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DEVELOPMENT OF MEDIA CAD RICHPEACE GRADING SYSTEM FOR THE MAKING OF HOME CLOTHING PATTERN IN FASHION EDUCATION STUDY PROGRAM, MEDAN STATE UNIVERSITY

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ABSTRACT

The aims of this study were (1) to find out how to develop the CAD Richpeace Grading System media for making home dress patterns at the Fashion Design Study Program, Medan State University. (2) Knowing the feasibility of CAD Richpeace Grading System media in making home dress patterns at the Fashion Design Study Program, Medan State University. This research is development research (R&D). The development model used in this study is the ADDIE development framework. The validation results by material experts obtained a score of 84.8% in the good category and the validation results by media experts obtained a score of 87.72% in the very good category. Small group trials were conducted on 8 students of the fashion design education study program. student assessment results in small group trials of 80.60% with good criteria. Group trials are being carried out by 16 students obtaining 85.23% in the very good category. Next is the large group tryout which was conducted on 32 students of the fashion education study program with the results of the student assessment in the large group test being 88.19% with very good criteria.

From the results of the assessment of media experts, material experts, small group and large group trials, it can be concluded that the Cad Richpeace Grading System media developed for making home clothes for garment businesses is very suitable for use as learning media and can help students to understand the material and understand steps in making home fashion patterns with a digital grading system.

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Introduction.

Laidiah, et al (2017) explained that introducing information technology to students in the industrial world is very important. Technological developments and community needs are interrelated with national education, one example of this type of education is vocational education. (Darmawan: 2014). Vocational education is believed to have a major contribution to the development of society and the improvement of a country's economy. The country's competitiveness depends a lot on workers who have knowledge and skills because they will increase production efficiency and added value (Hanafi: 2012). Therefore, vocational education graduates must prepare students who have expert competence to be ready to enter the world of the industry well and independently, and who have knowledge of technology in fields according to industry needs.

To become graduates who are professionals and ready to enter the world of the fashion industry, students must go through productive courses well, one of which is the grading and garment business. Both courses are very important and interrelated in the fashion industry. Grading courses are courses that study how to enlarge and reduce standard patterns to standard sizes. While the garment business is a course that applies the theory and practice of opening a fashion business that produces clothing in bulk or in large quantities using standard and standard sizes which in practice will use a grading system in enlarging and shrinking patterns.

Based on the results of observations, grading courses are still done manually by drawing patterns directly on a piece of paper which is then developed by gluing other paper. In this course, digital grading techniques have not yet been developed, namely using computer technology and applying software or applications in the learning process. Even though if developed, this grading technique can become the basis for the application of campus-based garment businesses that can be applied on campus looking at laboratory equipment. adequate clothing. So that fashion design graduates will be able to enter the garment industry professionals and are experts in their fields. Therefore, grading courses are very important subjects to study because they become a training ground for students to be ready to enter the fashion industry later.

In addition, the grading course is the basis for continuing the garment business course. These courses contribute to each other because campus-based garment courses are also able to generate income for campuses with the aim of earning income and creating new entrepreneurs managed by lecturers and students. Lecturers and students must be able to work together using digital technology to make it easier for students to make patterns with standard sizes S, M, L, and XL and have pattern sizes that fit standard sizes to produce clothing in large quantities. But in reality, the learning process still does not utilize digital technology in the learning process in garment business courses because the grading course has not implemented a digital system so that during the garment course students are also unable to practice grading techniques with the digital system.

According to Murdhor (2016) that fashion/fashion learning institutions can integrate CAD in learning and applications that are used variously, starting from AutoCAD, SketchUP, and Richpeace. One CAD application that can be used in pattern making is Richpeace. Richpeace has several types, including: a design grading system (DGS) can make patterns, change pattern sizes, and add stitch pattern marks and a garment marker system (GMS) makes pattern markers that have been made from RP-DGS with a predetermined amount and ratio .

The advantages of the CAD System Software from Richpeace are more open access where all tools can be active without any trial period (Suprihatin, 2016). The CAD System system is more productive in making patterns compared to the manual method even in the simplest models, so the CAD System pattern making system will provide great advantages in responding to orders quickly both in various sizes. In addition, CAD systems can provide substantial savings in the use of fabrics which can reduce production costs (Ondogan and Erdogan, 2006). In addition, according to Murdhor (2016) the use of Richpeace CAD software is faster and more effective in making patterns, grading and markers. HR efficiency can be done by 1 person from making patterns to markers, making markers can be done in a short time of approximately 5 minutes, the data used is not in the form of cardboard but in the form of computer files.

