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Feasibility Test and Student Response to Interactive E-Modules on Recreational Fashion Design at Vocational High Schools

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Abstract

This research was motivated by the limited availability of interactive teaching materials for Fashion Design and Production courses in vocational schools, particularly for recreational fashion design, which requires a high level of visual and procedural understanding. The purpose of this study was to develop and test the feasibility of an interactive e-module based on Heyzine Flipbook and to determine students' responses to it. The research method used was Research and Development (R&D) with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model. The research subjects involved three subject matter experts, three media experts, and 34 11th grade Fashion Design students at SMK Negeri 6 Semarang. The results showed that the e-module was highly feasible based on subject matter expert validation with a percentage of 91.67% and media expert validation of 96.05%. The practicality test using a student response instrument showed an average achievement of 83.71% with a very positive criterion. The research findings indicate that the integration of interactive features in e-modules is able to visualize complex material in a concrete manner, thereby increasing student learning independence. The conclusion of this study is that HeyzineFlipbook-based e-modules are feasible and effective for use as an innovation in digital learning media to support the independent curriculum in vocational education.

Keywords: interactive e-module, HeyzineFlipbook, recreational fashion design, student response, vocational education

INTRODUCTION

The development of digital technology has brought significant changes in various aspects of life, including in the world of education. The integration of information and communication technology in the learning process is no longer an option, but has become a necessity to keep up with the demands of an increasingly fast-paced and dynamic era. In vocational education, especially in fashion design vocational schools, learning does not only focus on mastering theory, but also on practical skills and creativity that are ready to be applied in the world of work. The introduction should be clear and provide the issue to be discussed in the manuscript. Before the objective, authors should provide an adequate background, and very short literature survey in order to record the existing solutions, to show which is the best of previous studies, to show the main limitation of the previous studies, to show what do you hope to achieve (to solve the limitation), and to show the scientific merit or novelties of the paper¹. The use of digital learning media such as interactive e-modules can help create more flexible, participatory, and learner-centered learning, thereby improving the quality of learning and the overall learning experience. This digital transformation provides opportunities for learners to study independently through visual, interactive, and easily accessible content anytime and anywhere,

¹ P. Sudira, "Kurikulum Merdeka Dan Integrasi Teknologi Digital Dalam Pendidikan Vokasi," *Jurnal Pendidikan Vokasi* 10, no. 2 (2020): 125–36, <https://doi.org/10.21831/jpv.v10i2.32757>.

ultimately supporting the development of competencies in line with requirements².

The implementation of the Merdeka Curriculum in the Fashion Design Program introduces the subject of Fashion Design and Production (DPB), which requires mastery of elements such as collection development, fashion styles, and technical drawing. One of the learning outcomes is the ability of students to design recreational clothing, which requires a balance between aesthetics, comfort, and practicality. To optimize these competencies, the use of interactive flipbook-based e-modules is an innovative solution due to their ability to present material systematically, visually, and independently through the integration of text, video tutorials, and animations. Previous research shows that the use of this media is effective in improving student understanding, especially of procedural design material³, and is considered highly feasible for application in vocational school learning⁴.

Digital learning media is information technology-based media that is used to present learning materials effectively, attractively, and flexibly according to the needs of students⁵. In the context of vocational education, e-modules are a form of digital learning media designed as structured electronic teaching materials to support independent learning. E-modules not only serve as a support for teachers in delivering material, but also as a learning resource that can be accessed flexibly without space and time limitations. Through communicative visual presentation, multimedia integration, and a systematic learning flow, e-modules have been proven to improve students' understanding of procedural material and encourage optimal independent learning⁶.

The development of information technology has encouraged conventional teaching materials to transform into more interactive and flexible website-based e-modules⁷. Website-based e-modules allow students to access learning materials online without any space or time restrictions, and support the integration of various multimedia elements. One platform that facilitates the development of digital e-modules is HeyzineFlipbook, which presents material in the form of electronic books with page-turning effects, providing a more engaging and communicative reading experience. Visual support, integration of text, images, and videos, as well as responsive access on various devices make HeyzineFlipbook-based e-modules have the potential to increase interest in understanding the material and encourage independent learning among students⁸.

The majority of previous researchers have proven that the effective use of digital learning media can improve the competence of vocational school students through the visualization of more concrete design steps compared to the use of static textbooks⁹. The use of this interactive technology not only

² Riska Aini Putri, "Pengaruh Teknologi Dalam Perubahan Pembelajaran Di Era Digital," *Journal of Computers and Digital Business* 2, no. 3 (2023): 105–11, <https://doi.org/10.56427/jcbd.v2i3.233>.

³ Nur Wahdaniah, St Aisyah, and Nahriana Nahriana, "Pengembangan Bahan Ajar E-Modul Interaktif Berbasis Flip Pdf Corporate Edition Untuk Meningkatkan Hasil Belajar Mahasiswa Pada Mata Kuliah Konstruksi Busana Wanita Di Jurusan Pkk Ft Unm," *UNM Journal of Technology and Vocational* 7, no. 3 (2023): 274, <https://doi.org/10.26858/ujtv.v7i3.53183>.

