International Journal of Textile and
Fashion Technology (IJTFT)
ISSN (P): 2250–2378; ISSN (E): 2319–4510
Vol. 9, Issue 6, Dec 2019, 23–42

INNOVATING A REINFORCEMENT METHOD TO IMPROVE THE CREATIVITY IN SLEEVES DRAPING

NAJLAA J. AL-THOBAITI

Assistant Professor, Department of Fashion Design, College of Designs, Umm Al-Qura University, Mecca, Kingdom of Saudi Arabia

ABSTRACT

Draping on the mannequin is an important plastic art because the characteristics provide the designer free thought and expression of his feelings. Also, it enables him to produce innovative artistic designs adapted to the characteristics of the body. It is a technique that requires high skill and innovation to produce distinct designs. Some positions need to be strengthened in the clothing. Reinforcement materials are used in the implementation of clothing to strengthen certain areas of clothing and help control and create the final drape of the costume. The reinforcement affects the quality and appearance of the garment, giving it the shape and improving its strength and its drop, especially in the parts to which reinforcing materials are added, gaining thickness and strength. Strengthening works to drape the clothing and give it a distinctive external shape and is one of the auxiliary materials for the designer. In spite of the diversity of studies dealing with the draping on the mannequin, there is a scarcity in studies that deal with reinforcement materials. The problem of this research is how to create an auxiliary reinforcement for creativity in draping the sleeves. This research aims to create a modern addition in the field of draping sleeves, work of modern reinforcement models to improve the process of creating designs for sleeves, facilitate the development of the skill of draping sleeves for the beginners, to implement complex designs and keep pace with recent developments and trends to develop the skills of draping on the mannequin. Four designs implemented in each of the three auxiliary reinforcements are presented in this research. Results show that there are statistically significant differences between four designs implemented in the initial reinforcement in achieving a "suitable design implemented with reinforcement, design compatibility with design elements, aesthetic values mastery" according to the opinions of the arbitrators.

KEYWORDS: Creativity, Draping, Reinforcement Method & Sleeves

Received: Oct 21, 2019; **Accepted:** Nov 11, 2019; **Published:** Nov 20, 2019; **Paper Id.:** IJTFTDEC20193

Original Article

INTRODUCTION

Creativity is one of the highest levels of cognitive activity of humans and one of the most important educational outcomes. The creative process requires a sufficient knowledge of the subject matter or the idea on which to think. Creativity is a mental process that contains a sense of problems in the field (Sadek, Amal, 2001). The modeling work on the mannequin offers more than an opportunity for creativity and devises new dimensions in the design, especially when analyzing how the cloth embodies the human form. Thus, the shape can be adapted to become more compatible with the body, and because of the characteristic of this method of work in three directions, it helps to fully understand and visualize the final appearance of clothing in its true size. The mannequin itself helps to innovate in its size and shape in three dimensions (height, width and depth) and obviates the perception of design proportions and details (Shoukry, Najwa, 2001).

Draping is an innovative activity between mental ability and physical performance. It is a process that requires a combination of ability and skill (Ali, Samar, 2005).

Plastic language is the basis of the vision of the artwork. It refers to the relationships of lines, areas, touches, colors, compatibility systems and rhythm available in the artwork. This visual language is the focus of the plastic relations practiced by the art practitioner to be able to convey the meanings and emotions through design drapes (Attia, Mohsen, 2011).

It is an applied art based on scientific origins and accurate results. It relies on the skillful hand of the artist in draping fabrics on a three-dimensional body, by arranging and coordinating the elements of draping in a unified composition and creating functional and aesthetic relationships, and at the same time, embodying the idea of the artist in the drape of designs of creative fashion in order to suit the recipients' tastes and turnout to wear them (Abboud, Doaa, 2008).

The draping on the mannequin needs a designer with a unique personality, characterized by innovation, flexible thought and skill in how to drape the design elements available to him, controlled by the basics of design, to produce a work of art that feels apparently beautiful (Attia, Mohsen, (2011).

As a result of the rapid development and technological advances in the garment industry, different drapings of reinforcing materials emerged that opened the horizons of the designer to creativity. The type of reinforcement and the places to install it are determined by the popular design and fashion (Claire, Shaeffer, 2011).

These materials are called reinforcing materials, which are the ones that help in the implementation of clothing. It is an invisible element that results in good appearance. The use of reinforcing materials is not modern, but dates back to ancient times (Abdel Salam, Iman, 2003).

Various studies that deal with the draping on the mannequin, such as the Hemdan, Naglaa, 2019, which aimed to identify the difficulties in the basic draping skills on the mannequin and thereby identifying more appropriate ways to overcome these difficulties, which facilitate the process of education, which is reflected on raising the efficiency of students (Al-Thubaiti, Najlaa, 2009). The study aims at using the inverted learning strategy to raise the efficiency of scientific students to cope with the requirements of the modern era and measure its impact as well as the study of Al-Hazzaa, Iman Ibrahim Fahad, 2017, which aimed to study the characteristics of reinforcement materials used in the draping on the mannequin and to identify the impact of strengthening materials on the appearance of the cloth. The following studies: Shanab, Mona *et al*., 2010, Abboud, Doaa, 2008 and Al-Thubaiti, Najlaa, 2004 all aim to reach the best methods to teach the skills of draping on the mannequin and also the study of Omar, Mona, 2013 and the study of Ahmed, Soha, 2010, which aims to raise the skill level of students and find the best method of draping suitable, for students to achieve control and conformation. The studies by Hijazi, Suzan Ahmed, 2005, Ismail, Thuraya Nijam el-din, 2006 and Ali, Samar, 2005, all aimed at identifying the mental skills associated with plastic applications on the mechanics. In addition, the studies by Abdel Moez, Heba, 2013, Ahmed, Elham, 2007, Sayed, Shirine, 2006 and Al-Thubaiti, Najlaa, 2009, all of which aimed to identify high-end sewing techniques and these techniques included reinforcement materials and fillers used in fashion.

