Design of Computer Aided Design Based Teaching Materials to Improve the Quality of Men's Fashion Pattern Drawing

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ABSTRACT

The aim of this study is to create a viable, practical, and effective video tutorial on crafting digital patterns in Men's Fashion. The research addresses curriculum requirements, emphasizing students' proficiency in fashion pattern creation using computer-assisted applications. The study employs a developmental research method comprising instructional, development, and implementation phases. The target population is 97 students enrolled in the 2021 fashion design program, with a sample of 32 students from class B. Research instruments include questionnaires, and the data analysis involves quantitative descriptive techniques. The analysis of student needs revealed that 47.5% of respondents require teaching materials in the form of video tutorials for crafting men's fashion patterns. The Men's Fashion digital pattern-making video tutorial demonstrates high feasibility, with material and video aspects scoring 0.87 and 0.85, respectively. According to responses from lecturers and students, the tutorial is highly practical. The effectiveness of the video tutorial is evident in a 12.89% improvement in students' pattern-making skills. In conclusion, the Men's Fashion digital pattern-making video tutorial is deemed viable, practical, and effective for integration into Men's Fashion courses at the college level. The digital approach reduces errors, enhances speed, cleanliness, and accuracy compared to conventional techniques.

Keywords: Menswear, Pattern Digital, Validity, Usability, and Efficacy.

1. INTRODUCTION

The good shape of a garment when used one of them is influenced by whether or not the pattern applied to the clothing. Producing a good form of clothing is inseparable from the systematic making of patterns and the flexibility of the results of pattern lines. Research that has been conducted previously related to the use of E-jobsheet men's clothing courses found that the percentage of 94% of students was satisfied in the use of teaching materials, but after an evaluation of the results of manual pattern making practices, there are still many students who are not competent in making patterns manually [1]. One of the causes of students' lack of skills in making men's fashion patterns manually is influenced by the educational background of graduates before entering the Medan State University Fashion Design Study Program.

This is what is experienced by fashion design students for the 2021/2022 academic year of the Medan State University Governance Education study program, where

from the results of making fashion patterns manually, there are many shortcomings in the results of patterns made by students. The challenges in pattern making, including accuracy in connecting pattern lines, flexibility in shaping curved pattern lines, and maintaining cleanliness in pattern creation, are crucial considerations [1] [2]. Moreover, the difficulties are compounded by the diverse educational backgrounds of students, including those from Public High Schools in both the Department of Natural Sciences and the Department of Social Sciences, Madrasah Aliyah Negeri (MAN), and Vocational High Schools with various majors, including Fashion Design and others [3]. This diversity poses clear obstacles to the learning process and outcomes, particularly for students without a background in Fashion Style from vocational schools (SMK). Table 1 illustrates the distribution of Fashion Design students' school backgrounds for the 2021/2022 academic year.

Table 1: Data on Students' Schools of Origin for the 2021/2022 Academic Year

No	Origin of school	Many
1	Fashion Vocational High School	34 people
2	Vocational High School Other Than Fashion	6 people
3	Public High School	43 people
4	Madrasah Aliyah Negeri	12 people
	Sum	97 people

From the table 1, it can be seen that fashion design students are dominated by high school graduates. Following in second place, students graduated from SMK fashion design and then filled by students who graduated from MAN and SMK in addition to fashion design. The quality of student input greatly affects the learning process in the classroom. For students who graduated from SMA/MAN and SMK in addition to fashion design, lessons in making fashion patterns are new knowledge that must be trained in pattern making, while students graduating from SMK clothing, classroom learning activities are repetition material learned in SMK so that their abilities become better and skilled in making patterns.

Making patterns digitally is a solution in the learning process Students are able to make pattern lines and the accuracy of pattern sizes according to the provisions on the jobsheet by checking the size using tools on the Richpeace DGS (RP-DGS). RP-DGS is Software for pattern making, making size / grading, editing, adding stitch marks / notch, adding stitch lines / seam, etc. RP-DGS serves to make Pattern and Grading, while RP-GMS is for pattern markers or arranging fashion patterns before entering the cutting stage [4].

The competency results of students who use video tutorial learning media are better than the competency results of students who only use modules in the practice of making blouse patterns with CAD RP-DGS. The use of digital pattern electronic learning media has been tested for feasibility to be used as an independent student learning aid and teaching media for teachers who teach Industrial Fashion Making subjects, digital shirt pattern making materials [5].

Table 2. Results of Manual Pattern Making for 2021/2022 Students [6]

No	Manual assessment of patterning practices			
	Grade 85-100	Grade 75-84	Grade 65-74	Grade 0-64
1	40 student	18 student	8 student	31 student

In the student assessment, as many as 31 people were declared to have not passed the practice of making patterns manually. In brief interviews with several students who have taken menswear courses, students argue that the difficulty that students often encounter when making patterns manually is to form the flexibility of pattern lines accurately and the technique of making pattern lines precisely has not been understood.

