

Effectiveness of a proposed training program to prepare technical specifications for fashion design and apparel production

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Abstract:

The aims of this study is to prepare a training program for the development of students' design skills for the preparation of technical specifications sheets for fashion design, its application to ensure its effectiveness and achieve the goal of providing students with the basic knowledge ,skills and their attitude has changed positively towards the importance of their preparation in the field and the students developed design solutions to overcome the difficulties encountered during the preparation and implementation of their proposed design according to the technical specifications they prepared in the program under study. The problem of the study emerged from the difficulty of preparing the students for the technical specifications of the design ideas of the various forms of clothing proposed in their illustrations of fashion, which makes it difficult to implement these design ideas correctly to help them to achieve the overall shape of the worn parts of the style in addition to the attention of the labor market to the appointment of highly qualified cadres of fashion designers have the ability to develop technical specifications of fashion with high accuracy or in high resolution. The research approach: - The analytical and the experimental approach. The study assumes that there are statistically significant differences between the average of the students before / after grades to prepare the technical specifications sheets for the proposed designs in the program for the benefit of the students and the effectiveness of the proposed program for the development of students' skills for the preparation of technical specifications sheets for fashion design. The statistical coefficients were carried out before / after the measurement tools used in the study "questionnaire, skill performance note cards, and Measure the attitude of students" T test, contrast analysis, correlation coefficient to verify hypotheses. The results showed that there were statistically significant differences between the average grades of students in favor of the remote application of the program under study, which indicates the students benefit from the proposed program and provide their knowledge, develop their design skills in the field of fashion design and change the attitude towards the importance of the preparation of fashion designer for the technical specifications of his design ideas attitude. This means achieving the objective of studying the effectiveness of the proposed program under study and verifying the validity of the hypotheses.

Keywords:

- *Effectiveness*
- *Training program*
- *Technical specifications*
- *Fashion design*
- *Apparel production*

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Introduction:-

Process of fashion designing depends on the creative designer who invents new designing ideas, and introduces clothing brands for fashion with its distinguishing manufacturing and technical details and specifications for every fashion to fulfill the consumers desires, and marketing goals of clothing company in the light of its manufacturing capabilities. So, fashion designing process requires from the designer to be creator from a designing aspect. Meanwhile, he must be fully aware and understanding of technical and marketing aspects of fashion, be acknowledged precisely with the nature and specifications of textiles, and structure of fashion. He must be able to understand nature of fashion designing models and how he can prepare it to do work with both the models executors and samples

through the technical specifications which he put down for the suggestive design/ designing sample to be able to make modification decisions to the technical details of designing sample to discover the textiles problems which appear during their preparation and weaving, or he introduces creative designing solutions during the preparation of sample and executing it whether by modifying pattern Lines "the cuts of styling" or parts of it, or making Draping.....or else of solutions which matchmaking with the occurring problem nature.

Therefore, the designer must determine all technical and manufacturing details and specifications of the suggestive designing ideas inside the documentary sheets of the technical specifications of the suggestive design/ design sample accurately and clearly which are agreed on from the company management to guarantee the

transference of its inside technical contents, information, and idioms, technical details, and tactical drawings to the rest of other departments who work on executing the designing ideas to transfer it to a clothing pieces in the company with serial stages and steps of manufacture as he has determined whether the execution of design was inside the same fashion company in which he works at or inside another private company. This will be done successfully and with high quality as per the execution of contents of pre-prepared technical specifications documents by the designer. Hence, the technical specifications of fashion designing are the essential link between both designing department in the clothing company, and the rest of the manufacturing departments in the same company or between it and another company in the field.

So, it was necessary to study the designing specification which is as a detail and a fixing presentation for the planned design and tactical goals of the clothing piece, and productive stages upon taking decision by translating design idea into a clothing piece or developing a certain design. By practicing its work with students of fashion designing major, the study has found a difficulty with their preparation of technical and technological specifications of designing ideas for suggestive various clothing brands with its indicative drawings of fashion that to lead to a difficulty in executing these designing ideas correctly that help them fulfill the general figure of clothing pieces that form clothing brand in addition to the interest of work market to assign high efficient cadres from fashion designer's who have the ability to put down technical specifications for fashion with high precision or translating it into a serial manufacturing stages to transfer the suggestive designs into fashionable clothing pieces according to what the designer did, and the attitude of students" future fashion designer's" that the function of fashion designer is to draw the designing idea with no interest to how to execute it and determine its technical specifications regarding that there is who execute it inside companies of designing and manufacture fashion. From this point, the research problem has appeared.

Research Problem:-

The research problem can be formulated in the following questions:-

- 1- What are contents of the suggestive program concerning the preparation of documents of technical specifications for fashion designing?
- 2- What is the possibility to prepare the documents of technical specifications for

fashion designing through the suggestive program?

Research Importance:

Research significance is concluded in the following:

- 1- Identification of technical specifications of fashion designing as for "its identification, kinds, and models, style of its preparation and presentation".
- 2- Make prominent the significance of preparing technical specifications documents in the field of fashion designing, and for the fashion designer.
- 3- Ensuring the role and contents of technical specifications documents in the stages of fashion designing to transfer designing ideas into clothing pieces.
- 4- Developing the students' experimental capabilities during their preparation of technical specifications documents of designing fashion for their designing ideas and transferring it into clothing pieces as they are regarded as working in the work market in the field of fashion designing and clothing production.

Research Objectives:-

This study aims essentially to:

- 1- Preparation of training program to develop the designing skills of students concerning the preparation of technical specifications documents for fashion designing.
- 2- Application of the study's suggestive training program to make sure of its effectiveness and to fulfill the aim of it to provide students with knowledge and the essential skills concerning the preparation of documents of technical specifications and production details of the clothing brands of fashion, and the change of their attitude positively towards its preparation significance in the field.
- 3- The students' development of designing solutions to overcome difficulties which face them during the preparation and execution of their suggestive designs according their technical specifications documents.

Research limits: - This study is limited the following:-

- Spatial Limits: Apparel department, Faculty of Applied Arts, Helwan University.
- Time Limits: the study procedures were conducted a semester.
- The human Limits: The research sample consisted of second-year students in the Apparel department - Faculty of Applied Arts - Helwan University.

Research Hypotheses:-

1- There are statistically significant differences between the intermediate grades of the students before / after the preparation of the technical specifications papers for the proposed designs for the program in favor of the distance performance of the sample students.

2- There are statistically significant differences between the average of the students before / after grades for the students' attitude for the proposed program.

3 - There are statistical differences between the average grades of students before / after the preparation and implementation of the final design proposed in accordance with the technical specifications prepared in the program.

4 - The effectiveness of the proposed program to develop the knowledge, skills and attitudes of students for the preparation of technical specifications sheets for fashion design.

Research Methodology:-

1- Research approach:

-The analytical method: used in the theoretical framework of the study.

-The experimental method: used in the application of the proposed training Program

2- Research sample:-

A Sample from the students in the second grade Apparel department, Faculty of Applied Arts, Helwan University. There are 18 students (designer's). They studied several subjects which qualify for preparation the technical specifications sheets.

3-Research tools:

- Assessment criterion to evaluate the validity of the suggestive program "the study's subject matter".

- Assessment criterion to "identify" the evaluation of technical specifications documents to fashion designing for students in the program "the study's subject matter".

- Notification cards to evaluate students' skillful performance during the preparation of technical specifications documents of the suggestive design, preparation of the suggestive design sample, and preparation and execution of the final design proposed in the program" the study's subject matter".

- Attitude criterion to determine attitudes of students "designer's" towards the suggestive program "the study's subject matter".

- Statistical transactions T test, discrepancy analysis, Ballack constant, correlation coefficient.

So, the research is divided into essential axes:-

1- Study of technical specifications of fashion designing:

1-1- Definition of technical specifications of fashion designing:

Specification of fashion designing is known as the primary planning and the control instrument in the production and execution of the design sample "clothing piece" and beneath. Workers on the production of samples have no provision of certain information for what they will do, and the oral instructions may lead to misunderstanding or forgetfulness. So, it is necessary to find a written specification indicating what will have been executed accurately for the workers in samples' chamber. Design specification is built on the basis of its easiness by conveying information in the shape of precise model not as information amount contained. So, the specification should answer any practical question in advance⁽⁶⁾.

The specification is also known as a contract agreed on between the design section and the rest of other production sections inside the same clothing companies and outside, and between the client and the company producing for him. Contracts of clothing production are done between the companies in the field in English, it is the language agreed on and prevailing between most world countries to express by on the technical and production details of fashion designing⁽⁵⁾.

1-2- kinds of technical specifications of fashion designing:-

Specifications of fashion designing are divided into the following:

1-2-1- unofficial specification:-

In which the design is described by its description as for its technical details by handwritten abbreviations that indicate what the designer wants, and this specification is used to communicate between the team members of designing section in the clothing company.

1-2-2- Official Specification:-

In which production and technical details of design is identified by certain reference numbers like textile raw materials, and example for this: a material bears the number 4062, and this number means every raw specification like "its kind, textile structure, mixture rates, its source, price, and wideness". Clothing particulars like a wider collar about 2cm from every limit than a collar class 605 is described. Specification is used to communicate between the designing section and the rest of sections occurred in the clothing production company⁽⁶⁾.

1-3- Models of Preparation of Technical Specifications of Fashion Designing:-

There are several and various molds or models in its general and external shape concerning preparation of technical specifications documents

of fashion designing concerning each of "children/ladies/men". This is due to the desire and sense of fashion designing company and her production in the shape of models for these documents. But they differentiate in their external content for technical data, information, and specifications of design needed to be executed and produced to fulfill its goal in the processes of design production "clothing piece" in serial and sequential production stages according to what determined by the designer, and to fulfill the communication process successfully between designing section and the rest of managerial and production sections of the company or between the companies each other in the case of external production of design "clothing piece"⁽⁴⁾.

