Utilizing Wet Felting to Produce Nonwoven Woolen Dress Accessories

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Abstract: Recently, nonwoven fabrics spread widely as not depending on spinning or weaving for producing their final products. Basically, these products depend mechanically, chemically or thermally on a connected mat of fibers. Many methods, techniques and materials are used for their production. One of the varied usages of nonwoven fabric is dress accessories that add completeness, convenience, attractiveness to dresses. They are not only using metal jewelry, precious and half preciouss tones, but also using a variety of different materials. Dress accessories are articles or pieces of dress, as handbags, shoes, belts, scarfs and different jewelry. The present research emphasized the utilization of wool felting in the production of nonwoven dress accessories. Wool fibers are characterized with felting which is caused by the presence of fibers scales and flexibility after the formation process. The present research aims at innovating easy- made and cost -effective dress accessories of nonwoven fabric, adding new formative dimensions for nonwoven fabric when using it for making accessories and enriching women's clothes with cost- effective fine and formative values. The present research is significant as it contributes in utilizing wool felting as a new approach for producing creative cost-effective dress accessories and the establishment of small businesses, which helps solve the problem of unemployment and increase family income. The experimentation is limited to a necklace as a separate accessory. The final products of the creative necklaces were submitted to jurors who assessed them using an Evaluation Checklist. The research adopted aquasi- experimental- design. Results showed that there were statistically significant differences between the creative necklaces in achieving aspects of summative evaluation and statistically significant statistical differences between the dimensions of evaluating the creative necklaces according to the jurors' views.
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Key Words: Wet felting, Nonwoven, Wool, Dress accessories.

1. Introduction

The mutual effect between man and the modern world is highly remarkable, as man cannot live in isolation. The increase in needs and utilization of consumed materials, especially textile, and the great development of industrial and synthetic materials bring about the idea of producing easy and cost-effective textiles of varied types. Thus, the idea of nonwoven fabrics merged (Mona Maher Wady 2006 p.29).

Nonwoven fabrics are a fabric-like material made from long fibers, bonded together by chemical, mechanical, heat or solvent treatment. The term is used in the textile manufacturing industry to denote fabrics, such as felt, which are neither woven nor knitted (Muller & Satthoff, 2015). Nonwoven fabrics industry is heavily produced, with a one line production of several tons per day, covering a wide area of consumption and occupying a prominent place in various fields of life. (Shaker, 2012, p. 1). Nonwoven fabrics can be utilized effectively for producing dress accessories.

Dress accessories are an article or set of articles of dress, as gloves, earrings, or a scarf, that adds completeness, convenience, attractiveness to one's basic outfit. (Cumming, Cunnington & Cunnington, 2010).

Wool fibers are characterized with felting which is caused by the presence of fibers scales and flexibility after the formation process. Wool is the textile fiber obtained from sheep and other animals, including cashmere from goats, mohair from goats, qiviut from muskoxen, angora from rabbits, and other types of wool from camelids (Braaten, 2005).

The present research handled utilizing felting, as one method of producing nonwoven fabric, in innovating nonwoven woolen dress accessories. Felt beads are easy and very inexpensive to make as a few grams of merino wool top and some soapy water are needed only. Combined with glass, metal or ceramic beads, they make beautiful jewelry and they can be made into decorations, zip pulls, hair pins and charms for phones.

Research Problem:

The problem of the present research problem is determined in the following question:

"To what extent can natural combed wool felting be used in the production of nonwoven fabric?"

Research Aims:

- Innovating easy- made and cost -effective dress accessories of nonwoven fabric.
- Adding new formative dimensions for nonwoven cloth when using it for making dress accessories.
- Enriching women's clothing with cost-effective fine and formative values.

Research Significance:

The present research contributes in utilizing wool felting as a new approach for producing creative cost-effective dress accessories and the establishment of small businesses, which helps solve the problem of unemployment and increase family income.

Research Hypotheses:

There are statistically significant differences between creative necklaces in achieving elements of summative evaluation according to the jurors' views.

There are statistically significant differences between the creative necklaces evaluation dimensions according to the jurors' views.

Research Limitations

The present research was limited to the technique of wet felting and experimentation is limited to a necklace as a separate accessory.

Research Design

A Quasi experimental- design

Dependent and Independent Variables

Dependent Variables: utilizing on woven natural wet felting combed wool fabrics technique in experimentation.

Dependent Variables: Nonwoven dress accessories

Research Instruments: An Evaluation Checklist of the final product of creative necklaces which was submitted to a number of specialized educational art jurors.

