Development Of Interactive E-Books For Production Unit Courses By Implementing A Hybrid Learning System

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Abstract.
The purpose of this research is to develop an interactive e-book for production unit courses by applying a valid, practical and effective hybrid learning. The product development model used is the IDI (Instructional Development Institute) model.. The subjects of this study were students of Fashion Design Education. The results obtained from this development research are as follows: (1) The availability of interactive e-books for production unit courses, (2) Production unit interactive e-books are declared to be very valid by material experts (0.86) and media experts (0.87), (3) interactive e-books for production unit courses based on lecturer responses are very practical (88%) and based on student responses are stated to be very practical (90%), (4) interactive e-book production units are declared effective in improve student learning outcomes (12.69%). Based on the findings of this study, it was concluded that interactive e-books for production unit courses were valid, practical and effective to be used as teaching materials in production unit courses at the university level.

Keywords: *E-Book Interaktif; Hybrid Learning; Learning Outcome and Production Unit Courses.*

I. INTRODUCTION

At the end of 2019 until now, the world is facing a COVID-19 pandemic that has spread evenly to every country in the world, including Indonesia. The pandemic (COVID-19) is disrupting the health system, shutting down the economy and many other sectors especially education [1]. Not only that, the virus that causes many deaths around the world from time to time mutates and creates several new types of virus variants, so that this virus makes changes in the process of human life in the world, one of which is education.According to the government, online learning is considered the most effective way to conduct learning amid the current pandemic [2]. Online learning is a process learning that utilizes the internet network in the learning process [3]. Platforms that can be used in implementing online learning include Google Classroom, Edmodo, Learning Houses, Teacher Rooms, etc. [4]. Apart from that, Whatsapp Group (WAG) and Zoom are also platforms that students can use during online learning [5].Literature study data on online material delivery shows that not all learners will be successful in online learning [6]. Therefore, learning is also carried out face-to-face so that learning is maximized. Currently the covid 19 pandemic has ended, but you still have to follow strict health procedures during the learning process. The circular of the Medan State University decided that learning at the Medan State University in the 2021/2022 Academic Year could be held in a mixed manner, namely face-to-face and online (hybrid learning)[7].Hybrid learning is a learning system that combines offline learning with online learning processes [8][9]. The hybrid learning system combines two choices of who will play the main role (lead) in the lecture process: instructor (instructor-led) or student (learner-led)[10].

Internet-based and traditional education provides educational opportunities that can encourage better student learning [11]Hybrid learning makes learning more effective [12]. the concept of hybrid learning applies learning technology that is "right" so that learning objectives are achieved [13]. there is considerable complexity in implementation of hybrid learning with almost unlimited design challenges and application in so many contexts [14]. One of the challenges of hybrid learning is the provision of appropriate media for learning. on the hybrid learning media used to support teaching and learning, namely the internet, computer networks, and standalone computers. the use of media will accelerate conceptual mastery and mastery of skills.learning production unit is a business activity carried out by schools in a sustainable manner, is a business that is managed professionally by the school community by optimizing school resources and the environment[15]. one of the activities that can be considered as a vehicle for complete education is the production unit [16]. Production unit courses provide students with a truly real-life work experience.

Students are expected to be able to open a convection business, a fashion atelier business and a fashion intermediary business. Therefore, learning production units should have learning media that support student motivation in hybrid learning.The limited learning media for production unit courses greatly affects student learning outcomes. teachers who are still adapting to online learning have also not developed media that students can use for independent learning. If in previous lessons students were given directions and learning simulations such as the shape and type of clothing business, for now students can only understand the directions from the lecturer and carry out according to the lecturer's directions at their respective homes.

Whereas among the materials studied, such as convection clothing, students are required to be able to work together with other students in producing clothing, whether applying sewing with a conveyor belt system or not, so that students can understand and practice a form of fashion business, as well as other production unit subject matter.One example, in the material in producing convection clothing, students should be in the laboratory in carrying out simulations of the clothing production process with this convection system. As in the theory of convection production, There are several techniques for producing clothing by convection, such as the conveyor belt method. If students are only given material online, in practical terms, students do not feel how technical and technical it is in producing clothes with a convection system. Therefore we need the right media to help students learn both in class and independently which can be learned by students anytime and anywhere.Ebooks are books in digital form in computer file format [17]. Interactive e-books are digital books where digital book users can interact reciprocally. [18, 19]. Interactive e-books have the best ability to support learning according to innovative learning orientation methods [20]. Interactive E-Books can increase student learning independence and are beneficial for students and can be an alternative learning that can be used in the world of education [21]. Therefore, interactive e-book media is deemed necessary to be developed in production unit courses and applied in hybrid learning. The purpose of this research is to develop an interactive e-book Production Unit Course by Implementing Hybrid Learning System in the Fashion Design Education Study Program, Medan State University

