



# The Feasibility of Pattern Making E-Book as Learning Media in the Digital Era of Education

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## ABSTRACT

Learning media is an important component that can determine the success of delivering learning material. In learning the Woman's Clothing Patterns Construction, many students with high school (SMA) background find it difficult to learn this material because the available media is in the form of printed books, in which its material coverage is still limited. Therefore, a more detailed and digital-based learning media is needed in order to optimize the learning process. This study aims to obtain the feasibility level of digital learning media in the form of e-book and student's opinions as users of the Woman's Clothing Pattern Construction E-Book. This study uses the Research and Development Research method with a 4D development model consisting of 4 stages, namely define, design, develop, and disseminate. Data collection technique was carried out by giving questionnaires to material and media experts, as well as students as users. The data analysis technique used is descriptive statistics. The results of this study obtained an excellent validity level, namely 92,66% for material and 94,5% for media. Furthermore, the results of the percentage of students' opinions as users obtained 87,66%. Thus, this digital learning media in the form of an e-book is very feasible for use in the Woman's Clothing Pattern Construction course.

**Keywords:** *E-book, Digital learning media, Pattern making, Woman clothing.*

## 1. INTRODUCTION

Learning media has an important position in the learning process, without learning media, communication will not occur and the learning process will not run optimally [1]. In present time, all fields are inseparable from renewal by adapting the sophistication of the use of technology, including in the field of education. Learning media that have adapted technological developments are inseparable from the Internet of Things (IoT). The application of the Internet of Things (IoT) can increase the interactivity between students and their learning objects; besides that it will be easier to get information and get learning materials [2]. One form of digital learning media that supports the ease of obtaining learning material and is easily accessible is in the form of an e-book.

E-books are learning media that use the internet network which is often used in e-learning [3]. E-book is a type of digital learning media that can combine various forms of media (text, images, animation, video or audio) in one medium that can be read on an electronic device (smartphone, laptop or tablet) [4]. According to Hasanudin (2017) there are advantages of

electronic materials, namely: 1) being able to study learning material repeatedly anywhere and anytime using devices connected to the internet [5]; 2) it is easier for teachers to update and distribute learning materials to students; 3) the ability of electronic learning materials to unite various media (multimedia) [6]. As for the quality of the E-book, there are five external qualities, namely: 1) functionality, the ability to provide functions that meet user needs, 2) reliability, the ability to perform the device stably when used, 3) usability, being able to in operation and attractive, 4) efficiency, can be used on time, 5) portability, able to be shared with various other devices [7].

A study conducted by Hanim, Fariyah, Nurmaya, Surani (2019) shows, first, e-book media can help deliver material on drawing menswear patterns. Second, using E-book media in the learning process of making women's clothing patterns is effectively used [8]. This proves that e-books as learning media can be applied in the delivery of material for making clothing pattern construction. In selecting and determining media, it is necessary to consider several factors from the media selection criteria. According to Bates in Carrillo (2020),

there is an ACTION factor in choosing the right learning media, namely 1) access, the media is easy to use and can be utilized, 2) the cost of financing the media used is affordable, 3) technology is available support, 4) interactivity media can establish communication, 5) organization media gets support from the top leadership of the school/university, 6) novelty media has novelty and attractiveness values [9].

Currently, learning activities in higher education are carried out in the form of blended learning, which is a combination of in-class learning and online learning using the internet. This was also done in the Women's Clothing Pattern Construction course. Clothing pattern construction is one of the pattern-making techniques in basic knowledge in the field of fashion that needs to be mastered in making dress patterns for every student. Based on the interviews conducted with lecturers of the Women's Clothing Pattern Construction course, it was stated that there were obstacles in the learning process, namely: 1) the majority of students had a high school educational background rather than a vocational school (Fashion Design vocational school); 2) learning resources used in learning is still printed books; 3) the media used in online learning is less efficient for this course since this course includes pattern making practice activities; 4) the course's learning media does not have a digital form yet (i.e. e-book) which is presented in detail including the steps for making patterns. Even though the use of printed books is still significant in the learning process, an optimized learning media is needed to help the success of the learning process in achieving competency goals by utilizing technological developments and developing detailed presentation of material.

In order to overcome the obstacles that exist in the Women's Clothing Pattern Construction course to achieve learning objectives, an e-book was made as a learning media by developing a detailed presentation of the material with pictures of the steps for making patterns as an alternative medium in helping students understand the concept and making patterns of women's clothing. The e-book that has been made will be examined for its level of feasibility from material and media experts, as well as obtaining the opinions of students who are taking the Women's Clothing Pattern Construction course as e-book users.