Experimental Design

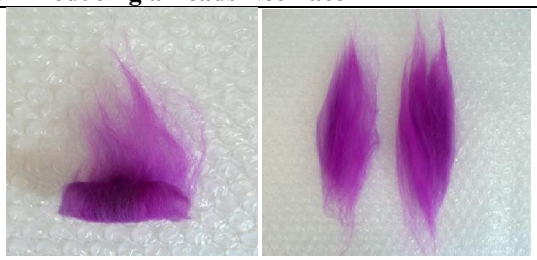
Table (1) A Model for Utilizing Wet Felting for Producing a Necklace

1	**Materials and Tools needed for the Design Implementation of:** Canson paper -pencil–wooden color- an erasers - a transparent plastic -cutter. **The Implementation Phase** 1-Designing a sketch for abstract linear shapes 2. Coloring the design. 3. Putting the design on a transparent plastic and cutting it.	 **1 2**
2	**Materials and Tools Used for Iimplementation:** Grades of blue, grey and yellow woolen fibers, varied yarns, sushi mat or bubbles bags, liquid soap, hot water, rolling pin, lace fabric. **Utilizing Wet felting Technique for the Production Of Nonwoven Fabrics** 1- Different grades of harmonious or contrasting colors of natural wool fibers suitable for the design are chosen. 2- Wool fibers are cut with the palm and distributed in the vertical direction on the sushi mat or plastic bubbles bag. 3-The next layer of wool is distributed in the horizontal direction. 4- Repeation of fibers distribution in the opposite side of the second layer. 5- The Snipped piece of transparent plastic is put over the distributed wool. 6- Colored wool is used to fill in the snipped spaces. 7- Water and liquid soap are used with a ratio of 3: 1. 8- A bubble bag or a piece of lace cloth is put on the felted wool. 9- The middle of the Felted wool is pressed by hand, till it is completely felted.	

	10- The felted wool is pressed well more than one time in more than one direction using the rolling pin for felting. 11- The handicraft is washed and left in air enough time for drying.	 **3**
3	**Production Phase:** In the present necklace a shell like semicirclepiece of the felted cloth was cut and fastened at the top of an anthro pomorphic felted twined woolen rope and complement arybeads and at the bottom beaded pendants of the beads	 **4**

A simple necklace can be made from a few felt beads threaded onto a metal choker, or onto a length of ribbon that can be fastened with either a knot, or a clasp and ring sewn to the ends. Felt beads can be embellished in many ways A hole ispoked in each felt bead with a thick darning needle. Pliers may be needed to pull the needle right through - then to thread them on to a metal choker or ribbon. To prevent the felt beads moving out of line, the stitching to attach the sequins and seed beads can be done with one continuous thread.

Table (2) A Model for Utilizing Wet Felting for Producing a Beads Necklace

1	**- Put some very warm water and a squirt of washing up soap into a bowl.** **- Roll up one of the tufts, quite tightly, as shown.**	
2	**- Place the rolled up tuft at right angles on to the bottom of the other tuft as shown.** **- Roll them up together, quite tightly, starting at the bottom, until you have a rough ball shape.**	
3	**- Holding the ball firmly, dip it into the soapy water for a few seconds.** **- Still holding the ball firmly between your fingers, turn your palm upwards and squirt a tiny amount of washing up soap into your palm.**	

4	**- The photo on the left shows the ball about halfway to becoming a bead.** **- The finished bead should be very firm but with just a little give so that you can poke a hole through it.** **This bracelet was made from plain, round felt beads and glass beads.**	  

Table (3) Dress Accessories: PacticalExperiementation (Necklaces)

Necklace(2)

Techniques	Flat wet felting
Materials	Naturaldyed combed wool, blue beads of different size.
Colors	Grades of blue, yellow

Necklace(1)

Techniques	Flat wet felting
Materials	Naturaldyed combed wool, pink beads of different sizes.
Colors	Grades of pink, light grey

Necklace(4)

Techniques	Flat wet felting, Twirling anthropomorphism
Materials	Natural dyed combed wool, beads of different colors and sizes, zips
Colors	Orange, grades of red

Necklace(3)

Techniques	Flat wet felting, snipping in cloth
Materials	Natural dyed combed wool, beads of different colors and sizes, zips.
Colors	Yellow, brown, orange

Necklace(6)

Techniques	Flat wet felting
Materials	Natural dyed combed wool fibers colored synthetic fibers, beads of different colors and sizes
Colors	Brown, yellow, grades of blue

Necklace(5)

Techniques	Flat wet felting
Materials	Naturaldyed combed woolfibers, colored synthetic fibers,- beads of different colors and sizes
Colors	Sky blue, orange, green