The findings of the empirical data above require an educator to innovate in the learning process so that findings like this are not found again. Therefore, the author makes a solution in the learning process of pattern making that utilizes technological developments by using the RP-DGS application in pattern making. This application has had many positive effects in the pattern making process. This application aims to overcome errors in making patterns encountered manually with the help of the RP-DGS application. With the transformation of pattern making digitally, students' abilities and skills will increase thanks to the help of the RP-DGS application. [7] [8] [9] [10]. The purpose of this study is to produce a video tutorial on making Men's Fashion digital patterns that are feasible, practical and effective to use in learning men's fashion courses.

2. METHOD

This research is using the Research and development method. Research and development methods are methods used to produce new products or improve existing products [11] [12]. This method involves several steps, such as: analysis of the product to be developed, initial product development or product draft, expert validity and product revision, small-scale and large-scale field trials, final product.
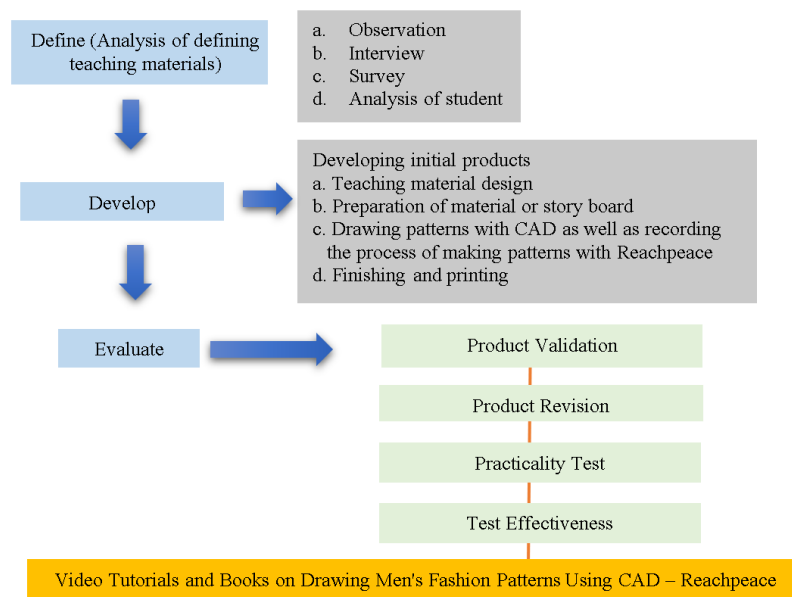
Figure 1 : Research Procedure

2.1 Define
2.1.1. Observation
Observation activities are carried out at the beginning of learning to get an overview of the learning media development plan that will be carried out. Observation activities also distribute questionnaires to students related to student needs for learning media to be developed. After obtaining data on the needs of learning media, the highest percentage of student needs is taken.

2.1.2. Interview
The interview was conducted to obtain in-depth data related to men's fashion courses. Interviews were conducted with 2 lecturers and 10 students who had taken men's fashion courses.

2.1.3. Survey
Survey activities include looking at the learning activities of class B fashion design students for the 2021 academic year, related to what learning methods are applied by lecturers, to obtain information on learning resources used during learning, documenting and collecting other supporting data needed for research.

2.1.4. Student Analysis
The analysis of student needs was carried out after obtaining data from the needs analysis questionnaire that was distributed during the initial observation activity. The results of the analysis are useful for obtaining information related to what kind of learning media students want during the learning process in men's clothing courses.

2.2 Develop
2.2.1. Teaching Material Design
The first product development activity is to design teaching materials that will be used in men's fashion courses.

2.2.2. Preparation of material of strory board
After the teaching materials are designed, the material is arranged according to learning outcomes.

2.2.3. Drawing pattern with CAD
Creating patterns with the Reachpeace-DGS application while recording pattern making activities with the ultimate goal of producing a digital pattern making tutorial video.

2.2.4. Finishing
Finishing activities include setting video speed, video sound and duration.

2.3 Evaluate
2.3.1. Product validity
After the teaching material product has been made, then product validation is carried out to experts. Product validation is carried out to two experts, first material experts and two media experts. Material experts, namely people who understand the study of material content related to the resulting media products, material expert validation is given to 2 lecturers who teach men's clothing courses. While media experts were given to 2 lecturers of the Information and Computer Engineering Education Study Program.

2.3.2. Product revission

After validation with material and media experts. If there are improvements in accordance with expert comments, then the teaching material products are revised according to the suggestions.

2.3.3. Practicallity test

After the product is valid, trials are carried out for students and lecturers related to the practicality of the teaching materials made.

