

The Relationship Between the Use of Richpeace-Based Video Tutorials on Digital Pattern Making in The CAD Pattern Making Course

Hazevi Atila Yazel Aze^{1*}, Ernawati², Rima Agustia³, Weria Hendri⁴, Halimul Bahri²

¹ Vocational Education in Fashion Design, Universitas Negeri Padang, Padang, Indonesia.

² Family Welfare Education, Universitas Negeri Padang, Padang, Indonesia.

³ Ph.D Student Pendidikan Fizik, UCSI University, Kuala Lumpur, Malaysia

⁴ Fashion Design Education, Universitas Negeri Medan, Medan, Indonesia.

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Abstract: This study aims to examine the effect of using Richpeace-based video tutorials on students' digital pattern-making proficiency in the CAD Pattern Making course. The study employed a quantitative approach with an associative survey design. The group was made up of students studying Fashion Design Vocational Education Program and Associate Degree in Fashion Design who enrolled in 2026. A total of 95 students participated voluntarily and completed the questionnaire. Data were collected using questionnaires measuring the use of Richpeace-based video tutorials and students' self-reported proficiency in digital pattern making. The data were analyzed using descriptive statistics, validity and reliability tests, normality and linearity tests, simple linear regression analysis, t-test, and coefficient of determination. The hypothesis test results indicate that the use of Richpeace-based video tutorials has a positive and significant effect on students' proficiency in digital pattern making, with a calculated t-value of 12.713 and a significance level of $0.000 < 0.05$. The regression analysis revealed a significant positive relationship between the use of Richpeace-based video tutorials and students' self-reported digital pattern-making proficiency, with the model explaining 63.5% of the observed variance ($R^2 = 0.635$). These findings indicate that greater reported use of Richpeace-based video tutorials is associated with higher levels of students' self-reported digital pattern making proficiency. However, the cross-sectional survey design does not establish a causal effect of the video tutorials on students' proficiency.

Corresponding Author:

Hazevi Atila Yazel Aze
Email: hazeviatila@unp.ac.id

INTRODUCTION

Advances in digital technology have significantly transformed the fashion sector, particularly in clothing design and production. One such transformation is the use of Computer-Aided Design (CAD) technology in pattern-making. Research (Dewantri & Susilowati, 2025) shows that the use of CAD in garment pattern making offers greater efficiency compared to manual methods, particularly in terms of work speed, pattern accuracy, and ease of revision. Thus, CAD proficiency is becoming increasingly important for fashion design students to adapt to the demands of the digital fashion industry. This demand has intensified as apparel education worldwide integrates digital design tools into its curricula, from two-dimensional pattern systems to virtual prototyping environments (Silva & Peramunugamage, 2023).

Richpeace RP-DGS is widely utilized in both the fashion industry and fashion education. Research by Nurhijrah & Suryana, (2023) explains that Richpeace RP-DGS (Pattern Design System) is a leading CAD/CAM software used in the fashion industry and education. Furthermore, Renaningtyas et al., (2024) explain that Richpeace is a specialized CAD (Computer-Aided Design) system designed specifically for designers and patternmakers. This system enables designers and patternmakers to create, modify, and grade garment patterns digitally with high precision, thereby accelerating the production workflow. The software offers a variety of features that support the professional digital pattern-making process, despite its usefulness, Richpeace RP-DGS can be challenging to master because pattern construction requires students to understand multiple software functions, operate various digital tools, and follow structured construction procedures. Such technical complexity may hinder the learning process, especially among students who are still unfamiliar with computer-aided design (CAD) software.

In higher education, the delivery of CAD Pattern Making course material is generally still dominated by direct demonstrations conducted by instructors in computer labs. Although this method allows for direct interaction, there are several limitations, such as limited practice time, students' difficulty in following every step of the demonstration simultaneously, and the lack of accessible materials for students to review independently outside of class hours. These conditions have the potential to cause disparities in skill mastery among students and impact learning outcomes. Instructional formats that allow learners to control the pace of information delivery are therefore recommended for procedurally complex tasks (Castro-Alonso et al., 2021).