II. METHODS

This type of research is Research and Development, which is a research method used to produce a product and increase the effectiveness of the product [22]. The interactive e-book development model uses the IDI (Instructional Development Institute) model. the model IDI development is the right form in testing the prototype which is part of the important in the media development chain [23]. This IDI design model is designed to answer three questions: a).What is mastered (basic competence) b).What or how are the appropriate procedures and learning resources to achieve the desired learning outcomes. c).Knowing the expected learning outcomes [24] The IDI model uses a system approach model which includes three stages namely; (1) Define, the problem identification stage begins with analyzing the needs of students and teachers, conducting observations, interviews and the need for teaching materials in schools. (2) Develop, at this stage identification of objectives is carried out, namely by first analyzing the instructional objectives to be achieved and the appropriate learning methods applied in learning.

Then designing an initial interactive e-book design according to student needs and developing an interactive e-book. (3) Evaluation. After the learning program is compiled, a pilot test is held to find out the weaknesses and strengths, as well as the efficiency and effectiveness of the program being developed.The data collection technique uses a questionnaire and the data analysis technique consists of validity analysis, practicality and effectiveness. Validity analysis through questionnaires on interactive e-books for production unit courses consisting of material aspects and e-book formats developed. Practical analysis is obtained from the results of the assessment of lecturers and students through a questionnaire on interactive e-books for production unit courses. Effectiveness analysis was obtained by looking at the completeness of student learning outcomes using interactive e-books and students who did not use interactive e-books.Validation was carried out by material experts and media experts to see the quality of the media and material produced. Validation and practicality value using the formula:

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

Information:

NA = Final score

S = Score obtained

SM = Maximum Score

Practicality tests are carried out on lecturers and students. The practicality test of the lecturer's response is obtained from the questionnaire sheet given to the lecturer in charge of the course. The practicality test of student responses was obtained from the questionnaire sheet given to students who used the production unit's interactive e-book.The effectiveness sheet is measured by the learning outcomes of students who study with e-books. The effectiveness sheet is in the form of a comparison of student learning outcomes between a test class that uses an interactive e-book and a class that does not use an interactive e-book. Learning outcomes are obtained by giving tests done by students in the form of multiple choice questions. Before the test is given, first a trial is conducted to determine the validity, reliability, level of difficulty and differentiating power of the questions.

III. RESULT AND DISCUSSION

This research model uses the IDI model which consists of Define, Development and Evaluation. The first stage is to determine, carry out a needs analysis, namely observing in class. The results of the observation showed that the learning resource used was power point The learning process is more centered on the lecturer, this can be seen when during the learning process students are passive, only relying on the material presented by the lecturer. Especially during the process of making products, students do not understand the steps in sewing practice, without any teaching materials that can guide students, so the lecturer provides direction at every step of the work., This clearly makes the use of time less effective during the learning process.At the define stage an interview was also conducted**.** The results of interviews with course lecturers that the current production unit course learning process uses power point teaching materials, teaching materials in the form of interactive e-books for production unit courses do not yet exist, so the author developed an interactive e-book for the production unit course as an additional source of student learning materials in production unit course. Student analysis is carried out on students who have passed the production unit course. Participants said it was difficult when attending lectures due to several factors including, teaching materials and media were still lacking in learning, when in practice the boundaries of differences in workmanship techniques and the completion of the atelier, convection and clothing intermediary business sewing systems are that students have not been able to fully understand and classify the differences in techniques and processing steps.

In addition, students also come from different school backgroundsIn addition, at this stage a literature study was also carried out The interactive e-book for the production unit courses is made based on the learning outcomes of the production unit courses in accordance with the semester learning plans that apply to Class 2019 students who apply the 2018 KKNI curriculum. Useful for determining the achievement of student learning outcomes. The identification of learning formulated in th e e-book material in accordance with the Semester Learning Plan, among others: Chapter 1. Introduction contains: description, prerequisites, instructions, final objectives, basic competencies. Chapter 2. Fashion business contains material on types of fashion business, analyzing fashion business opportunities. Chapter 3. Fashion patterns contain material Atelier clothing, convection clothing, intermediate clothing. Chapter 4. Defining customers contains material Opportunity opportunities, strategic approach.The second stage of the IDI model is develop. At this stage, designing and producing interactive e-books is carried out. At the development stage, the production unit interactive book was developed. The interactive book developed will be validated by material experts and media experts. Suggestions from experts will be the basis for improving the production unit's interactive bookContains the title of the course, the author's name, supporting images related to the production unit, the course section code, the name of the department and faculty, as well as the university logo and year of manufacture.

