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The Development of Miniature Dress Form from Spunbound Material as Three-Dimensional Presentation Media in Vocational Education

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Abstract

Vocational education involves many practical activities requiring direct examples or authentic media for effective learning. In fashion vocational education, three-dimensional media has emerged as the predominant choice for instructional presentation. This research aimed to develop products and systematically analyze the quality, composition, and effectiveness of miniature dress forms fabricated from spunbound as three-dimensional presentation media. The present study employed a research and development method that utilized the ADDIE model and a quantitative descriptive approach. The study involved 66 participants, including six expert validators, 20 small-scale, and 40 large-scale tests. The results obtained demonstrated that the miniature dress form, fabricated from spunbound material, exhibited quality (96.72), composition (97.03), and effectiveness (96.56) metrics that collectively fall within the high category, thus substantiating its efficacy as a three-dimensional presentation medium for fashion vocational education. It is therefore anticipated that the miniature dress form made from spunbound will be utilized as a three-dimensional presentation medium within the context of fashion vocational education.

Keywords: miniature dress form, presentation media, spunbound material, three-dimensional, vocational education

INTRODUCTION

Vocational education is a type of skill education that prepares students to enter the workforce after completing their studies. This educational model is characterized by a significant emphasis on practical applications, accounting for 60% to 70% of the curriculum, complemented by a foundation in theoretical principles (30% to 40%). The rationale behind this pedagogical approach is to address the prevailing concern regarding the inadequate preparation of college graduates regarding the applied skills demanded by the labor market. To this end, the methods employed in the teaching and learning process must be adapted to work conditions, ensuring that the expected results align with the demands of the labor market (Widowati, 2023). Mastering skills in vocational education necessitates a comprehensive infrastructure to facilitate skill reinforcement. In this regard, the vocational education learning process must employ a range of learning methods and media to enhance the quality of learning, aligning with the demands of the world of work and industry.

Using media for educational purposes entails presenting concrete experiences through visualization to introduce, enrich, or clarify abstract concepts and foster subsequent activities. Consequently, designing learning media that effectively conveys information and fosters interactions is paramount to enhancing communication skills essential for professional contexts. Vocational education can incorporate communication skills training through presentations, particularly in communicating ideas about their work. Cultivating practical communication skills is instrumental in helping students successfully navigate job interviews and other job training activities. Speech and

communication skills have been identified as more significant than motivation, work experience, and academic credentials (Mahdi, 2022).

A plethora of learning media can be applied and supported in learning presentations. These include graphic media, photographic media, three-dimensional media, projection media, audio media, and the environment as a teaching medium. The latter category comprises the following types of media: realia, models, stacking models, work models, mockups, and dioramas. The media ranges from simple to complex forms, including realia, models, text, visual, audio, video, and multimedia (Yaumi, 2018). Following the characteristics of fashion vocational education, three-dimensional media in the form of models are suitable for supporting pattern-making learning. These models function as a medium for conveying information and elucidating the intricacies of processes, systems, or learning objects in a manner that is uncomplicated, lucid, and appealing (Yaumi, 2018). The three-dimensional media to be developed is a miniature dress form. This endeavor is informed by observations from the learning process, which have revealed a paucity of dress forms, necessitating their utilization in alternation or by both students. The high cost of these dress forms has been identified as a significant barrier, as it limits their accessibility to students with limited financial resources. Additionally, the size and shape of the dress forms can pose challenges in terms of portability and convenience. These factors contribute to suboptimal conditions for students presenting their work, hindering effective and efficient implementation of the learning process.

Dress forms, otherwise known as sewing dolls, are defined as artificial or human-assembled objects that serve as representations of real objects. These forms can be classified into two categories: model objects and simple imitation objects. Model objects are constructed using models or examples, while simple imitation objects are created by displaying real objects. These media can be fabricated in various dimensions, including exact replicas, smaller versions, or larger-scale models to suit diverse learning requirements (Smaldino et al., 2019; Yaumi, 2018). These dress forms find application in various domains, including pattern making (for three-dimensional cutting), sample testing (seam accuracy), pattern checking, display, teaching, and learning (Hyun & Boo-Ja, 2006; Y.-R. Lee & Jang, 2019). Their role in creating clothing patterns underscores the significance of dress forms in the clothing industry (S. Lee & Kwon, 2020). Under its function, the dress form is designed to replicate the human torso or entire body, with dimensions adapted to various sizes for men's, women's, and children's clothing. These forms generally adhere to standard sizing conventions, such as S, M, and L. The materials utilized for dress forms typically include cotton for the outer layer, while linen and rayon are employed for the outer material. However, these materials do not necessarily indicate the specific composition of the filler and outer layers (Y.-R. Lee & Jang, 2019).