⁴ Venandia Firdaus Damayanti and Yuhri Inang Prihatina, "Pengembangan E-Modul Interaktif Membuat Desain Blus Di Kelas Xi Smk Keahlian Tata Busana," *Jurnal UNNES* 11, no. 2 (2022): 40–47, <https://doi.org/https://doi.org/10.26740/jurnal-online-tata-busana.v11i2.47602>.

⁵ Fattakhu Firlil Dewi Nur Majid, Abd Rahman, and Saiful Anwar, "EFL Student's Perception on Digital Learning Media Technology: The Case of Secondary School in Indonesia," *English Language Teaching Methodology* 5, no. 2 (2025): 139–51, <https://doi.org/10.56983/eltm.v5i2.1862>.

⁶ Muhammad Yusuf Falahuddini and Farida Febriati, "Pemanfaatan E-Modul Interaktif Untuk Meningkatkan Self Directed Learning Siswa Dalam Pembelajaran Sejarah Dan Kebudayaan Islam : Jejak Dan Dakwah Khulafaur Rasyidin," *JUKEMAS: Jurnal Pengabdian Kepada Masyarakat* 2, no. 2 (2025): 126–33, <https://doi.org/10.60126/jukemas.v2i2.941>.

⁷ D P Septiara and S Saino, "Pengembangan E-Modul Berbasis Web Pada Mata Pelajaran Produk Kreatif Dan Kewirausahaan Kelas XI BDP I Di SMKN 1 Surabaya," *Jurnal Pendidikan Tambusai* 6 (2022): 10689–99, <https://www.jptam.org/index.php/jptam/article/view/4123%0Ahttps://www.jptam.org/index.php/jptam/article/download/4123/3457>.

⁸ Jurnal Online and Tata Busana, "PENGEMBANGAN E-MODUL BERBASIS FLIPBOOK MATERI PEMBUATAN POLA KEBAYA *Research and Development (R & D)*, Metode Ini Diterapkan" 13, no. 3 (2024): 20–25.

⁹ Luwilmi Sahefa Ashari and Durinda Puspasari, "Pengembangan E-Modul Berbasis Heyzine Flipbook Pada Mata Pelajaran Otomatisasi Humas Dan Keprotokolan Di SMKN 2 Buduran Sidoarjo," *Journal of Social Science Research* 4, no. 1 (2024): 2568.

serves as a tool for knowledge transfer, but also as a means to strengthen students' independence and aesthetic understanding in the learning process¹⁰. However, so far there has been no research specifically developing a website-based e-module using HeyzineFlipbook for recreational fashion design material, especially at SMK Negeri 6 Semarang. Therefore, the development of this interactive media is an innovative alternative to support the needs of students as an independent learning resource for recreational clothing design material¹¹.

Based on the results of a student needs survey conducted using questionnaires and interviews with several fashion design teachers at SMK Negeri 6 Semarang, it was found that most students had difficulty finding reference sources or learning resources for creating recreational fashion designs. Classroom learning is still teacher-centered. The media used are books and PowerPoint presentations. In addition, several students also expressed that they often feel confused when they have to practice recreational fashion design independently because they do not have a guide in finding reference sources. Therefore, teachers and students strongly support and agree with the use of the HeyzineFlipbook website-based e-module, as they believe that this learning medium can help them find reference sources and understand the process of creating recreational clothing in a more realistic, interactive, and easy-to-learn manner whenever and wherever needed¹².

Based on the above background, this research entitled "Feasibility Test and Student Response to E-Modules for Recreational Fashion Design at Vocational Schools" was conducted. This study aims to test the feasibility of the e-module and to determine student response to the use of e-modules as a learning medium for recreational fashion design. The results of this study are expected to provide benefits in improving the quality of learning through the provision of effective and flexible digital learning media, supporting independent learning, increasing interest in learning, and serving as a reference for educators in developing technology-based learning media at vocational schools specializing in fashion design.

METHOD

This study uses a Research and Development (R&D) approach with the ADDIE development model, which includes the stages of analysis, design, development, implementation, and evaluation. This model was chosen because it has a systematic development flow and is suitable for producing digital learning media¹³.

This study was conducted at SMK Negeri 6 Semarang, located at Jalan Dr. Cipto No. 73, Kelurahan Karangturi, Kecamatan Semarang Timur, Kota Semarang, Central Java, during the period of January–February 2026. The research subjects consisted of several groups, namely expert validators, students, and trained panelists. There were six expert validators, consisting of three subject matter experts and three media experts, who were selected based on their competence and experience in the field of fashion education and digital learning media development¹⁴. The student subjects were 34 students from class XI Phase F of the Fashion Expertise Program at SMK Negeri 6 Semarang.