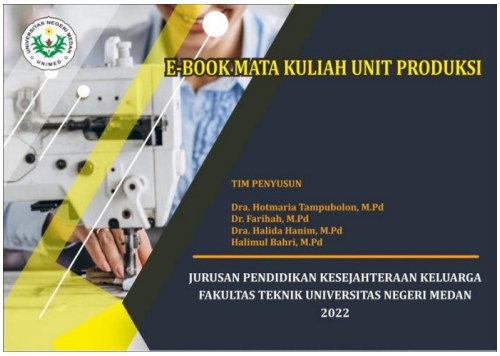

Fig 1. interactive e-book cover

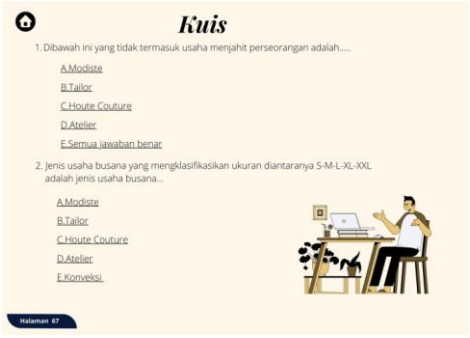

Fig 2. draft table of contents

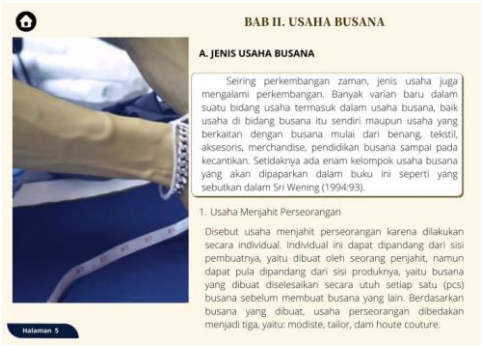

Fig 3. the e-book content section

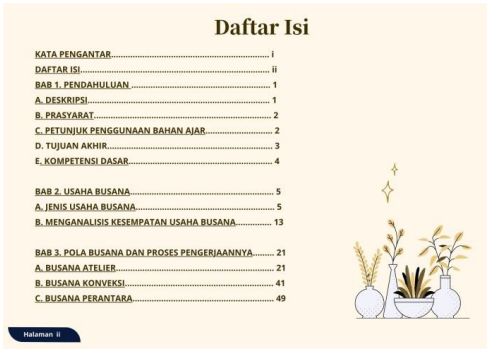

Fig 4.evaluation

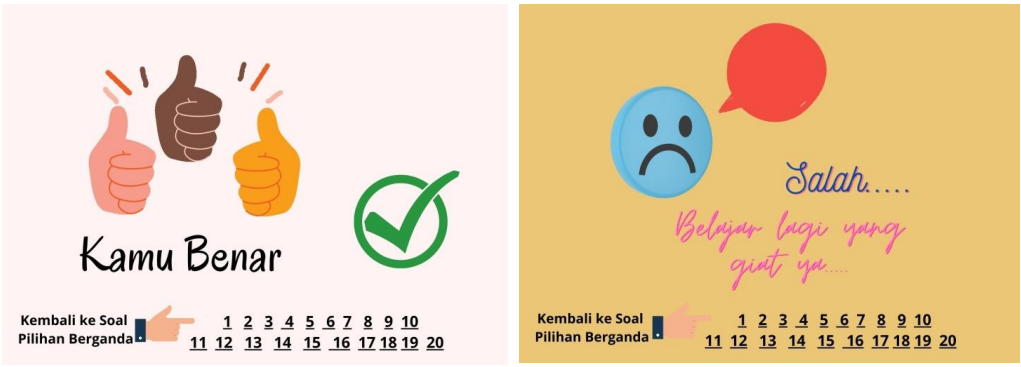

Fig 5. True False Quiz

The third stage is evaluation. At this stage the interactive e-books are developed in validity by media experts and material experts. The data that will be used to measure the validity of this interactive e-book is data obtained through input from the validator using a questionnaire. The validation stage is carried out to media experts and material experts. The results of the interactive e-book validation can be seen in the following table:

Table 4. Expert validation of production unit interactive e-book materials

No	Material expert validation		
	Question indicator	Score V1	Score V2
1	The suitability of the material with basic competencies	5	5
2	Materi easy to understand	4	5
3	The content of the material in accordance with the learning objectives	4	4
4	The scope of the material contained in this learning module is appropriate	4	4
5	The content of the material contained in this learning module is in accordance with the synopsis The learning flow in this module is clear	5	4
6	This learning module can attract students' interest	5	4
7	in learning	4	5

No	Material expert validation		
	Question indicator	Score V1	Score V2
8	This learning module can facilitate students to learn independently	4	4
9	The language used in the module is appropriate The language used in sentences is able to direct student activities	4	4
10		4	4
	Average score obtained	43	
	Maximum score	50	
	43/50 X 100%		
	Validity = 0, 86		

*V1=Validator 1, *V2=Validator2

Validation of interactive e-book material for production unit courses filled by material experts who understand studies in the field of production unit courses. The validation results from the two experts obtained an average value of 0.86. In accordance with the results of Aiken's calculations ranging from 0 to 1, the number 0.6 can be interpreted as having a fairly high then the value of V 0.6 and above is declared in the valid category [29].