2.3.4. Test effectiviness

From the results of product trials with 32 students, the effectiveness of the teaching material products developed was obtained.

2.4 Research Locations

Research location Design of CAD (Computer-Aided Design) Based Teaching Materials to Improve the Quality of Pattern Drawing in Men's Fashion Courses in the Fashion Education Study Program, Department of Family Welfare Education, Faculty of Engineering, Medan State University, Jl. Willem Iskandar Psr.V- Post Box 1589 Medan 20221.

2.5 Research Population

The research population is all students of the fashion education study program for the 2021 academic year totaling 97 students, while the research sample is class B students of fashion design for the 2021 academic year totaling 32 students.

2.6 Data Collection and Analysis Techniques
2.6.1 Validity Questionnaire

Validation questionnaires are used to determine the validity of the product developed The validation sheet contains several aspects of assessment of the components of teaching materials. There are two categories of validation questionnaires, namely content validity and media validity. [13] [14].

2.6.1.1 Material validation questionnaire

The material validation questionnaire contains several validator responses to the suitability of the material in the teaching materials with the syllabus and RPS, the correctness of concepts that can be accounted for and the suitability of descriptions with indicators.

2.6.1.2 Media validation questionnaire

The media validation questionnaire contains validators' statements and responses to the learning media developed. Analysis of validity data is obtained using quantitative descriptive analysis techniques, namely by analyzing quantitative data obtained from validation questionnaires given to material experts and

media experts. The result of Aiken's calculation [15] ranges from 0 to 1, the number 0.6 can be interpreted to have a high enough coefficient then the value of Validity 0.6 and above is expressed in the valid category [16] [17].

2.6.2 Practicality Questionnaire

This practicality questionnaire is used to see the practicality of the teaching materials developed. This questionnaire contains assessment responses by lecturers and students who take men's clothing courses. Indicators of lecturer questionnaires include looking at the ease of use of media, student learning interest, understanding of material by students, effectiveness and efficiency of time, attractiveness and suitability of learning media materials. While the questionnaire indicators for students are minimizing interest in learning, ease of use, language that is easy to understand, easy to understand, increase motivation and learning activity.

Practicality analysis is obtained from data in the form of response sheets given to lecturers and students to the use of developed teaching materials, to analyze response sheets and students used descriptive analysis [18].

$$NA = \frac{S}{SM} x100\%$$

NA = Final Grade
S = Scores obtained
SM = Maximum score

2.6.3 Effectiveness Sheet

The effectiveness sheet is measured from the results of manual pattern drawing skills and making men's fashion patterns digitally. The percentage of media effectiveness is obtained from the difference in the results of the analysis of the assessment of pattern drawing skills manually and digitally. Indicators of the assessment of the effectiveness of men's fashion pattern making questionnaires include: the accuracy of all image sizes on the pattern, the flexibility of pattern lines and speed in the process of making men's clothing patterns [19].

3. RESULTS AND DISCUSSION

3.1. Define
3.1.1. Observations

Observation activities carried out at the beginning of learning obtained data including: 1) graduates of fashion education study program students for the 2021/2022 academic year came from fashion vocational high schools, vocational schools other than clothing, high schools and state aliyah madrasahs. 2) The results of the questionnaire distributed to students obtained data that in learning to make men's fashion patterns, students prefer to use video tutorial media. 3) The number of students

who participated in the men's fashion course was 97 students.

3.1.2. Interview Results

The results of the interview with 2 lecturers of men's clothing courses obtained information: 1) the learning of men's fashion courses was constrained by the quality of input and the background of graduate students. 2) students find it difficult to understand the subject matter because the learning ratio of courses related to men's clothing is 1:10, meaning that in the learning curriculum for 8 semesters, Students only study men's fashion material only once in semester 4 and the rest study related to women's fashion courses. 3) Students are accustomed to sewing women's clothing, so in producing men's clothing, students have a bit of difficulty in the process. 4) Learning in pattern making, especially in menswear courses requires technological assistance such as the use of pattern design applications such as Richpeace, Optitix, etc.

The interviews with student representatives revealed that men's clothing courses pose a significant challenge for students. Students are more accustomed to sewing feminine forms of clothing, and the transition to sewing men's clothing requires the mastery of masculine shapes. This difficulty is a contributing factor to many students struggling to fully grasp the content of men's fashion courses. Additionally, the limited availability of learning resources specifically addressing men's fashion further exacerbates the challenge, with a lack of detailed resources explaining the techniques of pattern making through the sewing process for men's clothing.

3.1.3. Survey Result

The survey was conducted directly during the classroom learning process in the men's fashion course. The students surveyed are students of the class B fashion design study program for the 2021 academic year. During practical learning, lecturers use demonstration methods in making men's fashion patterns. Lecturer theory learning using power point media with the help of a projector. Learning resources used when learning men's fashion courses are men's fashion books, jobsheets and men's fashion modules.