In spite of the diversity of studies dealing with the draping on the mannequin, there is a scarcity in studies that deal with reinforcement materials.

Draping on the mannequin is a manual skill that requires precision and mastery. This method combines simple skills with complex skills (Abdul Ghaffar, Suha Ali 2005). It is the art of assembling, coordinating, organizing and draping aesthetic and functional elements to achieve design requirements on the individual skill of the designer (Abdel Moneim, Duha Mustafa, 2007).

It is an art that has its scientific origins in addition to the skill required to acquire mastery in it. It is one of the arts in which the artist creates creativity using his mental abilities and manual skills besides his experiences to reach an artistic composition, which beckons the researcher to invent a reinforcement to help creativity in the draping of sleeves.

Draping on the Mannequin

Draping is one of the most efficient methods used to create designs. Draping on the mannequin is a distinctive art that depends on the perfect harmony between the design and the fabric with its characteristics as well as the skill, experience, artistic sense and the ability to imagine and innovate (Hassouna, Amr Gamal Eldin 2003).

Draping on a mannequin is an art that has a firm foundation and rules, and requires skill, experience and accuracy in the person using this method. It requires an ability of imagination and innovation to highlight the creative artistic changes in dealing with the body and beauty (Shukri, Najwa *et al*., 2003).

It is a distinctive method based on the skill of the artist who handles the material on a three-dimensional body in various ways in order to get innovative designs as well as on the foundations and elements important and necessary to reach the desired success. The most important of these elements are the body and cloth and materials with all kinds (Shukri, Najwa *et al*., 2006).

It is one of the specialized areas that depend on the performance of the individual as a procedural behavior for some special works that require manual skills, as the general foundations of the draping on the mannequin and its various stages are processes that require full understanding of their details in order to be applied in a satisfactory manner (El-Sheikh, Karama Thabet Hassan, 2016).

Stages of Draping Skills on the Mannequin

- The skill of choosing the appropriate design of the body taking into account the drawing of design stories first on the mannequin so as to be consistent with the proportions of the body and its size.
- Skills of draping of design on the mannequin so that the designer tries to find appropriate solutions to some of the problems faced during the process of draping.
- Skill to adhere to the foundations and rules necessary for the draping process, which must be observed by the designer during the performance.
- Acquisition of new skills in the draping through his practice to drape a variety of designs and technologies continuously on the mannequin.
- Acquisition of the skill of continuous evaluation, where the design is draped by taking into account the elements of accuracy in the draping with the speed in performance and the ability to note and identify errors and modify during the draping and at certain stages, and after the completion of the draping (Ahmed, Suha, 2005).

Reinforcement Materials

Materials work to drape the clothing and give it a distinctive shape as in the imagination of the designer, and these materials vary according to their functional purpose (Abdel Moez, Heba, 2013). It is an auxiliary material for the draping. It does not only affect the shape of the design, but through which he can adapt fabrics from the dampness and flexibility to make them more solid and coherent. Strengthening is an important tool for the shaper, where inspired by his ideas, the more and varied, whether fundamental or auxiliary, gives him a fertile field of creativity and give different effects (Abdel Moneim, Duha Mustafa, 2007).

They are invisible auxiliary materials used to support a particular costume or used by a designer in a design to give it the desired effect (Al-Hazzaa, Iman Ibrahim Fahad, 2017).

The reinforcement materials diversified as a result of the rapid development in the field of fashion design, varied types in terms of the material manufactured and the desired purpose, where the advantage was of being lighter and more beautiful and diverse in drape and size. (Abdel Moez, Heba, 2013).

General Characteristics of Reinforcing Materials

- Some reinforcing materials are easy to drape due to their flexibility.
- Modern reinforcing materials are lightweight unlike previous materials because they are made of light plastics.
- The diversity of raw materials manufactured according to the type of reinforcement required and the fabric used for them (Al-Hazzaa, Iman Ibrahim Fahad, 2017).

Research Problem

The problem of research is to create an auxiliary reinforcement for creativity in draping the sleeves by answering the following questions:

- What is the possibility of creating a new addition in the field of sleeve draping?
- What is the possibility of creating modern reinforcement models that help to create sleeves designs?
- Can the development of sleeve draping skills be facilitated for beginners to implement complex designs?

Research Aims

1. Creating a modern addition in the field of draping sleeves.
2. The work of modern reinforcement models help the process of creating designs for sleeves.
3. Facilitate the development of the skill of draping sleeves for the starter to implement complex designs.
4. Keeping pace with the recent developments and trends to develop the skills of mannequin draping.

Research Importance

The importance of research lies in:

- Creating models to strengthen the sleeves to give new ideas to the designer.
- Get modern overlapping and complex designs.