Observations in the CAD Pattern Making course revealed that some students had difficulty following the steps for creating digital patterns demonstrated by the instructor during class. The limited time available for practical sessions in the laboratory restricted students' opportunities to revisit instructional explanations when they encountered difficulties.

As a result, there were disparities in students' levels of CAD proficiency, which impacted their learning outcomes. This situation highlights the need for learning resources that enable students to review the material independently and repeatedly, according to their individual learning needs.

The use of video tutorials is one alternative that can be employed to address this issue. Video tutorials allow students to review the material repeatedly according to their individual learning needs. According to previous research by Dermawan et al., (2025), the use of audiovisual media effectively improves student learning outcomes. Video tutorials allow students to access the material at any time, review each step of the process, and practice using the software independently. In practice-based learning, video tutorials also provide students with the opportunity to observe each step of the process in greater detail and in a more systematic manner. Overviews of video-based learning indicate that recorded demonstrations are an effective format for skill-oriented instruction because they combine auditory and visual cues while allowing learners to revisit each procedure as often as needed (Sabolic et al., 2021). Evidence-based guidance further suggests that the effectiveness of such videos can be increased through design choices such as first-person demonstration perspectives and prompts for generative activity (Mayer et al., 2020).

Previous studies have examined the use of instructional videos in vocational and technology-based education, particularly in supporting procedural understanding, independent learning, and practical skills. Video-based learning can provide learners with opportunities to observe procedures repeatedly and regulate the pace of learning according to their needs. At the same time, researchers caution that these benefits depend on design features such as segmenting, coherence, and learner control (Fyfield et al., 2022), on how instructor presence is handled on screen (Henderson & Schroeder, 2021), and on practical production factors identified in recent guidelines for educational video (Guy & McNally, 2022). However, the findings of previous studies are largely situated in general instructional contexts and do not specifically examine Richpeace RP-DGS based video tutorials in CAD Pattern Making course.

From a theoretical perspective, the Cognitive Theory of Multimedia Learning (CTML) offers a framework for understanding how students' process and integrate visual and verbal information

presented in instructional videos. The systematic combination of demonstrations, visual interfaces, and verbal explanations may support students' processing of complex procedural information. In addition, the Technology Acceptance Model (TAM) suggests that perceived usefulness and perceived ease of use are important factors in users' acceptance and adoption of technology. Recent syntheses of technology-adoption research in education confirm that these two perceptions remain the most consistent predictors of whether students and teachers actually use digital learning technologies (Liu et al., 2020). These perspective provide a theoretical basis for examining students' perceptions and reported use of Richpeace-based video tutorials in relation to their digital pattern- making proficiency.

Nevertheless, there remains a limited body of empirical research examining the relationship between students; reported use of Richpeace-based video tutorials and their reported proficiency in digital pattern making within a specific CAD Pattern Making course. Previous research has generally focused on developing digital learning materials, implementing CAD software, or examining instructional videos in broader learning context. Therefore, limited laboratory practice time reduced students' opportunities to revisit instructional explanations when they encountered difficulties during practical activities. In addressing this issue, this study examines the use of Richpeace-based video tutorials and students' self-reported digital pattern making proficiency in the CAD Pattern Making course. The contribution of this study is contextual and empirical, providing evidence regarding the strength and direction of the connection within the field of fashion design education.

Based on the research gap identified, this study examines: Is there a significant relationship between the use of Richpeace-based video tutorials and students' digital pattern-making proficiency?

This study aims to investigate the relationship between the use of Richpeace based video tutorials and students' digital pattern-making proficiency in the CAD Pattern Making course. The video tutorials used in this study were designed according to the procedures for using Richpeace RP-DGS software and the learning requirements of the CAD Pattern Making course. The tutorials provide systematic and repeatable demonstrations of digital pattern-making procedures, allowing students to review the learning material according to their individual needs.

This study provides empirical evidence on the association between students' reported use of Richpeace-based video tutorials and their self-reported proficiency in the digital pattern making. The findings may provide contextual information for instructors and researches regarding the use of video-based learning resources in CAD Pattern Making courses and may serve as a basis for further experimental research using objective performance assessments.

