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Development of Hypercontent E-Modules For Optimizing Learning in Atelier Clothing Business

Eka Rahma Dewi[1], Halidah Hanim[1], Armaini Rambe[1]

[1] Universitas Negeri Medan, Medan
ekarahmadewi443@gmail.com
corresponding author: *ekarahmadewi443@gmail.com*

ABSTRACT

Learning in the fashion atelier business requires students to integrate competencies in business management, customer service, and professional sewing techniques. However, limited class time and the lack of interactive media often hinder students' ability to learn independently and apply these skills effectively. This study developed a hypercontent-based e-module integrated with job sheets to enhance independent learning in the Fashion Atelier Business course. The research employed the ADDIE model (Analyze, Design, Develop, Implement, Evaluate) as a systematic development framework. Validation results showed high feasibility: material experts = 89% and media experts = 93%, both categorized as "very good." User trials yielded positive responses, with scores of 88.5%, 91.2%, and 94.6% for small, medium, and large groups, respectively. These results indicate that the e-module is valid, practical, and effective for vocational learning. The novelty of this study lies in the integration of hypercontent elements with practical job sheets, offering an interactive and self-paced digital learning experience that bridges theory and practice. This innovation supports students' entrepreneurial readiness and aligns vocational education with Industry 4.0 learning needs, providing a model for technology-enhanced fashion education.

Keywords*: *fashion, hypercontent, e-module, vocational learning, atelier business

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INTRODUCTION

The 21st-century learning paradigm emphasizes students' readiness to face various challenges in the era of globalization and rapid technological development. In this paradigm, the learning process is no longer centered on the teacher as the sole source of information but places students at the center of learning activities. Students are expected to actively seek, process, and apply the information they obtain to think critically, creatively, and solve problems independently. Teachers act as facilitators who accompany and guide students in the learning process. Learning materials are also structured contextually and relevant to real life, not merely as a collection of facts and concepts to be memorized but as resources designed to build deep understanding, foster curiosity, and train higher-order thinking skills. Therefore, the current learning environment must prepare competent graduates capable of facing the challenges of the 21st century (Hartono et al., 2020; Alamoush et al., 2021; Lei & Tang, 2023).

Graduates of the Fashion Design Education Study Program at Medan State University are expected to develop the skills needed to become entrepreneurs in the fashion industry. Establishing a business requires thorough preparation and understanding of management processes to achieve success. Knowledge of fashion business development can be acquired through the Fashion Business Management course, which covers essential topics such as the development of the fashion industry, business management, and production systems in various business models, including boutiques, garment factories, and tailoring services.

Fashion business management learning encompasses various aspects, such as business concepts, production management, marketing, and human resource management (Hanim, 2023). The goal is to equip students with the knowledge, attitudes, and skills necessary to manage a fashion business and to prepare them

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to take on the role of retail business owners (Hidayat & Rusijono, 2020). A successful fashion entrepreneur must be able to identify fashion trends, plan product lines, collaborate with suppliers, analyze sales and competitors, and possess strong analytical, negotiation, and communication skills (Sriyati, 2020). However, many students still lack these competencies, particularly in business management and sewing techniques appropriate for different business types. Observations show that numerous students have never handled sewing orders from customers, lack confidence in their results, and struggle to apply management principles effectively. Additionally, many are unable to differentiate appropriate sewing techniques based on the type of clothing business. These issues are compounded by limited learning time and insufficient instructional media.

Existing learning media, such as textbooks, generally provide only an overview of fashion business management without practical guidance on operational procedures. Effective learning in this field requires media that can demonstrate business management steps clearly and support self-directed learning. The use of technology-based media such as hypercontent-based modules integrated with job sheets is expected to bridge theoretical understanding and practical application. Hypercontent-based modules offer interactive and engaging content through text, images, videos, hyperlinks, and QR codes, allowing students to access diverse learning materials more dynamically (Muliawan, 2017; Sani, 2016; Widayanti, 2020; Wijayanto & Zuhri, 2014; Prawiradilaga et al., 2018; Amin et al., 2020; Simonson et al., 2005). The inclusion of job sheets provides structured operational steps for managing various types of fashion businesses, enabling students to apply their theoretical knowledge in realistic practice.

Previous studies have explored the development of hypercontent-based modules in various learning contexts (Amin et al., 2020; Shania & Arianto, 2022; Royhanin & Sungkono, 2022; Hotimah, 2023). However, previous research has not developed hypercontent e-modules equipped with job sheets for fashion business management courses, which are crucial for combining cognitive, psychomotor, and affective learning outcomes in vocational education.

Therefore, this study aims to develop and validate a hypercontent-based e-module integrated with job sheets to optimize independent learning and bridge theory with practice in the Fashion Atelier Business course. This innovation is expected to enhance students' entrepreneurial readiness, promote interactive digital learning, and align fashion vocational education with the demands of Industry 4.0.

