

Employing Aesthetic Possibilities of Compu Dobby loom's weavings into fashionable women designs

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ABSTRACT:

It's known that hand weaving is one of the oldest crafts have been made by human according to their need of wearing clothes. As time goes by, the man developed his tools and materials to reach the desired fabrics of different designs that meet his needs, where he was able to develop the loom, which was represented in many styles such as ground loom, and vertical loom to more advanced looms in our days. Subsequently, hand looms have evolved to become more handy and easier to control. Hand looms become computerized as a part of contemporary technological development.

The current research tackles one of these looms, which known as the computerized doobby loom, this loom is multi-potential that the researchers imported it specifically to be applicable in the practical experiment in this research.

It is a hand loom with 24 shafts, with a doobby device connected to a computer. The weaving work is produced by using a specified weaving design program called "Weave Pointv7", and executed manually by using the two pedals attached to the loom. Then we reach the main point of this discussion, which is designing creative contemporary ladies' clothes from the produced fabrics.

KEYWORDS: Dobby loom's weavings, Wearable Art, Plastic Utilities, Weave pointv7, Hand woven.

1. Introduction:

Problem statement:

The issue of the paper can be concluded to:

- Attempting to find technical and formative solutions to design hand woven fabric on the computerized 24 shafts doobby loom, which has never been used in Egypt or the Arab world before, and being imported specifically by the researchers to conduct a research experiment.
- Trying to combine the handmade fabrics and fashion designing in one single artwork to create unique modern designs for the ladies.

Research objectives:

- Innovate contemporary ladies fashion using the hand fabric woven on the computerized 24 shafts doobby loom.
- Achieving new technical and artistic entries through using the computerized doobby loom.

Research importance:

- The importance of the research:
- Enable the Contemporary artists to use the doobby loom in the handmade fabric designs.
- Open a new field to the Wearable Art in Egypt and introduce it to the art men and the fashion designers as one of the modern arts in the contemporary arts field and business.

Research hypotheses:

Research supposed that:

Using the multi designing abilities of the computerized doobby loom creates new horizons for the technical and artistic formation to apply it in designing modern and creative women clothes.

Research limitations:

- The practical experiment is applied on ladies from the age of 18:35 years old.
- Using the computerized 24 shafts doobby loom.
- Using design program “Weave Pointv7”.

Research methodology:

The current research follows the experimental and analytical descriptive method.

توظيف الإمكانيات التشكيلية لمنسوجات نول الدوبي المزود بالكمبيوتر لتصميم ملابس معاصرة للسيدات

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الملخص:

من المعروف أن النسيج اليدوي هو من أقدم الحرف اليدوية التي أبدعها الإنسان نظراً لحاجته إلى الكساء، ومع تتابع العصور والأزمنة استطاع الإنسان تطوير أدواته وخاماته للوصول إلى ما يرغب من منسوجات بتصميمات متنوعة لتفي بإحتياجاته، حيث استطاع الإنسان تطوير الأنوال اليدوية التي كانت تتمثل في النول الأرضي، والنول الرأسي إلى أنوال أكثر تطوراً في العصر الحالي وعلى إثرها تطورت الأنوال اليدوية فأصبحت تعمل بالكمبيوتر ويتناول البحث الحالي أحد هذه الأنوال والذي يعرف بنول الدوبي المزود بالكمبيوتر والذي استورده الباحثين خصيصاً للاستفادة منه في تطبيق التجربة العملية لما له من إمكانيات متعددة تتيح إنتاج منسوجات يدوية ذات زخارف وتشكيلات متنوعة.

وهو نول يدوي بأربعة وعشرون درأة مزود بجهاز دوبي متصل بالكمبيوتر، يتم تصميم العمل النسجي باستخدام برنامج متخصص بتصميم النسيج يعرف بأسم (Weave Pointv7) ويتم تنفيذ العمل النسجي يدوياً باستخدام الدواستين المزود بها النول ثم نصل للهدف الاساسي من البحث وهو تصميم ملابس سيدات معاصرة مبتكرة من القطع النسجية المنتجة يدوياً من هذا النول وقد تعرض البحث لعدد من مصممي الأزياء المهتمين بابتكار تصميمات ملابسية فنية (Wearable art) مستخدمين فيها النسيج اليدوي .