METHOD

This study used a quantitative approach and associative survey design to examine the statistical relationship between two variables without manipulating learning conditions. The independent variable was the reported use of Richpeace-based video tutorials, while the dependent variable was students' self-reported proficiency in digital pattern making. The selected research design enabled the study to assess both the direction and degree of association between the variables in the CAD Pattern Making course. The population consisted of students in the Fashion Design Vocational Education Program and Associate Degree in Fashion Design who enrolled in 2026 and had experience with the CAD Pattern Making course and Richpeace-based learning materials. The questionnaire was administered to all members of the accessible population. In total, 95 completed questionnaires were collected and subsequently included in the data analysis. Because participation was voluntary, and respondents were selected based on their willingness to complete the questionnaire, the study used a non-probability voluntary-response sampling approach. Accordingly, the results should be considered in the context of the participating respondents and should not be generalized to the broader student population without caution. This cautious interpretation is consistent with recent methodological guidance, which emphasizes that results from convenience-based and voluntary samples apply to the participating group and cannot support statistical generalization to the wider population (Stratton, 2026).

Data were obtained through a structured questionnaire comprising of two scales. Scale I measured the reported use of Richpeace-based video tutorials, including aspects related to ease of use, clarity of presentation, visual and audio quality, suitability of the material, completeness of the tutorial, and usefulness for learning. Scale II measured students' self-reported proficiency in digital pattern making, including their perceived ability to operate Richpeace tools, create basic patterns, modify patterns, and complete digital pattern-making procedures. The questionnaire used a Likert-type scale, a response format that remains central to self-report measurement in educational and psychological research (Jebb et al., 2021). Descriptive analysis summarized the characteristics of each variable, while inferential analysis included validity, reliability, normality, and linearity tests. Simple linear regression was used for hypothesis testing to investigate the effect of Richpeace-based video tutorials on students' digital pattern-making proficiency. The coefficient of determination (R^2) was used to assess the contribution of the independent variable to the dependent variable, while the significance of the influence was tested using a t-test at a significance level of 0.05. The result of the questionnaire item validity analysis are presented in Table 1.

Table 1. Results of the Item Validity Test

Variable	Initial Number of Items	Valid Item	Discarded Item
The Use of Richpeace-Based Video Tutorials	16	15	1
Students' Proficiency in Digital Pattern Making	10	10	0

The validity test results presented in Table 1 show that out of a total of 16 items in variable X and 10 items in variable Y, there were 25 valid items and 1 invalid item. Therefore, the researcher used the valid items for further testing. Table 2 presents the results of the questionnaire item reliability analysis conducted in this study.

Table 2. Results of the Item Reliability Test

Variable	Cronbach's alpha value	Description
The Use of Richpeace-Based Video Tutorials	0,898	Reliable
Students' Proficiency in Digital Pattern Making	0,925	Reliable

Based on Table 2, the reliability analysis result above show that Cronbach's Alpha for variable X is 0.898 and for variable Y is 0.925—both greater than 0.700—the data obtained for the variables in this study can be considered reliable. Both coefficients exceed the 0.70 benchmark conventionally referenced in reliability assessment, although recent methodological work encourages complementing alpha with alternative estimates such as McDonald's omega in future studies.

RESULTS AND DISCUSSIONS

Research Implementation

This study involved students in the Fashion Design Vocational Education Program and the Associate Degree in Fashion Design Program who enrolled in 2025. The study was carried out from June 18 to July 18, 2025. The questionnaire, distributed via Google Forms, consisted of several sections: a debriefing section, a sample identification section, Scale I—which measured variable X (the use of Richpeace-based video tutorials)—and Scale II—which measured variable Y (students' proficiency in digital pattern making). The research participants were asked to respond to all statements in the questionnaire. A total of 95 participants took part in this study.

