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THE INFLUENCE OF MATERIAL PROPERTIES ON THE DESIGN OF CLOTHING COLLECTIONS

Abstract. The article examines the influence of the properties of textile materials on the design of clothing, emphasizing its role in the aesthetic and functional characteristics of products. The main characteristics of materials affecting the design and quality of a clothing collection, types of materials and textures, their properties and influence on design decisions, as well as the interaction of texture with color and light are considered. Current trends are discussed, including sustainable production and innovative technologies, features and equipment in the manufacture and processing of fabric and knitwear.

Keywords: design, texture, textile material, knitwear, clothing collections, design, smooth, embossed, combined.

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Introduction. In recent decades, the textile industry has changed under the influence of technology and consumer preferences. The texture of materials has become a key factor influencing the perception and choice of clothing, determining comfort, durability and care. In today's market, understanding the impact of texture on clothing design is especially important. The purpose of this study is to analyze the influence of texture of textile materials on the design of clothing, which requires solving problems of determining the characteristics and classification of texture, studying its relationship with aesthetic and functional properties, analyzing successful examples of the use of texture in design from various brands and identifying consumer preferences.

There are many studies devoted to various aspects of textile materials and their impact on fashion design. In the works of such authors as Y.S. Prushinskaya, Y.L. Gerasimova, the main properties of fabrics and their influence on the perception of products are considered [1,4,5]. Thus, despite the existence of a significant amount of research in this area, the need for a more in-depth analysis of the effect of the texture of textile materials on the design of clothing remains relevant, which determines this study.

The range of materials used for making clothes is very wide: a variety of fabrics, knitwear, non-woven materials, leather, fur, etc. Their properties vary

significantly. When designing clothes, the criteria should be taken into account: the model is created from a specific material and the fact that the material is selected depending on the creative idea. In both cases, you need to know the properties of the materials, as well as how they affect shaping.

The main properties of materials that must be taken into account when modeling and designing are rigidity (flexibility), drapability, stretchability and shrinkage in various directions, molding ability and elasticity, thickness, vertical and horizontal density, surface density (mass). The properties and appearance of the material are determined both by the properties of the yarn (threads) – fiber composition, thickness, structure (twist), etc., and the features of its structure (weave), texture (pile, gloss, etc.), pattern [2].

The physical, mechanical and technological properties that directly affect the result of the costume collection are also important – appearance, fit, and absence of defects. When choosing fabrics, the properties of their elongation in the oblique direction should be taken into account. In fabrics with a large elongation, distortions are possible. This is especially true for the oblique sections of the model parts. During wet-heat treatment, individual sections of such parts may change their shape, and the appearance of the product may be distorted. Therefore, when developing a particular design associated with cuts at different angles to the shared thread, it is necessary to tighten the cut parts. The unevenness of the drawbar is aligned according to the patterns and cut off. If the fabric has a high stretchability and cannot be stretched, then the finished product will not match the intended shape.

When designing a model, the ability of materials to shrink during wet heat treatment or humidification should be taken into account. For example, cotton fabrics can shrink by 10-12%, staple fabrics by 15%, boucle-type pure wool fabrics by 8-10%, and carpet or gabardine fabrics by 5-10%. It is recommended that fabrics made of natural raw materials be pre-soaked in water, i.e. decoated. Shrinkage data should be taken into account when designing models made of different materials, such as upper, lining, gaskets, etc.

The forming ability of materials, the ability to form and fix the resulting shape, is taken into account when calculating and constructing the details of the product design. The three-dimensional shape of the model or its parts can be obtained by changing the angle between the warp and weft threads by pulling them off, pressing them, stretching them during wet heat treatment and then fixing them. This property is possessed by materials made of pure wool fibers. The cortical layer of these fibers, during wet-heat treatment, contributes to the creation of a particular shape, and then its long-term retention. Materials that are resistant to shrinkage, and therefore to molding abilities, are poorly served by wet-heat treatment. A certain shape of the part, in this case, is achieved due to a constructive solution, by introducing seams, darts, etc. Knitwear materials have a good molding ability. Due to the mobility of its structure, it can smoothly fit the surface of the human body. When shaping a knitwear model, the stretchability of knitwear (from 40% to 100% or more) should be taken into account, especially when designing products that fit snugly, without darts.