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	grey, beige,

Necklace(10)

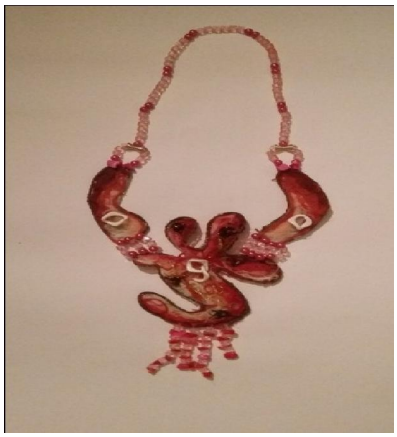
Techniques	Flat wet felting, pasting, needle embroidery, anthropomorphized wire
Materials	Dyed combed natural wool fibers, colored synthetic fibers, metal yarns
Colors	Blue, grey, brown, yellow, grades of green, orange, beige, golden.

Necklace(9)

Techniques	anthropomorphic wet felting, Felted balls
Materials	Dyed combed natural wool fibers, beads of different colors and sizes.
Colors	Yellow, brown, blue, grey, grades of orange.

Necklace (12)

Techniques	Flat Wet Felting, Embroidery, snipping, anthropomorphized wire
Materials	Dyed combed natural wool fibers, beads of different colors and sizes
Colors	Grades of violet



Necklace (11)

Techniques	Flat Wet Felting
Materials	Dyed combed natural wool Fibers, beads of different colors and sizes
Colors	Grades of pink and white

Necklace(14)

Techniques	Flat Wet Felting
Materials	Dyed combed natural wool fibers
Colors	Grades of blue, yellow, orange, beige

Necklace(13)

Techniques	Flat Wet Felting
Materials	Dyed combed natural wool fibers, colored synthetic fibers, metal yarns
Colors	Yellow, grades of orange, beige, golden

Experimentation Assessment

The necklaces were juried by (15) specialized educational art jurors to evaluate according to 16 items contain (Design Skill-Weaving Skill- Skill of finishing) shown in table (4).

Table (4) Final Version of the Creative Felting- based Dress Accessories Evaluation of specialized educational art jurors. Checklist

Skill	Items	1	2	3	4	5
Design Skill	1- The idea of necklace is a new and innovative.					
	2. The subject of creative design is unique.					
	3- Integration and synthesis of the same or different type elements.					
	4. Diversity of lines (straight -curved - refractor) for high lighting elements and enriches their details.					
	5. Placing spaces inside the drawing for enriching the fictional idea					
	6. Diversity in tactile and their emphasis on the details of the new and creative shapes.					
	7. Diversity of colors.					
Weaving Skill (Wool Felting)	1- Formation using natural wool and preparation materials.					
	2- The availability of formative treatments, which describes some of the elements.					
	3- Synthesizing yarns with natural wool fibers in a creative and advanced technical way.					
	4-. Utilizing wet felting technique in forming creative handicrafts of yarns and fibers.					
	5 Verification and diversity of tactile					
	6 A achieving diversity in color of used fibers and materials to suit the design					
Skill of finishing and producing a Handicraft	1- A Handicraft can be used as an acessory1-					
	2- Precision and quality in the implementation of a handicraft.					
	3- Finding new solutions for implementing and finishing a handicraft					
	4- A handicraft finishing quality and accuracy					

3. Results, Discussion and Conclusions:

Hypothesis (1): There are statistically significant differences between creative necklaces in achieving elements of summative evaluation according to the jurors' views.

To investigate the first hypothesis analysis of variance of the mean scores for necklaces summative evaluation according to jurors' views as reported in Table 5.

Table 5: Analysis of variance of the mean grades necklaces in achieving aspects of the summative evaluation according to the juror's views. Statistical treatments using were performed using statistical program SPSS (21).

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1177.265	13	90.559	7.572	.000
Within Groups	2678.824	224	11.959		
Total	3856.088	237			

The results of the previous table show that the value of (P) was (7.572) which is statistically significant value at the level (0.01). This indicates the existence of differences between the necklaces on the summative evaluation (Elgendy, 2008). The researcher calculates means and standard deviations and coefficient of quality. Table (5) reports results:

Table (6) Means and standard deviations and coefficient of total quality in achieving aspects of summative evaluation