1-4- Methods of Preparation of Technical Specifications of Fashion Designing:-

The technical specifications of fashion designing for each of "children/ladies/men" by the designer or the designing section team as follows:-

1-4-1- Normal Traditional Method:-

Technical specifications of fashion designing is by this manual traditional method inside models of documentary papers pre- prepared by the designer named by the technical documents of a design. The recent study is interested in the preparation of technical specifications of fashion designing for ladies by this method because it is the basis in the

preparation of these specifications in the field of fashion designing and clothing production ⁽⁹⁾.

1-4-2- Specialized Computer Method:-

Technical specifications documents of fashion designing are prepared by using the field's specialized computer programs and systems, or filling a form. This form contains information and data concerning the identification and characterization of design and is called working form. It can also be recorded on this form the cost of design execution or on an independent form concerning the cost to be recorded the cost concerning workers in the different production phases of design to guide different sections inside clothing company that are "planning, production, marketing" in the assessment of total cost of one design⁽⁹⁾.

1-5- Methods of presentation of technical specifications of fashion design:-

The technical specifications of fashion designing are presented in catalogues and prints on world fashion forecasts, and new fashion lines at websites which give a preview to a certain new season about the technical details of fashion, technical drawings, raw materials and colors, used decoration styles, and the accessories of various clothing brands "kids, women, or men" for the new season. As figure (1).

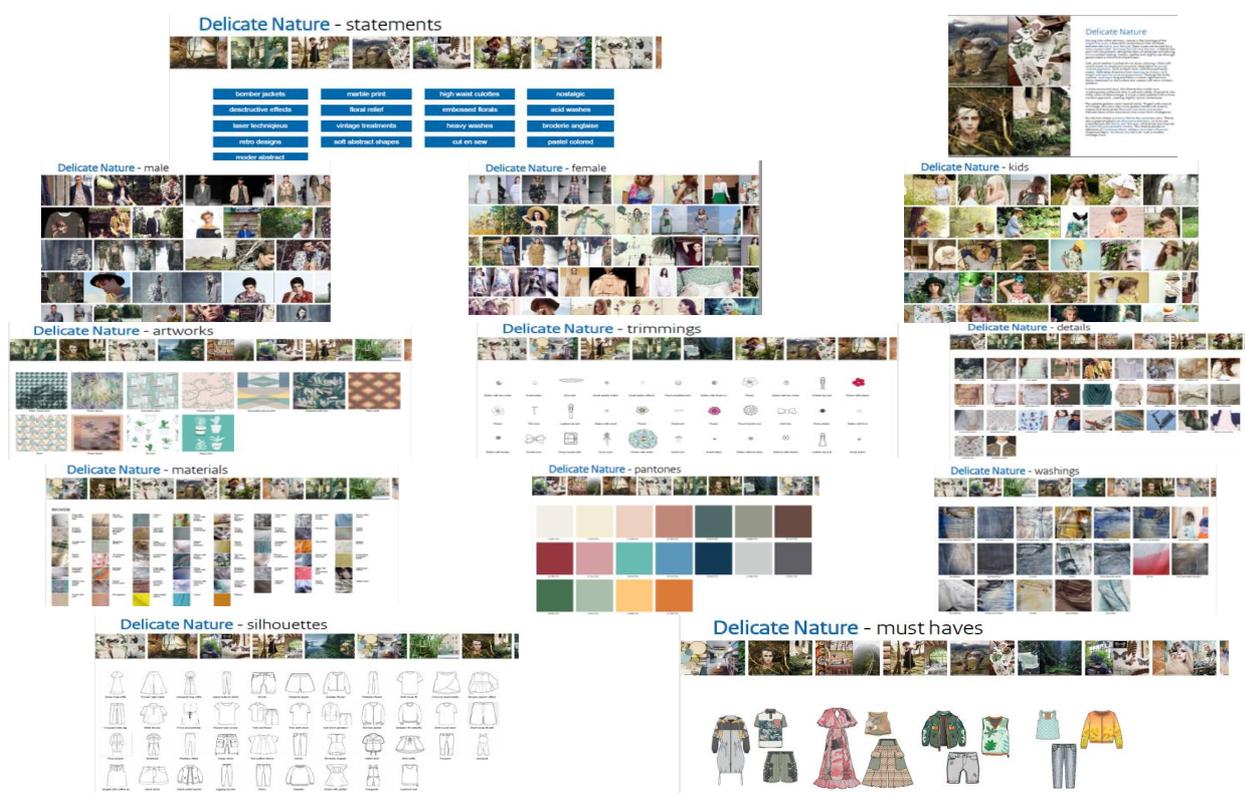


Fig (1) The technical specifications of fashion designing are presented in catalogues and prints on world fashion forecasts

The technical details of the new season fashion is on the shape of descriptive fashion drawings for new designing ideas with its tactical drawings or analytical and written photographic depicts in which all production information are described like technical specifications and drawings concerning each of" weaving , and its details, and yarns, and the technological developments of fashion" about the season. These specifications and details are concerned with the following clothing " casual , night and soiree, classical, and intimate" to make easy for fashion designer's in the companies of clothing design and production in the world countries to use it and reformulate it according to the consumer's requirements ,and the society producing and designing for, and the capacities of available production company⁽¹⁰⁾.

1-6- significance of technical specifications in the field of fashion designing:-

The significance of preparation of technical specifications documents of fashion designing differentiates according to the methods of fashion designing and executing it as follows:-

1-6-1- Haute Couture:-

The world famous fashion houses present it and called also high fashion. Haute Couture depends on the precise manual execution of a design, and to select raw materials and costume accessories

with distinguishing artistic level. This method has prominent clients and important persons in the society. So, it distinguishes with sole production the designer prepares it and his execution crew. It depends on the unofficial technical specifications of a design which is handwritten by the designer to execute the designs because he follows up its execution himself till its completion. So, the significance of preparing technical specifications for proposed designs is reduced by the high class weaving style than the other weaving styles as figure (2)



Fig (2) Form of Technical Specification / Description Sheets for Designing Haute Couture⁽⁹⁾

1-6-2- Ready to Wear clothing:-

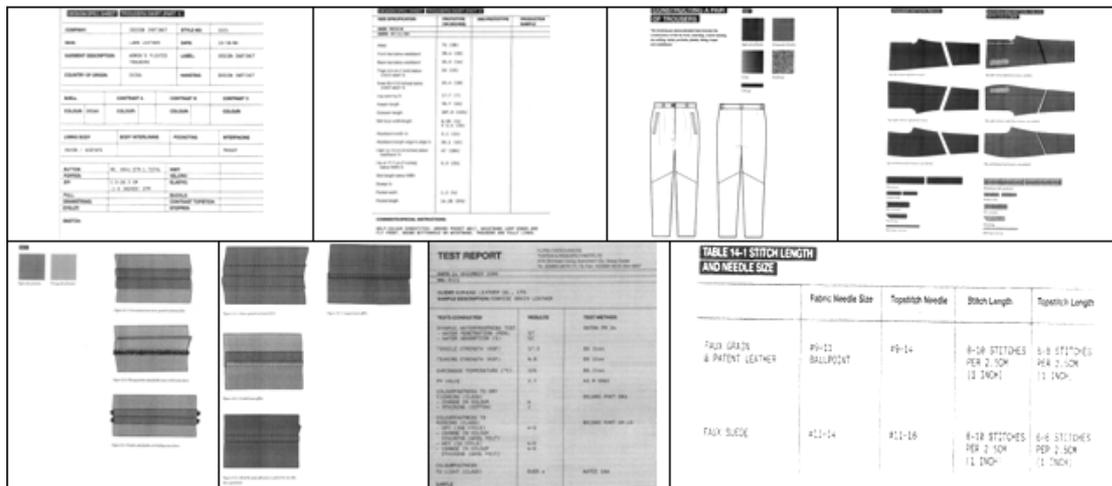


Fig (3) Form of Technical Specification / Description Sheets for Ready to Wear Clothing⁽⁵⁾

Ready to wear e clothing for wearing depends on the limited production of fashion designs, using different weaving machines more than manual execution, and raw materials less level than high class weaving fashion. This method is center between other weaving styles to execute and produce designs. It also depends on the preparation of technical and production specification documents of designer to execute

designs greatly than high class weaving⁽⁹⁾. As figure (3)

1-6-3- Mass Production of Clothing:-

The significance of preparing technical and production specifications of fashion designing by quantitative production of clothing is growing where the designs are executed on the shape of different clothing pieces in certain great quantities and constant sizes by a sequence of production phases to yarn, weave, and collect it. Different raw

materials, and different decorative details are used. So, what is inside the technical specifications portfolio which designer prepare "management of designing team" from technical drawings and production details is the essential link which links designing section with the rest of other production sections in the clothing company to get a logical sequence of production halls and phases, to access

the execution of clothing pieces design with high levels of quality and correspondent to the technical specifications of the designer. Documents of the designing technical specifications are represented in "designing specifications sheets, and sample specifications sheets" ⁽⁹⁾. As described in figure (4).

Fig (4) Form for Technical Specification / Design Description Sheets for Designing Mass Production of Clothing ⁽⁷⁾

1-7- The significance of preparation of technical specifications of fashion designer:-

The significance of preparation of technical specifications of fashion designing is determined as for the designer as follows:-

- Presenting solutions for the design production problems which has been facing him during the preparation and execution of design sample by the documents of technical specifications to fulfill the company goals in the light of its production capacities, and targeting consumer desires. So, it is an important instrument in which it expresses his designing ideas as a final production and executive phases.
- It is one of the most important contents of the designer dossier to present all the descriptive technical drawings and technical specifications for each production phase to execute his designing ideas, and transferring it into clothing pieces.
- They help designer accelerate taking designing decisions concerning each of " textiles selection, and colors" to keep his documents for technical specifications for each design by executing or developing it to guarantee continuous invention and non repeat, and fulfillment of the requirements of market, target consumers, and company goals⁽²⁾.

1-8- Role of Technical Specifications in Fashion Designing Phases:-

1-8-1- analysis of information obtained by the designer from the marketing management to

determine new designing features of certain season.

1-8-2- collecting information and determining designing ideas to prepare style portraits, mode, and client concerning his coordinating designing collections.