مشكلة البحث :

تتلخص مشكلة البحث في:

- محاولة الوصول إلى مداخل متنوعة للجمع بين المنسوجات اليدوية وتصميم الأزياء في عمل فني واحد لأبتكار تصميمات ملابسية معاصرة للسيدات0
- محاولة إيجاد حلول تقنية وتشكيلية لتصميم المنسوجات على نول الدوبي ذو 24 درأة المزود بالكمبيوتر والذي لم يتم استخدامه من قبل في مصر او الوطن العربي في النسجيات اليدوية ، حيث قام الباحثين باستيراده بغرض اجراء التجربة البحثية عليه

أهداف البحث :

- أبتكار تصميمات ملابسية معاصرة للسيدات مستخدمين فيها النسيج اليدوي المنسوج علي نول الدوبي ذو 24 درأة المزود بالكمبيوتر.
- تحقيق مداخل فنية وتقنية جديدة في النسيج اليدوي من خلال استخدام نول الدوبي المزود بالكمبيوتر.

أهمية البحث :

- اتاحة استخدام نول الدوبي المزود بالكمبيوتر للفنانين المعاصرين في مجال النسجيات اليدوية.
- فتح مجالاً جديداً في مصر لفن الملابس الـ (Wearable art) وتعريفه للقائمين على فنون النسيج والأزياء كأحد فروع الفنون المعاصرة.

فروض البحث :

امكانية تصميم ملابس مبتكرة معاصرة للسيدات مستخدمين فيها الإمكانيات التشكيلية لمنسوجات نول الدوبي المزود بالكمبيوتر مما تتيح مداخل جديدة للتشكيل الفني والتقني .

حدود البحث:

- تطبيق التجربة العملية علي السيدات من عمر 18:35 سنة
- استخدام نول الدوبي ذو الأربع وعشرون درأة المزود بالكمبيوتر

منهجية البحث:

يتبع البحث الحالي المنهج الوصفي التحليلي والتجريبي.

نتائج البحث:

- أبتكار ملابس وأزياء فنية (Wearable art) تتميز بالفرادة والحداثة ومعاصرة لأتجاهات الموضة العالمية من خلال تصميم خمس قطع ملابسية مبتكرة للسيدات ومكملاتها , وأحتوت تلك المجموعة الملابسية علي ثلاث فساتين وبلوزة وحقيبة يد.
- ونفذت هذه القطع الملابسية من نسيج يدوي تم نسجه علي نول الدوبي المزود بالكمبيوتر والذي استورده الباحثين خصيصا لهذا البحث ، وتم عمل أشكال متعددة من التصميمات النسجية علي الكمبيوتر باستخدام برنامج متخصص بتصميم النسيج يعرف بأسم (Weave Pointv7) ما بين اشكال ورقة الشجر والقلب و الكاروه والديتيجال.
- انتجت عدد من القطع النسجية اليدويه من تراكيب نسجية علي نول الدوبي والمكون من 24 درأة والتي تتيح تنوعات في شكل السطح النسجي والكثافات والملامس والخيوط مع تباين في الالوان والنقشات مايبين مساحات نسجية ذات لون واحد واخرى متدرجة الالوان.
- تم اضافة بعض الأقمشة والخامات في تنفيذ التصميمات الملابسية بالاضافة للمنسوجات اليدوية مثل: الشيفون والاورجنزا و الريش والجلد.
- اضافت تقنيات حديثة لزخرفة الملابس بوحدات الاضاءة الليدات (LED) Light-Emitting Diode التي اضافت اشكال زخرفية مجسمة , و كذلك تقنية الطباعة ثلاثية الابعاد (3-D printing) التي اضافت اشكال زخرفية مجسمة.
- تحقيق الإتصال الفني والتقني بين كل من مصمم الازياء ومصمم منفذ النسيج , حيث احتوي البحث علي تصميم وتنفيذ النسيج ثم تصميم و تنفيذ القطع الملابسية ومكملاتها , فبذلك نكون قد بدأنا البحث بالخيوط ونتهيها بمنتج ملابس فني مبتكر.

2. The computerized hand doobby loom:

Hand weaving is one of the arts and crafts that were linked up with human life, and accordingly its evolution was tied up with the technical and artistic development movements in the world. As the arts and industries evolved, the hand weaving looms have evolved as well, and got affected by the industrial, technological and informational revolution. Till the technological development came to serve the hand loom without overshadowing its aesthetics or elements.