3.1.4. Student Analysis Results

Student analysis was carried out to obtain the form of teaching material products to be made in this study. The data collection technique is in the form of a questionnaire of student needs which is distributed to 40 students during observation activities.

Table 3: Results of Needs Analysis

No	Content of the question	Survey results
1	Book/Jobsheet/Module/Handout PRINT version	35%
2	Book/Jobsheet/Module/Handout ONLINE version	17,5 %
3	Video Tutorial	47,5 %

The table 3shows that students prefer the use of video tutorial media in the learning process of fashion design courses, especially pattern making. Video media makes learning easier to understand because it can be repeated or replayed, providing an engaging and clear display of images and audio. [10], So it was decided that the learning media made was a video tutorial in making patterns in men's fashion courses.

3.2. Develop

3.2.1. Teaching Material Design

The teaching materials made are in the form of video tutorials on making men's fashion patterns digitally. The video material is made in the form of a tutorial on making men's shirt patterns which are divided into three parts. The first part of the front men's shirt pattern making tutorial video. Both video tutorials on making patterns of men's shirts on the back. Third, a video tutorial on making shirt sleeve patterns.
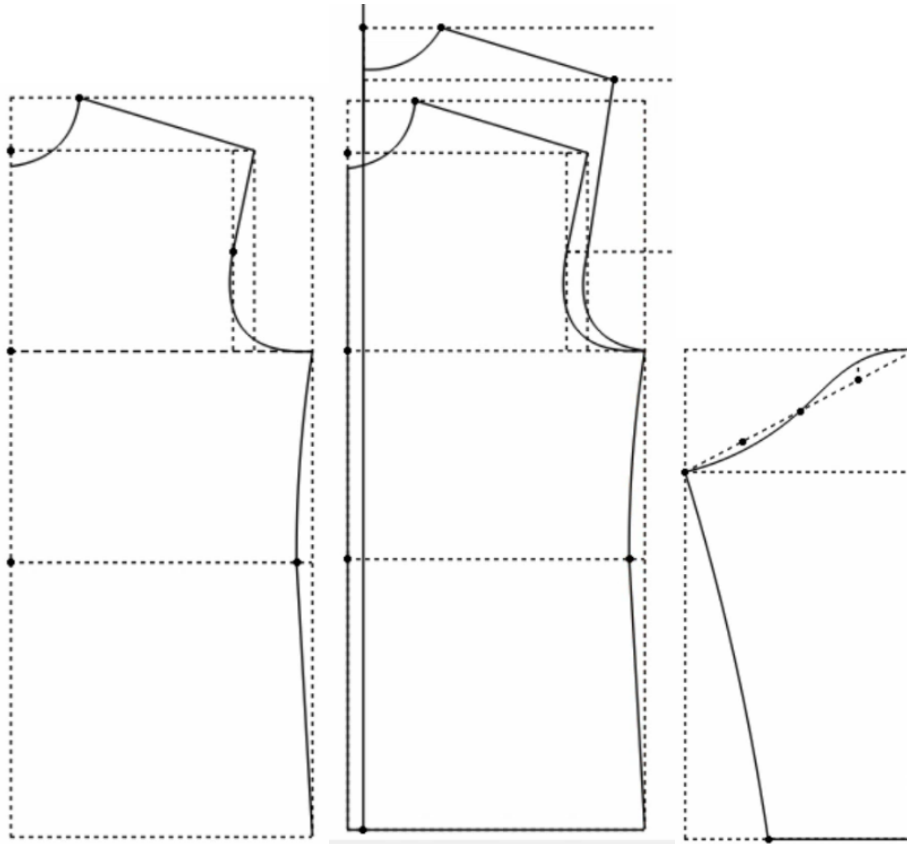
Figure 2: Men's shirt patterns that will be used as a video tutorial making process

3.2.2. Build a Story Board

Creating a Story board video tutorial on making men's shirt patterns digitally can be seen as follows:

1. Story board video tutorial first part shirt front pattern
   a. The opening scene is the CAD pattern title text
   b. The second scene is a digital pattern text of a men's shirt
   c. The third scene of the steps in making the front men's shirt pattern
   d. Closing scene

2. Story board video tutorial second part shirt back pattern
   a. The opening scene is the CAD pattern title text
   b. The second scene is a digital pattern text of a men's shirt
   c. The third scene of the steps in making the pattern of the back men's shirt
   d. Closing scene

e. Story board video tutorial part three shirt sleeve pattern
   a. The opening scene is the CAD pattern title text
   b. The second scene is a digital pattern text of a men's shirt
   c. The third scene of the steps in making shirt sleeve patterns
   d. Closing scene