1-8-3- preparation of designs: - the designer paints his designing ideas on several phases as follows:-

- Drawing Sketches: - they are on shape of ideas/ primary crops without details.

- Drawing technical / technical sketches: - The designer's develops the new design ideas in the initial on the executive drawings of production and specify the details and technical terms for presentation and evaluated by the decision makers clothing companies to reach acceptable designs and agreed to satisfy customers and achieve the objectives of the company within the limits of production potential.

- Illustrated fashion sketches: - The designer draws the design ideas agreed in a final colored fashion, accompanied by samples of fabrics, and the decorative details of their implementation, and put with it all technical or technical drawings to clarify the technical specifications and stages of production to implement^{(3) (8)}.

1-8-4- Preparation of technical specification Sheets for design / design Description Sheets: -

The designer prepares the design specifications sheets documentary fashion which is agreed upon by the company's management. These papers deal with the contact between the design designer and

all the other managers in the garment design and production companies. The preparation includes many different production details and technical terms for the proposed new design or developing a successful design. With a previous season, which is set within its own sheets to highlight the contents of each paper separately as follows⁽²⁾:-

1-8-4-1- Design specification:-

The fashion designer sets out a description of his new design ideas to determine the nature of the silhouette of the pattern, its structural and decorative lines, the shapes of the clothing items, the lengths, the sleeve patterns, the neck openings, etc., they are called many terms in the field Design Summary Sheets, Design Details Sheets and Design Description Sheets. The contents of these papers shall include the following:

1-8-4-2- Definition of design:-

The design defines the "cladding" of the company for its production in terms of "name and type of design, customer name, date of design and season of sale, brief description of the design and determination of the nature of the intended consumer, and the determination of quantities required for production, The model number (3526) shown in Figure (5) specifies the first number which is (3) the type of the piece of clothing which is Dress, and the second number (5) to the season and divide the season into stages to show the season of the design of the "dress piece" (past, present or future) and the stage number of the season, and the timing of the display of the piece of clothing while the third and fourth figures (26) to follow the numbers of successful clipping that It has been developed in each type of garment "dress" and can be upgraded from (1-99) for different cladding in each type of clothing for the season⁽⁶⁾.

1-8-4-3 Technical details of design:-

Designer or the team of designing prepare the technical or production details concerning design to transfer it from a designing idea into a piece of clothing, its contents include from designing department to the company's other departments in shown Figures (3),(4) as follows:-

1-8-4-3-1- Technical drawing:-

It is a flat, technical / technical design of the design showing the new or complex design features of the front or rear appearance painted on a grid background with all measurements corresponding to the dimensions of the human body on a scale that is easy to read and understand, and contains all the information and technical terms and details of the details of cladding operations. ", And measurement, and methods of opening and closing the piece of

clothing so that each of the port of Albatron and all the specialists of the production of knowledge and easy to understand all the details of different stages of production to sharpen the design accurately and clearly, also called the field Or production drawings, and sometimes Croquis⁽¹⁾⁽⁶⁾.

These technical drawings of the design are within the design specifications sheet.

1-8-4-3-2- Materials:-

Yarns and descriptive samples of textiles and all essential and auxiliary materials including "textiles, fillers, complements, and stuffing... etc " are attached with the designing specification. It is specified in the kind of every textile of used textiles in the designing its source and the textile width and price, and detailed records are written about it, and any additional notes is noted in the case of the occurrence of raw material related comments⁽⁸⁾.

1-8-4-3-3- Colors:-

Color samples of the design are to be colored and colored according to Pantone International⁽⁸⁾. The specifications and details of raw materials, colors and codes in the paper raw materials and colors

1-8-4-3-4- Size / Measurements & Tolerances: -

The Size and measurements of the sample of the piece or the first model, or the measurements required for the design, and the thickness of the sewing required by the maps of the sizes shall be determined by the technical specifications of the design and shall be stated if the sample has parts in special measurements and explained by the design specification. Production measurements for designs are made with the required sheet of Size / Measurements⁽²⁾.

1-8-4-3-5- Special operations:-

The decorative design methods of the design, such as "pleating, printing, embroidering, embellishment, special packing method, etc.", are called non-traditional design and are indicated by the design specification. If necessary, a small sample or illustrative sketch, Identifying species, sources, numbers, and prices. The operations or stages of the implementation plan sheet are designed⁽⁹⁾. As Figure (4)

1-8-4-3-6- Accessories & Trimmings:-

All auxiliary materials included in the implementation of the design for a piece of clothing selected for the implementation of the sample shall be defined as Trimmings, accessories, or decorations for the implementation of clothing, including "lace, belts, buttons, pres-studs, pads, decorative tapes, zips, appliqués,

specialized threads ,Braids etc.". The type of supplement used is based on the type of garment, however diverse or different. It is required by design and design specifications and cannot be excluded. Species, sources, sizes, quantities and prices are indicated ⁽⁶⁾.

1-8-4-3-7- Labels:-

The type and style of the Labels mark and identification cards, which are suitable for the nature of the design, are specified in the design specification and are usually sampled, and are usually standardized by the company and their markings are printed in the company's supplement stores unless the design requires otherwise "brand" Also the placement of the markup and any change in it should be written in the design specification. The details of the design and accessories, and the Labels for the accessory paper ⁽³⁾⁽⁶⁾.

1-8-5-Final Evaluation of the Proposed Designs:-

Each design idea shall be presented in final form after the contents of its technical and production specifications are prepared for the decision makers of the company to be discussed, and the best choice in light of these technical specifications and their production stages. Marketing and achieving the company's goals and policies⁽⁸⁾.

1-8-6-Preparation of technical specification Sheets for the sample / sample description:-

The Design Management Team prepares the technical specification sheets for the agreed design sample. These papers are designed to communicate between designer Design Manager, patron makers, and sample implementers. The preparation of the technical specifications of the fashion design sample includes many different production details and technical terms, each of which is specified within their own documents to determine their contents as follows ^{(3):-}

1-8-6-1- Description of the Sample:

The designer or the design department team prepares the technical specifications for preparing the design sample. It is called a number of terms in the field, including sample details sheets or sample summary papers. The preparation of the technical file for the sample includes the steps that follow the production of the sample in the design and production of clothes within the technical specification sheets of the sample. These papers are as follows ^{(6):-}

1-8-6-1-1- Definition of design sample:

The design sample of the clothing company is defined in terms of the name and type of the design sample, the customer's name, the sample date and the sales season, a brief description of the sample, the required quantities and timings, and

the model number of the sample. , And sample the operation number or model code with the sample labeling paper ⁽⁸⁾.

1-8-6-1-2- Technical details of the design sample:-

The design designer or the design team is responsible for the technical and production details of the design sample. The contents of the technical specification sheets of the sample from the design department to the samples department include the following:-

1-8-6-1-3-Flat drawing:-

The flat drawing of the structural and decorative lines of the design sample, with all the particulars of the name, size and dimensions of each part, is written separately to prepare the pattern suitable for the nature of the piece.

1-8-6-1-4- Materials:-

Determining the types of fabrics needed to carry out the design sample and its alternatives, and the quantity of cloth needed to carry out the sample with the sample specification paper.

1-8-6-1-5- Size and Measurements: -

Measurements and dimensions of the implementation of the sample as a whole, as part, and its dimensions, and the thickness of the sewing are written in the sample measurements sheets ⁽⁶⁾.

1-8-6-1-6- Technical details of the sample:-

The technical details shall be written, the production stages to be determined by the sample and the sewing machines needed for its embroidery and numbers shall be determined, the shape of the appropriate production line shall be determined for the final design, and the time required for each stage of execution shall be specified. , Cutting, processing, sewing, ironing, packaging, inspection, and quality control. "The production details of the sample are presented in its technical form on cost management to determine the cost price and therefore the selling price. It is a special disclosure for each sample with its specifications and requirements in order to help start production processes without any obstacles.

1-8-6-1-7- Accessories & Trimmings: -

The sample needs and specifications are determined by supplements and accessories in the sample Trimmings sheet, including "sewing threads, buttons, zippers, linings, fillers, hangers and packaging accessories"⁽⁹⁾.

1-8-7- Preparation of samples:-

The sample is defined as a design experiment or parts of it, or as a model of the design, performance and expected production of the clipped piece. It is used to illustrate the final shape

of the design and helps to ascertain the shape and measurement of each piece of the piece. And works to materialize the idea of design in the least possible time, which helps to reduce the overall time of development or modification and therefore take the best decisions in the shortest time. The preparation of the technical file or the technical specification sheets for the sample, the preparation of the models, the cutting, the preparation of the decorative techniques, the sewing, the examination, And to conduct tests to ensure that the initial design of the work requirements is achieved, to modify the design if any, to produce a second sample with the same steps, to design and review the final design, to produce experimental samples, to conduct tests and intensive tests to ensure proper design, "Technical Specifications" special sample freelancer based on the final design, the final evaluation of the sample "and after approval from the company's management is ready to display commercial exhibitions or sent to the customer"⁽⁷⁾.

In the case of the development of a sample for the design of a "piece of clothing" achieved success in the previous season depends on the development of development studies by the knowledge of the following: - "target groups, quality level, consumer desires, quality of clothing required to produce, marketing research, fabrics and fashion attitudes Global fashion, laws, available production capabilities, sales volumes, financing, and price expectations"⁽³⁾.

After these studies, we start the development process by following the following steps: "Design ideas, preparation of sketches, preparation of technical and production details of the sample, identification of raw materials and colors, cutting of sample, determination of the decorative requirements of raw materials, By: - "Knowing the desires of the consumers, their suitability and the achievement of their function, the quality of their implementation, and raw materials" and in the case of rejection of the sample means that the re-start to be prepared again. In the absence of modifications, the final technical details, the logical sequence of the production stages and all the technical specifications to reach the modified production plan are determined. The sample is evaluated by the desires of the consumers and the technical authority. In the case of modifications, they are either made to reach the best possible solutions; the drawings shall then pass through the previous stages or be rejected. In the absence of amendments, a similar sample shall be produced for the approved sample and the quantitative

production shall commence on the basis of the clothing companies ⁽⁷⁾.