- Encourage trainees in the field of draping to begin to drape designs characterized by modernity and beauty.
- Helps women to wear sleeves as complementary pieces of clothing in case the clothing is free of sleeves.
- Enriching the Arab libraries with modern research in the field of draping on the mannequin, where the research is a new addition in terms of its use to help strengthen creativity in the draping of sleeves.

RESEARCH APPLIED EXPERIMENT

Research Hypotheses

- There are statistically significant differences between the four designs implemented by the initial strengthening in achieving "suitable design implemented with reinforcement, design compatibility with design elements, aesthetic values and mastery" according to the opinions of the arbitrators.
- There are statistically significant differences between the four designs implemented in the second reinforcement in achieving "suitable design implemented with reinforcement, design compatibility with design elements, aesthetic values and mastery" according to the opinions of the arbitrators.
- There are statistically significant differences between the four designs implemented in the third reinforcement in achieving "suitable design implemented with reinforcement, design compatibility with design elements, aesthetic values and mastery" according to the opinions of the arbitrators.

Research Methodology

The research methodology is usually determined within the framework of its idea, objectives, effectiveness and procedures. Accordingly, the current research follows two approaches:

- Descriptive approach in order to analyze the skills of draping sleeves on the mannequin, the descriptive approach depends on the study of reality or phenomenon, as it exists in reality and is concerned as an accurate description (Obeidat *et al*., 2004) and is not limited to data collection, but includes some interpretation to obtain accurate facts and that to obtain scientific results are interpreted objectively in line with the actual data of the phenomenon (Ahmed Rifai, 2007).
- The curriculum is semi-experimental in order to be appropriate to achieve the objectives of the study and verify the hypotheses.

Research Limits

- Implementation of three reinforcing aids to drape sleeves in an innovative way.
- Creation of a set of designs in three ways.

Research Samples

It consisted of four designs implemented in each of the three auxiliary reinforcement methods.

Research Tools

The researcher designed a questionnaire to evaluate the designs implemented by the three reinforcing aids to drape sleeves in an innovative way. The questionnaire consists of four axes:

- The first axis: suitable design implemented with reinforcement: and included "6" phrases measuring the extent of appropriate design implemented with reinforcement.
- The second axis: the compatibility of design with the elements of the design: and included "10" phrases to measure the compatibility of the design with the design elements.
- The third axis: Aesthetic Values: Included "8" phrases that measure the aesthetic values in designs.
- The fourth axis: Mastery: Includes "7" phrases measuring the extent of mastery in design.
- The researcher used the questionnaire to evaluate the design scale of three grades "set - somewhat - not set", and the researcher gave each of these responses scores "3, 2, 1".

Applied Framework

Three auxiliary reinforcements have been implemented to drape sleeves in an innovative way, and a set of designs were made in each of the three methods. The following figures 1, 2, 3 and 4 illustrates this:

First Model **Second Model** **Third Model**

Figure 1: Reinforcements Help to Drape Sleeves in an Innovative Manner.

Figure 2: Sleeves Implementations for First Model.

Figure 3: Sleeves Implementations for Second Model.

Figure 4: Sleeves Implementations for Third Model.

Reliability and Validity

Questionnaire Validity

It means the ability of the questionnaire to measure what they were supposed to measure.

Validity using Internal Consistency between the Overall Score of Each Axis and the Total Score of the Questionnaire

Validity was calculated using internal consistency by calculating the correlation coefficient (Pearson correlation coefficient) between the total score of each axis (suitable design implemented with reinforcement, design compatibility with design elements, aesthetic values and mastery) and the overall score of the questionnaire. The following table illustrates this:

Table 1: Values of Correlation Coefficients between the Score of Each Axis and the Questionnaire

Axes	Correlations	Sig
The first axis: suitable port design with reinforcement	0.736	0.01
The second axis: Design compatibility with design elements	0.952	0.01
The third axis: aesthetic values	0.824	0.01
The fourth axis: mastery	0.771	0.01

It is clear from the table that the correlation coefficients are all a function at the level (0.01) because they are close to the correct one, which indicates the validity and homogeneity of the axes of the questionnaire.

Reliability

Reliability refers to the accuracy of the test in the measurement and observation, its inconsistency with itself, its consistency and frequency in the information it provides about the behavior of the examinee, and it is the ratio between the degree of variation on the scale indicating the actual performance of the examinees, and reliability is calculated by

- Cronbach's Alpha Coefficient
- Split-half method

Table 2: The Reliability Coefficient of the Axis of the Questionnaire

Axes	Cronbach's Alpha	Split-half
The First axis : suitable part design with reinforcement	0.744	0.772–0.710
The Second axis : design compatibility with design elements	0.863	0.895–0.831
The Third axis : aesthetic values	0.789	0.810–0.752
The Fourth axis : mastery	0.912	0.947–0.883
The reliability of the questionnaire as a whole	0.844	0.871–0.812

It is clear from the previous table that all the values of reliability coefficients: Alpha Coefficient, Split-half are significant at the level of (0.01), which indicates the consistency of the questionnaire.

RESULTS AND DISCUSSIONS

First Hypothesis

There are statistically significant differences between the four designs implemented in the initial reinforcement in achieving "suitable design with reinforcement, design compatibility with design elements, aesthetic values and mastery" according to the opinions of the arbitrators.

