

Teaching technical specifications in fashion design education

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Abstract

Technical specifications of the fashion designs should be made into written form to produce a clothing collection. Thus, the designer visualizes his/her idea using technical drawings. To fully realize his/her idea, it is important that the designer should provide the details regarding the technical specifications correctly. Because while a clothing collection is produced, it goes through many processes by different people. That the designer introduces technical specifications in detail provides accurate production of the collection.

In this study, the fashion design process is gathered under fifteen headings as identification of target market, research of fashion trends, determination of concept, identification of colors, selection of fabrics, determination of auxiliary materials, description of line, preparation of concept board, illustration of clothing designs, drawing of technical designs, formation of measurement charts, description of sewing instructions, indication of measurements, preparation of patterns and computing costs. In addition to these headings, the technical specifications covering the process are also considered. Lastly, the suggestions on teaching of the technical specifications in fashion design education are presented. The aim of this study is the technical specifications in the fashion design process to be learned. Therefore, the suggestion for integration of the information that is learned during fashion design education which requires a long lasting infrastructure is presented.

In fashion design education, it is important to provide education in design and production process. In this study the aim is to develop a model about teaching technical specifications in fashion design education. The aim of this study is to develop a model for teaching technical specifications in fashion design education. Therefore it is considered that the study is important in terms of integration of design and production information with related technical specifications.

Keywords: Fashion design, fashion design education, technical specifications

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1. Introduction

In fashion design education, there is technical knowledge such as concept determination, selection of the fabric and auxiliary materials, clothing design, pattern preparation, sewing techniques during the fashion design process to be taught. In order to the designer can prepare a collection by using this knowledge, written and visual document is expected to be prepared by the designer. This document covers technical specifications containing design and production process. It is necessary to teach this information which should be included in this document covering technical characteristics in collection preparation should be taught to the designer in fashion design education.

The creation of new styles involves a variety of specific operations: developing design ideas, selecting fabrics, preparing the first pattern, making a sample garment or prototype, evaluating and refining the fit and design, computing the cost, making a production pattern, making duplicates, and grading the production pattern (Shaeffer, 2012).

Designers have to record styles by means of specification drawings. This is particularly important for the designer who delegates the pattern development of a style to a pattern cutter. The designers have to develop a concise means of communication within the design team as well as with the production staff (Aldrich, 2004).

The designer's job includes a variety of responsibilities, such as the following:

- Researching the market
- Selecting the colors, fabrics, and garment styling for the line based on fashion direction from merchandisers
- Consulting with product engineers on costing factors
- Preparing the preliminary specifications on costing factors
- Presenting technical drawings or sketches of new garment styles
- Providing suggestions for linings, interfacings, trims, buttons, and other components
- Releasing the approved styles for pattern making
- Responding to inquiries about the styles during preproduction and production (Burns and Bryant, 2007).

The designers often have some specific design details in mind that need to be conveyed to the pattern maker and sample sewer in order to create the sample or prototype garment at the next stage of the design process. These details, as well as other vital information, are conveyed on a garment specification sheet, also called a garment spec sheet, or shortened still more to spec sheet. Examples of types of design details that need to be specified include the following:

- The placement and spacing of buttons
- Any edge stitching or top stitching
- The spacing between pleats or tucks
- Findings, such as the number, size, and style of buttons; zipper length, color, and style; snaps and buckles
- Pocketing, lining fabric, and interfacings (Burns and Bryant, 2007).

Designers work the way around, first getting an idea, perhaps developing it in a sketch, and then finding the appropriate fabric for it. However the designers work, they must ultimately decide which fabric will work best with a design, or vice versa. Designers must develop the ability to picture a design already made up in a fabric. This ability comes through observation and experience (Frings, 2014).

Most designers begin their process on garment templates called technical drawings. At first, these technical drawings may seem unnecessarily precise; however, they are designer's best tool for learning to design within adding meaningful and practical content to theirs work. Technical drawings are also a critical tool for communication between a designer and the people who produce his/her line. Everyone from the pattern maker to the salespeople uses technical drawings a guide to construct and sell the collection (Hagen, 2005).

To get a job in today's fashion industry, designers must know how to create technical drawings. Accurate technical drawings with specs are necessary to facilitate communication for the production of garments made off-shore. The technical drawing is considered a binding contract between the manufacturer and the factory producing the garment (Tain, 2006).