The analysis stage includes: (1) classroom observation; (2) identification of learning problems; (3) analysis of material requirements, particularly in the creation of recreational clothing designs; and (4) analysis of hardware requirements, such as laptops and smartphones, as well as supporting software, such as the Canva design platform and the Heyzine Flipbook publishing platform. The design stage includes: (1) creating an e-module framework consisting of an introduction, main material, and conclusion; (2) compiling a recreational clothing material map; and (3) designing instruments for assessing feasibility and practicality. The development stage includes: (1) compiling content based on

¹⁰ Arinda Kartika Putri and Arif Rahman Hakim, "Integrated With Accurate Education To Improve Students' Learning," *Jurnal Pendidikan Akuntansi Indonesia* 23, no. 01 (2025): 57–76.

¹¹ S. Ramadhani, S., Mutmainah, "E-Modul Interaktif Sebagai Alternatif Media Pembelajaran Digital Pada Mata Pelajaran Tata Busana," *Urnal Teknologi Pembelajaran* 7, no. 1 (2023): 105–17, <https://doi.org/10.29300/jtp.v7i1.6821>.

¹² dkk. Utami, N. L. P. M. S., "Pengembangan Media Pembelajaran E-Modul Berbasis Heyzine Flipbook Pada Mata Pelajaran Desain Busana.," *Jurnal Penelitian Dan Pengembangan Pendidikan* 8, no. 1 (2024): 135–44, <https://doi.org/10.23887/jppp.v8i1.65214>.

¹³ Marinu Waruwu, "Metode Penelitian Dan Pengembangan (R&D): Konsep, Jenis, Tahapan Dan Kelebihan," *Jurnal Ilmiah Profesi Pendidikan* 9, no. 2 (2024): 1220–30, <https://doi.org/10.29303/jipp.v9i2.2141>.

¹⁴ Ashari and Puspasari, "Pengembangan E-Modul Berbasis Heyzine Flipbook Pada Mata Pelajaran Otomatisasi Humas Dan Keprotokolanan Di SMKN 2 Buduran Sidoarjo."

credible references; (2) developing supporting media such as tutorial videos and design work steps; (3) creating e-modules using the Heyzine Flipbook platform; (4) feasibility testing by subject matter experts and media experts; and (5) revising the product based on input from experts. The implementation stage includes: applying interactive e-modules based on the Heyzine Flipbook website in the teaching of Fashion Design and Production, specifically on the subject of recreational fashion design, to 34 students in Grade XI Phase F of the Fashion Skills Program at SMK Negeri 6 Semarang in the period January–February 2026. The evaluation stage includes: the final product improvement process based on student feedback and the overall feasibility evaluation results.

The Instrument used was an e-module feasibility assessment sheet using a four-point Likert Scale (1-4). Quantitative data obtained from the validators assessment scores were then analyzed using descriptive percentage statistic. The formula used to determine product suitability referred to expert validation standard, as follows¹⁵:

$$\text{Percentage of Feasibility (\%)} = \frac{\text{Total Observation Score}}{\text{Total Expected Score}} \times 100\%$$

Next, the percentage calculation results are converted into e-module eligibility criteria to draw conclusions about product eligibility. Categorization is carried out by referring to the score interpretation scale as presented in Table 1 below:

Table 1. Eligibility Criteria¹⁶

Achievement Percentage (%)	Criteria
90% - 100%	Highly Suitable
75% - 89 %	Suitable
55% - 74%	Less Suitable
0% - 54%	Not Suitable

Sources¹⁷

Based on these calculations, e-modules are deemed feasible if they meet 75–100% of all criteria listed in the feasibility assessment questionnaire by subject matter experts and media experts. E-modules that have been created must meet the feasibility criteria; if not, they will be revised until they do.

Next, to assess the feasibility of e-modules in terms of the practicality of using interactive e-modules in learning, responses were collected from users, namely students. The data used was in the form of student response questionnaires, which were then analyzed using descriptive quantitative methods in the form of percentages as follows:

To calculate the percentage of respondents who answered strongly agree, agree, disagree, and strongly disagree according to the aspects asked, the following formula was used:

$$\frac{\text{Total Score}}{\text{Total score achieved}} \times 100\%$$

Calculate the average percentage of practicality using the following formula:

$$\frac{\text{Total Score Achieved}}{\text{Maximum Score}} \times 100\%$$

Next, determine the category of positive responses from students by matching the percentage results with the predetermined criteria. The criteria for student responses are adapted to the following provisions:

Table 2. Student Response Criteria

¹⁵ Erika Untari, Peppy Hidayati, and Ma'arifatun Nashikhah, "Analisis Uji Kelayakan Media Pembelajaran Interaktif," *Jurnal Online Tata Busana* 12, no. 3 (2023): 13–20.

¹⁶ Sugiyono, *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif, R&D*, Cetakan ke (Bandung, 2019).

¹⁷ Sugiyono.