In order to verify this hypothesis, the analysis of variance was calculated for the four designs implemented in the initial reinforcement in order to achieve "suitable design with reinforcement, design compatibility with design elements, aesthetic values and mastery" according to the opinions of the arbitrators and the following table illustrates that:

Table 3: Analysis of Variance of the Four Designs in the First Hypothesis

Axes	Classification of Axis	Case	Sum of Squares	Mean Square	DF	F	Sig.
First axis	Suitable of the implemented design with the strengthen	Between groups	2004.480	668.160	3	45.043	0.01
		Within groups	534.019	14.834	36		
		Total	2538.499		39		
Second axis	The compatibility of the design with the design elements	Between groups	524.988	174.996	3	11.763	0.01
		Within groups	535.553	14.876	36		
		Total	1060.541		39		
Third axis	The aesthetic values	Between groups	896.713	298.904	3	29.546	0.01
		Within groups	364.194	10.116	36		
		Total	1260.907		39		
Forth axis	The mastery	Between groups	691.830	230.610	3	36.809	0.01
		Within groups	225.540	6.265	36		
		Total	917.370		39		

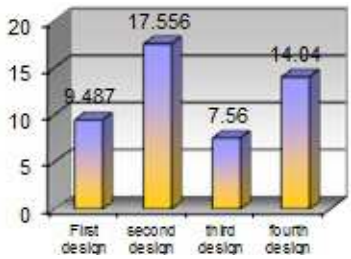
It is clear from Table 3 (First axis) that the value of F was 45.043, a statistically significant value at the level (0.01), which indicates the differences between the four designs in the suitability of the design implemented with the strengthening. For (Second axis), it is clear that the value of F was 11.763, a statistically significant value at the level (0.01), which indicates the differences between the four designs in the suitability of the design implemented with the strengthening. For (Third axis) it is obvious that the value of F was 29.546, a statistically significant value at the level (0.01), which indicates the differences between the four designs in the aesthetic values. For (Fourth axis) it is obvious that the value of F was 36.809, which is a statistically significant value at the level 0.01, which indicates the differences between the four designs in mastery according to the opinions of the arbitrators.

To find out the direction of significance, Scheffe' test was applied and multiple comparisons were done. The following table illustrates this:

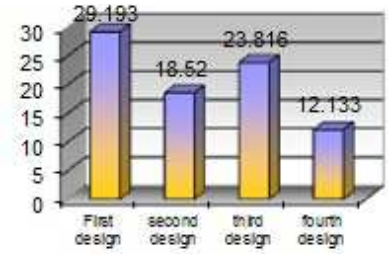
Table 4: Scheffe' Test for Multiple Comparisons for First Hypothesis

	Suitability of the Implemented Design with Reinforcement	First Design M= 9.487	Second Design M= 17.556	Third Design M= 7.560	Fourth Design M= 14.040
First axis	First design	-			
	Second design	**8.069	-		
	Third design	1.927	9.996**	-	
	Fourth design	4.553**	3.516**	6.480**	-

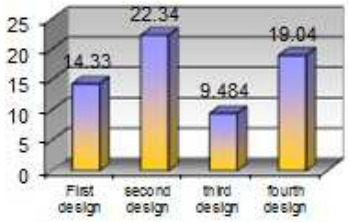
Second axis	**Compatibility of the Design with the Design Elements**	**First Design M= 29.193**	**Second Design M= 18.520**	**Third Design M= 23.816**	**Fourth Design M= 12.133**
	First design	-			
	Second design	10.673**	-		
	Third design	5.377**	5.296**	-	
	Fourth design	17.060**	6.387**	11.683**	-
Third axis	**Aesthetic values**	**First Design M= 14.330**	**Second Design M= 22.340**	**Third Design M= 9.484**	**Fourth Design M= 19.040**
	First design	-			
	Second design	8.010**	-		
	Third design	4.846**	12.856**	-	
	Fourth design	4.710**	3.300**	9.556**	-
Fourth axis	**Mastery**	**First Design M= 15.906**	**Second Design M= 19.890**	**Third Design M= 13.463**	**Fourth Design M= 8.800**
	First design	-			
	Second design	3.984**	-		
	Third design	2.443*	6.427**	-	
	Fourth design	7.106**	11.090**	4.663**	-



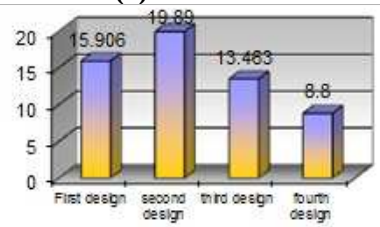
(a) First axis



(b) Second axis



(c) Third axis



(d) Fourth axis

Figure 5: Differences of the Four Designs in the Four Evaluated Axes for First Hypothesis.

Table 4 and Figure 5 show the following:

For first axis

- There are statistically significant differences between the second design and both the fourth and the first designs and the third design at the level of significance 0.01 for the second design.
- There are statistically significant differences between the fourth design and both the first and the third designs at the level of significance 0.01 for the fourth design.
- There are no statistically significant differences between the first and third designs.

From the previous results, it is clear that

The second design was the best design on the occasion of the design implemented with relay according to the opinions of the arbitrators, followed by the fourth, then the first and finally the third design.

For second axis

- There are statistically significant differences between the first design and both the third and second designs and the fourth design at the level of significance 0.01 for the first design.
- There are statistically significant differences between the third design and both the second and the fourth designs at the level of significance 0.01 for the third design.
- There are statistically significant differences between the second and the fourth design at the significance level 0.01 for the second design.