The crumbling of fabrics by sections negatively affects the design of products with undercuts, complex contour lines of the part, with welt pockets, buttonholes, gussets in one-piece sleeves, etc. If you make a product with such features, the fabric in these places will not spread over time and the product will lose its strength and appearance. It is better to avoid making models with such features from crumbled fabrics. It is recommended, when cutting parts from

heavily crumbled fabrics, to increase the width of the seams by 1.5-2 times and take into account additional allowances for the processing of cuts.

The elasticity of materials and their crease strongly affect the appearance of the model. The denser the fabric and more frequent the weave, the less the possibility of mutual shifting of the warp and weft threads, the greater its elasticity and less crease. Highly wrinkled material should not be used in too narrow, figure-hugging forms, draperies, pleats, pleats. These materials negatively affect the appearance of the model, giving it a casual look. In exceptional cases, it is considered accepted. This is especially true for products made of high-quality materials with natural fibers, such as linen, cotton, eelasticity of materials and their crease strongly affect the appearance of the model. The denser the fabric and more frequent the weave, the less the possibility of mutual shifting of the warp and weft threads, the greater its elasticity and less crease. Highly wrinkled material should not be used in too narrow, figure-hugging forms, draperies, pleats, pleats. These materials negatively affect the appearance of the model, giving it a casual look. In exceptional cases, it is considered accepted. This is especially true for products made of high-quality materials with natural fibers, such as linen, cotton, etc.

In order to avoid scorching of materials, las, and discoloration of the material, it is necessary to strictly observe the technical conditions and temperature conditions recommended for materials of various compositions during wet and thermal work. So, to avoid seams, paper or an ironer is placed under the allowances. It should be noted that fabrics of blue, turquoise, light gray tones and white fabrics are especially sensitive to high temperatures. Products made of fabrics with artificial fibers should be minimally moistened and not stretched during wet-heat treatment.

The texture of a material is the structure of its front surface. By interweaving the threads of the fabric, patterns of various structures are obtained on the fabric. They are obtained using the following weaves of warp and weft threads: simple smooth (linen, twill, satin, satin) or finely patterned (matting, reinforced twill, diagonal, crepe); complex (double, pile, openwork); large-patterned jacquard (fabrics with large patterns, patterns of flowers, geometric shapes, etc.). Due to this, the surface of the mat this, the surface of the materials can be smooth, rough, pile, shiny, matte, pressed, ribbed, fluffy, combined.

Due to this, the surface of the materials can be smooth, rough, pile, shiny, matte, pressed, ribbed, fluffy, combined, with fleece, etc. To take into account how the material and its texture will behave when creating a model, it is recommended to check it on a mannequin or human figure. You should pay attention to whether the material drapes and falls softly or sticks out (that is, soft tails and assemblies do not work), how the texture and basic properties of the material will affect the appearance of the model. It is necessary to see how the material will affect the appearance of the customer of the model and whether it suits him.

When designing a model, the scale, size, and location of the pattern on the material should be taken into account. It is necessary that the drawing does not confuse the shapes and is positioned on the model so that the figure does not visually deform. To do this, a number of rules should be taken into account when designing clothes. When cutting product parts, you can ignore the pattern of the material if it is small or medium in size, without a pronounced color scheme, with a completely filled background, and does not have the following features. If the pattern has a top and bottom, it is recommended to throw the fabric over the mannequin or figure, so that the pattern is pointing up on one side and down on the other. Such a search will help to find the best, more expressive solution in the

arrangement of the drawing. Fabrics with a large pattern should be used in simple, concise forms, without a large number of seams. If the material pattern is in the form of stripes, garlands, etc., the size of the pattern, its direction, the location of the centerline, and the overall color scheme should be taken into account. A drawing can visually distort a figure if its location is concentrated at the level of the protruding points of the chest, thighs, buttocks, and abdomen. When cutting, it is necessary to ensure that the pattern matches on the paired parts and darts. The pattern's rapport should be maintained along the midlines of the back and front, at the junctions of the yoke and bodice, bodice and skirt, and along the bottom of the product.