1-8-8- Presentation of the final designs:

The final designs in silhouettes and their technical details are presented in all design papers for their illustrations and technical drawings of structural and decorative design lines, and samples of fabrics for the implementation and instructions of cutting and sewing of the sample for each design of a piece of clothing for specialists in garment design and production companies for approval as final proposed models or as a suggested sample for final designs "Clothing cut" and then complete the contract for implementation⁽²⁾.

1-9- Standards the preparation of technical specifications for fashion design: -

- Technical specifications answer many of the productive questions on their own clearly and accurately do not accept confusion or difference.
- The technical specifications of the fashion design contains everything necessary for the stages of production only to express themselves without the need for great explanations from the designer to achieve the goal.
- The images shown to the technical specifications and production details shall be presented with high accuracy and clear in different sizes, conditions and sizes according to their importance and significance, and the interior within them of design elements, details and technical drawings.
- The easy analysis of the contents of the technical specifications of fashion to information, technical drawings, and details of the production stages of the design elements that make up the uniforms for professionals in the field around the world in a precise and clear to be implemented to pieces of clothing.
- Use the literature technical specifications in a suitable and clear line, and the size and color fit to all the details and technical terms it contains.
- English is used to prepare the technical specifications of fashion to connect between fashion design and clothing production companies around the world.
- Technical specifications sheets for fashion design in a clear sequence and one size for all pages, and one way if possible.
- Simplifies the pages of technical specification sheets for fashion design so as not to confuse anyone who reads them. Each page is specialized in specifications or specific technical details such as "design specification sheet, paper raw material, color sheet, measurement sheet ... etc"⁽¹⁾⁽⁷⁾.

2- Applied experience:-

The practical experience of the study went through several stages, as follows:

2-1- Preparation of the proposed program of technical specifications papers for fashion design:-

The proposed program was prepared through the following steps:

2-1-1- Identifying the General Objectives of the proposed training program:-

The proposed program for the preparation of technical specification sheets for fashion design is as follows:

- Increasing the knowledge and development of the students' design skills for preparing the technical specifications paper for fashion design and giving them positive attitudes towards the importance of preparing the technical specifications sheets for the design ideas for the fashion designer in order to improve and develop their work in the field of specialization.
- Preparation of cadres trained by designer's in the field of fashion design with a high degree of competence, providing the fullest possible design solutions in light of the productive potential available to garment companies according to the requirements of the labor market.
- The connection between the technological and design aspects of the preparation of the stages of fashion design beginning to identify the source of inspiration and design idea design and selection of colors and materials appropriate, and the preparation of the contents of technical specifications and productivity, and the preparation of the sample design proposal and then prepare the final design as pieces of clothing. Thus,

2-1-2- Procedural objectives:-

2-1-2-1- Knowledge objectives: - In which the student "designer" is able to

- Defines the concept of technical specifications for fashion design.
- Supports the importance of the contents of the technical specifications sheets to connect between the different administrations based on the implementation of fashion designs.
- Determines the importance of preparing technical specifications for the fashion designer.
- Provide examples for preparing technical specifications sheets for fashion design.
- Technical terms are used for fashion design by describing the design / design sample with the technical specifications of the design.
- The various styles of clothing are known for their style of technical design.
- Identifies the types of technical specifications for fashion design.
- Translates technical specifications for fashion design to convert them into various garments.

- Distinguish the types of identification marks used to implement the design / sample with its technical specifications
 - Retrieves the contents of the technical specifications sheets for fashion design.
 - Determines the content of each sheet of technical specifications for fashion design.
 - Distinguish between the contents of the technical specification sheets of the design "Design definition / flat drawings with their technical details / materials / colors / special operations / measurements / supplements /".
 - Distinguish the difference between the preparation of technical specifications sheets in fashion design methods.
 - Distinguish the difference between the models of the preparation of technical specifications in various fashion design methods.
 - The technical details of the design shall be determined by the technical specification sheets of the fashion design.
 - Distinguish the importance of technical specifications sheets with the different production capacities of fashion manufacturers.
 - Distinguish the contents of the technical specification sheets to describe both the design / design sample.
 - Collects information to be used during the program study.
 - Determines the role of the technical specification sheets in the design stages of the fashion to be converted to a piece of clothing.
 - Recognizes the requirements of his job as an applied designer in the field of fashion design / clothing production.
- 2-1-2-2- Skills objectives:** - In which the student "designer" is able to
- Preparation of the contents of the technical specification sheets for the fashion design of the various forms of clothing.
 - Proficient in designing the code for the design in the usual style in the field with the technical specifications of the fashion design.
 - Fluent in preparing a brief description of the design / design sample.
 - Fluent in writing the general data for the definition of design in the sheets of technical specifications.
 - Proficient in preparing the technical details of the various models of fashion design with technical specifications.
 - Be proficient in highlighting the difference between the technical details and the contents of the technical specification sheets of the fashion design.

- Description of the raw materials used to implement the design / sample in a detailed manner with the correct technical specifications.
 - The color codes used to implement the design / sample shall be determined by the technical specifications of the Pantone International.
 - Determines the measurements used to implement the design / sample with its technical specifications.
 - Be proficient in the preparation of details of all measurements of the implementation of the design / sample sheets technical specifications
 - Mastering the preparation of the technical specifications sheets for the operation of the design / sample with the technical specification sheets.
 - Proficient description of the nature of the details of the various types of supplements to implement the design / sample technical specifications.
 - Creates a brand name tag with technical specification sheets for the proposed design / design sample.
 - Acquires the skill of displaying all the technical information in the contents of the technical specifications sheets in sufficient manner to implement them correctly.
 - Mastering the technical drawings of the proposed design with its technical specifications.
 - Proficient in writing the technical data of the various forms of clothing with their technical specifications to reflect the stages of their implementation correctly.
 - Perfecting the preparation of decorative details with high quality for the various types of embossed patterns.
 - Organizes the presentation of the pages of the contents of the technical specification sheets of the fashion design.
 - Keep in mind the sequence of technical details with technical specification sheets.
 - Concludes the best implementation techniques for the proposed design sample.
 - Suggest design solutions for all productivity problems you may encounter during the preparation of the proposed design sample.
 - Implementation of innovative design ideas for cladding according to its technical specifications.
 - Apply the stages of the fashion design process to the various dress patterns.
 - Participates in specialized workshops to prepare technical specifications papers for fashion design.
 - Enthusiastic to prepare technical specifications sheets for fashion design.
 - Get used to preparing the technical details of his design ideas.
 - Interested in learning the contents of technical specifications sheets for fashion design.
 - Maintains the accuracy of the preparation of the technical details with the technical specification sheets of the fashion design.
 - Maintains the overall quality of the technical design sheets of the fashion design.
 - Accepts the instructions and instructions addressed to him in a welcoming manner during the preparation of technical specification sheets for fashion design.
 - Accepts the calendar of others to reach a better preparation of technical specifications papers for fashion design.
 - Listen carefully while applying the explanation to the preparation of fashion design labels.
 - Develops his skills in preparing technical specification Sheets for the design of the "design characterization / design sample".
 - Develop the skill of preparing the design in the technical drawing technique as clear production stages for the professionals in the field with technical specifications sheets.
 - The design of a brand mark with the name of a brand of the proposed design is characterized by its technical specifications.
 - Appreciates the importance of characterizing the proposed design / design sample with its technical specification sheets in a correct and clear manner for the specialists.
 - Feels happy while preparing technical specifications sheets for his designs.
 - Appreciates the importance of preparing technical specifications as a tool for communication between fashion design companies and clothing production in the field.
 - Feel the importance of preparing technical specifications for design as a means of communication between the productive departments within the garment production companies.
 - Feel the importance of preparing the technical specifications of the sample as a means of communication between the design / sample sections within the garment production companies.
 - His knowledge develops through the development of his own skills during the application of fashion design stages.
 - The decision is made to solve the problems faced by specific design / productivity data.
- 2-1-2-3- emotional objectives:** - In which the student "designer" is able to
- Aware of his design abilities during the preparation of the technical specification sheets for fashion design.

- Analyzes and develops information to solve the problems encountered during the preparation of the proposed final design.
- It is a point of view to benefit from the opinions of others by preparing technical specifications for different design ideas for cladding.

2-2- **Determination of program content:-**

Theme	Content
First	:-Study the definition of technical specifications for the design of fashion, types, models and methods of preparation.
Second	:-Studying the importance of technical specifications in the field of fashion design, including "fashion design methods, fashion designer."
Third	:-Study the role of technical specifications papers in the stages of fashion design.
Fourth	:-The application of the phases of fashion design "Analysis and collection of information for the source of inspiration, and the preparation and evaluation of designs"
Fifth	:-Preparation of the contents of the technical specifications papers for the proposed design "Description, definition design", and their evaluation.
Sixth	:-Preparation of the technical details of the technical specification Sheets for the design of "technical drawing, materials and colors", and their evaluation.
Seventh	:-Preparation of the technical details of the technical specification Sheets of the proposed design "Required measurements, special operations, supplements, identification marks" and their evaluation. :-Preparation of the proposed design in its final form with its technical specifications and final productivity.
Eighth	:-Preparation and evaluation of the contents of the technical specifications paper for the proposed design sample.
Ninth	:-Preparation and implementation of the proposed design sample, and evaluation. :-Provide solutions designed for the problems faced by the implementation of samples of the proposed designs.
Tenth	:- Modify and display the pages of the contents of the technical specifications of the design / design of the sample after implementation, and evaluation.
Eleventh	:-Preparation and implementation of the final design proposed in accordance with the technical specifications.
Twelfth	:-Presentation and evaluation of the final designs with their technical specifications.

2-3- **Training methods for the program:-**

The training methods vary in order to apply the program, including the lecture, the presentation of the demonstration to explain and explain the practical statement to prepare the technical specifications papers for the fashion design, the discussions and the brainstorming to ask questions to discuss and discuss the students about the knowledge of preparing the technical specifications sheets for fashion design and its importance in the field of specialization to increase the effectiveness of students during training, And the establishment of workshops and solve problems encountered during the preparation and implementation of the sample design proposal to reach the best design solutions and the stages of production to implement if necessary.

