AYOLLAR PIDJAGI DIZAYNINI ISHLAB CHIQISHDA 3D MODELLASHTIRISH TEXNOLOGIYALARIDAN FOYDALANISH.

Xoshimova D.S.
Toshkent to'qimachilik va yengil sanoat instituti hamda Parij xalqaro moda akademiyasi (AICP) qo'shma ta'lim dasturi 1-kurs magistranti
Yunusxodjayeva X.M.
Toshkent to'qimachilik va yengil sanoat institute "Moda va dizayn" kafedrasi Professori, T.f.f.d (PhD)

Annotatsiya: *Mazkur maqolada ayollar pidjagi dizaynini ishlab chiqishda 3D modellashtirish texnologiyalaridan foydalanishning ahamiyati va afzalliklari tahlil qilinadi. 3D modellashtirish yordamida kiyim konstruksiyasini yaratish, turli o'lchamlarga moslashtirish, dekorativ elementlarni sinab ko'rish va ishlab chiqarish jarayonini optimallashtirish imkoniyati mavjud. Shuningdek, maqolada dizaynerlarga yaratilgan qulayliklar, mahsulot sifatini oshirish va ishlab chiqarish samaradorligini yaxshilash masalalari ko'rib chiqilgan.*

Kalit so'zlar: *3D modellashtirish, ayollar pidjagi, dizayn, CAD tizimlari, modellashtirish, kiyim konstruksiyasi, innovatsion texnologiyalar.*

ИСПОЛЬЗОВАНИЕ ТЕХНОЛОГИЙ 3D-МОДЕЛИРОВАНИЯ ПРИ РАЗРАБОТКЕ ДИЗАЙНА ЖЕНСКИХ ПИДЖАКОВ

Хошимова Д.С.
Магистр 1 курса совместной образовательной программы Ташкентского института текстильной и лёгкой промышленности и Международной академии моды Парижа (AICP).
Юнусходжаева Х.М.
Профессор кафедры «Мода и дизайн» Ташкентского института текстильной и лёгкой промышленности, доктор философии по техническим наукам (PhD).

Аннотация: *В данной статье анализируется значение и преимущества использования технологий 3D-моделирования при разработке дизайна женских пиджаков. С помощью 3D-моделирования возможно создавать конструкции одежды, адаптировать их к различным размерам, тестировать декоративные элементы и оптимизировать производственный процесс. Также рассматриваются удобства, предоставляемые дизайнерам, вопросы повышения качества продукции и улучшения эффективности производства.*

Ключевые слова: *3D-моделирование, женский пиджак, дизайн, CAD-системы, моделирование, конструкция одежды, инновационные технологии.*

USING 3D MODELING TECHNOLOGIES IN WOMEN'S JACKET DESIGN

Xoshimova D.S.
First-year Master's student of the joint educational program of the Tashkent Institute of Textile and Light Industry and the Paris International Academy of Fashion (AICP).
Yunusxodjayeva X.M.
Professor of the Department of Fashion and Design, Tashkent Institute of Textile and Light Industry, Doctor of Philosophy in Technical Sciences (PhD).

Annotation: *This article analyzes the significance and advantages of using 3D modeling technologies in the design of women's jackets. 3D modeling enables the creation of garment constructions, adaptation to various sizes, testing of decorative elements, and optimization of the production process. The article also examines the conveniences provided to designers, as well as issues related to improving product quality and production efficiency.*

Key words: *3D modeling, women's jacket, design, CAD systems, modeling, garment construction, innovative technologies.*

In the modern fashion industry, the use of innovative technologies fundamentally transforms the design and development process, significantly increasing its efficiency. Traditional methods of garment design require a considerable amount of time, labor, and resources. This is especially true for creating complex-structured women's jackets, where manually drawing sketches, calculating constructions, determining measurements, and placing details is a highly complicated process prone to errors. Due to human factors, even minor technical mistakes may occur, negatively affecting product quality and generating additional costs during production.

For this reason, 3D modeling technologies provide designers with substantial opportunities. They allow designers to create virtual models and evaluate the appearance and proportions of garments in advance. This process enables precise checking of every detail of the construction, including collar and sleeve shapes, relief lines, pocket placements, and buttons. Designers can experiment with different design variations, select the most optimal option, and revise it if necessary. [1]

3D modeling technologies not only accelerate the design process but also expand the creative capabilities of designers. By testing various colors, fabrics, and decorative elements in a virtual environment, new ideas can be implemented quickly and effectively. Moreover, these technologies make it possible to automatically grade designs for different sizes, calculate fabric consumption, and optimize the production process. As a result, time, labor, and materials are saved, product quality improves, and production efficiency is enhanced.

Advantages of 3D Modeling Technologies. 3D modeling technologies provide a number of significant advantages in modern garment design and production. They not only simplify the work process for designers and pattern makers but also improve product quality, increase production efficiency, and save time and resources. The main benefits of these technologies are described in detail below. [2]

1. **Creating garment constructions:** With the help of CAD systems, all details of a jacket can be created accurately and quickly. Traditional methods of manually drawing constructions are time-consuming and prone to errors. 3D modeling allows all geometric lines, relief elements, collars, sleeves, and pocket placements to be precisely generated within the software. Designers can also test different materials, colors, and textures in a virtual environment, ensuring that the final design is both aesthetically pleasing and functionally optimized.