The computerized doobby loom is one of the most important developments of the manual loom.

Compu Dubby looms are innovative in the weaving field. It is a hand loom that would function more efficiently than those presently available, the loom designs and weaving techniques is modified for especially those of the guild masters of art weaving. It is a uniquely engineered hand loom and each feature of it has been chosen to reduce time and effort and maximize professional results.

To warp and weave on an AVL Loom will mean learning some new procedures and techniques even for the experienced weaver. The Compu doobby loom provide with 24 harness and a doobby device that work through the computer program named weavepoint 7, which allow the weaver to do as many as could be unique designs which are difficult to achieve in a regular loom. In this case the researcher used many designs to weave and get the fabric wanted to design the wearable art.

The researchers have imported the computerized doobby loom to reap the benefits from it in the practical application, for its various potentials that allow the production of handmade textiles with different decorations and shapes. By using the doobby machines, great differences in the weaving composition can be obtained, and the artist can manually control the obtained weaving through using weft entry system. (Fayza Abbas Ibrahim, 2010)

2.1. The loom structure:

The computerized manual doobby loom consists of the same parts as the usual manual loom, however, a computerized doobby machine has been used to complete the shaft motion, and open new fields to manually enter the wafts. The parts of the loom are explained below, Figure (1)s.



Fig 1. 24'' Workshop Dobby Loom

2.2. The Loom Parts:

2.2.1. The Tower:

The tower consists of a woody Parallel Rectangles that holds 24 shafts, which hold number of heddles that made of fixed synthetic yarns, as this shafts moves in a mechanical way connected to the doobby machine.

2.2.2. Warp and fabric Beams:

Which been designed on X shape to apply the loom when moving, the first beam is provided with rough surface, making the fabric stick and being folded easily. The width of the two beams is around 26 inches.

2.2.3. The Beater:

It's a device contains a reed , the size of the reed can be determined by the number of dents in one centimeter. If there were 10 dents per centimeter, it's called reed 10. However, it's changeable according to the wanted fabric.

2.2.4. The Treadles:

There are two treadles connected to the tower and the shafts, by which the shaft can be lowered according to the required design. The command of the shaft movement comes from the doobby machine to the pedals, and movement is transferred from one to the other.

2.2.5. The Dobby Machine:

The doobby machine is a closed metal device being programmed in advance to deal with the shaft movement; these movements are translated through its connection to the computer. The doobby machines provide huge differences in the textile structures and the possibility to have a variety of designs using the multi method designing fabric program, which can be directly applied to the doobby machine and produce various textile works. (AVL looms manual)

2.3. The Computer As a Designing Tool:

At this time, computers became the dominant tool, it is a tool for simplicity and creation through the different application, and accordingly it became one of the designing means, where it added great advantages to the designers, which are as follows:

- Freedom and greater flexibility in designing, easier and cheaper experience.
- More concentration, less hand-work, less stress, and less repetition.
- More productivity through an easier repetition for a more variety and double production.
- Greater design control, besides the ability to proofreading.
- Greater self-responsibility, where the designer is considered a full service agent from the start to the end of the production. (Haitham Abdeldayem Mahmoud Ahmed, 2014)

2.3.1. Textile Designing Program (weave point v7):

Recently, many computer programs has showed up, which allow to create new textile designs and pick the color for all the looms as determining the pedal rubber and the treadle system, it can be used with the manual and the industrial loom at the same time. (Madsen, David, 2012)

This program allows the designer to see the designed textile painted before being produced, which helps the designer to visualize the final result and allows him to amend and change before the production.

As the current research depends on executing the weaving works with the 24 shafts doobby loom, a collection of different designs will be selected to allow the production of unique designs in the research experiment.

3. Fashion designers have created in Wearable artby using handmade fabric:

The outfits and jewels made by hand created as fine arts alludes to wearable art, which also known as Artwear or wearable artworks.

The word Wearable art indicates that the work should be serious and distinct expressive statement as creating any piece of clothes requires aesthetic appeal.