From the previous results, it is clear that

The first design was the best design in the design compatibility with the design elements according to the opinions of the arbitrators, followed by the third, then the second and finally the fourth design

For third axis

- There are statistically significant differences between the second design and both the fourth and the first designs and the third design at the level of significance 0.01 for the second design.
- There are statistically significant differences between the fourth design and both the first and the third designs at the level of significance 0.01 for the fourth design.
- There are statistically significant differences between the first and the third designs at the level of significance 0.01 for the first design.

From the previous results, it is clear that:

The second design had the best designs in aesthetic values according to the opinions of the arbitrators, followed by the fourth, then the first, and finally the third design.

For fourth axis

- There are statistically significant differences between the second design and both the first and the third designs and the fourth design at the level of significance 0.01 for the second design.
- There are statistically significant differences between the first and the third design at the significance level 0.05 in favor of the first design.
- There are statistically significant differences between the first and the fourth design at the level of significance 0.01 for the first design.
- There are statistically significant differences between the third and the fourth design at the level of significance 0.01 for the third design.

From the previous results, it is clear that:

The second design was the best design in the mastery according to the opinions of the arbitrators, followed by the first, then the third, and finally the fourth design.

Second Hypothesis

There are statistically significant differences between the four designs implemented in the second reinforcement in achieving "suitable design with reinforcement, design compatibility with design elements, aesthetic values and mastery" according to the opinions of the arbitrators.

In order to verify this hypothesis, the analysis of variance was calculated for the four designs implemented in the second reinforcement in order to achieve "suitable design with reinforcement, design compatibility with design elements, aesthetic values, and mastery" according to the opinions of the arbitrators and the following tables illustrate that:

Table 5: Analysis of Variance of the Four Designs in the Second Hypothesis

Axes	Classification of Axis	Case	Sum of Squares	Mean Square	DF	F	Sig.
First axis	Suitable of the implemented design with the strengthen	Between groups	541.083	180.361	3	13.589	0.01
		Within groups	477.822	13.273	36		
		Total	1018.905		39		
Second axis	The compatibility of the design with the design elements	Between groups	709.140	236.380	3	47.498	0.01
		Within groups	179.157	4.977	36		
		Total	888.297		39		
Third axis	The aesthetic values	Between groups	1049.738	349.913	3	26.775	0.01
		Within groups	470.465	13.068	36		
		Total	1520.203		39		
Forth axis	The mastery	Between groups	1341.511	447.170	3	33.414	0.01
		Within groups	481.776	13.383	36		
		Total	1823.287		39		

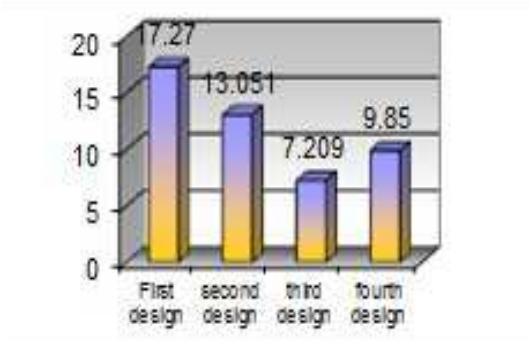
It is clear from Table 5 (First axis) that the value of (F) was (13.589), a statistically significant value at the level (0.01), which indicates the differences between the four designs on the occasion of the design implemented with the strengthening. For (Second axis) it is obvious that the value of F was 47.498, which is a statistically significant value at the level of 0.01, which indicates the differences between the four designs in the compatibility of the design with the design elements. For (Third axis) it is clear that the value of F was 26.775, a statistically significant value at the level 0.01, which indicates the differences between the four designs in the aesthetic values. For (fourth axis) it is clear that the value of F was 33.414, a statistically significant value at the level 0.01, which indicates the differences between the four designs in the mastery.

To find out the direction of significance, a Scheffe' test for multiple comparisons were applied. The following table illustrates this:

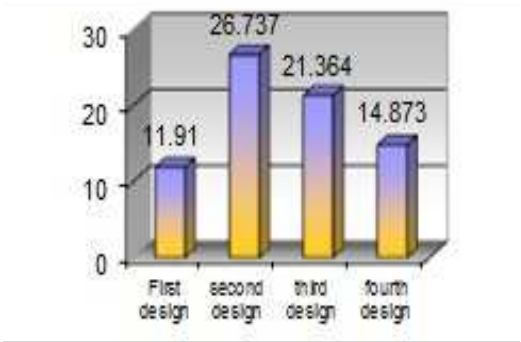
Table 6: Scheffe' test for Multiple Comparisons for Second Hypothesis

	Suitability of the Implemented Design with Reinforcement	**First Design M= 17.270**	**Second Design M= 13.051**	**Third Design M= 7.209**	**Fourth Design M= 9.850**
First Axis	First design	-			
	Second design	4.219**	-		
	Third design	10.061**	5.842**	-	
	Fourth design	7.420**	3.201**	2.641*	-
Second Axis	**Compatibility of the design with the design elements**	**First design M= 11.910**	**Second design M= 26.737**	**Third design M= 21.364**	**Fourth design M= 14.873**

