primary skill that must be mastered by students, as it forms the basis for developing various garment models (Kahar et al., 2020). Pattern making is the activity of creating a replica of the body shape according to the wearer's measurements, which is then used as a reference for garment construction (Irmayanti, 2017). Pattern making is the initial step in the garment production process; therefore, patterns play a crucial role in determining the quality of the resulting garments. Patterns related to tailoring and sewing refer to pieces of fabric or paper used as samples or guides in garment construction during the fabric cutting process (Irmayanti & Hadi, 2018).

According to Hariyadin & Nasihudin (2021) skills are defined as a measure of an individual's ability to perform a task quickly and accurately. Skills encompass not only physical abilities but also mental capacities, such as thinking and problem-solving in learning activities. This definition emphasizes that skills reflect the competence possessed by an individual in carrying out an action or task. In the context of basic pattern making and pattern alteration, these skills influence not only students' ability to interpret fashion designs and body measurements but also the quality of the garments produced. Various studies in the field of fashion education indicate that mastery of basic pattern making is closely related to learning outcomes in practical garment construction. For example, Hutauruk & Simbolon (2025) argue that different learning strategies in basic pattern-making materials have a significant impact on students' practical learning outcomes in basic body pattern construction.

In addition, a study by Huda & Ernawati (2024) argues that there is a significant relationship between learning motivation and students' skills in making basic women's patterns at vocational high schools, indicating that pattern-making skills are influenced by students' internal variables such as motivation, which ultimately affect learning outcomes. Other studies focusing on the development of learning media or instructional methods in the context of pattern making also provide evidence that instructional approaches can enhance students' practical skills. For instance, the use of the CAD Pattern System has been reported to improve students' competence and learning outcomes in women's pattern grading (Kulsum, 2020).

Although many studies have examined basic pattern-making and pattern alteration skills at the vocational high school level and in general fashion education, research that specifically investigates the direct relationship between the level of basic pattern-making and pattern alteration skills and students' learning outcomes in the Tailoring course remains relatively limited. This condition indicates a research gap at the higher education level, particularly in fashion design or vocational fashion education programs, which requires further in-depth investigation.

The Tailoring course is one of the core subjects in the Fashion Education curriculum, integrating two essential skills: pattern accuracy to produce precise pattern designs and pattern alteration to complete garment structures according to the intended design. Tailoring is a garment construction technique that emphasizes precise construction, proper fit to the wearer's body shape, and strong structural integrity in every seam. In the context of fashion, tailored garments such as suits, blazers, coats, and other formal wear are produced using techniques that consider body shape, patterns, construction, and detailing, resulting in garments that are ergonomically and aesthetically well-fitted (Zakiyah et al., 2017). Based on preliminary observations conducted among students of the 2023 cohort in the Fashion Education Study Program at Universitas Negeri Semarang, some students were found to have achievement scores below the average, namely below 70. This condition occurs due to several factors, one of which is that most students experience difficulties in pattern making, ranging from the construction of basic patterns to the development of pattern alterations according to the design. This is because Tailoring is not merely a practical skill but also trains students to apply theoretical knowledge of fashion pattern making to the practical process of producing real garments that meet standards of measurement, aesthetics, and functionality.

Students' success in this course ultimately reflects their professional competence to enter the competitive fashion industry. Tailored garments have characteristics that differ from other garment construction methods. Tailoring emphasizes strong and neat structures, particularly in areas such as the collar, shoulders, and hips to create a formal and professional appearance; a personalized fit according to the wearer's body measurements (precision fit); a high level of stitching detail related to padding, interfacing, and other functional components that distinguish tailored garments from ready-to-wear clothing; and the use of complex patterns and construction techniques, all of which require advanced skills and experience in both pattern making and sewing.

Based on the above description, this study aims to determine and analyze the relationship between the level of basic pattern-making and pattern alteration skills and students' learning outcomes in the Tailoring course in the Fashion Education Study Program at Universitas Negeri Semarang. The variables examined in this study include basic pattern-making and pattern alteration skills as the independent variables and learning outcomes in the Tailoring course as the dependent variable. The results of this study are expected to contribute to fashion education practitioners by serving as an evaluative reference and consideration in designing more effective strategies, methods, and emphases in pattern-making instruction, thereby improving the quality of the Tailoring learning process and enhancing students' professional competence in the field of tailored fashion.