(Wikipedia, the free encyclopedia, 2017)

The most recent change in the fashion designs is the wearable art which started with the movement of Arts and Crafts. The origin of this change is the 60's and the 70's hippie styles and the studio fiber art. (Melissa Leventon, 2005)

In this research we will shed lights on some of fashion designers who creating Wearable art and discussing its characteristic forms and processes.

3. 1. Sharron Hedges:

The 1970's crochet designer, Sharon Hedges, was and still one of the pioneers in the wearable art movement. She proved herself through using a variety of stunning prints in her designs. (Kathryn, 2012)

Sharron acknowledges correlation between welding and crochet: both are highly flexible addictive processes that necessitate beginning at a point and developing two-dimensionally in any direction. New were the color and the tactile quality of the yarns. She began wrapping crochet around welded armatures, adding lines of color. But at last she found the two textures incompatible. (Julie Schafler Dale, 1992)

She loved merging a two-dimension and three dimension crochet and creating an even 2D textile to dress up a person to see the changes and then working back in the 2D to adapt them. (Kathryn, 2012)

In Figure (2) one of her work "Lydia's Coat" It was woman's crocheted wool coat in rich shades of light to dull blue and purple in patterns of wave and cloud like forms and decorated at shawl collar by pink, cream and green flower shapes. A quarter of the coat is lined with silk simple knit while the other three-quarter are lined with gray wool weave with two hook and eye fasteners on the front closure. (Museum of Fine Arts, Boston, 2017)

3.2. Viktor&Rolf:

The innovative fashion house, Viktor&Rolf, was established in 1993 after the graduation of the Dutch designers Viktor Horsting and Rolf Snoeren from Arnhem Academy of Art and Design.

The house of Viktor&Rolf is known and highly respected for its spectacular and glamorous Haute Couture. Their desire is to produce eye-catching and unique style by a very unexpected fashion approach. (Viktor& Rolf, 2016)

Their Autumn/Winter 2016 collection used a selected textiles and clothes from the previous seasons. The designers used souvenirs from many past collections as a basis for their productions. Torn textiles are mixed up and hand knotted to create a variety of textiles and a massive forms. They also used vintage items from their own set for detailed decorated clothes. This needlework included heavy, organic mix of a multi-use fasteners, beads and crystals. (Viktor& Rolf, 2016)

The two designers modified the past collections to more spectacular garments. They depended on diversified portions of hand-woven layers and leftover fabrics, enhanced with voluminous tulle and trimmed with buttons. Basically, they produced a fabulous works mixing the rags-to-riches, Figure (3). (Amy Verner, 2016)

This look could be described as surplus-plus-plus, it grew from old army jackets and a vintage jeans. But this can't deny that they have successfully created something unprecedented and striking – an haute vagabond chic. The look is completed with crushed paper top hats and vagabond stains on knees and elbows.

The collection of the sweatshirts and the army jackets were phenomenon by the woven ruffles and the sparring patches of vintage buttons and crystals and they were repeated on the cropped jeans and khakis. (Miles Socha, 2016)



Fig 2. Sharron Hedges' design "Lydia's Coat"



Fig 3. Viktor & Rolf's design

3. 3. Janet Lipkin:

The textile artist Janet Lipkin was born in Northern California and graduated from Pratt Institute. She is one of the founders of the Art Wear movement and helped defining the wearable art.

Although Lipkin is attracted to organic motifs like pods and flowers, her works are dominant with bold colors and voluminous lacey layering. Her fashion designs are very sculptural. (Craft in America, 2017)

To Lipkin, color has always been an essential to her work as well as the texture. She started her work by dyeing yarns to develop rich palettes. (Janet Lipkin, 2015) (<http://www.janetlipkin.com/about>)

Her career having oscillated between fashion and art, Janet has devoted much thought to what differentiates these fields. For her it is a matter of the soul. Commercial work is intellectual, rational; art is emotional. (Julie Schafler Dale, 1992.)

In addition to the colors, Lipkin also focused on the form of the work. Her early pieces and weaved artworks was more of a sculpture shape. However, her latest knitted wearables create form through drape. Linear Layers. Figure (4). (Janet Lipkin, 2015)

Actually evolved out of a series of experiments with draping. Whereas previous work began withdrawing, Linear Layers was conceived by handling the fabric and moving it on the body.