METHOD

This research employed a Research and Development (R&D) approach using the ADDIE development model, which consists of five stages: Analyze, Design, Develop, Implement, and Evaluate (Januszewski & Molenda, 2008; Branch, 2009). The ADDIE model was selected because it is systematic, flexible, and emphasizes interactive processes between learners, instructors, and the environment (Hidayat & Muhamad, 2021). The study was conducted in the Fashion Design Education Study Program at Universitas Negeri Medan during the even semester of the 2023/2024 academic year.

Analyze

At this stage, a needs analysis was conducted to identify problems faced by lecturers and students in the Fashion Business Management course, particularly in the *Atelier Fashion Business* topic. Data were obtained through interviews and observations. The results showed that 100% of lecturers and approximately 89.5% of students expressed the need for hypercontent-based e-module media to support independent and interactive learning. This analysis also included a review of the course syllabus (KI and KD) to determine essential competencies to be achieved.

Design

Based on the analysis results, the initial design of the e-module was created. The module was structured to include learning objectives, materials, job sheets, evaluation components, and digital interactivity features. Tools such as Microsoft Word, Adobe Photoshop CS6, CorelDraw X5, and Flipbook PDF

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Professional were utilized to develop the prototype, enabling integration of text, images, videos, YouTube links, and QR codes.

Development

The development phase focused on producing and validating the hypercontent-based e-module. Expert validation involved two material experts and two media experts, who assessed the module based on established indicators.

Table 1. Material Expert Assessment Questionnaire

Assessment Criteria
Suitability of material to competencies
Clarity of learning objectives
Depth and breadth of material
Accuracy of concepts and terms
Systematization of material presentation

Table 2. Media Expert Assessment Questionnaire

Assessment Criteria
Visual appearance and graphic design
Integration of text, images, and video
Ease of navigation
Quality of interactivity
Consistency of format and layout

Validation used a Likert scale with scores ranging from 1 (strongly disagree) to 5 (strongly agree) (Riduwan, 2016). The interpretation of the Likert scale is shown below.

Table 3. Likert Scale Score

Answer	Score
Strongly Agree	5
Agree	4
Disagree	3
Don't Agree	2
Strongly Disagree	1

Data measurement was conducted using descriptive quantitative analysis. The results of the material and media expert assessments indicated that the e-module met the "very good" category, with average scores of 89% and 93%, respectively.

Implementation

After validation, the revised e-module was tested on students through three trial stages: small group (8 students), medium group (12 students), and large group (32 students). Each stage measured the practicality and effectiveness of the e-module using a response questionnaire. The average scores obtained were 88.5%, 91.2%, and 94.6%, all categorized as "very good." These results demonstrate that the module was feasible, effective, and scalable for broader classroom use.

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Evaluation

Evaluation was carried out throughout the development process, including formative evaluation at each stage and a summative evaluation at the end to determine the overall effectiveness and feasibility of the product.

Participants and Instruments

Participants consisted of students from the Fashion Design Education Study Program (academic year 2023/2024) and expert validators in material and media. The instruments used included expert validation sheets, student response questionnaires, and observation checklists.

Data Analysis Technique

Data were analyzed using descriptive quantitative methods by calculating the mean percentage scores for each indicator. The interpretation of mean scores followed Likert scale intervals, where 81–100% = *Very Good*, 61–80% = *Good*, 41–60% = *Fair*, 21–40% = *Poor*, and ≤20% = *Very Poor* (Sugiyono, 2020).

Ethical Considerations

All participants were informed about the research purpose, procedures, and confidentiality. Participation was voluntary, and consent was obtained before data collection. The study complied with the ethical standards established by Universitas Negeri Medan.

RESULTS AND DISCUSSION

The Fashion Atelier Business course requires students to master the ability to manage a fashion business and apply appropriate sewing techniques according to industrial standards. However, based on initial observations, many students were still unable to apply proper sewing procedures and lacked understanding of business management due to limited practice time and minimal supporting media. The hypercontent-based e-module developed in this study aims to overcome these issues by providing digital media that support independent and interactive learning. The development process followed the ADDIE model systematically.

Material Expert Validation

Validation by material experts assessed the feasibility of content, learning objectives, and conceptual accuracy. The results are shown in the following table.

Table 4. Results of Material Expert Validation

Assessment Indicators	Expert 1 (%)	Expert 2 (%)	Average (%)	Category
Suitability of material with competency	90	88	89	Very Good
Clarity of learning objectives	92	90	91	Very Good
Depth and breadth of material	88	86	87	Good
Accuracy of concepts and terms	91	89	90	Very Good
Systematization of material presentation	89	87	88	Very Good
Overall Average	—	—	**89**	**Very Good**

The overall validation result from material experts was 89%, categorized as *very good*. This demonstrates that the module content aligns with the expected competencies and learning objectives.