Any information not specified will be decided by the pattern maker. Thus, it is the designer's responsibility to specify all garment aspects that are important to the look of the design. A drawing of the garment design is included on the technical drawing along with fabric swatches. Technical drawings might include a close-up sketch of a detail, such as a pocket, cuff, or collar, as well as the back view. Tech drawings are especially useful and often necessary for pattern making and production needs. Sometimes specific dimensions, such as the size and/or placement of patch pocket, are indicated on the tech drawing. The technical drawing may also include the measurement specifications and construction specifications (Burns and Bryant, 2007).

The technical drawing is a technical rendering of a garment, with the measurements and tolerance levels identified for each step. Often, companies have technical designers and/or patternmakers to make up the sizes specs or patterns. But remember that essentially every garment requires a new set of specs because there will probably be something unique on that garment that is different from a generic body (Johnson and Moore, 2001).

The aims of this study are; a) to define the fashion design process, b) to determine the technical specifications, and c) to present suggestions on teaching the technical specifications in fashion design. Despite the information on design and production in fashion design education, this information is not integrated sufficiently. This study is important for the integration and association of design and production information with related technical specifications.

2. Technical Specification in Fashion Design Process

The designers must consider the elements of good design. The direction of visual interest in a collection of garments created by construction details such as seams, openings, pleats, gathers, tucks, topstitching, and trims (Frings, 2014). Accurate adaptation from specification drawings can be made of the type of design illustrated. Basic seam and pocket positions can be marked, pattern pieces can be traced off and modified (Aldrich, 2004).

Couture and top ready-to-wear designers are able to enhance their creativity with expensive fabrications and beautiful workmanship because they are able to sell at higher prices. This freedom enables them to create trends. Mainstream designers must know how to interpret these trends to suit their own customers and select fabrics that fit into their company's price range. They are responsible for concepts, styling, and color selection. Designer must also supervise patternmaking, fit, and samplmaking, as well as see their lines through to a successful completion (Frings, 2014). It is eventually very important that the designers are able to manage this whole process.

It is necessary to give information about teaching the technical specifications for managing design process. The content of the technical document to be prepared by the designers in the fashion design process is given below.

Fashion Design Process	
1.	Identification of target market
2.	Research of fashion trends
3.	Determination of concept
4.	Identification of colors
5.	Selection of fabrics
6.	Determination of auxiliary materials
7.	Description of line
8.	Preparation of concept board
9.	Illustration of clothing designs
10.	Drawing of technical designs
11.	Formation of measurement charts
12.	Description of sewing instructions
13.	Indication of measurements
14.	Preparation of patterns
15.	Computation of costs

When the designer prepares a collection, he/she prepares a document consisting of the technical specifications using all the information given above. The matters that the designer is required to know about the contents of this document are as follows:

1. Identification of target market: Characteristics of consumers in the target market such as age, gender, economic status, physical properties, social class, and religious belief affect their purchasing behaviors. Therefore, it is important that the designer knows and analyze very well the characteristics that shall affect the purchasing behavior of consumer in the target market.

2. Research of fashion trends: Fashion trends are determined by international fashion councils and are given to the fashion designers and producers for a certain fee. Also, in order to obtain these trends resources such as internet sites, fashion magazines, fashion trends seminars are followed. These trends include information about colors, fabrics, adornments, accessories, styles.

3. Determination of concept: The concept is an important factor affecting the creativity of the designer for occurrence of the design ideas. The designer uses the reports of the fashion councils, trend searches, museums, architecture, theatre, movie, music and other arts, nature and historical events to define a source of inspiration. Therefore, concept is one of the most important matters in the process of collection preparation.

4. Identification of colors: Color is particularly important to sell a collection. Therefore, designers must consider their customers and provide colors that are both appealing and flattering. Furthermore many fashion designers usually rely on color forecasts provided by color and design services, trade associations, or fiber companies. By basing part of a color story on those trend forecasts, the designers are assured that the group will be in the mainstream of fashion. Usually, designers combine trend colors with their own choices to make their color stories unique (Frings, 2014).

5. Selection of fabrics: Fabric is an important tool for the designer to express his/her creativity. The success of the collection requires the right selection of fabrics. Fabric selection is important not only visually but also in terms of cost of fabric, quality, usability in the production, easily obtainability. The appropriateness of the fabrics for collection requires its characteristics such as fiber blend, weaving type, weight, color along with additional performances such as keeping warm or cool, easy to care, being stain proof and sustainable.