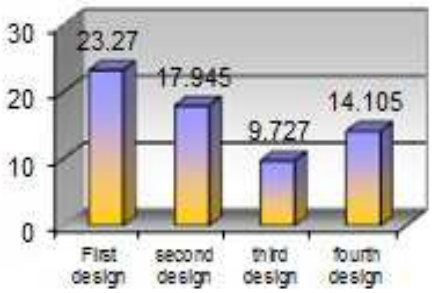
	First design	-			
	Second design	14.827**	-		
	Third design	9.454**	5.373**	-	
	Fourth design	2.963*	11.864**	6.491**	-
Third axis	**Aesthetic values**	**First design M= 23.270**	**Second design M= 17.945**	**Third design M= 9.727**	**Fourth design M= 14.105**
	First design	-			
	Second design	5.325**	-		
	Third design	13.543**	8.218**	-	
	Fourth design	9.165**	3.840**	4.378**	-
Fourth axis	**Mastery**	**First design M= 15.105**	**Second design M= 9.850**	**Third design M= 12.340**	**Fourth design M= 19.420**
	First design	-			
	Second design	5.255**	-		
	Third design	2.765*	2.490*	-	
	Fourth design	4.315**	9.570**	7.080**	-



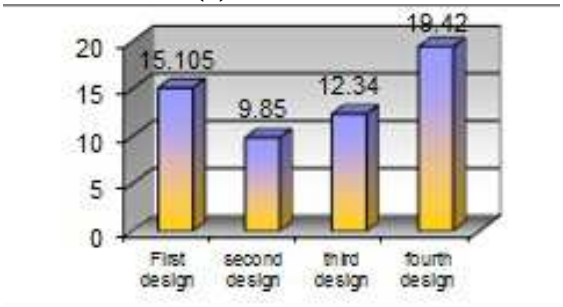
(a) First axis



(b) Second axis



(c) Third axis



(d) Fourth axis

Figure 6: Differences of the Four Designs in the Four Evaluated Axes for Second Hypothesis.

Table 6 and Figure 6 shows the following:

For first axis

- There are statistically significant differences between the first design and both the second and fourth designs and the third design at the level of significance 0.01 for the first design.
- There are statistically significant differences between the second design and both the fourth and the third designs at the level of significance 0.01 for the second design.

- There are statistically significant differences between the fourth and the third design at the significance level 0.05 in favor of the fourth design.

From the previous results, it is clear that:

The first design was the best design suitable for the design implemented with the relay according to the opinions of the arbitrators, followed by the second, then the fourth, and finally the third design.

For second axis

- There are statistically significant differences between the second design and both the third and fourth designs and the first design at the level of significance 0.01 for the second design.
- There are statistically significant differences between the third design and both the fourth and the first designs at the level of significance 0.01 for the third design.
- There are statistically significant differences between the fourth design and the first design at the significance level 0.05 in favor of the fourth design.

From the previous results, it is clear that:

The second design was the best design in the design compatibility with the design elements according to the opinions of the arbitrators, followed by the third, then the fourth, and finally the first design.

For third axis

- There are statistically significant differences between the first design and both the second and fourth designs and the third design at the level of significance 0.01 for the first design.
- There are statistically significant differences between the second design and both the fourth design and the third designs at the level of significance 0.01 for the second design.
- There are statistically significant differences between the fourth and the third design at the level of significance 0.01 for the fourth design.

From the previous results, it is clear that:

The first design was the best design in the aesthetic values according to the opinions of the arbitrators, followed by the second, then the fourth, and finally the third design.

For Fourth Axis

- There are statistically significant differences between the fourth design and both the first and the third designs and the second design at the level of significance 0.01 for the fourth design.
- There are statistically significant differences between the first and the third design at the significance level 0.05 in favor of the first design.
- There are statistically significant differences between the first and the second design at the level of significance 0.01 for the first design.
- There are statistically significant differences between the third and the second design at the significance level 0.05

in favor of the third design.

From the previous results, it is clear that:

The fourth design was the best design in the workmanship according to the opinions of the arbitrators, followed by the first, then the third, and finally the second design.

Third Hypothesis

There are statistically significant differences between the four designs implemented in the third reinforcement in achieving "suitable design with reinforcement, design compatibility with design elements, aesthetic values and mastery" according to the opinions of the arbitrators.

To verify this hypothesis, the analysis of variance was calculated for the four designs implemented in the third reinforcement in order to achieve a "suitable design with reinforcement, design compatibility with design elements, aesthetic values, and mastery" according to the opinions of the arbitrators.

Table 7: Analysis of Variance of the Four Designs in the Third Hypothesis

Axes	Classification of Axis	Case	Sum of Squares	Mean Square	DF	F	Sig.
First axis	Suitable of the implemented design with the strengthen	Between groups	1027.394	342.465	3	30.887	0.01
		Within groups	399.152	11.088	36		
		Total	1426.546		39		
Second axis	The compatibility of the design with the design elements	Between groups	733.653	244.551	3	21.194	0.01
		Within groups	415.392	11.539	36		
		Total	1149.045		39		
Third axis	The aesthetic values	Between groups	530.897	176.966	3	58.084	0.01
		Within groups	109.683	3.047	36		
		Total	640.580		39		
Fourth axis	The mastery	Between groups	349.328	116.443	3	12.637	0.01
		Within groups	331.709	9.214	36		
		Total	681.037		39		