Research Data Description

This study investigated the explanatory variable, namely the use of Richpeace-based video tutorials, and the dependent variable, namely students' proficiency in digital pattern making. The collected data were

analyzed with SPSS version 2023. Descriptive statistics for the variable “use of Richpeace-based video tutorials” are as follows:

Table 3. Results of the Descriptive Analysis of Variable X

Variable	Mean	Median	Mode	Std. Deviation	Varians
The Use of Richpeace-Based Video Tutorials	64.32	63.00	60.00	6.63	43.98

Based on Table 3, the mean score for the reported use of Richpeace-based video tutorials was 64.32, with a median of 63.00, a mode of 60.00, a standard deviation of 6.63, and a variance of 43.98. These descriptive statistics indicate the central tendency and variability of respondents’ scores. Based on the scoring categories used in this study, the reported use of Richpeace-based video tutorials was categorized as high. Furthermore, descriptive statistics for students’ proficiency in digital pattern making were obtained through data analysis using IBM SPSS Statistics Version 25 for Windows, namely:

Table 4. Results of the Descriptive Analysis of Variable Y

Variable	Mean	Median	Mode	Std. Deviation	Varians
Students’ Proficiency in Digital Pattern Making	41.69	40.00	40.00	5.08	25.831

Based in Table 4, the mean score for students’ self-reported digital pattern-making proficiency was 41.69, with a median of 40.00, a mode of 40.00, with a standard deviation of 5.08 and a variance of 25.831. These statistics describe the central tendency and variability of respondents’ reported proficiency scores. Based on the scoring categories applied in this study, students’ self-reported digital pattern-making proficiency was categorized as good.

Prerequisite Tests

1. Normality Test

In this study, the normality of the data was examined using the Kolmogorov-Smirnov test. According to Ghozali (2021), the normality test is performed to determine whether the residuals in a regression model are normally distributed. This assumption can be evaluated using the One-Sample Kolmogorov-Smirnov test. A regression model is considered to meet the normality assumption when the Asymp. Sig. (2-tailed) value below 0.05 indicates that the residuals do not follow a normal distribution. The results of the normality test conducted in this study are presented below:

Table 5. Results of the normality test

Variable	Test Statistic	Sig.	Description
The Use of Richpeace-Based Video Tutorials and Students’ Proficiency in Digital Pattern Making.	0,083	0,109	Normal

Based on Table 5, Kolmogorov-Smirnov test, the analysis of the unstandardized residuals in a test statistic of 0.083 and a significance value of 0.109. As the significance value is greater than 0.05, the residuals satisfy the assumption of normality. Since the significance value exceeded 0.05 ($p=0.109 > 0.05$), the residuals were considered to follow a normal distribution. Thus, the normality assumption required for the regression analysis was satisfied.

2. Linearity Test

According to Norfai (2020), linearity can be assessed in the “Linearity” and “Deviation from Linearity” sections. If the significance value in the “Linearity” section is less than 0.05 ($p < 0.05$), the relationship between the variables can be considered linear. Furthermore, when the significance value of the “Deviation from Linearity” exceeds 0.05 ($p > 0.05$), it indicates that there is no significant departure from linearity, suggesting that the relationship between the variables is linear. The results of the linearity test in this study are presented in the following table.

Table 6. Linearity test results

Variable	F	Sig. Linearity	F	Sig. Deviation	Description
The Use of Richpeace-Based Video Tutorials and Students' Proficiency in Digital Pattern Making.	166.622	0,000	1.144	0,327	Linear

Referring to Table 6, it is evident that the variables of Richpeace-based video tutorial usage and students' proficiency in digital pattern making have a significance value of 0.000 for Linearity ($p < 0.05$) and 0.327 for Deviation from Linearity ($p > 0.05$), therefore, it can be concluded that the variable of Richpeace-based video tutorial usage and students' proficiency in digital pattern making have a linear and statistically significant relationship. This finding is supported by an F-value of 166.622 and a significance value of 0.000 ($p < 0.05$), indicating that the regression model is statistically significant in explaining the contribution of Richpeace-based video tutorial usage to students' proficiency in digital pattern making.