A complicated piece consisting of four individual parts that can combine in various ways to become one, the surfaces are knitted in painterly designs and create a wonderful array of pattern on pattern when worn simultaneously. Like most of Janet's art, Linear Layers does not

work flat, but needs the dimension of a body to give it life and form. (Julie Schafler Dale,1992)

Lipkin's desire was to explore diverse designs and to transmit her story through her art pieces. What helped to represent these images is the sewing machine and the knitting machine which allowed her to create elaborate images, tailored and draped forms. She tried to begin work in a series, much like painter. She was dyeing all her yarn to reach a rich palette, Ikat dyeing skeins of yarn and dip-dyeing panels of black and white knitted images. She explored acid dyes to make her color palette. Through the years she created a different collections such as: Indonesian Kimono, Geometric Ikat jackets, Mexican Kimonos, Swimming tunics, Dish Rag Kimonos, Tibetan Tiger Coats...etc.(Janet Lipkin,2015)

4. Methods and Experiment:

Fashion designs as a wearable art for ladies have been designed in this research by using hand woven fabric which been made by the computerized dobby loom and other manufactured fabrics. About 18 meters have been woven on 24 shafts by using the computerized dobby loom.

Many art experiments have been made to reach the needed process to produce the suggested fashion designs by using hand woven fabric which been made by the computerized dobby loom, as Figure (5) which explains one of the experiments.



Fig. 4. Janet Lipkin's design



Fig 5. Art experiment

Below, these fashion designs are reviewed :

4.1. Design1: see sketch. Figure (6)

4.1.1. Garment construction:

Fitted blouse with high collar, with short sleeve and Valona on the bottom. The high coal was embroidered with a total about 20 pieces of 5 mm white LEDs (Light-Emitting Diode) to give the aesthetic shape of the garment and the light dimensions to the fashion design, Figure (7), and see dress from three sides in Figure (8).



Fig.6. Sketch for design1



Fig.7. The high collar with Leds



Fig.8. Dress from three sides

4.1.2. Fabrics:

Organza and hand woven fabric made of cotton yarns.

4.1.3. The textile techniques:

The produced designs have been woven on 24 shafts by using the computerized dobby loom.

4.1.3.1. The textile design:

Decorated on the shape of a Leaf, Figure(9).

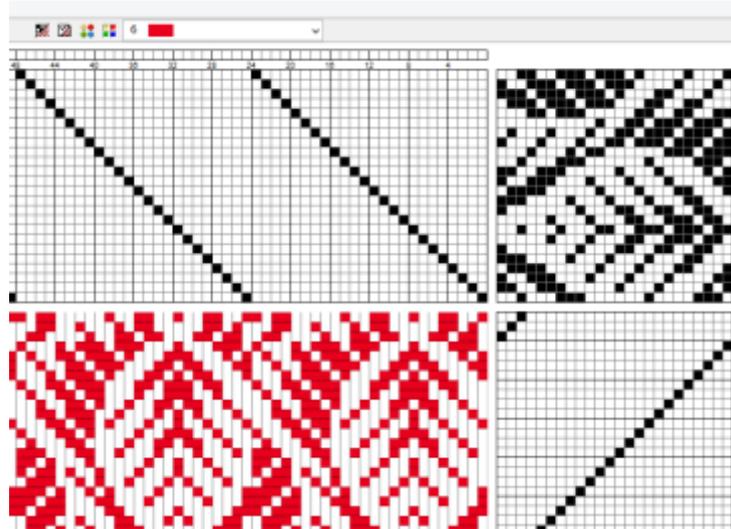


Fig 9. Textile design

4.1.3.2. Woven piece details:

The researchers used a group of the designing solutions for weft insertion system, as the variety in the color scheme that is used to achieve different shades of lights and colors. The next two figures show some of the designing solutions for the fabric composition. In Figure (10), the weft has been used by sequential colors in narrow spaces, which made horizontal lines nearly as a rainbow shape. As for the second design, the weft was mostly used in wide spaces, which changed the fabric shapes and the gradient transition of colors, Figure (11).



Fig.10. Woven piece details (1)



Fig.11. Woven piece details (2)

4.2. Design2: see sketch. Figure (15)



Fig.12. Sketch for design2

4.2.1. Garment construction:

Woman's handbag with leather hands as accessories. In Figure (13) the handbag can be seen from two sides (front and back).