A Necklace	Mean	Std. Deviation	Quality Labs
A Necklace (1)	70.24	2.56	93.65
A Necklace (2)	69.59	1.66	92.78
A Necklace (3)	70.47	2.65	93.96
A Necklace (4)	70.29	2.49	93.73
A Necklace (5)	70.59	2.58	94.12
A Necklace (6)	68.76	2.22	91.69
A Necklace (7)	69.82	2.48	93.10
A Necklace (8)	70.00	2.67	93.33
A Necklace (9)	70.71	2.64	94.27
A Necklace(10)	70.59	2.58	94.12
A Necklace (11)	70.35	2.42	93.80
A Necklace (12)	61.71	9.50	82.27
A Necklace (13)	68.47	2.24	91.29
A Necklace (14)	68.94	2.30	91.92

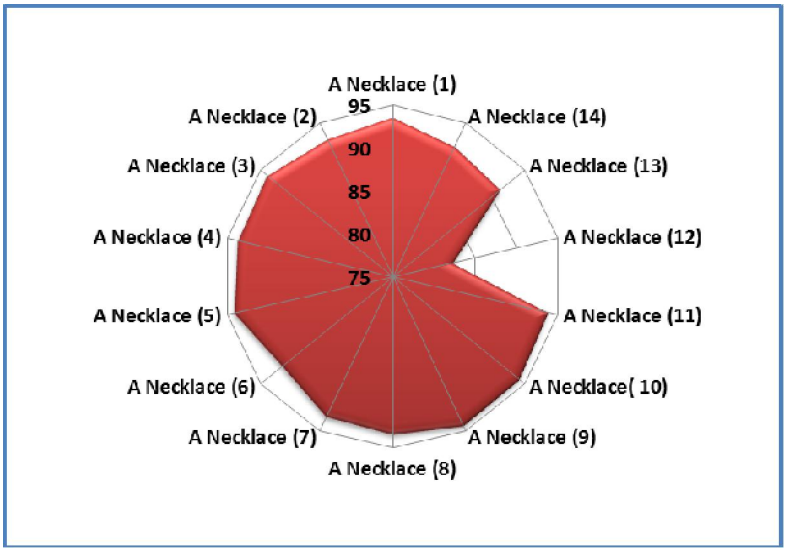


Figure 1: The mean scores of necklaces the summative evaluation in achieving elements of quality according to the jurors' views

Table (6) and Figure (1) show that: Quality correlations of necklaces executed ranged from (82.27) lower quality coefficient of busy number (12) and between (94.27) Top quality coefficient of busy number (9).

Hypothesis(2): There are statistically significant differences between the creative necklaces evaluation dimensions according to the jurors'views.

To investigate this hypothesis has been analysis of variance to assess the mean score of necklaces evaluation dimensions calculated according to jurors' views as reported in Table (6).

Table 7: analysis of variance to assess the mean score of necklaces evaluation dimensions according to the jurors' views

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1829.962	2	914.981	106.124	.000
Within Groups	2026.126	235	8.622		
Total	3856.088	237			

The results of table (7) indicate that the value of (P) was (106.124), a statistically significant value at the level (0.01), which indicates the existence of differences between the necklaces evaluation dimensions in achieving aspects of summative evaluation according to the jurors' opinions. The researcher calculates means and standard deviations and the correlation coefficient of total quality as reported in table(7).

Table 8: means and standard deviations and coefficient of total quality in achieving aspects of the evaluation (as a whole)

Dimensions	Mean	Std. Deviation	Quality Coeffcient
design skill	66.38	4.06	88.50
weaving skill	72.74	1.20	96.98
finishing skill	69.36	2.36	92.48

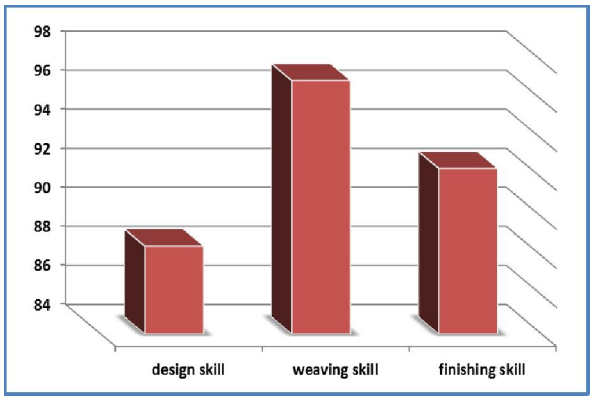


Figure (2) Total Quality Correlation Coefficient for the Necklace Mean Evaluation Scores

Table (8) and Figure (2) show that: overall quality correlations for evaluating necklaces executed ranged from (88.50) lower quality coefficient was given to the design skill and the highest coefficient (96.98) was to the dimension of weaving skill.

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