Considering the points above, this research aims to develop a dress form utilizing spunbond material. Spunbond is a product of textile technology, specifically a non-woven fabric made of polypropylene. This material has a variety of applications, including in the manufacture of bags and blankets. The fabrication of non-woven fabrics entails a substantially more economical process, as they are composed of irregular fibers bonded through chemical bonding, local thermal fusion, or mechanical entanglement (Abdel-Mouttalib et al., 2024). Spunbond's widespread use can be attributed to its cost-effectiveness and reliable strength (Mouradian, 2022). Consequently, spunbond material may also be suitable for fabricating miniature dress forms as a three-dimensional presentation medium. Presentations by fashion vocational education students are expected to influence or inform lecturers and the public about their work. In addition to facilitating the process of creating fashion patterns, dress forms are also used to display or showcase clothes sewn or made by draping.

This research has adopted a quantitative approach to solve the problems found. Quantitative research is characterized by its systematic, planned, and structured design, with a clear framework delineating the research process from its inception to its conclusion. The research design employed is development research, which utilizes a descriptive quantitative approach. Development can be defined as the process of translating design specifications into physical form. The concept of development encompasses three fundamental aspects: (1) product development, (2) systemic and systematic procedures, stages, or hierarchies, and (3) related to the model. The underlying principles of development activities are predicated on the continuation of existing products, modification or alteration, combination of critical elements, or the creation of new products (Yaumi, 2018). This research involves systematically designing, producing, and assessing products to ensure effectiveness (Widowati et al., 2025).

METHOD

This study employed a saturated sampling technique, wherein the researcher encompassed the entire population within the sample (Sugiyono, 2019). The research study was conducted with a sample size of 20 respondents for the small-scale and 40 respondents for the large-scale test. The research team also included six experts whose task was to validate and estimate the product's reliability and the feasibility questionnaire used. The validation of the questionnaire's reliability was conducted by employing the product moment correlation formula. In contrast, the estimation of its reliability was achieved through the utilization of the Cronbach alpha formula. The selected procedural model employs the ADDIE research and development model. According to Branch (2009), the letters in ADDIE represent the following steps: analyze, design, develop, implement, and evaluate. The ADDIE model is a product development concept. The ADDIE concept is applied to build performance-based learning. The following section delineates the steps of the ADDIE development model in this research.

First, the Analyzing stage. Performance analysis is a multifaceted concept encompassing various methodologies, including collecting general information such as curriculum, learning outcomes, infrastructure, and a review of pertinent literature. The findings from observational studies, interviews with faculty members, and question-and-answer sessions with students often support this process. This analysis is related to activities in work situations and the environment to determine which products need to be developed (Sugiyono, 2016). Consequently, this research endeavors to undertake activities that include the analysis of the development of evaluation instruments, a feasibility analysis, and development requirements. This study employed a questionnaire as a data collection instrument.

Second, the Design stage. Following the analysis results, a work plan was formulated to emphasize the product description to be produced in the final stage of development, and the instruments to be developed began to be designed. The following steps were taken: a. Determining the Development Team: Experts who play an essential role in the product development process were identified. This group comprises six product validation experts: two designers, two boutique owners, two tailors, b. Developing a Development Schedule, c. Making a Concept Map. The initial media design and material selection for the product were also carried out at this stage. The three-dimensional dress form media for the dress form patterns was created using standard M patterns. Third is the Development stage. This stage is called the product realization stage, encompassing product manufacturing and testing activities (Sugiyono, 2016). The development process is meticulously executed under the design, wherein researchers craft miniature dress forms utilizing spunbond material. The recommendations or validation informs subject matter experts' development of these products. Following the incorporation of these suggestions, the product undergoes a formative evaluation process, which entails collecting data intended to refine the developed product before its implementation or integration into the learning process. The steps involved in this process include conducting small group trials with 20 students.