## 2. METHOD

The method in this study is Research and Development (R&D) with the 4D development model from Thiagarajan, which includes four stages of development, namely define, design, develop, and disseminate [10]. The four stages include initial needs analysis, product design, product development, feasibility testing, product testing, and deployment.

These stages are used to produce e-book as a learning media.

As for the assessment of learning media according to Winarno in Herniwati (2019) and Ernawati (2017), for the assessment of learning multimedia media based on material aspects and additional information [11][12]. Another aspect used is from Wahono in Martha (2018), which was learning design [13]. Furthermore, the criteria for learning media can be seen from aspects of visual communication design and software.

This research was conducted at the Fashion Design Education Study Program, Faculty of Engineering, State University of Jakarta. The e-book material is focused on the basic pattern of the female body with various systems, skirt and sleeve patterns, as well as the manipulation darts and neckline variations. Data collection was conducted through a mixed questionnaire by providing a set of written statements to 2 material experts, 3 media experts, and 29 students, who were taking the Women's Fashion Pattern Construction course. The data collection technique used is a questionnaire [14]. The statement items for the material and media expert panellists totalled 30 items each and the statement items for students were 20 items. The alternative answers provided in the questionnaire consist of 4 answers (very good, good enough, not good, very bad). This study used data analysis techniques using descriptive statistical methods [14][15]. The data analysis technique used to calculate how feasible the e-book learning media is by calculating the percentage.

## 3. RESULT AND DISCUSSION

The result of product development in this study is an electronic book, which is the development of learning media in digital form as an alternative media that can be used by students in the Women's Clothing Pattern Construction course, so they can better understand the steps of making clothing patterns. This e-book learning media is valid and appropriate based on the assessment of material and media experts as well as student opinions.

In this e-book, the material discussed includes basic knowledge in making clothing patterns, namely taking women's body measurements, basic women's pattern making systems (Meyneke systems, Soen systems, and simplified Dressmaking systems), dart manipulation, and necklines for women's clothing. In addition to these materials, several questions related to each material are also presented as exercises. Figure 1 shows the cover and contents of e-book.



**Figure 1** E-book cover and contents.

Material expert validation regarding the completeness and appropriateness of the material contained in the e-book learning media was carried out

From Table 1 above it can be concluded that from the assessment aspect with an average result of 92.66% in very good criteria. The data obtained is thus the material on the e-book learning media for the construction of women's clothing pattern course is very

by two material experts. The results of product feasibility validation through questionnaires by giving ratings ranging from very good, good enough, not good, and very bad and giving reasons for the assessment and input for improvement if the material is not appropriate. Expert validation includes aspects of learning design, material aspects, and additional information aspects. At this validation stage there are deficiencies that must be revised and input from material experts as follow: 1) design revision with pattern steps made; 2) revision of presentation of pattern step figures, 3) adding body note references to the material, 4) addition symbols and numbers on the figure of the pattern step to clarify the part. Input improvements from the material experts provided have been carried out and improved on the e-book product.

assessed is regarding visual design aspects (layout, typography, illustration, color and animation) and software aspects (reliability, usability, portability). The assessment was carried out by filling out a questionnaire by giving ratings ranging from very good, good enough, not good, and very bad. At this validation stage there are

**Table 1.** Validation of Material Experts

No	Aspect	Percentage	Criteria
1	Learning design	93.05%	Very good
2	Material	94.16%	Very good
3	Additional information	91.66%	Very good
4	Average	92.66%	Very good

good and feasible to use.

Media expert validation regarding the preparation, presentation, and quality of E-book learning media was carried out by three media experts. The media design

deficiencies that must be revised and input from media experts, including: 1) improving the alignment of image placement; 2) consistency in the use of typeface, font size, typesetting, and font color; 3) eliminating graphic decoration elements on view of each sheet.