$RS \leq 35\%$	Negative
$36\% \leq RS \leq 50\%$	Less Positive
$51\% \leq RS \leq 75\%$	Positive
$76\% \leq RS \leq 100\%$	Very positive

Sumber:¹⁸

The use of teaching materials is considered successful if the criteria for positive responses from students is met, which is 76%.

RESULTS AND DISCUSSION

This study followed the ADDIE model development procedure. The following is a description of the research results at each stage:

Analysis

The analysis stage was conducted to identify the gap between the ideal conditions expected and the reality in the field. In accordance with the problems described earlier, the analysis was carried out through two main aspects:

- a. **Student needs analysis:** In line with the results of a survey conducted at SMK Negeri 6 Semarang, it was found that even though students have access to digital technology, they still have difficulty finding representative reference sources for recreational fashion design materials. Conventional media such as textbooks and static PowerPoint presentations are considered insufficient for visualizing aesthetic aspects and technical details (technical drawing) in depth¹⁹. This results in low learning independence because students tend to rely entirely on teacher instructions in class.
- b. **Curriculum and Material Analysis:** Based on the learning outcomes in the Fashion Design and Production (DPB) element of the Merdeka Curriculum, recreational fashion materials require a balance between function and creativity. The results of the analysis indicate the need to transform procedural materials into a more concrete digital form. The need for media that is “easily accessible anytime and anywhere” is a crucial point, given the characteristics of practical subjects that require independent visual repetition by students²⁰.

Design

In the design stage, a framework for the e-module is developed to meet the needs of students at SMK Negeri 6 Semarang who want independent and interactive learning resources. The following are the design stages that must be followed in developing an interactive e-module: collecting references from books, journals, etc., compiling a concept map, and finally designing the interactive e-module.

¹⁸ Arikunto and Suharsimi, *Metodologi Penelitian*, 2010.

¹⁹

²⁰ S. A. Fitri and M. Maspiya, “Pengembangan E-Modul Berbasis Kurikulum Merdeka Pada Mata Pelajaran Desain Dan Produksi Busana,” *Urnal Online Tata Busana* 12, no. 2 (2023): 1–10, <https://doi.org/10.26740/jotb.v12n2.p1-10>.

Framework for E-Module on Recreational Fashion Design

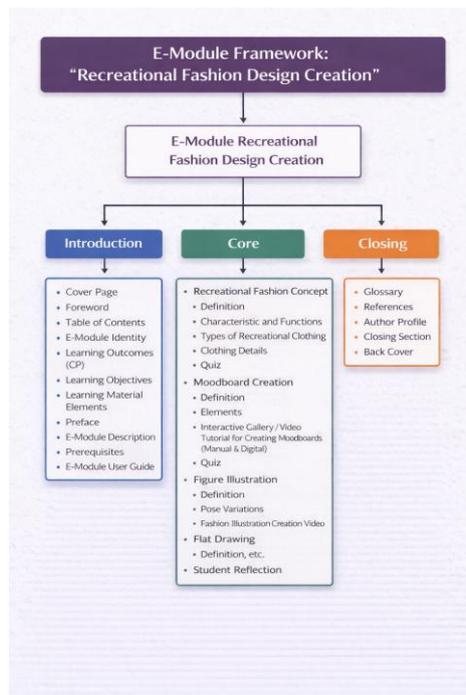


Figure 1. Framework for E-Module on Recreational Fashion Design

Development

The development stage is carried out after the e-module design has been systematically compiled in the design stage. Activities at this stage include the production and validation of the product. First, the material for designing recreational clothing is compiled based on references from books, journals, and learning outcomes in the Fashion Design and Production (DPB) subject. The material is developed in the form of text, illustrative images, step-by-step instructions, and video tutorials to clarify the design process.

Second, all content was designed using the Canva platform to produce attractive and communicative visuals. Next, the compiled files were converted into interactive flipbooks using the HeyzineFlipbook website platform, resulting in a website-based e-module that can be accessed online through various devices.

Third, the developed products were then validated by six expert validators consisting of three subject matter experts and three media experts. Validation by subject matter experts was conducted to assess aspects of educational objectives, subject matter, independence & innovation, self-development motivation, unity, attractiveness, critical & innovative thinking, and contextual insight. Meanwhile, validation by media experts included an assessment of the aspects of suitability, appearance, color, font usage, illustrations, material illustrations, and the use of illustrations. The results of the assessment were then analyzed using a feasibility percentage and revisions were made according to the experts' suggestions. Next, a trial is conducted to observe the students' responses, which are assessed in terms of language, usage, media, and material. This aims to ensure that the e-module on recreational fashion design is not only valid in substance but also highly comprehensible and easy to use for students.

This development stage resulted in a final product in the form of an interactive e-module based on Heyzine Flipbook that has met the eligibility criteria and is ready to be used in the learning process.