Fig.13. the handbag from two sides: front and back

4.2.2. Fabrics:

Hand woven fabric made of cotton yarns and the bag's hands made of leather.

4.2.3. The textile techniques:

The produced designs have been woven on 24 shafts by using the computerized dobby loom.

4.2.3.1. The textile design:

The dobby loom allows the transmission between the textile designs saved at the weave point7 program through the weaving process without changing the wraps or threading. The program excludes all the excessive shaft by the loom's mechanic moves, leaving the threads out of the weaving process, which makes the artist produce more designs with a variety of the woven structures, which is not produced by any other dobby loom.

The following figure illustrates the second woven structure using the same old wraps which consist of 16 shafts and threading on the sides. Tie up represents the design. Figure (14).

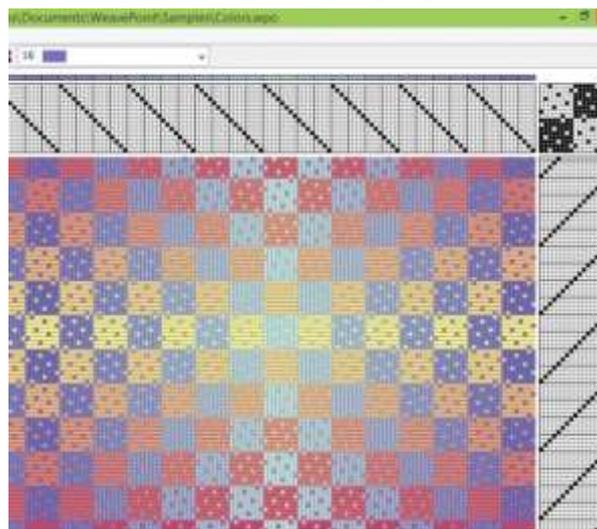


Fig.14. Textile design

4.2.3.2. Woven piece details:

The next design represents the woven piece resulted from the changes of the design with the same threaded wraps and by using a different approach to add the wefts without modifying threading, which is one of the advantages of the program. Also, a different color

distribution has been used to assure the appearance of the wefts. However, sometimes it uses contrasted colors to illustrate the decorative woven design. Figure (15)



Fig.15. woven piece details

4.3. Design3: see sketch. Figure (16)

4.3.1. Garment construction:

Dress consists of bodice of hand woven fabric and skirt of yellow tulle. Add additional top part from yellow tulle which can be placed or removed, Figure (17). In Figure (18) dress can be seen from two sides' front and back. In front side was removed additional top part.



Fig.16. Sketch for design3



Fig.17. Dress with additional top part



Fig.18. Dress from two sides: front and back

4.3.2. Fabrics:

Tulle and hand woven fabric made of cotton yarns.

4.3.3. The Textile Techniques:

The produced designs have been woven on 24 shafts by using the computerized dobby loom.

4.3.3.1. The Textile Design:

Decorated on the shape of a heart, Figure (19).

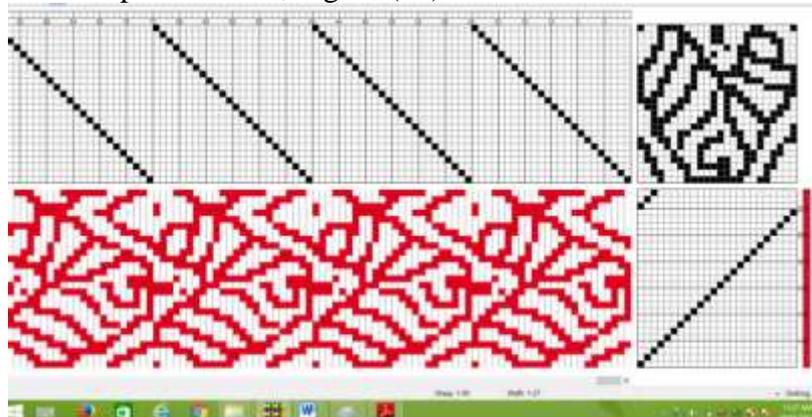


Fig.19. Textile design

4.3.3.2. Woven piece details:

The weave point7, which is attached with a computer device and equipped to apply threading, tie up and wefts entry system, is characterized with a punch of options that allows the artist to obtain unique designs. However, a free hand drawing feature has been used in this design on the squares of the tie up to extract both the wefts entry system and threading sequentially. The researchers, in this textile work, was able to move between the colors, shapes and the textures by using cotton threads and its smooth appearance alternately with the frilly threads, which carries on the sides cotton balls that shows on the textile repeatedly. The

researchers could diversify the balls' density and appearance. The following details represent snapshots of the woven piece, Figure (20).