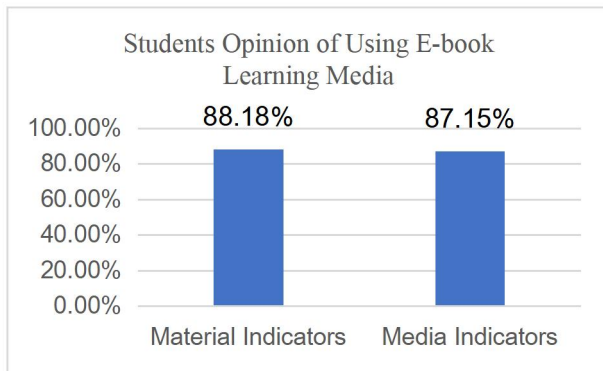
**Table 2.** Validation of Media Experts

No	Aspect	Percentage	Criteria
1	Visual design	91.30%	Very good
2	Software	98.80%	Very good
3	Average	94.50%	Very good

From Table 2 above it can be concluded that from the assessment aspect with an average result of 94.50% in very good criteria. The data obtained is thus an e-book learning media for the subject of construction of women's clothing patterns which is very good and feasible to use.

The e-book learning media that has been created will be tested in small classes in the Women's Clothing Pattern Construction course with as many as 29 students. This questionnaire was distributed via the google form containing statements with the choices of strongly agree,

agree, disagree, and strongly disagree. The statements given include material indicators and media indicators. The results of student opinions obtained percentages on material indicators of 88.18% and percentage results on media indicators of 87.15%. The average result of the two indicators obtained a percentage of 87.66% which received very good response criteria by users (Figure 2).



**Figure 2** The result of e-book media validation assessment by students.

The process of developing e-book learning media uses the 4-D development model, which consists of define, design, develop, and disseminate. The defining stage is useful for determining and analyzing needs in the learning process and collecting different data according to the product. The design stage is carried out by observing and identifying the characteristics of learning media and student needs for this course. The learning media used in this study is the E-book. Furthermore, at the develop stage, the E-book media covers material for each pattern making, both basic patterns and variations of pattern making for other clothing parts, which are made in detail with the steps of making through digital patterns using the CAD Pattern System. At this stage, revisions were also carried out in accordance with input from material and media expert. The final stage, namely disseminate, was carried out after the product being developed has no further improvements from the experts. Then, the dissemination had been carried out on the E-book media through a limited link to the general public, and the final results of the E-book was given to lecturers and students of this course. This is in line with the with the research that was successfully carried out using the same method [16].

The author found several inputs for E-book learning media in discussing the material. This input aims to make the learning material in the E-book presented more broadly and up to date. Based on input from panelists, material in the E-book can be added from various current journals such as a list of body measurements that can be added according to Indonesian body size standards. In addition to the introduction of the material so that the discussion can be deepened according to the material to be discussed. Paying attention again to the suitability of the illustration design with the pictures of the manufacturing steps so that there are no errors in the delivery of learning material in making necklines. Furthermore, there is input from material experts to increase the difficulty of the independent practice questions given.

Based on input from media experts, a glossary for descriptions of each word that has a deeper meaning can be added to the E-book, as well as adding answer keys, either in the form of a link or a QR scan, so that students who have done exercises will know the results of their work, whether they can understand properly or not.

After carrying out the feasibility of e-book learning media based on an assessment of the feasibility of the material and the eligibility of the media, the results obtained through the percentages are quite varied in each aspect both in the eligibility of the material and media. However, the overall rating is in the very good category. The highest rating was obtained on the software aspect, by giving the excellence of the software in accordance with the quality of the e-book. While the results of user opinions (students) which were divided into two material components and media components obtained very good responses in the use of e-book learning media for Woman's Clothing Pattern Construction courses. Thus, e-book learning media in this course are feasible to be used in the learning process which includes material for taking body measurements, making basic patterns (body basic patterns, sleeve basic patterns, and skirt basic patterns), dart manipulations, and variations of the neckline.

#### 4. CONCLUSION

Based on the results of the development research that has been carried out, it can be concluded that from the results of the feasibility validation of e-book learning media for the Women's Fashion Pattern Construction course it is feasible to be used as a learning medium. This e-book media can be used as a tool for lecturers to convey pattern construction material in the learning process. Furthermore, this media is also useful for students to increase understanding in making patterns in the online learning process and helps students repeat learning material in an independent learning process without being limited by place and time.

#### AUTHORS' CONTRIBUTIONS

Y.S. and E.A. author conceived of the presented idea and were involved in planning and supervised the work, Y.S. and A.I. developed the theory and instruments, E.A. and A.I. verified the analytical methods, A.I. collected the data and drafted the manuscript, all the authors discussed the findings and contributed to the final manuscript.

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