3.2.3. Drawing patterns using CAD as well as screen recording process for video tutorials

After the material and arrangement of teaching materials have been determined, then the process of making video tutorials on making men's clothing patterns digitally using the RP-DGS application. The screen recording process is made according to the story board that has been designed, namely the first part of the shirt front pattern, the second part of the shirt back pattern and the third part of the shirt sleeve pattern.
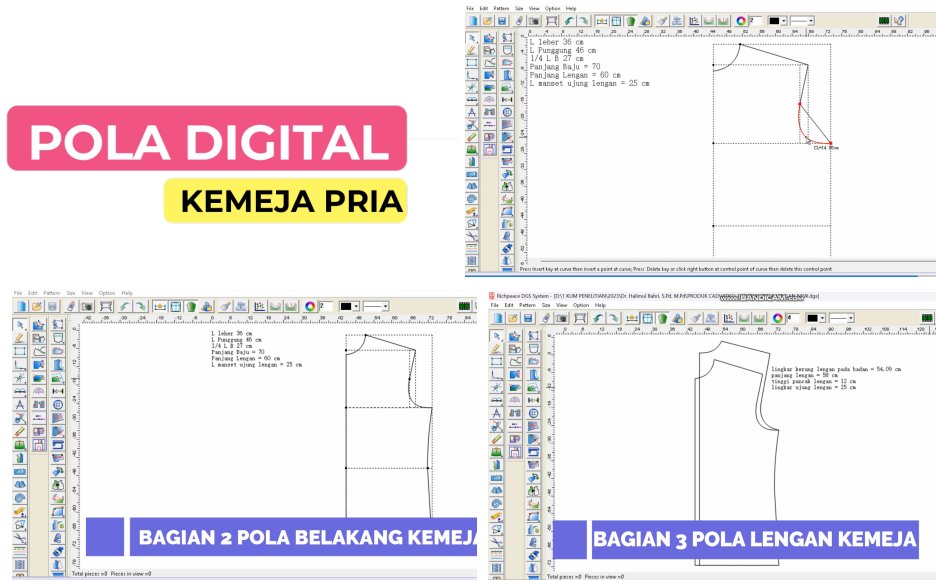
Figure 3: One of the display of the cover scene and the content of the digital pattern making tutorial video

3.2.4. Finishing

In simpler terms, the finishing process involves efforts to organize and enhance a video presentation, making it more useful and enjoyable for viewers. This includes ensuring a smooth and logical flow of images and sounds, creating dynamic visuals to prevent boredom. The first part of the video tutorial has a duration of 14 minutes and 54 seconds, with a file size of 181 MB. The second part runs for 9 minutes and 27 seconds, with a file size of 125 MB. The third part of the video has a duration of 6 minutes and 38 seconds, with a file size of 88.7 MB.

3.3. Evaluate

3.3.1. Product Validation

3.3.1.1. Material Validity Analysis

The data that will be used to measure the validity of the digital pattern making tutorial video for this menswear course is data obtained through input from validators using questionnaires. The validation stage is carried out to media experts and material experts. The results of the validation of the digital pattern making video tutorial for menswear courses can be seen in the table 4.

Table 4: Material Validity Analysis

No	Material expert validity		
	Question indicator	Score Obs 1	Score Obs 2
1	Adaptability of the content to fundamental skills	4	5
2	The information is understandable	5	4
3	The information is in line with the goals of learning	4	4
4	The learning video's subject matter is of an appropriate size	4	4
5	The learning video's lesson material adheres to the syllabus in terms of content.	5	4
6	This video tutorial's learning curve is obvious.	4	5
7	This educational movie may pique kids' interests.	4	4
8	This educational movie can help pupils study on their own.	4	4
9	In line with Indonesian laws, the language in the video is utilized.	5	5
10	Sentences include information that can guide students' activities.	5	4

| No | Material expert validity | | |
	Question indicator	Score Obs 1	Score Obs 2
	Score of each observer	44	43
	Average result achieved	43,5	
	Maximum point	50	
	43/50		
	Validity = 0, 87		

*Obs1=Observer 1, * Obs2=Observer 2

Validation of men's fashion course video tutorial material is given to material experts who understand studies in the field of men's fashion courses. The use of video tutorials is an alternative that can be used by lecturers as a learning medium in explaining practicum material, where lecturers do not need to repeat explanations about practicum steps as well as blouse pattern making. Conversely, students can repeat the

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explanation of the lecturer's material by watching video tutorials anywhere and anytime without always doing face-to-face with the lecturer so that students are able to learn independently [20]. During the validation process of video tutorial material for making men's fashion patterns digitally, advice and input from experts were obtained for the perfection of the developed media