Figure 2. Final results of the e-module product

Implementation

The implementation stage was carried out through trial activities with students to determine the practicality and feasibility of using e-modules in learning. Interactive e-modules based on Heyzine Flipbook were applied to the Fashion Design and Production (DPB) subject, specifically the material on recreational fashion design, to 34 students in Grade XI Phase F of the Fashion Expertise Program at SMK Negeri 6 Semarang.

Implementation began with brief instructions on how to access and use the e-module via a website link. Students then studied the material independently, starting with understanding the concept of recreational clothing, observing design examples, learning the steps of design creation through illustrations and video tutorials, and practicing design creation according to the instructions in the e-module.

During the learning process, the researcher acted as a facilitator who provided guidance when there were technical difficulties or difficulties in understanding the material. At the end of the activity, students were asked to fill out a response questionnaire to assess the ease of use, attractiveness of the display, clarity of the material, and usefulness of the e-module in assisting the learning process.

Evaluation

The evaluation stage was conducted to determine the feasibility of the developed website-based interactive e-module, with an emphasis on the feasibility of the material, practicality of use, and student response to the learning media. This evaluation was carried out after the e-module was used in learning activities on the subject of recreational fashion design.

The feasibility of the e-module was assessed by three subject matter experts and three media experts using a feasibility assessment instrument. Feasibility evaluation was carried out through a validation process by subject matter experts and media experts. Validation by subject matter experts aimed to assess the suitability of the content with the learning outcomes in the Fashion Design and Production (DPB) subject, the accuracy of concepts, the depth of material, and the clarity of the presentation of the design steps. Meanwhile, validation by media experts focuses on visual appearance, presentation systematics, text readability, illustration and video tutorial quality, and ease of navigation in flipbook-based e-module.

The results of suggestions/criticisms and follow-up improvements to the e-module in terms of material are presented below:

Table 3. Results of improvements to the e-module in terms of material

Suggestions/Criticism Before	Follow-up After
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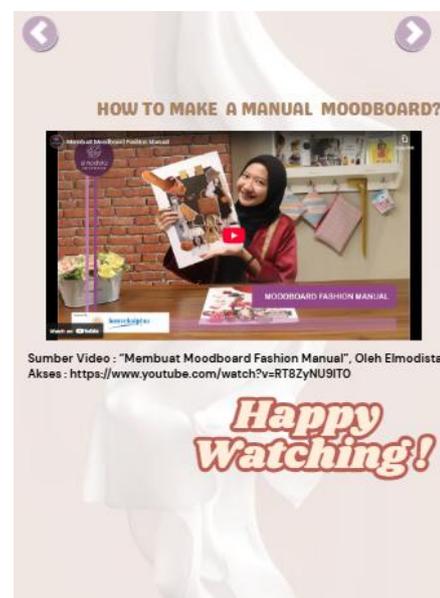
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Every foreign term is italicized.



Provide clear sources for each photo/video reference (Title/Name, Link)



Each reference has been clearly sourced (Title/Name, Link).

Source: Researcher data, 2026.

The results of suggestions/criticisms and follow-up improvements to the e-module in terms of media are presented below:

Table 4. Results of improvements to the e-module in terms of media

Suggestions/Criticism	Follow-up
Before	After



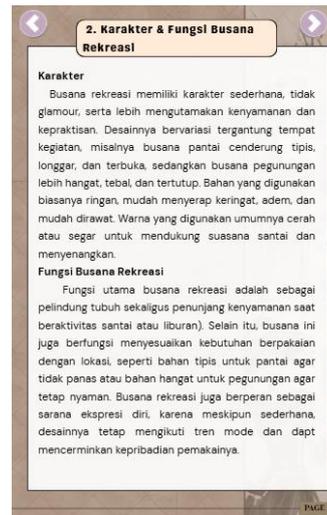
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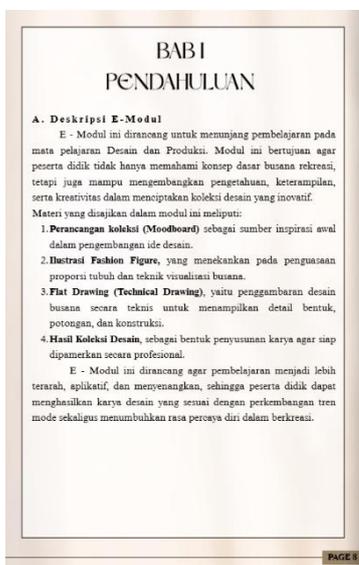
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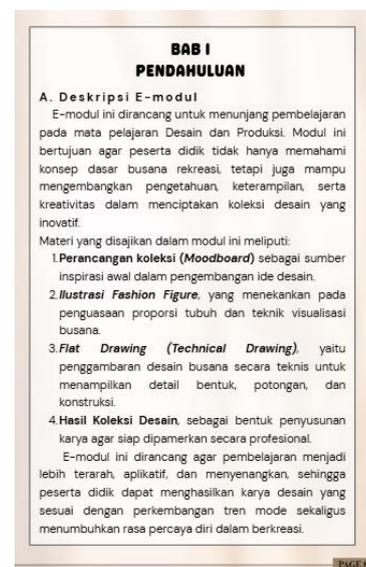
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Source: Researcher data, 2026.