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Media Expert Validation

Validation by media experts assessed visual design, multimedia integration, interactivity, and navigation.

Table 5. Results of Material Expert Validation

Assessment Indicators	Expert 1 (%)	Expert 2 (%)	Average (%)	Category
Visual display and graphic design	95	92	93.5	Very Good
Integration of text, images, and video	94	91	92.5	Very Good
Ease of navigation	96	94	95	Very Good
Quality of interactivity	92	90	91	Very Good
Consistency of format and layout	93	92	92.5	Very Good
Overall Average	—	—	**93**	**Very Good**

The overall media validation average score was 93%, also categorized as *very good*. This indicates that the hypercontent-based e-module met the standards of usability, attractiveness, and functionality.

User Trial Results

After revisions, the e-module was tested on students through three stages: small, medium, and large groups.

Table 6. Student Trial Results

Trial Group	Number of Students	Average Score (%)	Category
Small Group	8	88.5	Very Good
Medium Group	12	91.2	Very Good
Large Group	32	94.6	Very Good

The results showed consistent improvements in student responses as the group size increased, indicating the scalability and practicality of the e-module. Overall, both expert validations and user trials confirmed that the hypercontent-based e-module is feasible, effective, and suitable for implementation in the Fashion Atelier Business course.

Discussion

The high validation scores from experts and users indicate that the integration of hypercontent elements—text, images, videos, and hyperlinks—effectively enhances the quality of learning. This aligns with Mayer's (2021) *Multimedia Learning Theory*, which emphasizes that presenting information through multiple formats can improve comprehension and retention.

The combination of digital interactivity and practical job sheets bridges theoretical and practical learning, a finding consistent with Hanatan et al. (2023), who reported that digital modules based on discovery learning significantly increase student motivation and engagement. Similarly, Ningsih et al. (2024) found that flipbook-based e-modules improve learning outcomes and participation, supporting the effectiveness of visual-interactive approaches used in this study.

From a vocational education perspective, the hypercontent-based e-module addresses the long-standing issue of limited practice time. By allowing flexible, self-paced learning, it supports students' ability to review materials and simulate business processes independently. This finding resonates with Resti Febrianti et al. (2023), who demonstrated that digital modules promote learning autonomy and digital literacy.

The use of Flipbook PDF Professional also provides an innovative means of combining multiple media in a single platform, resulting in an engaging and realistic learning experience. The combination of theoretical content with job sheets aligns with Muliawan (2017), who emphasized the importance of integrating practical

procedures in fashion education. In addition, the consistent improvement in student response scores (88.5%, 91.2%, 94.6%) indicates that the module not only meets design standards but also enhances learners' motivation and understanding. This pattern supports the findings of Royhanin & Sungkono (2022) and Hotimah (2023), which emphasize that hypercontent-based media encourage deeper engagement and contextually meaningful learning. Overall, the developed e-module has demonstrated its effectiveness as a technology-enhanced learning tool that integrates theory and practice, aligns with Industry 4.0 educational goals, and contributes to the advancement of vocational learning media in fashion education.

CONCLUSIONS AND RECOMMENDATION

Conclusion

This research successfully developed a hypercontent-based e-module integrated with job sheets to optimize independent learning in the *Fashion Atelier Business* course. The development followed the ADDIE model, encompassing the stages of analysis, design, development, implementation, and evaluation. Validation by material experts (89%) and media experts (93%) demonstrated that the e-module met the *"very good"* category, indicating strong feasibility and content accuracy. Likewise, student trials produced excellent results with average scores of 88.5%, 91.2%, and 94.6% for small, medium, and large groups, respectively, proving its practicality and effectiveness in vocational learning contexts.

The novelty of this study lies in the integration of hypercontent elements with practical job sheets, a combination that bridges theoretical knowledge and real-world application. This approach provides an interactive, self-paced learning experience that aligns with Industry 4.0 demands and strengthens students' entrepreneurial readiness in the field of fashion business management.

Overall, the developed e-module serves as an innovative model of technology-enhanced vocational learning, offering both academic and practical contributions to the improvement of digital learning resources in fashion education.

Recommendations

1. **For Educators:** Teachers and lecturers can adopt this hypercontent-based e-module as a complementary medium to traditional instruction. It allows flexible access to materials, supports flipped learning, and enhances students' independent practice in managing fashion businesses.
2. **For Educational Institutions:** Vocational programs should integrate hypercontent-based media into their curriculum to promote interactive learning experiences that reflect modern industrial practices. Institutions are encouraged to provide training for teachers on developing similar multimedia learning resources.
3. **For Future Researchers:** Future studies should examine the long-term effects of using hypercontent-based e-modules on students' entrepreneurial competence, digital literacy, and learning retention. Integration with Learning Management Systems (LMS) or Augmented Reality (AR) technology is also recommended to enhance interactivity and simulate realistic fashion production processes.

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