Table 5. Expert validation of production unit interactive e-book media

No	Media expert validation			
	Question indicator	Score V1	Score V2	Score V2
1	The selection of images on the cover and content supports the material presented	5	4	5
2	The images contained in the learning module are easy to understand	4	4	4
3	The appearance of the image in accordance with the proportions	5	5	4
4	The appearance of this learning module can attract students' attention	4	4	4
5	Proportional cover layout / front cover (text and image layout) according to needs	4	4	5
6	This module can be used as alternative teaching materials	4	5	4
7	Selection of colors, text and images according to needs	4	5	4
8	The color of the writing does not interfere with eye vision	4	4	5
9	The font size in this learning module is as needed	5	5	4
10	The texts/sentences in this learning module are easy to read	4	4	5
	The average score obtained	43,7		
	Maximum score	50		
	43,7/50 X 100%			
	Validity = 0, 87			

*V1=Validator 1, *V2=Validator2, *V3=Validator 3

Validation of interactive e-book media for production unit courses filled by material experts who understand studies in the field of learning media. The validation results from the three experts obtained an average value of 0.87. Data on the practicality of using the production unit module was obtained through a questionnaire filled in by a practitioner (producer unit lecturer) and students. Practical tests of interactive e-books for production unit courses are given to lecturers and students. The results of the lecturer's practicality

test were 88% and the students' practicality results were 90%. In accordance with the practicality category proposed by Riduwan [30] it can be concluded that the interactive e-book of the production unit developed is in the "Very Practical" category.Learning outcomes data is taken to see the learning outcomes of students who use interactive e-books in production units and students who do not use interactive e-books in production units. Learning outcomes obtained after a test using multiple choice questions as many as 22 items at the end of the lesson. The average learning outcomes of the experimental class using the production unit interactive e-book was 82.28 and the class that did not use the production unit interactive e-book was 69.59. Seeing the increase in the average learning outcomes of students who use interactive e-books in production units and those who do not use interactive e-books in production units, it is 12.69%. The value of the effectiveness of the module used is 82.28%, it is included in the "very effective" category according to the criteria for the level of learning success [31].

The results show that the use of hybrid learning is more effective than online or face-to-face models in higher education [32][33]. However, the use of hybrid learning must be supported by the right learning media so that learning outcomes can be maximized.The limitation of learning media for production unit courses is one of the main reasons for developing interactive e-book learning media. Interactive e-books package text, images and videos in one digital book which is used to help students understand abstract learning material so that it can attract students' attention to study. By using e-books, students will find it easier to learn material wherever they are because this e-book is electronic [34]. The results of the study obtained interactive e-book products for production unit courses that have been declared very valid by material experts (0.86) and media experts (0.87), based on the responses of lecturers as media experts and materials experts, interactive e-books for the production unit course, it was stated to be very practical (88%) and based on student responses it was stated to be very practical (90%). The interactive e-book media of the production unit was declared effective in improving student learning outcomes (12.69%). From these data it can be concluded that the interactive e-book for production unit courses is valid, practical and effective to be used as teaching material in production unit courses at the university level.The results of previous studies stated that the use of interactive e-books is efficient in the learning process [35]. In line with that, the results of other studies state that the use of interactive e-book media has a very good influence on students. Students have learning independence and are more motivated in learning [36].

IV. CONCLUSION

Research on the development of production unit modules was developed using the IDI model which consists of define, develop and evaluate stages. The defining stage consists of class observations, interviews and literature study. The stages of development carried out include designing learning modules and preparing learning modules for production units. The evaluation stage is carried out by testing the practicality module by lecturers and students. The interactive e-book production unit was stated to be very valid by material experts (0.86) and media experts (0.87), based on lecturer responses, interactive e-books were very practical (88%) and based on student responses it was stated to be very practical (90%)). Testing out student learning outcomes was declared effective in improving student learning outcomes (12.69%). This development research produces valid, practical and effective production unit modules in production unit courses that are suitable for use as teaching materials for production unit courses.

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