The drawing should not end in the middle. It should be remembered that on printed fabrics, reliefs, wedges, undercuts, and small details are hardly noticeable. The drapery on such fabrics is featureless and only its silhouette is perceived. The drapery looks good on a smooth-colored fabric that sets off each coat tail or fold. In striped fabric models, it is not recommended to use three different stripe directions at the same time – longitudinal, transverse and oblique. This splitting of the bands overloads the model and tires it out. When cutting the details of a striped and checkered model, it is necessary to ensure that the pattern matches on the paired parts and darts. The pattern’s rapport should be maintained along the midlines of the back and front, at the junctions of the yoke and bodice, bodice and skirt, and along the shoulder lines. In a striped or checkered product, the transverse stripes on the bodice and on the sleeve should be located at the same level, that is, they match. It should be remembered that the pattern of stripes and cells is carelessly refracted at the stitching points of the darts. It is necessary to model the tuck so that the pattern on one side retains its longitudinal position, and on the other it is semi-oblique and converges in a herringbone pattern. In adjacent products, along the midline of the back, the stripes or cages should converge to the waistline in a herringbone pattern, and they maintain an upright position from the waistline. It should be remembered that vertical sparse lines on the product visually lengthen the figure, while horizontal lines expand the silhouette. But frequent vertical thin lines expand the silhouette, while horizontal ones lengthen it. At the same time, wide stripes, both horizontal and vertical, visually expand the silhouette. Large drawings visually enlarge the figure, while small ones decrease it. The figure will appear taller if the model is sewn from a dark–striped material, and lower and fuller if it is sewn from a light-striped material. The color, texture, and properties of the suit’s materials make it either heavier or lighter. Embossed, rough, fleecy fabrics increase the volume of the suit, and conversely, a smooth, shiny or glossy surface reduces its volume.

The color of the material plays a significant role in the visual perception of the model and its compositional solution. Color, more than other signs, has an emotional effect on a person. The influence of color on human psychology is a whole science. But when designing clothes, you should always take into account a number of the most important recommendations:

– if different colors are combined in a suit, then one should always dominate, be the main one, the leading one. Other colors, related or contrasting, should reveal the main color;

- the same color is perceived differently in tissues of different structures.; more active colors in the shape create movement in their direction; light drawings on a dark background will appear larger than dark drawings of the same size on a light background;

– full figures in cold or dark-colored suits appear to have less volume, while in light or warm-colored suits they will appear more voluminous;

- it should be noted that white increases the volume visually, while black decreases it.

The texture of textile materials is a set of physical and visual characteristics of a fabric that determine its appearance, tactile sensations and behavior during operation. This concept covers aspects such as surface structure, density, stiffness, elasticity, and other properties that affect the perception of a material by both designers and consumers. Texture can be both natural and artificial, and it plays a key role in creating a unique style and image of clothing.

The texture not only determines the visual perception of the product, but also affects its functional characteristics. For example, smooth fabrics can create an elegant and sophisticated look, while embossed textures can add volume and dynamism to a design. Thus, understanding texture is an important aspect in designing clothes, as it forms not only the aesthetic, but also the practical perception of the product.

The textures of textile materials can be classified into several categories depending on their visual and tactile characteristics.

The main texture groups include:

1. Smooth textures: These fabrics are characterized by a smooth and uniform surface. Examples of smooth textures include satin, silk, and polyester. Smooth textures are often used in evening and business wear, as they create an effect of sophistication and elegance.

2. Relief textures: These materials have pronounced relief elements that can be created by weaving or surface treatment. Examples of relief textures include velvet, jacquard, and embroidered fabrics. Relief textures add depth and interest to the design, and can also be used to create accents in clothing.

3. Combined textures: These fabrics combine elements of both smooth and embossed textures. Combined textures can be created by using different processing technologies or combining several types of fabrics in one product. Such textures allow designers to experiment with contrasts and create unique visual effects.

Each of these texture categories has its own characteristics and applications in fashion design, which allows you to create a variety of images and styles.

The texture of textile materials has a significant impact on both the physical and aesthetic properties of fabrics. In terms of physical properties, texture determines characteristics such as strength, wear resistance, breathability, and thermal insulation. For example, embossed textures can provide better breathability due to the presence of air pockets between the fibers, which makes such fabrics more comfortable to wear in warm weather. In contrast, smooth fabrics may be more susceptible to damage, but they are usually easier to clean and maintain.