6. Determination of auxiliary materials: Auxiliary materials to be used in the collection are interlining, interfacing, button, zip, trimmings, elastic band, ribbon, band etc. Designer states this type of auxiliary materials in his/her collection thoroughly. Thus, he/she is required to know all auxiliary materials and adornment materials. Also, it is quite crucial that the auxiliary materials are in harmony with the fabric.

7. Description of line: After selecting the fabric, the designer must consider the other elements of good design, in this section, the term line refers to the direction of visual interest in a garment created by construction details such as seams, openings, pleats, gathers, tucks, topstitching, and trims (Frings, 2014). An apparel line consists of one large group or several small groups of apparel items, or styles, developed around a theme that may be based on such factors as color, fabric, design details, or a purpose. A line is composed of a variety of items or styles, such as shirts, pants, jackets, vests, and sweaters. Each line is developed for a specific target customer and could consist of as many as 50 or 60 apparel items. A group might use three to five fabrics in varying combinations and include approximately a dozen items, all carefully coordinated (Burns and Bryant, 2007).

8. Preparation of concept board: Concept boards are an important tool in the fashion industry for selling and communicating design ideas (Tain, 2006). The first design ideas are often conveyed through the development of concept boards, also called inspirations boards (Johnson and Moore, 2001). Many designers use concept boards to show their ideas to the management team. They generally make a collage of color and fabric swatches, sketches of ideas, trims, and photos from magazines that capture a theme. When the concepts are approved, designers develop their ideas into specific themes for groups and individual garment designs (Frings, 2014).

9. Illustration of clothing designs: Designer displays the parts that form his/her collection on silhouette with artistic drawings. In order for these artistic designs to be producible the designer needs to have experience in clothing production. Otherwise, problems occur in the implementation of artistic drawings and the designer may have to change his models.

10. Drawing of technical designs: Technical drawing provides a visual communication between designer, producer, purchaser and all workers in production stage. Besides, it plays an important role in minimizing the misunderstandings and complications that might occur in all stages of production. These drawings remove international language differences or expressional differences in artistic drawings. The aim in technical drawing is to show the production with the most accurate drawings. These drawings are prepared as front and back image to reflect forms, sewing and adornments. When required inner and side images are also drawn (Değirmenci and Çardak, 2010). Generally, the sketches show both the front and back views of each garment. They should be large enough to view the details of each garment (Sterlacci, 1997). Also, details related to the characteristics of the model's cutting, collar, pocket, arm are displayed with an enlargement. This information especially enlightens pattern designers to reveal the style of the collection.

11. Formation of measurement charts: Measurement charts differ according to countries. In some cases designer considers the international measurements whereas in some cases he/she forms measurement charts in line with his/her experience. In measurement charts formed by detailed measurements, while giving measurement places, conditions such as belt is excluded or included, size from the back middle or shoulders, curved or diagonal measurement of armhole. Measurement charts are especially used when preparing clothing patterns and controlling clothing measurements.

12. Description of sewing instructions: It is important to express the sewing techniques to be applied in a common language to prevent misunderstandings between designer and producer in collection production (Kurumer, 2007). In order for the collection to be produced accurately, designer is required to provide the sewing techniques with details. Sewing details are stated with writings and figures. If special sewing techniques are needed to be used in some parts of the product, sewing details are displayed with figures in details.

13. Indication of measurements: The fundamental principles in measuring garment specifications are extremely important in spec sheet. Essentially, measurements need to be as complete and accurate as possible if the production sample is to be correct. While the method of measuring can vary from individual to individual and from company to company, consistency from garment to garment is very important. Designer achieves consistency by indicating measuring points on the spec sheet (Tain, 2006).

14. Preparation of patterns: Patterns are firstly prepared with reference to the basic sizes given in the measurements chart. The models are secondly applied on these basic patterns. Right pattern preparation process provides the clothes to fit to the bodies. For the preparation of the patterns of the designed models, the designer has to have the knowledge on pattern and model application.

15. Calculation of costs: The cost of the collection is affected by fabric, auxiliary materials, production costs, labor and other similar costs. Higher cost of fabric brings together the high quality auxiliary material selection and careful production. Today, the collection is prepared according to the target cost approach. In this approach, the planned cost of collection is defined firstly and then the products in the collection are designed according to this cost.

3. Results and Suggestions

In fashion industry, a sample production of the collection is made before mass production starts. Sample production is required for the designer to reflect his/her idea fully on the collection and for early determination of problems that might be encountered in mass production. Therefore it is vital that technical specifications of the collection are given in sample production process. As a result, technical specifications are given as written and visual documents to help people involved in sample production and mass production processes.