METHOD

This study aims to examine the relationship between knowledge of basic pattern making and pattern alteration and the learning outcomes of students of the Fashion Education Study Program, Class of 2023, at Universitas Negeri Semarang (UNNES) in the Tailoring course. Based on the research objective, this study employs an ex post facto research method with a correlational design. Ex post facto research is a method used to investigate causal relationships that are not manipulated by the researcher, in which the cause-and-effect relationship is based on theoretical analysis, indicating that a particular variable leads to the occurrence of another variable (Kahar et,.al. 2020). The population of this study consisted of students of the Fashion Education Study Program, PKK FT UNNES, Class of 2023, who had completed the Tailoring course, totaling 55 students. A total sampling technique was applied, in which the entire population was used as the research sample, as the population size was fewer than 100 participants.

Basic pattern-making and pattern alteration skills (X) refer to the level of students' skills in constructing basic patterns and developing pattern alterations, as measured by their course grades in Pattern Construction. Students' learning outcomes (Y) represent the achievement of competencies in the Tailoring course. The instrument used in this study was documentation. Documentation was employed to collect data related to students' skills in basic pattern making and pattern alteration (X) as well as learning outcomes in the Tailoring course (Y), using students' final grade records as the data source. The data analysis technique used in this study was descriptive analysis combined with a correlation test. The correlation test was employed to determine the strength of the relationship between basic pattern-making and pattern alteration skills (X) and students' learning outcomes in the Tailoring course.

RESULTS AND DISCUSSION

Based on the results of descriptive statistical analysis of 55 respondents, the pattern-making skills variable showed a mean score of 84.53, with a minimum value of 78 and a maximum value of 88. The standard deviation of 2.210 indicates that the data on students' pattern-making skills are relatively homogeneous and fall within the high category. Meanwhile, the learning outcomes variable in the Tailoring course had a mean score of 82.93, with a minimum value of 50 and a maximum value of 91. The standard deviation of 8.645 suggests that students' learning outcomes exhibit a relatively greater degree of variability compared to pattern-making skills. The descriptive results are presented in **TABLE 1**.

TABLE 1. Descriptive statistic.

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Pattern Making Skills	55	78	88	84.53	2.210
Learning Outcomes	55	50	91	82.93	8.645
Valid N (listwise)	55				

Overall, it can be concluded that students' pattern-making skills tend to be high and relatively uniform, whereas learning outcomes in the Tailoring course demonstrate a good level of achievement but with greater variability in performance among students. Based on Table 1, this difference indicates that although mastery of pattern making is relatively consistent, final success in the Tailoring course is still influenced by other variables that were not examined in this study. Further analysis was conducted to determine the relationship between the variables. However, prior to this, a prerequisite analysis was performed, namely a normality test, to examine whether the data for pattern-making skills and learning outcomes in the Tailoring course were normally distributed as a requirement for selecting the appropriate statistical analysis technique. The results of the normality test are presented in **TABLE 2** below.

TABLE 2. Normality test.

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pattern Making Skills	.212	55	.000	.925	55	.002
Learning Outcomes	.239	55	.000	.706	55	.000

a. Lilliefors Significance Correction

The normality test in this study used the Kolmogorov–Smirnov test, with a total of 55 valid respondents. Based on the results of the normality test, the Kolmogorov–Smirnov significance value for the pattern-making skill variable was 0.000 and for the learning outcomes variable was 0.000. Since all significance values for both variables showed Sig. < 0.05, it can be concluded that the data for pattern-making skills and learning outcomes in the Tailoring course are not normally distributed. Subsequently, data analysis was performed to determine the relationship between variables. The analysis technique used was Spearman Rank correlation to examine the relationship between the pattern-making skill variable and students' learning outcomes. The choice of Spearman's correlation test was made because the variable data are not normally distributed, thus a non-parametric analysis technique was used. Below are the results of the data analysis using the Spearman Rank correlation test.

TABLE 3. Results of the Spearman Rank correlation test.