The aesthetic properties of fabrics are also closely related to their texture. Smooth fabrics create a sense of simplicity and minimalism, which may be relevant for modern design solutions. Relief textures, on the contrary, attract attention and can become the main accent in the image. In addition, texture affects the perception of color: smooth surfaces are usually perceived as brighter and more saturated, while embossed ones can soften color shades. Thus, understanding the relationship between the texture of textile materials and their physical and aesthetic properties is a key element in the clothing design process. This knowledge allows designers to make informed decisions when choosing fabrics for their collections and create products that meet the needs of consumers both in terms of functionality and aesthetics.

The texture of fabrics in fashion is a multi-layered and historically determined aspect of textile design that has evolved over time, starting with the Renaissance, when velvet and satin symbolized status and wealth. In the Victorian era, a variety of textures such as silk, wool, and cotton were used to create intricate layered dresses with ruffles and lace, giving them volume and depth. The twentieth century became an era of experimentation with synthetic materials such as nylon and acrylic, which contributed to the emergence of unique textures within the Art Deco and minimalist styles. Modern trends focus on environmental friendliness and sustainable development, which is manifested in the use of recycled materials and natural fibers that create pleasant-to-touch fabrics. Technological innovations, including smart fabrics with variable textures, open up new horizons for designers, allowing them to combine functionality and style. A mix of textures is becoming a popular technique where different materials are combined, creating visual interest and emphasizing design elements, which confirms the importance of texture as an integral component of the modern fashion context.

Texture in fashion design is a key element that not only enriches visual perception, but also affects the functionality and wearability of products. In this context, let's look at the practices of well-known designers and brands that actively use textural solutions in their collections.

The Chanel brand, one of the leaders of Karl Lagerhold, has become an intellectual and an innovator in the fashion world. Lagerfeld masterfully combined traditional elements with modern textures, creating classic tweed jackets that featured sophisticated textures and comfort. He incorporated a variety of materials into his collections, including leather, metal and glass inserts, which allowed him to create multi-layered images reflecting both the brand's heritage and current trends.

Alexander McQueen, known for his bold and provocative approaches to design, used texture as a means of expressing conceptual ideas. His lectures, as well as Plato's Atlantis, were devoted to special topics, including world topics. McQueen actively used embroidery, embossing and non-standard materials, which allowed him to create unique images that combined art and fashion.

The Balenciaga brand, led by Denis Gavasalia, has also become the inventor of its own innovative catwalk in technology. Gvasalia actively uses three-dimensional shapes and unexpected combinations of materials such as neoprene and denim. His works are characterized by a pronounced texture, which makes them easily recognizable and relevant in the context of modern fashion trends.

Thus, the use of texture in fashion design is a multifaceted phenomenon with a rich history. Studying the cases of designers such as Alexander McQueen and Demna Gvasalia allows us to better understand the importance of texture in fashion and its impact on the perception of clothing. Texture not only enriches the visual design language, but also serves as a means of conveying emotions and conceptual ideas, making it an integral part of modern fashion discourse.

Thus, the use of texture in fashion design has a rich history and continues to evolve in modern trends. Studying the historical context, modern trends and cases of famous designers allows us to better understand the importance of texture in fashion and its impact on the perception of clothing.

Materials and methods. Based on the theoretical analysis, an experimental study was conducted to determine the influence of textile material texture on clothing design. The study examined how different textures affect the perception of clothing by using various pattern samples. Participants were asked to evaluate the samples based on the following criteria: attractiveness, comfort, and style.

The target audience consisted of students from fashion schools, designers, and general consumers. The data collection process included the development of questionnaires and sample sets, which were then presented to participants in both online and offline survey formats within a controlled environment.

The collected data were analyzed using statistical methods, and the findings were as follows:

– 65% of respondents preferred natural fabrics, while 25% favored synthetic ones.

– 70% of participants believed that texture influences style.

– 80% reported a noticeable change in impression depending on the texture.

For most respondents, soft fabrics were associated with comfort, making lightweight textures desirable for summer wear and warmer textures for winter clothing. Additionally, texture was identified as a tool for self-expression, particularly among younger individuals throughout the year.

Research results. The results of the experiment showed that the participants preferred clothes with textures that evoked positive associations. For example, 85% of the participants rated samples with soft textures (corduroy, cashmere) higher compared to rough textures (denim, coarse wool). The choice of texture was also influenced by the mood of the participants at the moment.