From the description above, it is necessary to integrate the use of CAD Richpeace software in making patterns digitally. In this research, CAD Richpeace grading system media will be developed for making home clothing patterns in the Fashion Design Education Study Program, Medan State University.

Method.

Research Development of Media CAD Richpeace Grading System for making home clothing patterns using the ADDIE development model. The ADDIE model consists of 5 stages, namely analysis, design, development, implementation and evaluation (Branch, 2009).

In the analysis stage, a problem analysis was carried out in grading learning, especially the application of digital media in the garment business. This stage of analysis was carried out by direct observation and conducting interviews with one of the lecturers who taught the grading course. Analysis of the needs of students and teachers for learning media is carried out by distributing questionnaires related to the needs of learning media. In addition, at this stage identification of learning media is carried out according to the target of students. Instructional objectives, identify content/learning materials, identify learning tools, and delivery strategies in learning.

At the design stage, namely making the initial appearance of the media that has been designed, making media content whose structure has also been adapted to the structure of the media at the design stage, namely titles, competency standards, basic competencies, indicators, subject matter, sample questions and practice questions.

At the development stage, the CAD Richpeace Grading System media will begin to be developed by researchers according to a predetermined design. After that, the media that has been made will be validated by material experts and media experts. The validation of the expert team will be carried out by lecturers in fashion education at Medan State University. Suggestions, input, and comments obtained from the expert team are then used to improve the media. If the media made has not reached the positive criteria, the researcher will revise the media according to the suggestions from media experts and material experts.

In the implementation phase, improvements were made to the CAD Richpeace Grading System media which was developed by taking into account notes and suggestions as well as comments from media experts and material experts, and small, medium, and large group trials were carried out.

The evaluation phase is carried out in the form of a formative evaluation aimed at revising the needs. After the implementation phase was carried out in product trials, the authors obtained data in the form of a questionnaire. Revisions are made according to evaluation results or needs that has not been met by the media.

The analyzed data were processed descriptively into interval data using a Likert scale. According to Widoyoko (2012) that scale five has better or more complete variability than scale four so that it can reveal more fully the differences in respondents' attitudes. The five scale criteria used are: Very Good, Good, Not Good, Very Not Good, Very Bad. According to Sugiono (2017) On the Likert scale to determine the interval between attitude levels from very bad to very good the formula is used:

$$\text{Intervals (i)} = \frac{\text{Highest score} - \text{Lowest Score}}{\text{Number of Interval Classes}}$$

Data analysis was carried out using a rating scale using the formula (Sugiyono, 2019)

$$\text{P} = \frac{\text{Data Collection Score}}{\text{Total Score}} \cdot X \cdot 100\%$$

Description: P = Percentage Number

The data obtained in the form of responses, suggestions or input obtained from media experts and material experts are used for product improvement. For quantitative data, the determination of the validation classification by media experts and material experts is based on the average answer score.

Results and Discussion.

Based on observations, in grading courses, students still use the grading system manually, namely by drawing a pattern directly on a piece of paper which is then developed by sticking other paper. Students also have never graded digitally using Cad Richpiece software which is part of the needs of the fashion industry. In addition, there is no learning media available that makes it easier for students to

make home clothing patterns independently at home digitally, namely in the form of learning videos using the Cad Richpiece software.

An analysis of the needs of students and lecturers is carried out by distributing student and lecturer needs questionnaires. The results of the analysis of the needs of students and teachers amounting to 92.5% stated that the development of the Cad Richpeace Grading System in making home clothing patterns is urgently needed to increase learning that is more effective and efficient following digital advances for the needs of the garment industry.

At the design stage, it starts with making a storyboard and the initial appearance of the media as well as a draft of the media content in accordance with the learning competency goals. The contents of the media include covers, basic competencies, indicators, subject matter, videos on making home dress patterns with the CAD Richpeace grading system software and are equipped with training.