Fourth is the Implementation stage. The product in question was applied in a real situation to a large group of 40 fashion design students. The objective of this stage is to ascertain the response to the utilization of a miniature dress form composed of spunbond material. Fifth is the Evaluation stage. The evaluation assesses whether each activity step and the resulting product aligns with the specified criteria (Sugiyono, 2016). A questionnaire was utilized in student responses to the developed product and ascertain the effectiveness of the miniature dress form from spunbond material. The student response questionnaire administered was subjected to descriptive percentage statistics, with the following criteria employed:

Table 1. Descriptive Criteria Percentage

Interval	Category
76% - 100%	High
56% - 75%	Medium
< 50%	Low

RESULTS AND DISCUSSION

This study utilizes a questionnaire to assess the quality, composition, and effectiveness of miniature dress form products made from spunbound. The questionnaire is a product feasibility questionnaire with quality, composition, and effectiveness indicators developed with the product. The feasibility questionnaire has previously undergone validation by subject matter experts. It was administered to a small sample of 20 respondents, and the objective of this preliminary testing was to ascertain the validity and reliability of the questionnaire. The content validity of the experts was determined to be 0.857 for quality indicators, 0.928 for composition indicators, and 0.860 for effectiveness indicators, with an r^2 of 0.811. The reliability of the experts was 0.825.

The small-scale test yielded a validity value of 0.657 for the quality indicator, 0.671 for the composition indicator, and 0.671 for the effectiveness indicator, with an r^2 of 0.444. The reliability value was 0.750. This finding validates the feasibility questionnaire, which assesses the quality, composition, and effectiveness of miniature dress form products made from spunbound. The questionnaire's reliability is substantiated by its capacity to be utilized on a large scale. The large-scale test was conducted as part of the implementation and evaluation stages of the ADDIE model. During the implementation stage, fashion students evaluated the developed product. During the evaluation stage of the project, fashion students provided feedback regarding miniature dress form products made from spunbound material by completing a feasibility questionnaire. The study's experimental phase comprised 40 respondents. The results of the feasibility questionnaire are displayed in Table 2.

Table 2. Results

Indicator	Percentage	Criteria
Quality	96.72	High
Composition	97.03	High
Effectivity	96.56	High
Mean	96.77	High

The miniature dress form, which is fabricated from spunbound, received positive feedback following the administration of the feasibility questionnaire. Consequently, miniature dress-form products are deemed suitable as a presentation medium in vocational fashion education. This research employs the ADDIE development model, a five-stage research framework consisting of analysis, design, development, implementation, and evaluation. The analysis stage was conducted through in-depth interviews with fashion design students to ascertain the necessity for media to support their skills. The insights gathered in this phase were instrumental in informing the design of the three-dimensional dress form media, which was developed using spunbond material with a scale size of 1:2. The subsequent stage entailed the fabrication of three-dimensional dress form media products through a trial process, followed by validation with a small group of 20 respondents and product evaluation by two designers, two boutique entrepreneurs, and two tailors. Following the declaration of feasibility, the implementation stage was initiated, wherein the three-dimensional dress form media produced was the subject of a large-scale evaluation study involving 40 participants. The final stage of this developmental research is the evaluation stage. The findings of this evaluation stage are based on the data obtained, including the evaluation results and the three-dimensional media dress form assessment from spunbond material. The latter shows a high average value with quality, composition, and effectiveness indicators.

The findings are consistent with the conclusions of previous research (Hyun & Boo-Ja, 2006); dress form is defined as a three-dimensional model of the human body used to fit clothes of various shapes and sizes. Dress forms utilized within academic settings are predominantly used by students, necessitating their production at a cost-effective price point (Y.-R. Lee & Jang, 2019). The selection of spunbond as a material for miniature dress forms is based on Mouradian's research (2022), in which spunbond fabric is used extensively due to its low cost and reliable strength. Spunbond's versatility is evidenced by its application in diverse fields, including medical gowns, disposable nappies, masks, agricultural fabrics, construction sheets, automotive fabrics, and agriculture, sheet construction, automotive fabrics, filtration, hygiene, geotextiles, surgical drapes, artificial cartilage, industrial and cosmetic wipes, nappies, and protective clothing (Mouradian, 2022). The effectiveness of Spunbound in these applications is well-documented.

CONCLUSION

The following discussion and results section will present the findings of developing a miniature dress form from spunbond material as a three-dimensional visual presentation in vocational education. This research followed the ADDIE research and development stages: analysis, design, development, implementation, and evaluation. The results obtained from the study indicate that the miniature dress form, constructed from spunbond material, is a highly effective three-dimensional presentation medium within the context of vocational education. This conclusion is supported by the high quality and composition scores achieved.

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