Hypothesis Testing

1. Simple Linear Regression Test

The following table presents the result of the simple linear regression analysis conducted in this study:

Table 7. Results of the simple regression analysis

Model	R	R ²	F	Sig.	B
Regression	0,797	0,635	161.617	0,000	2.422 0.611

Based on Table 7, it can be seen that an R value of 0.797 indicating a strong relationship between the use of Richpeace-based video tutorials and students' proficiency in digital pattern making. The analysis yielded an F-value of 161.617 with a significance level of 0.000 ($p < 0.05$), indicating that the regression model is statistically significant. The simple linear regression equation obtained from the analysis is presented as follows:

$$Y = 2.422 + 0.611X$$

The constant of 2.422 represents the predicted value of students' reported proficiency when the reported use of Richpeace-based video tutorials is zero. The regression coefficient of 0.611 indicates that a one-unit increase in the reported use score is associated with an estimated 0.611 – uni increase in the reported proficiency score. Because this is a cross-sectional associative survey, the coefficient should be interpreted as an estimated statistical association rather than evidence that increased use of the video tutorials causes an increase in proficiency.

2. Coefficient of Determination

The coefficient of determination indicate the proportion of variance in variable Y that can be accounted for by variable X.

Table 8. Results of the Coefficient of Determination Test

Model	R	R ²
Students' Proficiency in Digital Pattern Making	0,797	0,635

Referring to Table 8 above, the analysis yielded a coefficient of determination (R²) of 0.635. This indicates that the variable of using Richpeace-based video tutorials contributes 63.5% to students' proficiency in digital pattern making, while 36.5% could be attributed to other factors beyond the scope of this study, such as learning motivation, prior proficiency in using CAD software, practice intensity, learning facilities, and other factors that may affect students' proficiency.

3. Partial Test (t-Test)

Table 9. T-test results

Model	t	Sig.
Regresion Constant	12.713	0,000
<i>The Use of Richpeace-Based Video Tutorials</i>		

Referring to Table 9, the analysis indicates that the calculated t-value for the use Richpeace-based video tutorials is 12.713, exceeding the critical t-value of 1.986 ($12.713 > 1.986$), and the significance value of 0.000 ($p < 0.05$). This suggests that the use of Richpeace-based video tutorials contributes significantly to students' mastery of digital pattern making. The results of the analysis indicate that the use of Richpeace-based video tutorials is correlated with and significantly contributes to students' mastery of digital pattern making; therefore, the alternative hypothesis (H_a) is confirmed.

Discussion

Students in this study reported frequent and positive use of Richpeace-based video tutorials, with a mean score of 64.32, which falls within the high category used by the researchers. This result is understandable in a course where students are expected to work through a series of precise operations in CAD software. During a classroom demonstration, missing a single step may make the next step difficult to follow. A recorded demonstration gives students an opportunity to return to the part they did not understand and proceed at a pace that suits them. The survey results suggest that students regarded this form of support as useful, although they do not tell us how often each student replayed a video or which video features were most helpful.

The value of a tutorial in this setting lies not simply in showing what a finished pattern looks like, but in making the sequence of actions visible. Students can watch how a measurement is entered, how lines are constructed, and how a pattern is adjusted before trying the same steps in Richpeace. This is consistent with Mayer's (2024) account of multimedia learning, in which visual and verbal explanations can support understanding when information is selected and organized carefully. Fyfield et al. (2022) similarly emphasize that the quality of instructional video design matters. For CAD Pattern Making, clear screen recordings, manageable segments, and explanations delivered at the moment they are needed are likely to be more useful than lengthy demonstrations with little opportunity for review. These design implications, however, were not tested separately in the present study.

Students also rated their digital pattern-making proficiency positively. The mean score for this variable was 41.69, placing it in the good category under the study's scoring criteria. This finding indicates that respondents generally felt capable of carrying out the digital pattern-making activities represented in the questionnaire, including operating Richpeace tools, preparing basic patterns, and modifying designs. It should not be taken to mean that their practical work had been independently assessed at a good level. The proficiency measure was based on students' own judgments, which are informative about their confidence and perceived competence but may not fully reflect the accuracy or technical quality of the patterns they produce.

The strongest empirical finding is the relationship between the two reported variables. The correlation coefficient was 0.797, and the simple regression model produced a slope of 0.611, a t-value of 12.713, and a significance value reported as 0.000 (interpreted as $p < 0.001$). The coefficient of determination was 0.635. In practical terms, students who reported more favorable use of the Richpeace tutorials also tended to report higher proficiency, and the model accounted for 63.5% of the variation in reported proficiency scores among these respondents. This is a substantial association in this sample. It does not mean that the tutorials caused a 63.5% improvement in skill, nor that 63.5% of any individual student's proficiency was produced by the videos.