In general, the results obtained emphasize the importance of texture as a key element of consumers' perception and choice of clothing. This knowledge can be used by designers to create collections that meet the expectations and preferences of the target audience [2].

The results of our study confirm the existing theories that the texture of clothing plays a significant role in the perception of style and the emotional response of consumers. For example, research conducted in the field of fashion psychology shows that textures can evoke certain associations and emotions, which is consistent with our findings on the preference of soft fabrics to create a sense of comfort.

In recent years, there has been a growing interest in environmentally friendly and natural materials, which is confirmed by our results on the preference for natural fabrics. This is consistent with the global trend towards sustainable fashion, where consumers opt for materials that are not only aesthetically pleasing, but also environmentally friendly.

Currently, consumers are striving to find a balance between functionality and aesthetics, which is also supported by existing research in the field of consumer behavior. This highlights the importance of creating collections that meet both the practical and emotional needs of customers. One of the main limitations of our study is the size and composition of the sample. Although we tried to include diverse groups of respondents, certain demographic characteristics (e.g. age, gender, social status) may be incompletely represented, which limits the generalization of the results [3].

If you sew a product using the same patterns from materials with different properties, they will look different on the same figure, as they will differ in shape, size, and plastic. For example, a flared skirt made of stiff fabric on the figure will have a smooth conical shape, and a draped one will have a conical shape with tails. The better the fabric drapes, the more the tail is formed and the skirt appears less extended to the bottom. As you know, the maximum elongation of fabrics occurs when they are stretched at an angle of 450 to the warp threads.

If the molding ability of the fabric is poor, a smooth volumetric shape can only be obtained constructively – by introducing seams, darts. With a good molding ability of the material, the same volumetric shape can be obtained by changing its structure: the angle between the warp and weft threads by stretching, stretching, and planting. An example of a material that, due to the mobility of its structure, smoothly fits the surface of the human body is knitwear with good stretchability. Elastomeric filaments (fibers) were used to give some stretchability to fabrics. However, the properties of fabrics and knitwear still differ significantly due to the different structures of these materials. Recently, knitwear has become increasingly common. This is due, firstly, to its excellent consumer qualities – comfort, a huge variety of properties, appearance, good fit on various shapes, even significantly different from the typical ones, etc. Secondly, knitting production is much more efficient than weaving, which is why it is rapidly developing all over the world – more and more advanced equipment is emerging for all stages of the production of knitwear for various purposes.

Modern equipment makes it possible to produce high-quality knitwear in large specialized enterprises, small enterprises, and even in everyday life. The range of yarns and yarns for the production of knitwear is becoming more and more diverse. Knitwear provides unique opportunities to embody the creative ideas of a designer who can choose and combine yarns and threads himself, create a variety of textures, patterns, coloristics, product shape, and finishing elements. The properties of knitwear are very diverse and depend on a number of factors. Knitted fabric is formed from threads or yarns bent in the form of loops, intertwined with each other. The loops form horizontal loop rows and vertical loop columns. There is a distinction between cross-knitted (knitwear) and basic knitwear. In cross-knitted knitwear, as in hand knitting, looped rows are formed by successively bending and looping one or more threads. After forming loops in one row, the thread moves to the next row, etc. to obtain the basics of knitted knitwear, a whole system of threads (bases) is required, since each loop column uses its own thread. The columns are connected to each other in different ways, forming a variety of interlacing [3]. To produce loops in knitting machines, special needles are used, the thickness of which depends on the size of the loop. The thickness of the knitting machine needle is determined by its class. The thinner the needles (higher grade), the closer they are to each other in the machine – the loops are smaller, so a thinner yarn should be used.

Transversely knitted knitwear can be made on flat-knitting and round-knitting machines. In the second case, the needles are placed on the needle cylinder and the fabric is knitted with a “tube” (stocking). The width of the resulting “tube” of the web mainly depends on the diameter of the cylinder and the class of the machine. The width of the web is also influenced by the type of raw materials, the linear density of yarn or threads, the weave, and the knitting density. Circular knitting machines of appropriate diameters produce a web for products without side seams [3]. According to the production method, knitwear is usually divided into regular, semi-regular, cropped and combined. The details of regular products are knitted along the contour and only sometimes tinted in separate areas, usually along the neck line. The details of semi-regular products are cut out of coupons, which are strips of knitted fabric earned from the bottom and obtained from circular knitting and flat knitting machines.