When the designer prepares a technical document, he/she is supposed to be had a command on the whole process stated above very well. Technical specifications that are the subject of this study is separated into fifteen items regarding the fashion design process. And the figure about these descriptions is given below.

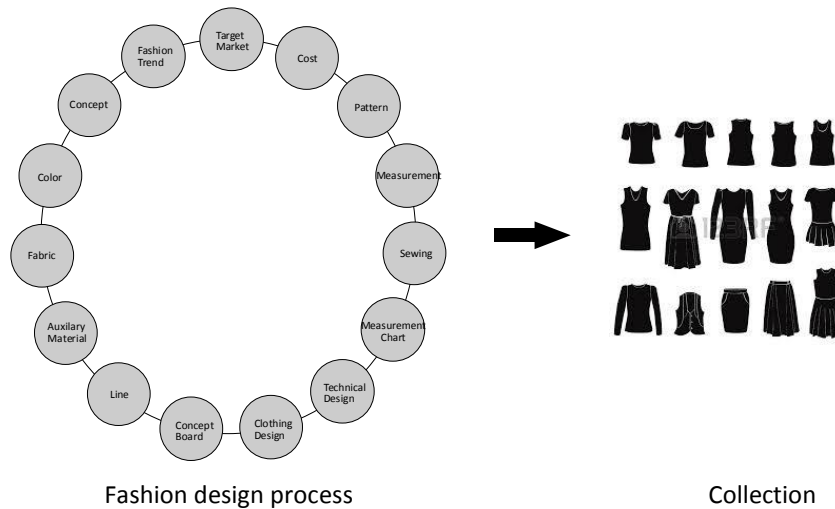


Figure 1. Preparation of Collection

In the fashion design process for a successful collection is obtained with accurate combination of technical specifications by the designer. Thus, curriculum suggestions with regards to teach the designer technical specifications in fashion design education are as follows:

- 1- For the identification of target market, marketing, marketing researches, fashion marketing should be taught in correlation with fashion industry.
- 2- Trend analysis, trend expectation, and trend determination should be taken place in the curriculum in order for the fashion trends to be researched and followed.
- 3- In lessons such as source of inspiration or concept determination should be taught.
- 4- For the selection of the collection colors, color knowledge should be given lessons related to be used in the collection.
- 5- Technical specifications such as fabric structure, blend, and texture of fabrics that could be used in the collection should be taught.
- 6- There should be taught towards recognizing the auxiliary materials to be used in the collection.
- 7- There should be given lessons about style determination and grouping towards defining the collection line.
- 8- The preparation of concept board should be taken place in the curriculum related with the collection.
- 9- Fashion painting, fashion illustration, fashion design should be taken place in the curriculum and skills such as drawing a silhouette, designing a model.
- 10- Technical drawings should be taken place in curriculum to produce the collection accurately.
- 11- There should be given lessons about the formation of measurement chart for the preparation of patterns.
- 12- There should be given lectures regarding technical specifications about the sewing of the collection.
- 13- There should be given lessons in which measurements are necessary for control of products in the collection.

- 14- The technical information on pattern preparation and model application should be given in the courses.
- 15- The computation of the collection cost should be taught in the classes. The information on parameters affecting the collection cost should be given.

Even though lectures about the suggestions given above take place in the curricula, they are not at sufficient levels. Also during education, these lectures are given with more general contents. In this study it is recommended that the suggested lectures to be correlated with the fashion design process and their scope to be extended and given profoundly. More specifically, suggestions about fashion design process are given below:

- Technical specifications such as blend, weight, fiber analysis towards recognizing the fabric should be taught in the lectures and it should be ensured that the designer makes the fabrics he/she will use in his/her collection harmonious. Moreover, detailed information should be given over the course of auxiliary material selection of designer about selecting the ones in harmony with the fabric. Designer should be taught about determining the fabrics and colors that the target market can use, and following the fabric trends.
- Designer should be upskilled about showing his/her designs accurately on a silhouette. Drawing details should be taught towards designing model details he/she uses in his/her designs such as cutting, collar, arms, cuffs, belts. Technical specifications of the design should be taught to the designer in order for the models and drawings to be considered applicable by others.
- It is quite important for the designer to know the pattern preparation techniques in terms of the applicability of his/her designs. Designer should also benefit from the pattern information in proportioning designs as well. Information such as sewing types, sewing instructions, and sewing threads should be taught to the designer. Also, the designer should be taught about technical specifications of sewing with international figures.

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