2-4- **Educational activities of the program:-**

The proposed program includes:

- **Home assignments:** - This method is used to apply the knowledge and skills involved in the program.

The contents of the program are defined in the framework of its objectives. The theoretical framework of this study is summarized in a sequential, logical and gradual manner in depth and breadth from easy to difficult, from simple to complex, so that the content includes the following subjects:-

- **Continuous training for the student to prepare the technical specifications for designing the design / sample as follows:-**

- Definition of the design in the style of operation number or model / model "coding".
- Description of design / sample using technical terms in the field.
- Preparing the technical details with the technical specification Sheets for the proposed design / design sample.
- Preparation and implementation of the proposed design sample in accordance with its technical specifications.
- Modification and termination of the contents of the technical specification Sheets for the proposed design if the sample requires it.
- Implementation of the proposed design in accordance with final technical specifications.

2-5- **Educational aids of the program:** The teaching aids were used as follows:-

- Presentation of models of books, scientific references and various Internet sites for the models of preparing technical specifications of

fashion "design / sample" in various styles of fashion design.

- Provide illustrative examples to inform them on how to prepare the contents of the technical specifications sheets for fashion design to conclude and consolidate these contents, including:
 - Types and methods of preparing technical specifications sheets for fashion design.
 - The contents of the technical design sheets of the design design "design / sample paper".
 - The nature of the technical and technical details of the various forms of dress with the official and non-official specifications for fashion design.
 - Display and arrange the contents of the technical specifications of the design "design / sample".
 - Presenting models of technical specifications papers designed and prepared by the designer or design team in the fashion industry.

2-6 - Tools and materials used to prepare the training program:

The study prepared tools and materials suitable to achieve the objectives of the study in the following:

- Drawing and design tools, cutting and pasting tools for paper, and A4 paper.
- The blackboard to confirm the clarification of some of the particles may be difficult to absorb.
- Digital camera and a scanner.

2-7- Basic experimental procedures:

2-7-1 - Selection of the research sample: -

The basic research sample consisted of second-year students in the department of ready-made clothes - Faculty of Applied Arts - Helwan University, a random sample that did not interfere with the researcher. And took them (9) students sample exploratory, and the number (18) of the students sample the basic experience.

2-7-2 - Preparation of research tools: -

The measurement tools were designed to be used for research purposes before /after the proposed program for the study sample. They were presented to a group of academic professors specialized in the field to review and evaluate their opinions and modify what they see in favor of the program and its measuring tools. In front of the appropriate grade to express his assessment and

Table (2): truthfulness and constancy of proposed validity of the program

Measurement Tools of the Proposed Program	Cranach's Alpha	Midterm Retail	Truthfulness
Proposed Validity of the Program	0.90	0.89	0.95

It is indicated from table (2) calculation of truthfulness and constancy by Vaccronbach coefficient and midterm retail of the measurement.

his point of view and grades ranged from (1-5) and represents the number (5) highest rating and number (1) the least. Measuring tools are as follows:

2-7-2-1-Validity of the program:

An assessment scale was designed to evaluate the validity of the program under study for the sample on the "research sample" shown in Table (1). It is designed after verifying the wording and clarity of its terms.

Table: (1) Evaluation of the validity of the proposed program

Items	Degree				
	5	4	3	2	1
1. Validity of the program.					
2. The appropriateness of training methods.					
3. Sequence of program content.					
4. The overall shape of the program.					
5. Evaluation methods in the program.					
6. Suitable for educational activities.					
7. Time planning for the program.					

- Truthfulness and constancy of arbitrators of measurement of proposed validity of the program:-

Measurement of the proposed validity of the program was presented by a study on a group of specialized arbitrators professors in the field on the regard of being sure of validity and its properness for application and benefit of students "sample of the research" from it. It is required from seigniors the evaluation and amendment what they see in favor of the program and fulfilling the aim of application. They requested amendment of the formulation some of its goals to become more clear and it has been amended. The consensus between the arbitrators proportion 92.21% for the total measurement.

They all were high relevancy that to entail the constancy of measurement, and also truthfulness was calculated, it was a function that to entail the

measurement truthfulness. Therefore, the program is valid for application according to the views of the arbitrators.

- Final image of the validity of the proposed program:-

An assessment scale was designed to consist of (7) main items to evaluate the proposed program "under study", in which the referees determine their opinions about its validity.

2-7-2-2- A questionnaire to assess students' technical specifications:-

Table (3): Evaluation of the questionnaire to the technical specifications sheets

Items	Degree				
	5	4	3	2	1
1. Validity of the questionnaire.					
2. Objectives of the questionnaire axes.					
3. The sequence of questionnaire axes.					
4. The questionnaire achieves its objective.					
5. Wording of the phrases axes.					

- The truthfulness and consistency of the arbitrators for the questionnaire:-

The questionnaire was presented to a group of specialized arbitrators in order to ascertain the

Table (4): Truthfulness and constancy of the arbitrators for the questionnaire

Measurement Tools of the Proposed Program	Cranach's Alpha	Midterm Retail	Truthfulness
questionnaire for students' technical specifications sheets	0.92	0.91	0.96

Table (4) shows the reliability and stability of the questionnaire for the proposed program studied by calculating the Vaccronbach coefficient and the midterm interval, all of which have high significance indicating the stability of the scale. August honesty was a function which shows the sincerity of the scale and it resulted in the views of the arbitrators on the appropriateness of the proposed program as a measurement tool.

Table (5) shows the scale of evaluating the technical specifications sheets prepared for the students of the proposed program

First Axis:- Preparation of specification sheets/ sample description/ the program design	Degree					Observations
	1	2	3	4	5	
1. Suitability of the general form of technical specification sheets prepared for the proposed design.						
2. Clarity of data in the technical specification sheets for fashion design.						
3. Accuracy of the technical specification sheets for fashion design.						
4. Organizing of the production details in the prepared technical specification sheets.						
5. Suitability of the preparation of technical specification sheets for the production details of the proposed design.						
6. Availability of the public information (i.e. design name, design type, design class, sales season, production date, demanded quantity, client name, and size).						

The standard is designed to evaluate the technical specifications sheets prepared for students in the "research sample" as shown in Table (3). This measure is an important tool in assessing students' performance before / after the application of the proposed program. This standard is designed after verifying the wording and clarity of its expressions.

ease and clarity of its terms and its relevance to the objectives of the program. The percentage of agreement between the arbitrators was 92.36% for the total estimation scale.

- Final image of the questionnaire to evaluate the technical specifications of the students:

The questionnaire is designed to evaluate the technical specifications sheets prepared for the students. It consists of (3) main axes and includes each axis on a group of items (8-9) items. The scale is shown in the final table (5).

7. Determination of the work style number of the final proposed design.						
8. Usage of the technical terms of fashion according to the brief description of the proposed design.						
9. Sequence of the technical specification sheets of the proposed design.						
Second Axis:- Contents of specification sheets of the sample/ design	Degree					Observati ons
	1	2	3	4	5	
1. Clarity of the technical information related to the design description in the technical specification sheets prepared for the proposed design.						
2. Preparation of the technical work sketches of the proposed design, in the right manner.						
3. Usage of the work style number to describe the properties of the materials demanded for proposed design (for a clothing model).						
4. Usage of the work style number to determine the color degree according to the International Pantone Color Chart to execute the right colors to the design.						
5. Availability of the specification tables of the scale proposed to execute the design.						
6. An image, that shows the styles of decorative preparation required to be executed to the design/ model, is to be put.						
7. The supplements required for the sample/ design to be executed may be determined.						
8. The descriptive cards of the sample/ design may be determined.						
9. The ways of taking care of the clothing models of the sample/design may be determined.						
Third Axis: - The functional purpose of the preparation of the sample/ design technical specification sheets.	Degree					Observation s
	1	2	3	4	5	
1. The prepared technical specification sheets must meet all the stages of the proposed design production to be transformed to a clothing model.						
2. The technical specification sheets of the design must determine only what is necessary to be produced.						
3. The production stages must be sequenced in the prepared technical specification sheets.						
4. The data related to the technical specification sheets must be understandable for the specialists.						
5. The technical details prepared for the proposed design in the productive technical specification sheets must be truthful.						
6. The prepared technical specification sheets should be an expression of the executive stages of the designing idea.						
7. The technical specification sheets of the fashions design must be prepared accurately.						
8. It should be a differentiation between the contents of the technical specification sheets prepared for designing in the program.						
9. Explanatory samples of materials, colors, supplements, and descriptive cards must be attached.						

2-7-2-3-Cards of skill performance note:-

Note cards are designed to measure the skillful performance of the students by observing the following conditions: - Analyze each skill and arrange its steps sequentially to achieve the skilled

performance of the students related to the technical skills of the program as shown in Table (6).

Table (6): Evaluation of note cards for the skillful performance of students

Items	Degree				
	5	4	3	2	1
1- Card validity for the calendar					
2 - Clarity of the card axes.					
3. The appropriateness of the card for the goal of them.					
4 - Wording of the phrases axes.					

- The truthfulness and constancy of the arbitrators of the notes of the performance performance skill: -

The observation cards were presented to a group of specialized arbitrators in order to ascertain the ease and clarity of their terms, their connection with the objectives of the program, and their suitability for the application after modifying the wording of some of their articles to become clearer. The percentage of agreement between the

arbitrators of the cards for the skilled performance of the students as follows: - Note card preparation of the technical specifications of the proposed design by 90%, and the percentage of agreement to note the performance of the design sample preparation 92.5%, and the proportion of agreement to the performance card implementation of the proposed design 93.4%.

Table (7) shows the validity and reliability of the performance note-cards of the technical specification sheets prepared for designing the students' clothes.