Fig. 1. CAD Richpeace Grading System media cover

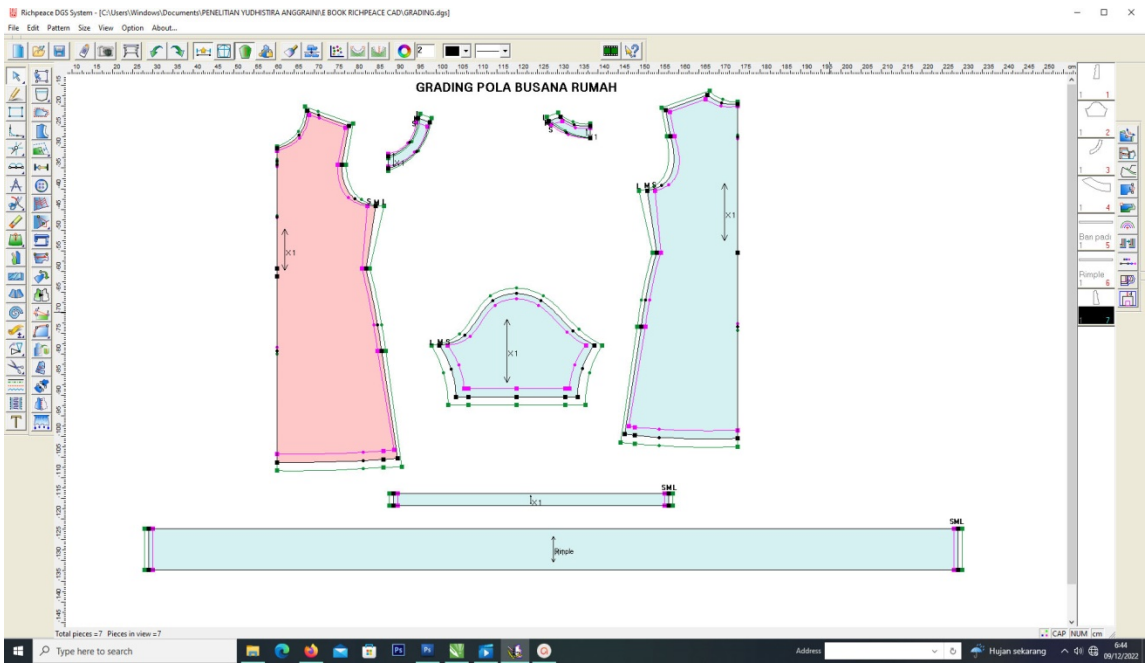

Fig. 2. Content display for CAD Richpeace Grading System media

Media development begins with selecting the right digital software for grading courses. The software used in this study is the Cad Richpeace Grading System. The media is developed based on the storyboard that has been made at the design stage. at this stage a product development test is carried out through the validation stage by material experts and media experts. Material expert validation aims to provide input and evaluation on the grading material for home clothing patterns. Material expert validation in the Cad Richpeace media development research was carried out by 2 subject matter experts. The validation results from material experts are in the form of assessment scores on the components of Cad Richpeace media for making home clothing patterns. As for what is assessed in the material component, namely the feasibility aspect of the content and the feasibility aspect of presentation.

Table 1. Assessment scores by material experts on the feasibility aspect of the content of the material

No	Assessment Indicator	Material Expert		Total score	%	Criteria
		1	2			
1.	Conformity of the material with the syllabus.	3	5	8	80%	Good
2.	Clarity of indicators on the material.	3	4	7	70%	Good
3.	The suitability of the material with the needs of students.	4	5	9	90%	Very Good
4.	Complete information needed by students.	4	4	8	80%	Good
5.	Ease of understanding the material.	3	4	7	70%	Good
6.	The suitability of the media with the material concept.	4	5	9	90%	Very Good
7.	The suitability of video in teaching materials can clarify the content of the material.	4	5	9	90%	Very Good
Amount		25	30	55		**Good**
Average					81,7%	

Based on the results of validation by material experts, it can be seen from the feasibility aspect of the content of the material in the Cad Richpeace Grading System learning media for making home clothing patterns with an assessment of 7 indicators considered good. Overall the feasibility aspect of the content of the material obtained an average number of 81.7% with good criteria.

Table 2. Score of Assessment by Material Experts Regarding Aspects of Feasibility of Presenting Material

No	Assessment Indicator	Material Expert		Total score	%	Criteria
		1	2			
1	The presentation of the material is systematic.	4	4	8	80%	Good
2	Ease of understanding language.	4	5	9	90%	Very Good
3	Clarity of presentation of material in the media.	4	5	9	90%	Very Good
4	Completeness of learning materials.	4	4	8	80%	Good
5	Clarity of reference material.	3	4	7	70%	Good
6	The use of color on the Cad Richpeace Grading System media screen display	4	5	9	90%	Very Good
7	Can focus students' attention.	4	5	9	90%	Very Good
8	Suitability of the material with the media	4	5	9	90%	Very Good

9	Provide independent learning opportunities.	5	5	10	100%	Very Good
10	Make it easy for teachers to deliver material.	5	5	10	100%	Very Good
Amount		41	47	88		**Very Good**
Average					**88%**	

Based on the results of the material expert validation in the table above, it can be seen from the aspect of material presentation in the Cad Richpeace Grading System media in making home clothing patterns with an assessment of 10 indicators which are considered very good. Overall, the presentation aspect obtained an average of 88% with very good criteria.