Feasibility of E-Module for Recreational Fashion Design

Feasibility Results

The feasibility of the e-module was assessed by three subject matter experts using a feasibility assessment instrument. The assessment results showed that the developed e-module was deemed feasible for use in the learning process. Based on the overall validation results from the subject matter experts, the e-module obtained a feasibility percentage of 88.89% with a “Feasible” category.

Next, based on the analysis of each assessment indicator, an average percentage of 94.09% was obtained, which falls into the “Highly Feasible” category. This finding shows that the e-module has met the standards of content suitability, learning objectives, material presentation, critical thinking orientation, and contextual relevance. A detailed summary of the results of the subject matter expert validation is presented in Table 5 and Table 6.

Table 5. Summary of Material Expert Validation Results

Subject Matter Expert	Total Score
Validator 1	75
Validator 2	73
Validator 3	76
Total Score	224
Maximum Score	252
Percentage	88,89%
Criteria	Feasible

Source: Researcher data, 2026.

Table 6. Summary of Expert Validation Results per Indicator

Sub-Indicator	Percentage (%)	Criteria
Educational objectives	94,20%	Highly Suitable
Source material	94,20%	Highly Suitable
Independence and Innovation	95,11%	Highly Suitable
Self-Development	93,12%	Highly Suitable
Unity	89,13%	Suitable
Presentation of interesting material	95,74%	Highly Suitable
Presentation of critical thinking material	92,42%	Highly Suitable
Contains contextual insights	96,02%	Highly Suitable
Average	94,09%	Highly Suitable

Source: Researcher data, 2026.

Analysis per indicator (Table 6) shows an average percentage of 94.09% in the Very Good category. The indicators of contextual insight (96.02%), interesting presentation of material (95.74%), and independence and innovation (95.11%) received the highest scores, indicating that the e-modules are relevant to the context of vocational learning and are able to encourage creativity and independent learning among students. The instructional objectives and source material indicators each scored 94.20%, while self-development (93.12%) and critical thinking material presentation (92.42%) were also in the very feasible category. The unity indicator scored 89.13% in the feasible category, indicating that there is still room for improvement in the consistency and continuity of material presentation.

These findings are in line with previous studies which state that e-modules in fashion design learning are considered feasible if they meet the learning objectives, material systematics, and relevance to the Merdeka Curriculum²¹. Thus, based on the results of material expert validation, the developed e-modules are declared feasible to highly feasible for use as learning media in recreational fashion design material in vocational schools²².

Media Feasibility Results

Next, the validation results by three media experts show that the e-module for recreational

²¹ Damayanti, Venandia Firdaus, and Yuhri Inang Prihatina. “Pengembangan E-Modul Membuat Desain Blus Di Kelas Xi Smk Keahlian Tata Busana.” *Jurnal UNNES* 11, no. 2 (2022): 40–47. <https://doi.org/https://doi.org/10.26740/jurnal-online-tata-busana.v11i2.47602>.

²² Fitri, S. A., and M. Maspiya. “Pengembangan E-Modul Berbasis Kurikulum Merdeka Pada Mata Pelajaran Desain Dan Produksi Busana.” *Jurnal Online Tata Busana* 12, no. 2 (2023): 1–10. <https://doi.org/10.26740/jotb.v12n2.p1-10>

fashion design is in the Very Feasible category. Based on Table 7, a total score of 206 out of a maximum score of 228 was obtained, with a feasibility percentage of 90.35%. This score falls within the range of 90%–100%, which is considered highly feasible. The range of scores between validators shows relatively balanced consistency in assessment, so it can be concluded that in terms of appearance and media design, the e-module has met the quality standards for digital learning media.

Table 7. Summary of Media Expert Validation Results

Media Expert	Total Score
Validator 1	67
Validator 2	70
Validator 3	69
Total Score	206
Maximum Score	228
Percentage	90,35%
Criteria	Highly Suitable

Source: Researcher data, 2026.

Table 8. Summary of Media Expert Validation Results per Indicator

Sub-Indicator	Percentage (%)	Criteria
Weight of Material	96,74%	Highly Suitable
Layout display	91,30%	Highly Suitable
Color scheme	91,67%	Highly Suitable
Use of fonts	94,57%	Highly Suitable
Illustrations	89,86%	Suitable
Illustrations of material	93,48%	Highly Suitable
Use of illustrations	96,38%	Highly Suitable
Average	93,25%	Highly Suitable

Source: Researcher data, 2026.

The validation results by three media experts show that the e-module for recreational fashion design is in the Very Suitable category. Based on Table 7, a total score of 206 out of a maximum score of 228 was obtained, with a percentage of 90.35%. This score falls within the range of 90%–100%, thus meeting the criteria for highly feasible as a digital learning medium. The consistency of scores between validators shows that, in general, the appearance, presentation system, and visual quality of the e-module have met the standards of feasibility for website-based learning media.