2. **Adapting to different sizes:** 3D modeling technologies enable automatic grading of a single model into multiple sizes. That is, once a designer creates a jacket in one size, the software can automatically adapt it to all standard sizes. This process not only saves significant time but also reduces errors caused by human factors and simplifies the production workflow. In addition, the proportions and fit for each size can be evaluated in advance, ensuring comfort and ergonomics of the final product. [3]

3. **Testing decorative elements:** Using 3D modeling, buttons, collars, pockets, relief lines, and other decorative elements can be placed within the virtual model. Designers can experiment with different configurations to select the most optimal design and aesthetic arrangement. In this way, the placement and appearance of decorative elements are verified before production, improving design quality and minimizing manufacturing errors.

4. **Virtual fitting:** 3D modeling technologies allow designers to assess how a jacket fits on the body, including its shape and proportions. Virtual fitting evaluates ergonomic aspects, freedom of movement, and overall comfort. It also allows for the assessment of fit across different body types and sizes. This ensures that structural and design errors are corrected prior to production, enhancing product quality and resulting in garments that meet customer expectations.

5. **Optimizing production:** 3D modeling allows finished models and patterns to be automatically transferred to cutting equipment. This accelerates production, improves labor efficiency, and enables effective use of materials. As a result, not only are time and resources saved, but production costs are also reduced. Furthermore, 3D modeling optimizes the manufacturing process, increasing efficiency in factories and enabling the creation of high-quality, precise garment models. [4]

6. **Designer convenience and creativity:** 3D modeling technologies expand designers' creative possibilities. By experimenting with various colors, fabrics, and patterns in a virtual environment, new design ideas can be implemented quickly and effectively. Additionally, designers can manage their time more efficiently and reduce errors when creating complex garment models.

3D modellashtirish jarayoni Murakkab bichimli ayollar pidjagini 3D modellashtirish jarayoni bir necha bosqichlardan iborat bo'lib, har bir bosqich dizayn va ishlab chiqarish sifatini maksimal darajada oshirishga xizmat qiladi. Ushbu jarayon dizaynerlarga pidjakning tashqi ko'rinishini, funksionalligini va ergonomik xususiyatlarini oldindan baholash imkonini beradi. Quyida 3D modellashtirish jarayonining asosiy bosqichlari batafsil tushuntirilgan.

1. Model g'oyasini yaratish 3D modellashtirish jarayoni dizaynerning g'oya va konsepsiyasini belgilashdan boshlanadi. Ushbu bosqichda dizayner eskizlar yaratadi, pidjakning silueti, uzunligi, yeng va yoqa shakli, cho'ntak va tugmalar joylashuvi kabi dekorativ elementlar aniqlanadi. Shu bilan birga, zamonaviy moda tendensiyalari, maqsadli auditoriya ehtiyojlari va funksional talablar hisobga olinadi. Model g'oyasini batafsil rejalashtirish dizayn jarayonining keyingi bosqichlarini tezlashtiradi va xatolarni kamaytiradi.

2. Asosiy konstruksiyani yaratish Keyingi bosqichda CAD tizimlari yordamida pidjakning asosiy konstruksiyasi kompyuterda yaratiladi. Bu bosqichda tana o'lchamlari, proporsiyalar va harakat erkinligi hisobga olinadi. CAD tizimi konstruktsiyaning har bir detalini aniq hisoblab beradi, chiziqlar, rel'yef elementlari va tikuv joylarini aniqlaydi. Shuningdek, bu bosqichda materiallarning xossalari, mato qalinligi va elastiklik kabi parametrlar ham dasturga kiritilishi mumkin, bu esa modelning real sharoitlarda qanday turishini oldindan baholash imkonini beradi. [3]

3. 3D Modeling. After creating the basic construction, the model is reviewed in a virtual format using 3D modeling. This process allows designers to visually evaluate how the jacket fits on the body. Through 3D modeling, the compatibility of various details and elements, such as the collar, sleeves, pockets, and decorative features, is checked. Additionally, designers can experiment with different colors, fabrics, and textures in the virtual environment, which contributes to the aesthetic refinement of the final product.

4. Testing and Optimization. Once the 3D model is created, the testing and optimization phase begins. At this stage, the jacket's fit on the body, ergonomics, freedom of movement, and overall functionality are evaluated. If necessary, the model is revised: minor construction errors are corrected, the placement of decorative elements is adjusted, and the proportions of the silhouette are improved. In this way, all structural and design errors are addressed before production, significantly enhancing product quality. [4]

5. Preparing Patterns. In the final stage of the process, all details are prepared as final patterns. These patterns are used in production for cutting and sewing the fabric. Patterns created using CAD systems are precise and optimized, which accelerates production, reduces fabric consumption, and increases labor efficiency. Additionally, by testing the patterns in the virtual environment, they can be graded for different sizes and made ready for manufacturing.

In the process of designing complex-structured women's jackets, 3D modeling technologies serve as a modern, efficient, and convenient tool for designers and

manufacturers. These technologies allow for precise creation of garment constructions, adaptation to different sizes, testing of decorative elements, and optimization of the production process. [4]

In conclusion, the use of 3D modeling technologies in designing complex women's jackets is of significant importance for the modern fashion industry. It accelerates the design process, improves product quality, and enhances production efficiency.

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