Table 5: Revision of menswear digital pattern making video tutorial material

No	Before Revision	After Revision
1	Use more practical shirt pattern-making work steps.	The working step of pattern making already uses a practical pattern system
2	Tutorial on the drawing of curved pattern lines, to explain how and techniques in detail.	Each work step that connects between pattern lines has been explained in detail Techniques and functions
3	Separate the video tutorial sections making front, back and arm patterns.	The video tutorial developed has been made into three parts, namely the first part of the front pattern making video, the second part of making the back pattern and the third part specifically for shirt sleeve patterns.
4	We recommend that when making back body patterns, use the front body pattern as a guideline in making back body patterns, thus saving time making back body patterns.	The back pattern making video tutorial already uses a front pattern, so the time needed in making a back pattern is more efficient.
5	Adjust the use of auxiliary lines in the pattern. Do not mix auxiliary lines and pattern mark lines.	The use of lines has been changed according to their function.
6	It is worth distinguishing the coloring of pattern lines for the front and rear body.	The line color of the front and back patterns has been distinguished to make it easier to understand, for the front pattern is red and the back is blue.

3.3.1.2. Media Validity Analysis

Validating the video tutorial media for the men's fashion course was conducted by media experts knowledgeable in the field of instructional media. The validity results from the three experts yielded an average score of 0.85. In line with Aiken's calculation, which ranges from 0 to 1, a figure of 0.6 can be interpreted as having a relatively high coefficient, indicating that a

validation score of 0.6 and above falls into the valid category.

Table 6: Media Validity Analysis

No	Media expert validation			
	Question indicator	A	B	C
1	The content and cover picture choices support the information offered.	5	4	4
2	The lesson video's pictures are simple to grasp.	4	4	4
3	The image's look is consistent with its dimensions.	4	5	4
4	Students' attention may be drawn by the sight of this instructional film.	4	4	4
5	Front cover (text and picture layout) cover layout that is proportionate to the necessities	4	4	5
6	For lecturers and students involved in the learning process, videos can serve as an alternate instructional resource.	4	5	4
7	color, text, and picture choices made in accordance with requirements	4	5	4
8	The hue of the text does not interfere with vision.	4	4	5
9	adjusting the video text size as necessary	5	4	4
10	The lesson films' text and phrases are simple to read.	4	4	5
	The sum of each observer's score	42	43	43
	Average result achieved	42,7		
	Maximum point	50		
	42,7/50			
	Validity = 0, 85			

*Obs1=Observer 1, * Obs2=Observer 2, * Obs3=Observer 3

Media validation of men's fashion course video tutorials is given to media experts. CAD is one of the theoretical and practical courses that examines the basic concepts of making and compiling patterns according to models using the Richpeace CAD System. Therefore, in the lecture process, appropriate learning media are needed and able to help students to learn independently. With the existence of video tutorial learning media, it can help lecturer activities in presenting material face-to-face so that lecturers will later focus more on guiding and facilitating students in lectures. In addition, video tutorials can help students to learn individually and repeat and practice the knowledge that has been given by lecturers anywhere and anytime [21]. During the media validation process, video tutorials on making men's fashion patterns digitally, advice and input from experts were obtained for the perfection of the developed media.

Table 7: Media revision video tutorial on making digital patterns in menswear

No	Before Revision	After Revision
1	Scene switching of videos containing captions is slowed down, allowing viewers to read each text displayed on the screen.	The speed of switching between scenes has been adjusted.
2	The length of the video is reduced to make it less long.	The length of the video has been reduced by eliminating unnecessary parts.

3	Videos are reduced in size so that all viewers can download or watch online more lightly.	The video size has been decompressed, so if downloaded or viewed online it is lighter when played.
4	The video resolution is enlarged for a clearer image display.	The video export resolution process has been improved, so the video quality is better than the previous one.
5	Explain the use of tools that are often used at the beginning of the video, in order to reduce the length of the video.	The opening already describes only the parts of the tool used, without explaining the functions of the tool that are not used when drawing patterns.
6	Backsound adjustable, don't collide with video instructor's voice.	The backsound has been adjusted to the sound of the instructor.
7	The process of zooming in and zooming out should not be too fast, adjust to the needs of students.	Zoom in and zoom out are customized for beginner learners.

3.3.1.3. Media Practicality Analysis
3.3.1.3.1. Practicality Analysis of Lectures

Practicality is related to the ease of use of Men's Fashion video tutorials developed. Practicality data was obtained through questionnaires filled out by lecturers of men's fashion courses.