Fig.20. Woven piece details

4.4. Design4: see sketch. Figure (21)

4.4.1. Garment construction:

Fitted dress composed of interlaced circular units where chiffon fabric is exchanged with hand woven fabric in it and decorated by the shapes of the three-dimensional printing as a new addition to the textile arts, Figure (22), and see dress from three sides in Figure (23).



Fig.21. Sketch for design4



Fig.22. Dress was decorated by 3D- printing shapes



Fig.23. Dress from three sides

4.4.2. Fabrics:

Chiffon and hand woven fabric made of cotton yarns.

4.4.3. The textile techniques:

The produced designs have been woven on 24 shafts by using the computerized dobby loom.

4.4.3.1. The textile design:

Decorated on digital shape was designed by researchers, Figure (24).

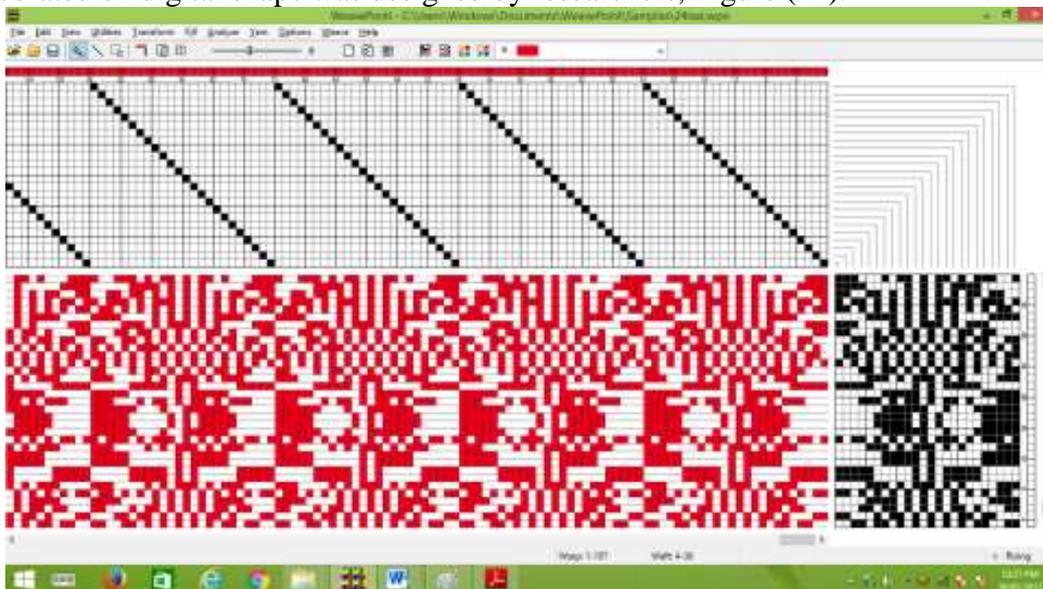


Fig.24. Textile design

4.4.3.2. Woven piece details:

In this woven piece shows a contrast in the threads density and tissue texture which illustrates the design aesthetics, where we feel a smooth texture in some parts and a rough texture in the other parts.

There is also a contrast in the colors of the woven surfaces, some surfaces have a unified color and many others have multiple colors in different shades to give the illusion of a rainbow colors. Figure(25)