Measuring tools of the proposed program	Cronbach's Alpha	Retail Midterm	Truthfulness
- The note card of the skillful performance for preparing the technical specification sheets of the fashion.	0.86	0.85	0.93
- The note-card of the skillful performance for preparing the design sample with its technical specification prepared in the program.	0.85	0.86	0.94
- The note-card of the skillful performance for preparing the final design with its technical specification prepared in the program.	0.93	0.95	0.96

Table (7) shows the accuracy and reliability of the skill performance note used by the students in the proposed program, which is studied separately by calculating the Vaccronbach and the midterm separators for each card separately, all of which are of high significance, indicating the stability of the cards and also the honesty calculation. Note The opinions of the arbitrators on the suitability and validity of the use of cards as a tool of measurement in the proposed program.

- The final image of the note card skill:-

After completing the calculation of the validity and stability of observation cards for the skillful performance, the cards have become final and valid as a measuring tool to evaluate the students' skill performance of the "research sample" before / after. As follows:

- Note card for the skillful performance of preparing the technical specifications sheets and their contents for the students of the "research sample" in the training program as shown in Table (8), and consisted of thirteen axes. Each axis contains three items to measure these skills.

- A note card to measure the skillful performance of the students in the program to prepare and implement the sample of the proposed design according to the technical specifications paper they prepared for the design sample as shown in Table (9) and consisted of six axes.

- Note card for the skillful performance of the students "sample of the research" for their final design as pieces of clothing in accordance with the final technical specifications they prepared in the program as shown in Table (9), and consisted of six axes, each containing three items.

Table (8): the note card of the students' performance for the preparation of technical specification sheets of the fashion design in the proposed program

Item	Degree					Observations
	1	2	3	4	5	
Preparing the technical specification sheets for designing fashions.						
1- Preparation perfection.						

2- Preparation accuracy.					
3- General form of preparation.					
Describing the design in the technical specification sheets.					
1- Writing all the data related to the “clothing piece” in the right manner.					
2- Describing the design in way that suits its execution.					
3- Determining work style numbers for the proposed design according to the rules followed in this specialization.					
Preparing the technical sketch in the technical specification sheets.					
1- The validity of the technical sketch preparation.					
2- Suitability of the technical sketch preparation for the proposed design.					
3-The technical sketch shows the production stages of the proposed design.					
Preparing the technical specifications of the materials					
1- Showing the assistant materials used to execute the proposed design.					
2- Describing the essential materials used to execute the proposed design.					
3- Using the work style numbers to describe the used materials accurately.					
Preparation of the technical specification for colors					
1- Determining the colors used to execute the proposed design.					
2- Writing the names of the colors used to execute the proposed design.					
3- Using the International Pantone Color Numbers.					
Preparing the size of the technical specification sheets					
1-The indexation related to the execution of the proposed sample/design must be determined.					
2-The indexation of the weaving allowances of the proposed design models must be put.					
3-The table of indexation of the proposed design must be attached.					
Preparing the working processes of the technical specification sheets					
1- The preparing style suitable for decorative forms of the proposed style may be determined.					
2- The style of preparing the decorative units must be shown through explanatory sketches.					
3- The technical specifications of the decorative preparing style must be written.					
Preparing the accessories of the design in the technical specification.					
1- Determining the accessories of the design proposed in the technical specification sheets.					
2- Writing all the technical details of the accessories of the proposed design.					
3- Perfection of the preparation of the technical specification in the sheet of accessories of the proposed design.					
Descriptive cards in the technical specification sheets.					
1- Determining the type of descriptive cards used in the proposed design.					
2- Making a model of descriptive cards in the design technical specification sheets.					
3- Determining the places of the descriptive cards on the clothing					

piece.						
Making the pattern						
1- The skill of preparing the patterns/ models in the design technical specification sheets.						
2- Determining the numbers of clothing pieces that need to be cut in the proposed design.						
3- Determining the technical information of each clothing piece in the proposed design						
Preparing the cutting marker in the technical specification sheets.						
1- Putting all the pattern parts in the right attitudes of the fabric.						
2- Assuring that the fabric will not be wasted through the cutting marker.						
3- Counting the quantity of fabric used to execute the proposed design.						
Preparing the production stages in the proposed design						
1- Determining the production stages suitable for the nature of the proposed design/clothing piece.						
2- Choosing the type of weaving machine that suits the proposed design/ clothing piece.						
3- Showing all of the productive technical information related to the proposed design.						
The accuracy of performance in preparing the proposed design technical specification sheets.						
1- Assuring the integration between all the technical details.						
2- Persistence to execute the right performance of the explaining steps.						
3- Adherence to the date of receiving.						

Table 9: The note card of the preparation of the executed sample/design according to the proposed design technical specification sheets.

Items	Degree					Observations
	1	2	3	4	5	
The skills of preparing the sample to design the final proposition.						
1- Cutting the executed sample/ design.						
2- straightening the textile in the right way.						
3- cutting textile in the right way.						
Examining the cut sample/ design						
1- perfection of cutting the parts of the clothing pieces.						
2- undamaged of the cut parts of the clothing piece.						
3-The existence of all signs of weaving of the clothing piece.						
Sewing						
1- Accuracy of sewing / assembling of the cut clothing pieces.						
2- Straightness of the sewing lines of the clothing piece.						
3- The quality of preparing of the angles/ corners/ ends of the clothing piece.						
Fitting						
1- Fitting the parts of the sample/design.						
2- Fitting the measurement of the sample/ design according to the used manikin.						
3- Fitting the general design of the port design "piece of clothing".						
The functional purpose of the executed sample/ design						
1- Reflects the image of the final product						
2- Truthfulness of the textiles direction						
3- Validity of the executed sample for wearing						
The Aesthetic Form						
1- The aesthetic value of the executed sample/design						
2- The ideal form of the executed sample/design on the manikin						
3- Showing the details of the executed sample/design						

▪ **Attitudes scale / questionnaire: -**

The attitudinal scale is designed as a two axis and each axis contains a number of items ranging from (7-8) items. The first axis is to prepare the fashion designer for the technical specifications of his design ideas and convert them into pieces of clothing. The second axis is to prepare the technical and productive details of the contents of

the technical papers in the proposed program In order to measure the change in the students' attitudes, and presented to the arbitrators to evaluate the elements in Table (10). And asked to amend the wording of some items for what they see in favor of the scale has been modified.

Table (10): Evaluation of the measure of students' attitudes

Items	Degree				
	5	4	3	2	1
1- Formulation questions from the scale.					
2 - Simple questions from the scale.					
3 - Clarity of the items of the scale.					
4. Relevance to measure students' Attitudes.					

- The truthfulness and consistency of the Attitudes scale: -

The scale was presented to the group of specialized professors who gave opinion on the appropriateness of formulating and clarifying its

terms to the students, and their suitability to measure their attitudes towards the proposed program. The ratio of the arbitrators to the total scale was 93.18%.

Table (11): Truthfulness and constancy of the measure of attitudes for students

Measurement Tools of the Proposed Program	Cranach's Alpha	Midterm Retail	Truthfulness
questionnaire for students' Attitudes	0.86	0.86	0.93

It is clear in the table (11) validity and reliability calculates Alvakronbach coefficient and retail midterm all of which were of high significance, which indicates the stability of the scale and was also honesty account was a function which shows the sincerity of the scale and it resulted in the views of the arbitrators on the appropriateness and validity of the attitudes scale as a tool to find out the attitudes of students clannish / after me the program.

Prepared the scale through a set of questions and answer it shows students a attitude towards the proposed program as shown in the table (12) and then it can be deduced their attitudes towards the proposed program takes into account when drafting the terms of measurement axes be clear and specific meaning, free of terms not familiar to the students, and the exclusion of Words that lead to a specific answer. The average time was 8 minutes to answer it.

- Final image of the attitudes scale: -

Table (12): The scale of the students' attitudes to the program

Items	Degree					Observations
	1	2	3	4	5	
First Axis:- The students' attitudes toward the proposed program						
1. Perfection of the preparation of the design technical specification sheets/ the sample description.						
2. The importance of learning the preparation of the design technical specification sheets.						
3. Accuracy of the preparation of the design technical specification sheets/ the design description.						
4. Easily understanding the proposed program for preparing of the design technical specification sheets.						
5. The proposed program add much knowledge to your field of fashion design.						
6. The proposed program helps you to develop your designing skills in this field.						
7. Your study of the proposed program makes you thinking of the technical details of your designing ideas during planning their first lines.						

Second Axis: - The preparation of the technical specification sheets of the sample/ design.	Degree					Observations
	1	2	3	4	5	
1. You can prepare the different clothing styles alone.						
2. You can describe the clothing models and styles using its technical terms.						
3. You will be able to describe the clothing pieces according to their acknowledged work style numbers in this field.						
4. Accuracy of preparing the work sketches in the program technical specification sheets.						
5. You may find some difficulty during your preparation of the contents of the design technical specification sheets.						
6. You are able to accurately prepare all the of the technical details related to the technical specification sheets.						
7. You can simply use the work style numbers to describe the proposed design technical details.						
8. You can accurately prepare the production stages of the design proposed in the technical specification sheets.						

2-8- **Exploration experiment:** -

The study presented the entire program to be evaluated before the training of a group of academic professors specialized in the field to explore their views on the proposed program and measuring tools to modify what they are in favor of the program, and make the required amendment. And presented to the sample survey to verify the clarity and simplicity of measuring tools and easy to answer them.

- **Application of measuring tools before:** -

The measurement tools were applied before the proposed program was applied to the students' sample.

2-9- Basic experience of the proposed program:

Includes:-

2-9-1- **Application of the proposed program:** -

The proposed program was applied to the students 'sample of the research' according to the planning of its sessions prepared in advance, and requires the application of a full semester (one semester per week) for several axes are as follows:

- Increase students' knowledge of preparing technical specifications for fashion design.