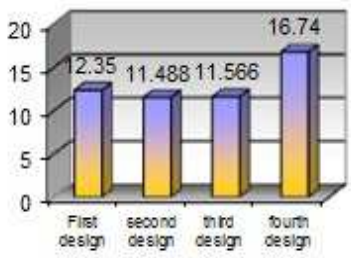
It is clear from Table 7 (First axis) that the value of F was 30.887, a statistically significant value at the level 0.01, which indicates the differences between the four designs on the occasion of the design implemented with strengthening. For (Second axis), it is obvious that the value of F was 21.194 which is a statistically significant value at the level of 0.01, which indicates the differences between the four designs in the compatibility of the design with the design elements. For (Third axis) it is clear that the value of F was 58.084, a statistically significant value at the level 0.01, which indicates the differences between the four designs in the aesthetic values. For (Fourth axis) it is obvious that the value of F was 12.637, a statistically significant value at the level 0.01, which indicates the differences between the four designs in the mastery according to the opinions of the arbitrators.

To find out the direction of significance, a Scheffe' test for multiple comparisons were applied. The following table illustrates this:

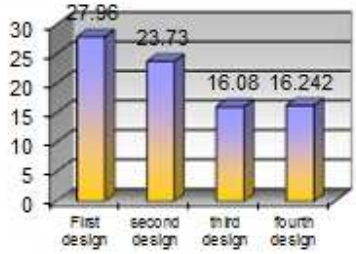
Table 8: Scheffe' Test for Multiple Comparisons for Third Hypothesis

First Axis	Suitability of the Implemented Design with Reinforcement	First Design M= 12.350	Second Design M= 11.488	Third Design M= 11.566	Fourth Design M= 16.740
	First design	-			
	Second design	0.862	-		

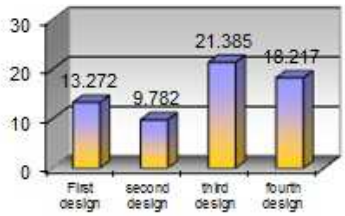
	Third design	0.784	0.078	-	
	Fourth design	4.390**	5.252**	5.174**	-
Second axis	**Compatibility of the design with the design elements**	**First design M= 27.960**	**Second design M= 23.730**	**Third design M= 16.080**	**Fourth design M= 16.242**
	First design	-			
	Second design	4.230**	-		
	Third design	11.880**	7.650**	-	
	Fourth design	11.718**	7.488**	0.162	-
Third axis	**Aesthetic values**	**First design M= 13.272**	**Second design M= 9.782**	**Third design M= 21.385**	**Fourth design M= 18.217**
	First design	-			
	Second design	3.490**	-		
	Third design	8.113**	11.603**	-	
	Fourth design	4.945**	8.435**	3.168**	-
Fourth axis	**Mastery**	**First design M= 14.092**	**Second design M= 18.296**	**Third design M= 11.783**	**Fourth design M= 8.387**
	First design	-			
	Second design	4.204**	-		
	Third design	2.309*	6.513**	-	
	Fourth design	5.705**	9.909**	3.396**	-



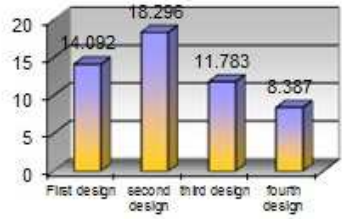
(a) First Axis



(B) Second Axis



(c) Third Axis



(d) Fourth Axis

Figure 7: Differences of the Four Designs in the Four Evaluated Axes for Third Hypothesis.

Table (8) and Figure (7) shows the following:

For first axis

- There are statistically significant differences between the fourth design and both the first and the third designs and the second design at the significance level 0.01 for the fourth design.
- There are no statistically significant differences between the first design and both the third and the second designs.
- There are no statistically significant differences between the third and second designs.

From the previous results, it is clear that:

The fourth design was the best design suitable for the design implemented with the reinforcement according to the opinions of the arbitrators, followed by the first, then the third and finally the second design.

For second axis

- There are statistically significant differences between the first design and both the second and fourth designs and the third design at the level of significance 0.01 for the first design.
- There are statistically significant differences between the second design and both the fourth and the third designs at the level of significance 0.01 for the second design.
- There are no statistically significant differences between the fourth and third designs.

From the previous results, it is clear that:

The first design was the best design in the design compatibility with the design elements according to the opinions of the arbitrators, followed by the second, then the fourth, and finally the third design.

For Third Axis

- There are statistically significant differences between the third design and both the fourth and the first designs and the second design at the level of significance 0.01 for the third design.
- There are statistically significant differences between the fourth and both the first and the second designs at the level of significance 0.01 for the fourth design.
- There are statistically significant differences between the first and the second designs at the level of significance 0.01 for the first design.

From the previous results, it is clear that:

The third design was the best design in the aesthetic values according to the opinions of the arbitrators, followed by the fourth design, then the first design and finally the second design.

For Fourth Axis

- There are statistically significant differences between the second design and both the first and the third designs and the fourth design at the level of significance 0.01 for the second design.
- There are statistically significant differences between the first and the fourth design at the level of significance 0.01 for the first design.
- There are statistically significant differences between the first and the third design at the significance level 0.05 in favor of the first design.
- There are statistically significant differences between the third and the fourth design at the level of significance 0.01 for the third design.

From the previous results, it is clear that:

The second design was the best design in the workmanship according to the opinions of the arbitrators, followed by the first, then the third and finally the fourth design.