Table 3. Percentage of Material Feasibility Test Results on Cad Richpeace Grading System media for making home clothing patterns

No	**Aspect**	**Percentage %**	**Criteria**
1	Feasibility of the content of the material	81,7%	Good
2	Presentation eligibility	88%	Very Good
Average		**84,8%**	**Good**

The feasibility test of the Cad Richpeace Grading System material on making home clothing patterns by material experts on the feasibility aspect of the material content obtained a percentage of 81.7% and the feasibility aspect of presenting the material was 88%. The total number of aspects obtains a percentage of 84.8% which is included in the good criteria or is suitable for use in learning garment business grading.

Media expert validation of the development of the Cad Richpeace Grading System media in making home clothing patterns was carried out by 2 validators who are experts in their fields. This assessment was carried out for the development and revision of the Cad Richpeace Grading System media for making home clothing patterns that have been designed. Assessment by media experts in the form of scores from the Aspects of Media Quality and Aspects of Visual Media Presentation.

Table 4. Evaluation by media experts on aspects of media quality

No	**Assessment Indicator**	**Media Expert**		**Total score**	**%**	**Criteria**
		1	**2**			
1	Instructions for using Cad Richpeace Grading System media.	5	4	9	90%	Very Good
2	Ease of use of Cad Richpeace Grading System media.	4	4	8	80%	Good
3	Placement of navigation buttons.	4	4	8	80%	Very Good
4	Display layout quality.	4	4	8	80%	Very Good
5	Image display quality.	4	5	9	90%	Very Good
6	Video display quality.	5	5	10	100%	Very Good
Amount		26	26	52		**Very Good**
Average					**86.7%**	

Based on the validation of media experts in the table, it can be seen from the feasibility aspect of the content of the quality of the media in the development of the Cad Richpeace Grading System media in making home clothing patterns with an assessment of 6 indicators which are considered very good. Overall the feasibility aspect of the quality of media content obtained an average number of 86.7% with very good criteria.

Table 5. Assessment scores by media experts regarding aspects of visual media presentation

No	Assessment Indicator	Media Expert		Total score	%	Criteria
		1	2			
1	Text limitations.	4	5	9	90%	Very Good
2	Proportional media display.	4	5	9	90%	Very Good
3	Videos look clear and logical.	5	5	10	100%	Very Good
4	The suitability of the Cad Richpeace Grading System media with learning materials.	4	5	9	90%	Very Good
5	The use of font sizes in the media.	4	4	8	80%	Good
6	Media suitability with learning objectives.	4	4	8	80%	Good
7	Media Cad Richpeace Grading System simplifies the learning process.	4	5	9	90%	Very Good
8	Media Attractiveness Cad Richpeace Grading System.	4	5	9	90%	Very Good
Amount		33	38	71		**Very Good**
Average					**88.75%**	

From the data from the validation results of media experts, it can be seen from the aspect of visual presentation of the media on the Cad Richpeace Grading System media for making home clothing patterns with an assessment of 8 indicators which are considered very good. Overall, the aspect of visual media presentation obtained an average number of 88.75% with very good criteria.

Table 6. Percentage of the results of the Cad Richpeace Grading System Media Feasibility Test on making home clothing patterns by media experts

No	Aspect	Percentage %	Criteria
1	Media Quality Adequacy	86.7 %	Very Good
2	Feasibility of Visual Presentation	88.75%	Very Good
Average		**87.72%**	**Very Good**

Test the development of the Cad Richpeace Grading System for making home clothing patterns by media experts on the feasibility aspect of quality content with a percentage of 86.7% and the feasibility aspect of visual media presentation with a percentage of 88.75% which is included in the criteria very good or very suitable for use. The total number of aspects with a percentage of 87.72% is included in the very good criteria.

After conducting media validation by material experts and media experts, a pilot test was carried out by students. The trials were carried out in 3 stages, namely, small-scale trials, medium-scale trials and large-scale trials.

Small group trials were conducted on 8 students of the Unimed fashion education study program who had high, medium and low ability levels. Trials must be carried out because the product is still tentative or the product being developed can still change. Small group trials were conducted to determine the feasibility of the Cad Richpeace Grading System media for the competency of making home clothing patterns.