Analysis per indicator (Table 8) shows an average percentage of 93.25% in the Very Good category. The material weight indicator (96.74%) and use of illustrations (96.38%) received the highest scores, indicating that the balance between content and visualization has been optimally designed to support student understanding. The indicators of layout display, color scheme, font usage, and material illustrations are also in the highly suitable category, although the aspect of illustrations (89.86%) is still in the suitable category and can be improved. These findings are in line with previous studies which state that flipbook-based e-modules with systematic and illustrative visual designs are considered highly effective and suitable for use in fashion design learning²³.

Practicality Results of E-Module

The practicality of these e-modules was assessed by 34 Grade XI Fashion Design students at SMK Negeri 6 Semarang. The assessment was conducted using a practicality questionnaire covering linguistic aspects, usage, material, and media to determine the students' responses.

The results of the practicality assessment of the students' responses by 34 students in the 11th grade Fashion Design class at SMK Negeri 6 Semarang showed a very positive level of achievement in all aspects tested. The linguistic aspect scored 84.56% with a very positive criterion, the usage aspect scored 82.35% with a very positive criterion, the media aspect scored 82.72% with a very positive criterion, and the material aspect scored the highest at 87.01% with a very positive criterion. The overall average response rate of students to the e-module was 83.71%, which generally falls into the very positive category.

²³ Wahdaniah, Nur, St Aisyah, and Nahriana Nahriana. "Pengembangan Bahan Ajar E-Modul Interaktif Berbasis Flip Pdf Corporate Edition Untuk Meningkatkan Hasil Belajar Mahasiswa Pada Mata Kuliah Konstruksi Busana Wanita Di Jurusan Pkk Ft Unm." *UNM Journal of Technology and Vocational* 7, no. 3 (2023): 274. <https://doi.org/10.26858/ujtv.v7i3.53183>.

Table 9. Practicality Test Results

Aspect	Total Score
Language	84,56%
Usage	82,35%
Media	82,72%
Material	87,01%
Average Percentage	83,71%
Criteria	Very Positive

Source: Researcher data, 2026

These results show that the Heyzine Flipbook-based interactive e-module received an excellent response due to its ease of use, attractive visuals, and ability to help students understand the stages of recreational fashion design independently. This is in line with the findings of previous studies, which show that Heyzine-based learning media receive positive responses for supporting fashion design learning due to their interactive nature²⁴. Furthermore, in line with other findings, the very positive response from vocational high school students shows that e-modules can be an effective alternative digital medium for enhancing the learning experience in productive fashion design subjects²⁵.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that the Heyzine Flipbook-based interactive e-module on Recreational Fashion Design material meets very high feasibility criteria with validation results from material experts of 91.67% (very feasible) and media experts of 96.05% (very feasible). The implementation of the product to 34 grade XI Fashion Design students at SMK Negeri 6 Semarang produced a very positive response from students with an average percentage of 83.71%, which includes details of achievements in the linguistic aspect of 84.56%, the usage aspect of 82.35%, the media aspect of 82.72%, and the highest score of 87.01% in the material aspect. These findings prove that the e-module is effective in transforming procedural material into a concrete and interactive digital form, thereby addressing the challenges of the Merdeka Curriculum in the Design and Fashion Production element by providing attractive learning resources that are easily accessible to students anytime and anywhere.

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DECLARATION OF CONFLICTING INTERESTS

The authors declare that there are no conflicts of interest in the research, authorship, and/or publication of this article. This research was conducted independently, and the results are presented objectively without influence from external parties.

²⁴ Utami, N. L. P. M. S., dkk. "Pengembangan Media Pembelajaran E-Modul Berbasis Heyzine Flipbook Pada Mata Pelajaran Desain Busana." *Jurnal Penelitian Dan Pengembangan Pendidikan* 8, no. 1 (2024): 135–44. <https://doi.org/10.23887/jppp.v8i1.65214>.

²⁵ Ramadhani, S., Mutmainah, S. "E-Modul Interaktif Sebagai Alternatif Media Pembelajaran Digital Pada Mata Pelajaran Tata Busana." *Urnal Teknologi Pembelajaran* 7, no. 1 (2023): 105–17. <https://doi.org/10.29300/jtp.v7i1.6821>