Correlations				
			Pattern Making Skills	Learning Outcomes
Spearman's rho	Pattern Making Skills	Correlation Coefficient	1.000	.428**
		Sig. (2-tailed)	.	.001
		N	55	55
	Learning Outcomes	Correlation Coefficient	.428**	1.000
		Sig. (2-tailed)	.001	.
		N	55	55

**. Correlation is significant at the 0.01 level (2-tailed).

Based on **TABLE 3** above, the correlation coefficient value (Spearman's rho) between pattern-making skills and learning outcomes is 0.428, with a significance value (2-tailed) of 0.001, which is less than 0.05. These results indicate that there is a positive and significant relationship between pattern-making skills and learning outcomes in the Tailoring course. The positive direction of the relationship suggests that higher levels of pattern-making skills tend to be associated with higher learning outcomes. Based on the correlation interpretation table, a correlation value of 0.428 (42.8%) falls into the moderately strong category.

The results of the study indicate that students' pattern-making skills are positively related to their learning outcomes in the Tailoring course. This finding suggests that students' ability to understand and apply pattern-making techniques has a direct impact on their academic and practical performance in garment construction skills. This relationship is consistent with previous studies that have examined the relationships among skill-related variables in the context of fashion education. For instance, a study by Seputra & Wening (2017) found a positive and significant relationship between the use of instructional modules and learning outcomes in shirt pattern making. Although the analysis employed the Product Moment correlation, the context remains similar, indicating that pattern-making skills are closely associated with students' learning performance in fashion education. Similarly, research conducted by Andi Nuralfiah, (2024) revealed that although the Tailoring course is a practical subject that requires the mastery of hard skills, it also provides opportunities for students to develop soft skills through practical learning activities. The findings of this study highlight the importance of implementing 4C skills (critical thinking, creativity, collaboration, and communication) in the learning process. These results can serve as a reference for the development of instructional strategies in other practical courses, particularly in designing the integration of 4C skills within the learning process. In line with these findings, Irmayanti et al. (2020) reported that the average test scores of blouse pattern-making using video tutorials were higher than those obtained using conventional instructional media, such as learning modules, indicating a significant influence on students' learning outcomes.

Conceptually, pattern making is the initial stage in the garment construction process. This skill is essential because it helps students understand the technical structure of clothing before proceeding to subsequent stages such as cutting

and sewing. A study by Irmayanti & Hadi (2018) states that knowledge of pattern making and sewing skills make a positive contribution to garment production outcomes, which are indirectly related to overall learning outcomes in subjects related to tailoring. In addition, correlational studies in the field of education indicate that specific skills mastered by learners are associated with their learning outcomes.

CONCLUSION

Based on the results of data analysis and the discussion conducted in this study, it can be concluded that students' pattern-making skills fall into a high category with a relatively homogeneous distribution of data. Meanwhile, learning outcomes in the Tailoring course also demonstrate a high mean score, although with greater variation in achievement among students. The results of the normality test indicate that the data for pattern-making skills and learning outcomes in the Tailoring course are not normally distributed. Therefore, the analysis of the relationship between variables was conducted using the non-parametric Spearman Rank correlation test. The results of the Spearman Rank correlation test reveal a positive and significant relationship between pattern-making skills and learning outcomes in the Tailoring course, with a correlation coefficient of 0.428 and a significance value of 0.001. This level of correlation falls within the moderate category, indicating that higher levels of pattern-making skills tend to be associated with higher learning outcomes. Thus, pattern-making skills play an important role in supporting students' learning achievement in the Tailoring course, although learning outcomes are also influenced by other factors beyond the variables examined in this study.

This study has limitations because it only examines the relationship between basic pattern-making and pattern alteration skills and students' learning outcomes. Therefore, future researchers are recommended to investigate other factors that may potentially influence students' learning outcomes in the Tailoring course. The use of regression analysis may be considered to examine the contribution of each variable in greater depth. In addition, studies employing an experimental design can also be conducted to obtain a more comprehensive understanding of the effect of basic pattern-making and pattern alteration skills on practical learning outcomes.

REFERENCES

Andi Nuralfiah. (2024). 21st Century Skills in Tailoring Courses to Support Independent Learning in The Department of Fashion Education. *Journal of Electrical Systems*, *20*(5s), 1512–1518. https://doi.org/10.52783/jes.2483

Dasar, S., Dimara, M. D., Guru, P., Dasar, S., Pendidikan, U., & Sorong, M. (2020). *Word Square*. *8*(1), 87–93.