- Practice the implementation of procedural stages for fashion design: -

The procedural stages of the proposed designs for the students were applied to the "sample" of the proposed program, as is followed by the fashion and clothing companies, starting with preparing the design ideas for their source of inspiration for each of them. The research sample includes sketches of initial sketches without details and the development of the initial ideas into technical technical sketches For the production and specify all the details and technical terms for their implementation, and draw Illustrations illustrative fashion in a final color of their proposed design with the attached samples of fabrics, and the details of the decorative implementation, and all technical drawings to clarify the stages For productivity to implement. "

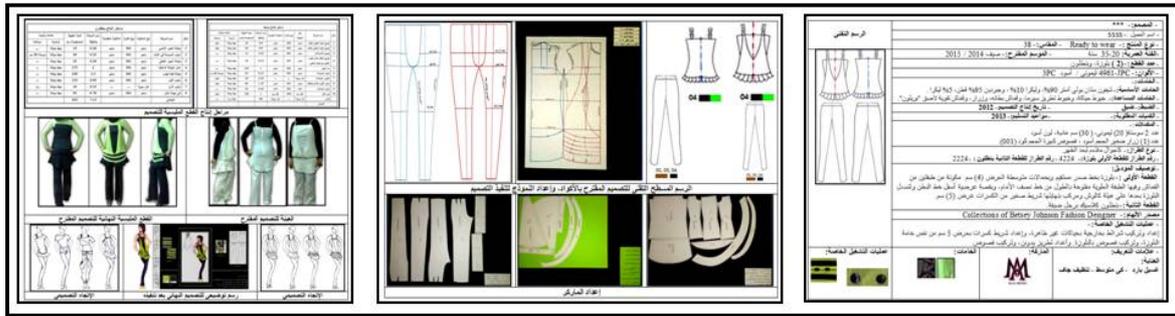
- Students practice the skills of preparing the technical specification sheets for the design / sample of the proposed design with their contents and technical and production data shown in forms (6-10), including the followin



Fig (6): Example of the students' work "sample research" to prepare the technical specifications sheets for the style of haute couture



Fig (7): Example of the students' work "sample research" to prepare the technical



specifications sheets for the of mass production

Fig (8): Sample of the work of students "sample research" for the preparation of technical specifications sheets for the design of fashion in the form of quantitative production of clothing

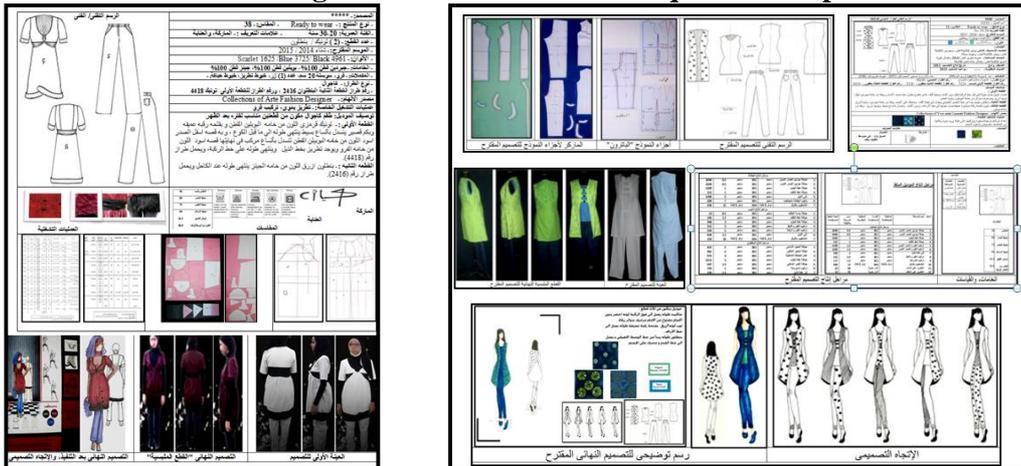


Fig (9): Example of the students' work "sample research" to prepare the technical specifications sheets for the design of the proposed program

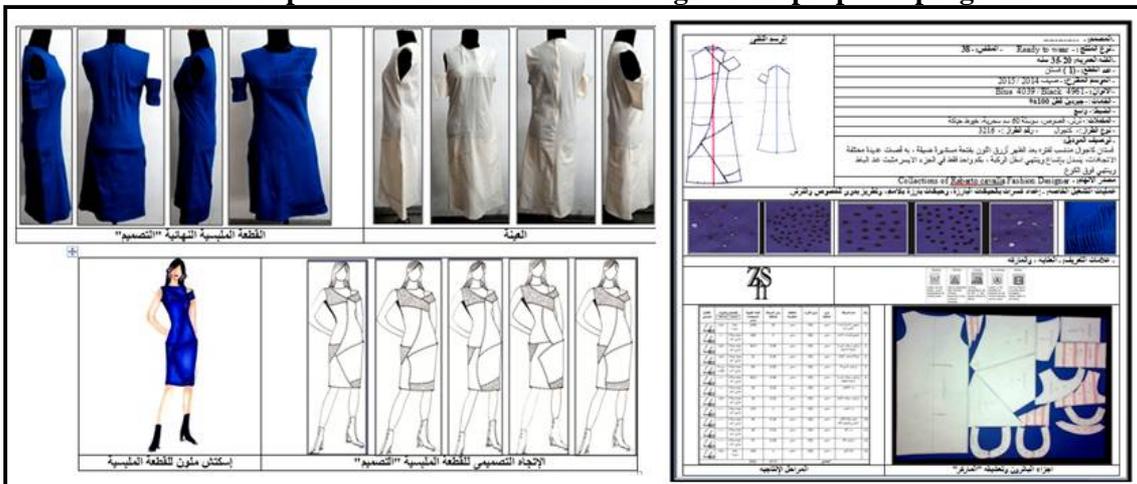


Fig (10): Example of the students' work "sample research" to prepare the technical specifications sheets for the design of the proposed program

- Preparation and implementation of samples of the proposed designs according to the contents of their technical specifications.
- Final modification of the contents of the technical specifications sheets of the proposed designs, showing innovative design solutions to the difficulties encountered by the students in the "research sample" during the preparation of the proposed design sample in the program.
- Implementation of the proposed designs in final form as pieces of clothing with their final technical specifications.
- The orientation of intellectual students towards the importance of preparing fashion designer technical specifications as the productive stages of his design ideas.

2-9-2- Application of measurement tools after:-

The measurement tools were applied after the application of the proposed program with the same tools already applied beforehand to evaluate the students 'sample of research' by a group of academics who are specialized in the field.

2-10- Program Evaluation:-

The proposed program is replaced by academic / academic training by academic professors in the field. It also evaluated all the objectives and contents of each session in order to identify the

strengths of the project to develop them and improve their weaknesses in order to ensure that they are effective and valid for the specific objectives of learning.

2-11- Statistical Analysis: -

Use the appropriate statistical analysis of the study, namely, the T test, the variance analysis, the Ballack constant, the correlation coefficient to extract the results, the verification of the objectives and hypotheses, and the effectiveness of the proposed program.

3-Results and discussions:

This section includes the statistical analysis extracted from the basic research sample to verify its hypotheses and to interpret and discuss the results reached.

▪ **The first hypothesis:-** There are statistically significant differences between the intermediate grades of the students before/after the preparation of the technical specifications sheets for the proposed designs for the program in favor of the distance performance of the sample students. To verify the validity of the hypothesis, test (T) was used to find the significance of the differences between the averages and is shown in the following table (13).

Table (13): Statistical significant differences between the averages of degrees for students in Preparation of technical specifications sheets (before/after)

Preparation of technical specification sheets	Average	Number sample	Standard deviation "s d"	Error factor	(T) test	Freedom degree "d f"	Significance level
Before	31.33	18	3.34	0.78	31.18	17	0.00
After	122.33	18	12.32	2.9			

It is clear from the previous table that by calculating the value of T TEST between the before/ after group scores for the preparation of the technical specifications of the program, the calculated T TEST value was found to be 31.18 and the computed values of 31.18 were compared with the values of the two tables, which is 2.11 at a significant level of 0.05, 2.9 at a significant level of 0.01 and at the freedom level 17, it was found that the calculated value is greater than the table value at a significant level of 0.01 if there is a

significant difference between the two groups at a significant level of 0.01. Since the mean of the group is equal to 31.33 with a standard deviation of 3.34 and the mean range of the group Is equal to 122.33 with a standard deviation of 12.32 if mellow The scores of the before group are lower than the average of the group, which confirms the students' benefit of the "research sample" of the proposed program.

Table (14): Statistical significant differences between the averages of skills degrees of students to Preparation technical specifications sheets (before/after)

skills degrees of to Preparation technical specifications sheets	Average	Number sample	Standard deviation "s d"	Error factor	(T) test	Freedom degree "d f"	Significance level

Before	50.5	18	7.32	1.72	37.47	17	0.00
After	173.28	18	9.35	2.2			

It is clear from the table (14) that by calculating the value of T TEST between the before/ after group scores for the skills of students to Preparation technical specifications sheets of the program, the calculated T TEST value was found to be 37.47 and the computed values of 37.47 were compared with the values of the two tables, which is 2.11 at a significant level of 0.05, 2.9 at a significant level of 0.01 and at the freedom level 17, it was found that the calculated value is greater than the table value at a significant level of 0.01 if

there is a significant difference between the two groups at a significant level of 0.01. Since the mean of the group is equal to 50.5 with a standard deviation of 7.32 and the mean range of the group Is equal to 173.28 with a standard deviation of 9.35 if mellow The scores of the before group are lower than the average of the group, which confirms the students' benefit of the "research sample" of the proposed program.

Table (15): Statistical significant differences between the averages of skills degrees of students to prepare and implement the proposed design sample (before/after)

prepare and implement the proposed design sample	Average	Number sample	Standard deviation "s d"	Error factor	(T) test	Freedom degree "d f"	Significance level
Before	20.11	18	1.37	0.32	42.37	17	0.00
After	79.88	18	5.27	1.24			

It is clear from the table (15) that by calculating the value of T TEST between the before/ after group scores to prepare and implement the proposed design sample of the program, the calculated T TEST value was found to be 42.37 and the computed values of 42.37 were compared with the values of the two tables, which is 2.11 at a significant level of 0.05, 2.9 at a significant level of 0.01 and at the freedom level 17, it was found that the calculated value is greater than the table value at a significant level of 0.01 if there is a

significant difference between the two groups at a significant level of 0.01. Since the mean of the group is equal to 20.11 with a standard deviation of 1.37 and the mean range of the group Is equal to 79.88 with a standard deviation of 5.27 if mellow The scores of the before group are lower than the average of the group, which confirms the students' benefit of the "research sample" of the proposed program.