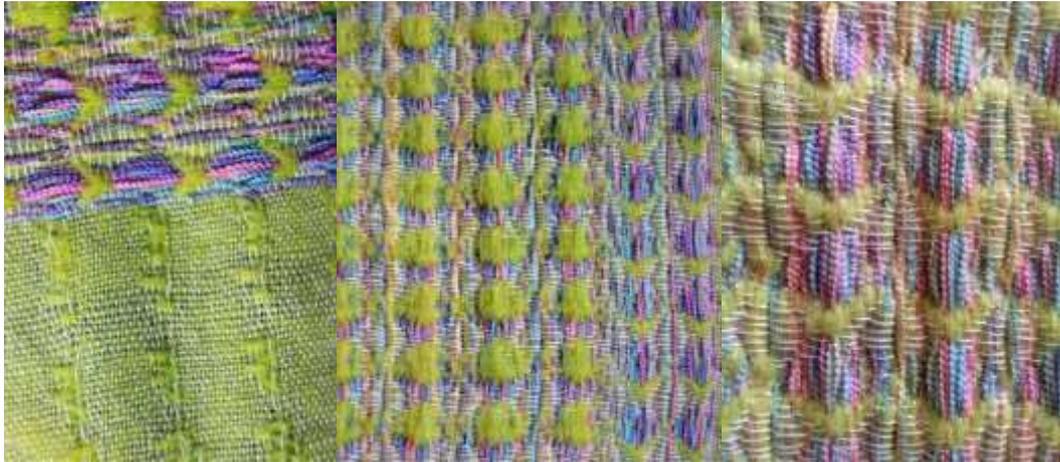


Fig.25. Woven piece details

4.5. Design5: see sketch. Figure (26)

4.5.1. Garment construction:

Dress without sleeve, its skirt composed of Valona of three fabrics: yellow Organza, blue Organza and hand woven fabric. In the top part of dress, bras took the leaf shape that is the same shape of textile design of hand woven fabric. The shoulders were decorated with feathers, Figure (27). In Figure (28) see dress from many sides.



Fig.26. Sketch for design5



Fig.27. The shoulders with feathers



Fig.28. Dress from many sides

4.5.2. Fabrics:

Organza, feathers and hand woven fabric made of cotton yarns.

4.5.3. The textile techniques:

The produced designs have been woven on 24 shafts by using the computerized dobby loom.

4.1.3.1. The textile design:

Decorated on the shape of a Leaf, Figure (29).

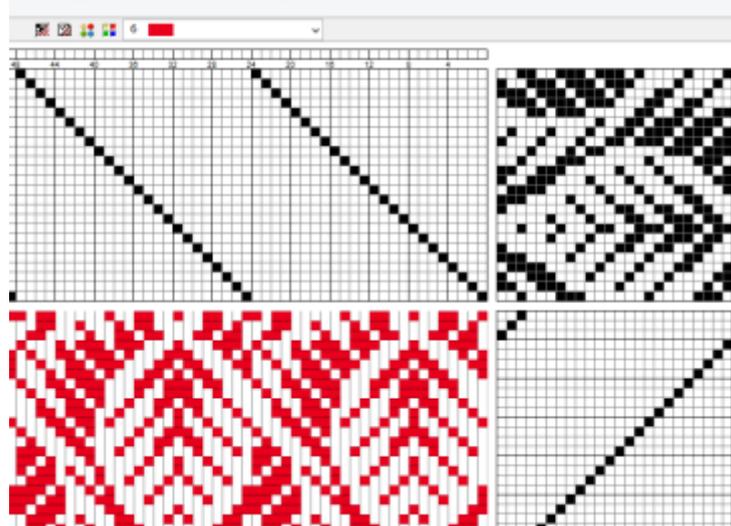


Fig.29. Textile design

4.5.3.2. Woven piece details:

The beauty of this woven piece appears by using the same type and density of the wraps and wefts along with the unification of the thread dyes and the repetition of tree leaves as decorative shapes. Figure (30).



Fig.30. Woven piece details

5- Results and discussion:

The following research hypotheses were successfully achieved:

- Designing a collection of five fascinating wearable fashion designs for women including 3 charming dresses, a blouse and a hand bag.
- Those fashion designs were made using the hand woven fibers which were woven by "The computerized hand doobby loom". The researchers imported this doobby loom for the sake of this research. In addition, the loom was used to produce a range of innovative textile designs in different shapes, colors, textures and thicknesses. The shapes are represented in leaves, hearts, digital pattern and plain pattern. While the colors saturation ranged between the single colored and the multi-colored patterns, which were very much alike the rainbows.
- In addition to the hand-woven pieces, many fashion designs were implemented using different fabrics and materials like chiffon, organza, feather and leather.
- Adapting two modern techniques for decorations; using LEDs as a new illuminative tool and the 3D printing by adding some decorative embodied (tridimensional) shapes.

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