With the combined manufacturing method, the main parts can, for example, be cut out of the canvas, the finishing parts can be tied in a regular way. The production method dictates the requirements for the shape and design of the

product. For example, for regular and semi-regular products, the number of connecting seams should be as small as possible, the contours of the parts are designed in a simple configuration, the bottom lines are horizontal, since the lower rows of coupons and knitted parts are earned.

In order to avoid lowering the hinges, the sections of the parts are most often swept before or during processing. There is a huge fleet of sewing equipment specialized for processing various types of knitwear and performing various stitches, seams and knots of knitwear. In products made of cross-knitted knitwear of medium and high stretchability, it is impractical to design stitching seams in the transverse and close to it direction, since they will be highly stretched. In order to obtain products of specified sizes and shapes that are stable during operation, it is very important to carefully observe the technological modes at all stages of the production of fabrics and products, as well as taking into account the characteristics of knitwear when developing the design. Thus, when designing clothes, it is necessary to take into account the basic properties of materials that affect shaping [4].

Future research may focus on increasing the diversity of the sample, including more participants from different cultural and social groups to better understand the impact of texture on clothing choice.

Speaking of prospects, conducting long-term research will allow us to better understand the dynamics of perception of texture in the context of time. Studying the influence of texture on the perception of clothing in different countries and cultures can provide a more complete understanding of how cultural differences affect the choice of fabrics and styles, which also helps in observing consumer behavior in stores or analyzing purchasing decisions in real time.

Research may also focus on the impact of new technologies on texture perception and clothing choice, especially in the context of online shopping. In conclusion, our research highlights the importance of texture as a key element in consumers' perception and choice of clothing. Despite the existing limitations, the results open up new horizons for further research in this area.

Conclusion. Designers are encouraged to take into account the preferences of their audience, explore emotional reactions to textures, and experiment with combinations of them to enhance the attractiveness of products. Manufacturers should invest in the development of environmentally friendly fabrics and conduct educational campaigns about the benefits of sustainable choice.

Texture also plays a key role in sustainable fashion design, influencing the environmental footprint and social responsibility of production. The emotional connection between the consumer and the product becomes important in a competitive market. Taking into account the research results, designers and manufacturers can create more responsible collections that meet modern requirements.

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КИІМ ТОПТАМАЛАРЫН ЖОБАЛАУДАҒЫ МАТЕРИАЛДАР ҚАСИЕТТЕРІНІҢ ӘСЕРІ

Аңдатпа. Мақалада тоқыма материалдардың қасиеттері киімді жобалаудағы әсері зерттеледі, олардың бұйымдардың эстетикалық және функционалдық сипаттамаларындағы рөлі атап өтіледі. Киім топтамасының дизайны мен сапасына әсер беретін материалдардың негізгі сипаттамалары, материалдар мен фактуралардың түрлері, олардың қасиеттері және дизайнерлік шешімдеріне әсері, сонымен қатар, фактураның түс пен жарықпен әрекеттесуі қарастырылады. Ағымдағы үрдістер, оның ішінде тұрақты өндіріс пен инновациялық технологиялар, маталар мен трикотаж бұйымдарын өндіру мен өңдеудегі жабдықтар мен ерекшеліктері талқыланады.

Тірек сөздер: дизайн, фактура, тоқыма материал, трикотаж, киім топтамасы, жобалау, тегіс, өрнекті, біріктірілген.

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ВЛИЯНИЕ СВОЙСТВ МАТЕРИАЛОВ НА ПРОЕКТИРОВАНИЕ КОЛЛЕКЦИЙ ОДЕЖДЫ

Аннотация. В статье исследуется влияние свойств текстильных материалов на проектирование одежды, подчеркивая ее роль в эстетических и функциональных характеристиках изделий. Рассматриваются основные характеристики материалов, влияющие на дизайн и качество коллекции одежды, типы материалов и фактур, их свойства и влияние на дизайнерские решения, а также взаимодействие фактуры с цветом и светом. Обсуждаются современные тенденции, включая устойчивое производство и инновационные технологии, особенности и оборудование при изготовлении и обработке ткани и трикотажа.

Ключевые слова: дизайн, фактура, текстильный материал, трикотаж, коллекции одежды, проектирование, гладкие, рельефные, комбинированные.