Table 8: Practicality Analysis of Lecturers

.No	Results of the analysis of lecturer practicality		
	Question indicator	Score Obs 1	Score Obs 2
1	Adaptability of the content to fundamental skills	4	4
2	The information is understandable.	5	5
3	The content complies with the learning objectives.	4	4
4	The lesson video's subject matter is of an adequate size.	4	4
5	The learning video's lesson material adheres to the syllabus in terms of content.	5	5
6	The learning path in the video is clear	4	4
7	Learning videos can interest students in learning	4	4
8	Learning via videos can help pupils progress independently.	4	4
9	The language in the video complies with Indonesian regulations.	5	4
10	Sentences include information that can guide students' activities.	5	4
	Score of each observer	44	42
	Average result achieved	43	
	Maximum point	50	
	44/50 X 100%		
	Practicality = 86%		

*Obs1=Observer 1, * Obs2=Observer 2,

The results of the practical analysis of men's fashion course video tutorials were given to lecturers who taught

men's fashion courses. From the results of the practical analysis of the use of video tutorials, this learning media is very practical to use in the practice of making patterns, especially in men's fashion courses. [22].

The practicality of learning videos for men's fashion courses also requires a response from students. This data was obtained through questionnaires given to students after learning using learning videos for men's clothing courses.

3.3.1.3.2. Results of Student Practicality Analysis

Table 9: Results of Student Practicality Analysis

No	Results of student practicality analysis				
		Number of scores obtained by each respondent			
	Valuation indicator	4	3	2	1
1	I can learn material for making men's fashion patterns digitally by using this video tutorial media.	14	27	-	-
2	Video tutorial media provides an opportunity to learn according to my ability.	14	27	-	-
3	I easily follow the steps of making men's fashion patterns digitally in this video tutorial media.	9	30	2	-
4	Video tutorial media provides an opportunity to learn according to my ability.	12	29	-	-
5	I know well the difference between making conventional menswear patterns and digitally	16	25	-	-
6	I think this Men's Fashion digital pattern making video tutorial media provides benefits in my scientific field.	21	20	-	-
7	In my opinion, making digital patterns can be used as guidelines in making clothes in accordance with growing fashion trends.	20	21	-	-
8	I'm more interested in creating patterns digitally than conventionally	9	23	9	-
9	Making patterns digitally is more efficient in terms of pattern results and processing time.	16	21	4	-
10	This digital pattern provides my creative and innovative space in developing various types of fashion patterns.	15	26	-	-
11	I want to learn continuously in the use and making of digital fashion patterns.	14	27	-	-
	Number of scores per interval	160	276	15	-
	Total score count	451			
	Average score	41			
	Maximum score	44			
	41/44 X 100%				
	Practicallity = 93,18 %				

The results of the practical analysis of men's fashion course video tutorials are also given to students who take men's fashion courses. A practicality questionnaire was given to all students who took men's fashion courses. The results of the practical analysis of the use of video tutorials then this learning media is very practical to be used by students in the practice of making patterns, especially in men's clothing courses [23].

3.3.1.4. Results of Media Effectiveness Analysis

Learning outcome data was taken to see the results of students' ability to make men's fashion patterns digitally. The results of the ability test are given to students by giving assignments in the form of making shirt patterns digitally using the body measurements used at the beginning of the practice of making manual patterns. This is done in order to be able to take a psychomotor assessment of the results of making manual patterns and digital pattern.

Table 10: Media Effectiveness Analysis

Respondent	Pre test dan post test		
	Observation indicator	Average Pre test	Average Post test
1	Accuracy and flexibility of the neckline	75.86	89.65
2	Shoulder line precision and flexibility	71.96	82.75
3	Front and rear shoulder down precision	70.27	90.86
4	Accuracy and suppleness of arm convoluted lines	72.41	82.75
5	Accuracy and flexibility of body side lines	73.22	84.25
6	Precision and flexibility of shirt bottom lines	86.22	92.31
7	Accuracy and flexibility of arm pattern peak lines	69.41	82.75
8	Compatibility of arm coil circumference body pattern and arm pattern	89.65	86.28
9	The accuracy of the size of the body circumference in the pattern	62.08	93.12
10	The accuracy of the length of the shirt on the pattern	80.62	95.75
	Average	75.17	88.047
	88.047 – 75.17		
	Efektivity = 12.89%		

The results of the analysis showed a significant increase in the ability of students in the process of making special patterns of shirt patterns that were used as test objects in this study. Thus, the video tutorial media for making men's fashion patterns using CAD greatly contributes to learning activities for men's fashion pattern making practices, especially men's shirt patterns [24] [25].

4. CONCLUSION

This research has resulted in a video tutorial for creating digital patterns in men's fashion using the CAD RP-DGS application. The validity of both the material and the video tutorial media indicates that it is suitable for application in the learning process. The practicality of the digital pattern-making video tutorial, as perceived by lecturers and students, falls into the category of being very practical for use during the learning process. Furthermore, the effectiveness of the video tutorial has a significant impact on improving students' ability to create men's fashion patterns. In conclusion, the Men's Fashion digital pattern-making video tutorial is deemed suitable, practical, and effective as a learning resource for Men's Fashion courses at the college level.