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REFERENCES

- Arikunto, and Suharsimi. *Metodologi Penelitian*, 2010.
- Ashari, Luwilmi Sahefa, and Durinda Puspasari. "Pengembangan E-Modul Berbasis Heyzine Flipbook Pada Mata Pelajaran Otomatisasi Humas Dan Keprotokolan Di SMKN 2 Buduran Sidoarjo." *Journal of Social Science Research* 4, no. 1 (2024): 2568.
- Damayanti, Venandia Firdaus, and Yuhri Inang Prihatina. "Pengembangan E-Modul Interaktif Membuat Desain Blus Di Kelas Xi Smk Keahlian Tata Busana." *Jurnal UNNES* 11, no. 2 (2022): 40–47. <https://doi.org/https://doi.org/10.26740/jurnal-online-tata-busana.v11i2.47602>.
- Falahuddini, Muhammad Yusuf, and Farida Febriati. "Pemanfaatan E-Modul Interaktif Untuk Meningkatkan Self Directed Learning Siswa Dalam Pembelajaran Sejarah Dan Kebudayaan Islam: Jejak Dan Dakwah Khulafaur Rasyidin." *JUKEMAS: Jurnal Pengabdian Kepada Masyarakat* 2, no. 2 (2025): 126–33. <https://doi.org/10.60126/jukemas.v2i2.941>.
- Fitri, S. A., and M. Maspiya. "Pengembangan E-Modul Berbasis Kurikulum Merdeka Pada Mata Pelajaran Desain Dan Produksi Busana." *Urnal Online Tata Busana* 12, no. 2 (2023): 1–10. <https://doi.org/10.26740/jotb.v12n2.p1-10>.
- Majid, Fattakhu Firli Dewi Nur, Abd Rahman, and Saiful Anwar. "EFL Student's Perception on Digital Learning Media Technology: The Case of Secondary School in Indonesia." *English Language Teaching Methodology* 5, no. 2 (2025): 139–51. <https://doi.org/10.56983/eltm.v5i2.1862>.
- Online, Jurnal, and Tata Busana. "PENGEMBANGAN E-MODUL BERBASIS FLIPBOOK MATERI PEMBUATAN POLA KEBAYA Research and Development (R & D), Metode Ini Diterapkan" 13, no. 3 (2024): 20–25.
- Putri, Arinda Kartika, and Arif Rahman Hakim. "Integrated With Accurate Education To Improve Students ' Learning." *Jurnal Pendidikan Akuntansi Indonesia* 23, no. 01 (2025): 57–76.
- Ramadhani, S., Mutmainah, S. "E-Modul Interaktif Sebagai Alternatif Media Pembelajaran Digital Pada Mata Pelajaran Tata Busana." *Urnal Teknologi Pembelajaran* 7, no. 1 (2023): 105–17. <https://doi.org/10.29300/jtp.v7i1.6821>.
- Riska Aini Putri. "Pengaruh Teknologi Dalam Perubahan Pembelajaran Di Era Digital." *Journal of Computers and Digital Business* 2, no. 3 (2023): 105–11. <https://doi.org/10.56427/jcbd.v2i3.233>.
- Septiara, D P, and S Saino. "Pengembangan E-Modul Berbasis Web Pada Mata Pelajaran Produk Kreatif Dan Kewirausahaan Kelas XI BDP I Di SMKN 1 Surabaya." *Jurnal Pendidikan Tambusai* 6 (2022): 10689–99. <https://www.jptam.org/index.php/jptam/article/view/4123%0Ahttps://www.jptam.org/index.php/jptam/article/download/4123/3457>.
- Sudira, P. "Kurikulum Merdeka Dan Integrasi Teknologi Digital Dalam Pendidikan Vokasi." *Jurnal Pendidikan Vokasi* 10, no. 2 (2020): 125–36. <https://doi.org/10.21831/jpv.v10i2.32757>.
- Sugiyono. *Metode Penelitian Pendidikan: Pendekatan Kuantitatif, Kualitatif, R&D*. Cetakan ke. Bandung, 2019.
- Untari, Erika, Peppy Hidayati, and Ma'arifatun Nashikhah. "Analisis Uji Kelayakan Media Pembelajaran Interaktif." *Jurnal Online Tata Busana* 12, no. 3 (2023): 13–20.
- Utami, N. L. P. M. S., dkk. "Pengembangan Media Pembelajaran E-Modul Berbasis Heyzine Flipbook Pada Mata Pelajaran Desain Busana." *Jurnal Penelitian Dan Pengembangan Pendidikan* 8, no. 1 (2024): 135–44. <https://doi.org/10.23887/jppp.v8i1.65214>.
- Wahdaniah, Nur, St Aisyah, and Nahriana Nahriana. "Pengembangan Bahan Ajar E-Modul Interaktif Berbasis Flip Pdf Corporate Edition Untuk Meningkatkan Hasil Belajar Mahasiswa Pada Mata Kuliah Konstruksi Busana Wanita Di Jurusan Pkk Ft Unm." *UNM Journal of Technology and Vocational* 7, no. 3 (2023): 274. <https://doi.org/10.26858/ujtv.v7i3.53183>.
- Waruwu, Marinu. "Metode Penelitian Dan Pengembangan (R&D): Konsep, Jenis, Tahapan Dan Kelebihan." *Jurnal Ilmiah Profesi Pendidikan* 9, no. 2 (2024): 1220–30. <https://doi.org/10.29303/jipp.v9i2.2141>.

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