Hariyadin, & Nasihudin. (2021). Pengembangan Keterampilan Dalam Pembelajaran. *Jurnal Pendidikan Indonesia*, *2*(4), 733–743.

Huda, R. N., & Ernawati. (2024). Hubungan Motivasi Belajar Dengan Keterampilan Siswa Tata Busana Dalam Pembuatan Pola Dasar Wanita Di Smk N 3 Kota Solok. *Jurnal Pendidikan Tata Busana*, *4*(2), 179–188.

Irmayanti. (2017). Analisis Perbedaan Fitting Factor Antara Pola. *Media Komunikasi Pendikan Teknologi Dan Kejuruan*, *4*(2), 92–103.

Irmayanti, I., & Hadi, S. (2018). *The Contribution of Pattern Making Knowledge and Sewing Skill to the Outcome of Womenrs Blazer Making*. *201*(Aptekindo), 32–36. https://doi.org/10.2991/aptekindo-18.2018.7

Irmayanti, Suryani, H., & Achmadi, T. A. (2020). Pengaruh Penerapan Video Tutorial CAD Pembuatan Pola Blus terhadap Peningkatan Kompetensi Mahasiswa. *Jurnal Teknologi Busana Dan Boga*, *8*(2), 171–178. https://journal.unnes.ac.id/nju/index.php/teknobuga/article/view/30111

Kulsum, U. (2020). Grading Women's Clothing Patterns with the CAD Pattern System to Improve Student Learning Outcomes and Competencies. *Journal of Education Technology*, *4*(2), 187. https://doi.org/10.23887/jet.v4i2.26205

Muhammad Syahrul Kahar, Zakiyah Anwar Zakiyah Anwar, D. K. M. (2020). Pengaruh Model Pembelajaran Kooperatif Tipe Jigsaw Terhadap Peningkatan Hasil Belajar Kemampuan Pemecahan Masalah Siswa SMP. *Jurnal Program Studi Fisika Indonesia*, *9*(2), 279–295.

Muhammad, Y. (2019). Pendidikan Holistik Menurut Para Ahli. In *Encephale* (Vol. 53, Issue 1, pp. 59–65).

Permatasari, A. Y., & Suhartini, R. (2020). Application of the Porrie Muliawan Pattern Construction System in the Creation of Evening Gowns with a Catchy Theme. *BAJU: Journal of Fashion & Textile Design Unesa*, *1*(1), 57–72.

Putri Ayu Hutauruk, & Kiki Tristiawanti Simbolon. (2025). Pengaruh Strategi Pembelajaran Berdiferensiasi Terhadap Hasil Belajar Siswa Pada Materi Pembuatan Pola Dasar Badan di Kelas X Tata Busana SMKS Pangeran Antasari. *Jurnal Sosial Humaniora Dan Pendidikan*, *4*(3), 461–475. https://doi.org/10.55606/inovasi.v4i3.4511

Seputra, D. C., & Wening, S. (2017). Hubungan Pemanfaatan Modul Pembelajaran dengan Hasil Belajar Pembuatan Pola Kemeja Pria Kelas XI di SMK Negeri 3 Purworejo. *Jurnal Pendidikan Teknik Busana UNY*, *6*(1), 1–12. https://scholar.google.com/citations?view_op=view_citation&hl=id&user=ubpvglIAAAAJ&cstart=20&pagesize=80&citation_for_view=ubpvglIAAAAJ:4TOpqqG69KYC%0Ahttps://journal.student.uny.ac.id/ojs/index.php/busana/article/view/10236

Suryani, H., Imayanti, I., & Yahya, M. (2018). *The Effectiveness of Clothing Pattern Making Training with CAD-based System on Fashion Students*. *201*(Aptekindo), 311–316. https://doi.org/10.2991/aptekindo-18.2018.68

Zakiyah, W., Sakti, W. A., & Katiah. (2017). Jurnal Penelitian Busana dan Desain (JPBD). *Penelitian Busana Dan Desain*, *1*(1), 1–12.