There are plausible educational reasons for this relationship. Pattern making requires students to coordinate technical knowledge with repeated software practice. A tutorial that remains available outside scheduled laboratory sessions may help students revisit unfamiliar commands before continuing their work. Desmal et al. (2025) discuss how digital teaching videos can support flexible

review of learning material, while Amara and Purmadi (2025) draw attention to the continuing value of combining tutorial-based study with direct learning interaction. In the present setting, it is reasonable to view the videos as a resource that can complement instructor demonstrations and practice rather than replace either one. The study did not measure the amount of independent practice, so this explanation remains an interpretation rather than a demonstrated mechanism.

The findings can also be considered alongside students' perceptions of educational technology. Tang et al. (2023) discuss the importance of perceived usefulness and ease of use in technology acceptance. The high reported use of the tutorials may reflect students' sense that the material is accessible and relevant to their coursework. At the same time, the relationship with reported proficiency is compatible with the view that students benefit when procedural explanations can be seen and heard together (Mayer, 2024). Neither technology acceptance nor the cognitive processes described in multimedia learning theory were directly tested as mediating variables here. These perspectives are therefore helpful for interpreting the results, but they should not be presented as confirmed explanations for the observed correlation.

For instructors, the findings point to a practical way of organizing CAD instruction. Short tutorial videos could be prepared around specific Richpeace tasks, such as constructing a basic block, editing a curve, adjusting measurements, or revising a finished pattern. Students could be asked to use the video during practice, submit the resulting pattern, and explain the steps they followed. This arrangement would allow lecturers to identify mistakes that a self-report questionnaire cannot reveal and to provide feedback on both the process and the finished work. It would also help distinguish students who can follow a demonstration from those who can apply the same technique without guidance. These are recommendations for future course design, not outcomes evaluated in this survey.

Several limitations need to be kept in view when interpreting the results. The sample consisted of 95 voluntary respondents from the relevant fashion-design programs, and both variables were measured through questionnaires at the same point in time. Students with stronger prior CAD skills may have been more comfortable using the tutorials, or students who were more motivated may have reported higher scores on both measures. Responses collected through the same method can also share sources of bias, an issue discussed by Podsakoff et al. (2024). The study did not include a comparison group, direct observation of tutorial use, or an objective assessment of pattern accuracy. As a result, the statistically significant association cannot establish that using the videos improves practical competence.

Taken together, the results provide encouraging evidence that students' reported use of Richpeace-based video tutorials is closely associated with how proficient they consider themselves in digital pattern making. The main contribution is therefore a clearer picture of this relationship in a specific CAD Pattern Making learning context. A useful next step would be to combine learning logs and independent assessments of students' pattern-making work with a pre-test/post-test or comparative design. Such evidence would make it possible to examine whether, and under what instructional conditions, video tutorials lead to measurable improvements in skill. For now, the tutorials can reasonably be regarded as a promising supplementary resource whose educational effectiveness warrants more direct testing.

CONCLUSIONS

Based on the results obtained, the use of Richpeace-based video tutorials was categorized as high, while students' proficiency in digital pattern making was categorized as good. The regression analysis further demonstrated a positive and statistically significant impact of Richpeace-based video tutorials on students' proficiency in digital pattern making. This finding was supported by the calculate a calculated t-value of 12.713, which was higher than the critical t-value of 1.986 ($12.713 > 1.986$) at the 5% significance level. Therefore, the proposed research hypothesis was supported. The coefficient of determination ($R^2 = 0.635$) indicates that the use of Richpeace-based video tutorials contributes 63.5% to students' proficiency in digital pattern making. Meanwhile, the remaining 36.5% may be attributable to

other factors that were not examined in this study, such as learning motivation, students' prior proficiency in using CAD software, practice intensity, learning facilities, and instructor support during the learning process. These findings indicate that Richpeace-based video tutorials are an effective learning medium for improving students' proficiency in the CAD Pattern Making course because they facilitate learning that is more flexible, systematic, and oriented toward practical skills.

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