Table 7. Results of the media assessment in small group trials

No	Indicator	Percentage (%)	Criteria
1	Aspects of Attraction	80.11	Good
2	Difficulty Level Aspect	81.33	Good
3	Display Aspect	80.32	Good
4	Benefits Aspect	80.66	Good
Average		**80.60**	**Good**

The data above shows that the percentage of small group trial responses on 8 fashion design education students was based on four aspects, namely the attractiveness aspect of 80.11%, the difficulty level aspect of 81.33%, the appearance aspect of 80.32% and the benefit aspect of 80.66%. The average aspect gets 80.60% in the good category.

Group trials are being carried out by 16 students from the fashion design education study program. Analysis of data from the results of the medium group trial is a continuation of the small group trial that was previously carried out.

Table 8. Results of the media assessment in the medium group trial

No	Indicator	Percentage (%)	Criteria
1	Aspects of Attraction	86,58	Very Good
2	Difficulty Level Aspect	83,45	Good
3	Display Aspect	85,20	Very Good
4	Benefits Aspect	85,66	Very Good
Average		**85.23**	**Very Good**

Based on the results of the Cad Richpeace Grading System media assessment on competence in making home clothing patterns carried out in the medium group trial based on four aspects, namely the aspect of attractiveness 86.58% with very good category, aspect of difficulty level 83.45% good category, appearance aspect 85.20 very good category and the benefit aspect is 85.66% very good category. the average result of the assessment of the four aspects is 85.23 with a very good category. From these results, it is stated that the Cad Richpeace Grading System media on competence in making home clothing patterns is suitable for use in grading learning in fashion education.

The large group tryout was carried out after conducting the medium group tryout, the tryout was carried out on 32 students of fashion design education study program. Large group trials were conducted to determine the feasibility of the Cad Richpeace Grading System media for competence in making home clothing patterns. The test results are in the form of an assessment score of the Cad Richpeace Grading System media product in making home clothing patterns

Table 9. Results of the media assessment in large group trial

No	Indicator	Percentage (%)	Criteria
1	Aspects of Attraction	89,55	Very Good
2	Difficulty Level Aspect	86,33	Very Good
3	Display Aspect	88,60	Very Good
4	Benefits Aspect	88,25	Very Good
Average		**88,19**	**Very Good**

The results of the media assessment in the large group trial were based on four aspects, namely the attractiveness aspect of 89.55%, the difficulty level aspect of 86.33%, the display aspect of 88.60% and the benefit aspect of 88.25%. the average result of the four aspects is 88.19% with a very good category. Media Cad Richpeace Grading System In making home clothing patterns suitable for use in grading lessons in the Fashion Design Education Study Program

From the results of small group trials, medium groups and large groups, it was seen that there was an increase in the trial results after the media was revised. Small group trials with good category with an average gain of 80.60%. the trial group was getting 85.23% in the very good category. The large group trial obtained 88.19% in the very good category. From the trial data above, it can be concluded that the Cad Richpeace grading system media for making home clothing patterns is suitable for use in the learning process of digital grading courses.

The effectiveness test is a test carried out to measure the success rate of using media in improving student learning outcomes (Fitra & Maksum, 2021). Effectiveness test data obtained from student learning outcomes. Learning outcomes were obtained from the assessment of the pre-test (initial test) and post-test (final test) which were attended by 32 first semester students of the Fashion Design Education Study Program. The results obtained through the test analysis obtained the acquisition value, for the pre test (initial test) the percentage of the value obtained was 75.20 and the post test the percentage value obtained was 91.33 included in the "very effective" category according to the criteria for the level of success of learning. (Sudijono, 2009). From the results of the pre-test and post-test assessments, it can be concluded that there are differences in the values of the results obtained before and after the media is used in learning. so that it can be concluded that the Cad Richpeace grading system media in making fashion patterns is effectively used in learning.

The results of the research were reinforced by the results of Muslichah's research (2022) which stated that learning media based on CAD Pattern Making was able to improve students' abilities in making peplum skirt patterns at the Arva School of Fashion. In addition, according to Kusumawardhani & Arifiana (2021) through the implementation of the CAD Richpeace Digital program it is able to increase students' enthusiasm for learning about CAD Richpeace, provide students with more teaching materials to study at home, prepare facilities and infrastructure to support learning activities

Conclusions.

Based on the results of the research and discussion on the development of the Cad Richpeace grading system media for making home clothing patterns at Medan State University, it can be concluded as follows:

1) Development of CAD Richpeace Grading System media for home clothing patterns to produce Cad Richpeace media products packaged in learning videos using CAD richpeace grading system software.

2) The feasibility of the CAD Richpeace Grading System media for making home clothing patterns at Medan State University with an average material expert validation test of 84.8% with a proper classification and a media expert of 87.72% with a very feasible classification used in learning grading with a digital system.

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