REFERENCES

[1] Farihah, Dina Ampera, Halimul Bahri. Konstruksi Pola. Jawa Tengah: Cv. Sarnu Untung. 2022.

[2] Idah Hadijah, Hapsari Kusumawardani, Nurul Aini. Kompetensi Pembuatan Pola Busana Berbasis Cad Pattern System Guru SMK Tata Busana di Malang Raya. Jurnal Karinov. Vol. 1 No. 2, 2018. Pp 1-6. DOI:http://dx.doi.org/10.17977/um045v1i2p%25p.

[3] Program Studi Pendidikan Tata Busana. Biodata asal sekolah mahasiswa. devakad.unimed.ac.id. 2023.

[4] Muhdhor, dkk. Pattern, Grading dan Marker dengan CAD (Richpeace). Direktorat Pembinaan SMK – Kemdikbud. 2018.

[5] Irmayanti dan Hamidah Suryani. Pengembangan Modul Aplikasi Komputer Terapan Tata Busana bagi Mahasiswa PKK FT UNM. Jurnal Teknoboga, Vol. 8 No. 1, 2020. DOI: https://doi.org/10.15294/teknobuga.v8i1.23999.

[6] Arsip Dosen penialain tugas praktek matakuliah busana pria. 2020.

[7] Departemen Pendidikan Nasional. Pengembangan Bahan Ajar. Sosialisasi KTSP 2008.

[8] Prastowo, Andi. Panduan Kreatif Membuat Bahan Ajar Inovatif. Yogyakarta: Diva Press. 2015.

[9] Belawati, Tian. Pengembangan Bahan Ajar. Jakarta: Pusat Penerbitan Universitas Terbuka. 2003.

[10] Trianto. Mendesain Model Pembelajaran Inovatif-Progresif. Jakarta: Perenada Media Grup. 2012.

[11] Sugiyono. Metode Penelitian Kuantitatif, Kualitatif dan R&D. Bandung. Alfabeta. 2019.

[12] Agus Irianto. Statistik: Konsep Dasar, Aplikasi dan Pengembangannya. Prenamedia Group. Jakarta. 2004.

[13] Sudjana. Metoda Statistika. PT. Tarsito Bandung. Bandung. 1996.

[14] Sutrisno Hadi. Statistik. Pustaka Pelajar. Yogyakarta. 2015.

[15] Aiken, L. R. Three Coefecients for Analyzing the Reliability and Validity of Ratings. Educational and Psychological Measurement. 1985.

[16] Suharsimi Arikunto. Dasar-Dasar Evaluasi Pendidikan. Bumi Akasara. Jakarta. 2018.

[17] Ngalim Purwanto. Prinsip-Prinsip dan Teknik Evaluasi Pengajaran. Remaja Rosdakarya. Bandung. 2020.

[18]. Azwar, S. Dasar-dasar psikometri. Yogyakarta: Pustaka Belajar. 2014.

[19] Riduwan. Skala Pengukuran Variabel-Variabel Penelitian. Alfabeta, Bandung. 2010.

[20] Magdalena Dwi Anggreni dan Sicilia Sawitri. Pengembangan Media Pembelajaran Elektronik Pola Digital di SMK Negeri 6 Semarang. Jurnal Fashion And Fashion Education Journal, Vol 9 No. 1, 2020. Pp 19-27. https://doi.org/10.15294/ffej.v9i1.41257

[21] Amadori, K.; Tarkian, M.; Ölvander, J.; Krus, P. Flexible and robust CAD models for design automation. Adv. Eng. Inform. 2012, 26, 180–195, doi:10.1016/j.aei.2012.01.004.

[22] Bodein, Y.; Rose, B.; Caillaud, E. Explicit reference modeling methodology in parametric CAD system. Comput. Ind. 2014, 65, 136–147, doi:10.1016/j.compind.2013.08.004.

[23] Iwakaran, R.P.; Johnson, M.D. Analyzing the effect of alternative goals and model attributes on CAD model creation and alteration. Comput.-Aided Des. 2012, 44, 343–353, doi:10.1016/j.cad.2011.11.003.

[24] Ondogan and Erdogan. The comparison of the Manual and CAD System for Pattern Making,Grading and Making Processes. Journal Fibres & Textiles in Eastern Europe. Vol. 14 No.1, 2006.

[25] Seels, Barbara B. & Richey, Rita C. Teknologi Pembelajaran: Definisi dan Kawasannya. Penerjemah Dewi S Prawiradilaga dkk. Jakarta: Kerjasama IPTPI LPTK UNJ. 1994