Table (16): Statistical significant differences between the averages of skills degrees of students to prepare and implement the proposed design (before/after)

skills degrees of students in implement the final design	Average	Number sample	Standard deviation "s d"	Error factor	(T) test	Freedom degree "d f"	Significance level
Before	20.83	18	1.58	0.37	38.35	17	0.00
After	78.05	18	5.57	1.31			

It is clear from the table (16) that by calculating the value of T TEST between the before/ after group scores for the preparing and implement the final design of the program, the calculated T TEST value was found to be 38.35 and the computed values of 38.35 were compared with the values of the two tables, which is 2.11 at a significant level of 0.05, 2.9 at a significant level of 0.01 and at the freedom level 17, it was found that the calculated

value is greater than the table value at a significant level of 0.01 if there is a significant difference between the two groups at a significant level of 0.01. Since the mean of the group is equal to 20.83 with a standard deviation of 1.58 and the mean range of the group Is equal to 78.05 with a standard deviation of 5.27 if mellow The scores of the before group are lower than the average of the

group, which confirms the students' benefit of the "research sample" of the program.

The second hypothesis: - There are statistically significant differences between the averages of the students 'before / after grades for the students' attitude for the proposed program which is being studied for the program's after application, which

indicates that the student attitudes have changed positively towards the program

To verify the validity of the hypothesis, test (T) was used to find the significance of the differences between the averages and is shown in the following table (17).

Table (17): Statistical significant differences between the averages of degrees of students' attitudes towards proposed program (after/before)

attitudes towards proposed program	Average	Number sample	Standard deviation "s d"	Error factor	(T) test	Freedom degree "d f"	Significance level
Before	19.5	18	2.98	0.7	23.52	17	0.00
After	65.27	18	6.11	1.44			

It is clear from the table(17) that by calculating the value of T TEST between the before/ after group scores for the students' attitudes towards proposed program, the calculated T TEST value was found to be 23.52 and the computed values of 23.52 were compared with the values of the two tables, which is 2.11 at a significant level of 0.05, 2.9 at a significant level of 0.01 and at the freedom level 17, it was found that the calculated value is greater than the table value at a significant level of 0.01 if there is a significant difference between the two groups at a significant level of 0.01. Since the mean of the group is equal to 19.5 with a standard deviation of 2.98 and the mean range of the group is equal to 65.27 with a standard deviation of 6.11 if mellow The scores of the before group are lower than the average of the group, which confirms the students' benefit of the "research sample" of the proposed program. The hypothesis authenticity is verified. A correlation between the axes of the

trend scale was found to be 0.87 at a significant level of 0.01. The interest of students in the preparation of technical specifications papers for the proposed design / sample and change the positive attitude of the program to benefit from and the importance for them in their field of specialization.

The third hypothesis:- There are statistical differences between the average grades of students before / after the preparation and implementation of the final design proposed in accordance with the technical specifications prepared in the program for the benefit of the performance of the after dimension of the program

To verify the validity of the hypothesis, by applying the equation of the analysis of the difference between the grades before /after and is shown in the following table:-

Table 18: Analysis of the variance of the average grades of students with the Questionnaire Scale to evaluate the technical specifications sheets for fashion design

Variance source	Sum of the squares	Degrees of freedom "d f"	Average squares	F	Significance level
Between the groups	403.444	2	201.722	10.393	0.000
Inside the groups	989.889	51	19.410		
Total	1393.333	53			

It is clear from the table (18) the scale of the estimate "questionnaire" by applying the equation of the analysis of the difference between the grades before/ after and the value of F is equal to

10.393, a function at the level of 0.01 this means that there are differences statistically significant between the grades of the axes.

Table (19): Analysis of the variance of the average grades of students with the skill note card to prepare the technical specifications sheets for fashion design program

Variance source	Sum of the squares	Degrees of freedom "d f"	Average squares	F	Significance level
Between the groups	17.795	12	1.483	2.609	0.003
Inside the groups	125.611	221	568.		

Total	143.406	233			
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It is clear from the table (19) Analysis of the variance of the average grades of students with the skill note card to prepare the technical specifications sheets for fashion design program and the value of F is equal to 2.609, a function at

the level of 0.01, which means that there are differences of statistical significance between the grades.

Table (20): Analysis of the variance of the average grades of students with the skill note card to implementation of the design sample according to the technical specifications in the proposed program.

Variance source	Sum of the squares	Degrees of freedom "d f"	Average squares	F	Significance level
Between the groups	2.861	5	.572	1.286	0.276
Inside the groups	45.389	102	.445		
Total	48.250	107			

It is clear from the table (20) the variation of the note card of the implementation of the design sample according to the technical specifications in the proposed program. The equation of the analysis of the variance between the axes was applied and the value of F is 1.286 which is not

significant at the level of 0.05. This means that there are no statistically significant differences between the average the grades of the axes equal the students' skills for preparing and implementing the design sample.

Table (21): Analysis of the variance of the average grades of students with the skill note card to prepare the final design according to the technical specifications of the proposed program

Variance source	Sum of the squares	Degrees of freedom "d f"	Average squares	F	Significance level
Between the groups	2.185	5	.437	2.306	.050
Inside the groups	19.333	102	.190		
Total	21.519	107			

It is clear from the table (21) the variation of the performance note card to prepare the final design according to the technical specifications of the proposed program and the equation of the analysis of variance between the was applied and the value of F is equal to 2.306 which is a function at the level of 0.05 which means that there are statistically significant differences between the As

for the averages. The hypothesis authenticity is verified.

The fourth hypothesis:- The effectiveness of the proposed program to develop the knowledge, skills and attitudes of students for the preparation of technical specifications sheets for fashion design.

Table (22): effectiveness of the proposed program before / after

Items	Before	After	Ballack constant	The result
-Evaluation scale of the student assessment questionnaire to prepare the technical specifications sheets in the proposed program.	31.33	122.33	1.41	There are effectiveness
- note card performance skills for students to evaluate the preparation of papers and technical specifications for the design of the proposed program.	50.50	173.28	1.37	There are effectiveness
- Note card performance skills for students to carry out the proposed program design sample according to the papers and technical specifications	20.11	79.88	1.34	There are effectiveness
-Note card performance skills for students to implement the final design program according to the technical specifications sheets	20.83	78.05	1.46	There are effectiveness
-measure the attitude of students towards the proposed program	19.50	65.27	1.43	There are effectiveness

It is clear from the above table (22) that the value of the Ballack constant is greater than 1.2 for the average grades of students with all the measuring tools used in the proposed program. This confirms that students benefit, provide their knowledge and develop their skills in the field of specialization. This means effectively the proposed program under study, the hypothesis authenticity is verified.

Research results:-

The results of the research after studying the technical specifications of fashion design and determining the importance of preparing the designer for the new design ideas for the various styles of the design stages of the fashion to be cut into the clothing analytical and experimental study, and answer the questions of the study and the preparation and implementation of the proposed program, and achieve the objectives and validity of hypotheses and then proved the results of the following study :-

1- There are statistically significant differences between the intermediate grades of the students before /after the preparation of the technical specifications papers for the proposed designs for the program in favor of the distance performance of the sample students. This confirms the students' benefit from the proposed program and highlights the learning experiences they have undergone in the field.

2 -There are statistically significant differences between the averages of the students 'before / after grades for the students' attitude for the proposed program which is being studied for the program's after application, which indicates that the student attitudes have changed positively towards the program.

3 - There are statistical differences between the average grades of students before / after the preparation and implementation of the final design proposed in accordance with the technical specifications prepared in the program for the benefit of the performance of the after dimension of the program to highlight the scientific development of the knowledge and skills of students in the design and production of clothing by putting innovative solutions to overcome the difficulties encountered during the preparation And the implementation of their proposed designs according to the technical specifications they have prepared in the program under study.

4 -The effectiveness of the proposed program to develop the knowledge, skills and attitudes of

students for the preparation of technical specifications sheets for fashion design.

Recommendations and proposals: - The researcher recommends the following:

- Conducting further studies that link the fashion design with the advanced garment production technology to increase the ability of the "designer's" to excel compete and meet the challenges of the industry and the labor market.

- The obligation of students to develop technical and productive specifications of fashion for their new design ideas such as drawings, stages and steps implemented in a clear and professional manner in the field of specialization to convert them into clothing pieces in line with technological development.

- The need to link between academia and industry by establishing workshops between specialized academic colleges and design and garment companies to develop the field of fashion design and clothing production and increase its competitiveness.

References:-

1- Abling, B: Fashion Sketch book sixth addition, New York, Fairchild Publications, pp. 313-324,334-343. (2015).

2- Carol Brown:"Fashion & textiles, the essential careers guide" Laurence king publishing pp. 159,162,164,166 (2010).

3- Carr, H & Lathams, B:"Technology of clothing manufacture" third edition, black well science, London, pp.143-144,146-147,191 (2000).

4- Francesca Sterlacci: Leather fashion Design, Portfolio skills, fashion & textiles publishing by Laurence king first edition publishing ltd, London, pp. 94, 99,100-101,128-129,174,176-177 (2010).

5- Georgina O'Hara Callan: "The Thames and Hudson Dictionary of Fashion and Fashion Designer's", pp.54 (2000).

6- Gerry Cookli: Garment technology for Fashion Designers. Black Well Science LTD, pp. 132-138 (1997).

7- Jaeil Lee: Technical Source book for designer's first edition, Fairchild pubns, pp. 36-47 (2014).

8- Quarto Plc:"Fashion design drawing course principles, practices & techques"Thames& Hudson publishing first edition, British, pp. 40-41,73,79 (2010).

9- Suejenkyn Jones: Fashion design" lourence king publishing second edition, London, pp. 126,177 (2005).

10- Sue Jenkyn: Fashion Design Portfolio, Laurence King; third edition education, pp. 45,122,166-170 (2011).