CONCLUSIONS

Creativity is one of the highest levels of cognitive activity of the human being and one of the most important educational outputs, the creative process needs a sufficient knowledge in the subject or idea on which to think.

The work of modulation on the mechanic offers more than an opportunity for creativity and devise new dimensions in the design, especially when analyzing how the cloth embodied the shape of the human form, so that the shape can be adapted to become more compatible with the body because this method of work in three directions helps to understand the full perception of the final appearance of clothing in its true size.

As a result of the rapid development and technological advances in the garment industry, various drapings of reinforcing materials emerged that opened the horizons of the designer to creativity.

The research aims to:

- Create a modern addition in the field of draping sleeves.
- The work of modern reinforcement models help the process of creating designs for sleeves.
- Facilitate the development of the skill of draping sleeves for the starter to implement complex and complex designs.
- Keep pace with the recent developments and trends to develop the skills of draping on the mannequin.

Your search found:

- There are statistically significant differences between the four designs implemented in the initial reinforcement in achieving "suitable design implemented with reinforcement, design compatibility with design elements, aesthetic values and mastery" according to the opinions of the arbitrators.
- There are statistically significant differences between the four designs implemented in the second reinforcement in achieving "suitable design implemented with reinforcement, design compatibility with the design elements, aesthetic values and mastery" according to the opinions of the arbitrators.
- There are statistically significant differences between the four designs implemented in the third reinforcement in achieving "suitable design implemented with reinforcement, design compatibility with design elements, aesthetic values and mastery" according to the opinions of the arbitrators.

Recommendations

- Discover more reinforcing materials that can be employed to fit this type of art.
- Encourages beginners in the field of draping to dare to experiment and innovate.
- Conducting training courses on a regular basis on how to strengthen and drape a strengthening.
- Enriching the field of fashion design, especially the field of draping, the importance of the topic of strengthening and expanding ideas in it.

- Encouraging researchers to be acquainted with the new draping in the mannequin to acquire skills and expertise.

REFERENCES

1. *Abboud, Doaa (2008): the effectiveness of a program of self-learning interactive video to teach some of the skills of draping on the mannequin, doctoral dissertation, Helwan University.*
2. *Abdel Ghaffar, Suha Ahmed (2005): Techniques of the method of draping on the mannequin, Al-Fikr Al-Arabi Publishing House, first edition.*
3. *Abdel Ghaffar, Suha Ahmed (2010): measuring the effectiveness of an interactive video program to learn one of the techniques of mannequin, research published in the Journal of Science and Arts, Studies and Research, Helwan University.*
4. *Abdel Moez, Heba (2013): an analytical historical study of the invisible effects used in clothing and techniques implemented in the style of high-end knitting, unpublished doctoral thesis, Faculty of Home Economics, University of Menoufia.*
5. *Abdel Moneim, Duha Mustafa (2007): Material as a source of design on the mannequin, applied analytical study, unpublished doctoral dissertation, Faculty of Applied Arts, Helwan University.*
6. *Abdel Salam, Iman, Shoukry, Nagwa, Sedky, Mona, Nabih, Hanan, (2003): the draping on the mannequin between originality and modernity, "Books World, Cairo.*
7. *Ahmed, Elham (2007): The Effect of Different Woven Fabrics on Some Draping Techniques on mannequin, Unpublished Master Thesis, Faculty of Home Economics, King Abdulaziz University.*
8. *Al-Hazzaa, Iman Ibrahim Fahad (2017): Effect of some reinforcing materials on the appearance of different fabric problems on mannequin, unpublished Master Thesis, Faculty of Home Economics, King Abdulaziz University, Jeddah.*
9. *Ali, Mona Omar (2013): self-educational program for the draping of crumbs and tapes on the mannequin Master Thesis, Faculty of Arts and Interior Design, Umm Al-Qura University.*
10. *Ali, Samar Ali Mohammed (2005): the plastic potential of raw materials as a source of design on the mannequin, an applied analytical study, research published in the Journal of Science and Arts, Volume XVII, the first issue, January.*
11. *Al-Thubaiti, Najlaa (2004): A study of the effectiveness of an educational program to fill the measurement model - Unpublished Master Thesis - College of Education for Home Economics - Mecca.*
12. *Al-Thubaiti, Najlaa (2009): A study of the ability of draping fabrics on the mannequin to design women's clothes, Ph.D. Thesis, Umm Al-Qura University.*
13. *Attia, Mohsen (2011): Trends in Modern and Contemporary Art, Book World, Cairo.*
14. *Claire, Shaeffer (2011): Couture Sewing Techniques Revised and Updated, The United States of America: The Taunton Press, Inc.*
15. *Costa, A. F. S., Rocha, M. A. V., & Sarubbo, L. A. (2017). Bacterial cellulose: an ecofriendly biotextile. Int. J. Text. Fashion Technol, 7, 11-26.*
16. *Chungkrang, L., Phukan, A., & Gogoi, N. (2016). A Study on Mishing Tribes and Their Traditional Costumes of Assam. International Journal of Textile and Fashion Technology (IJTFT) ISSN (P), 2250-2378.*
17. *El-Sheikh, Karama Thabet Hassan (2016): A Comparative Study of Fashion Design Methods in the Light of the Performance and Opinions of Specialized Students in Clothing and Textile, Science and Arts Magazine, No. 22.*
18. *Hamdan, Najlaa Ibrahim (2019): the study of the skill difficulties of the students in the foundations of draping on the*

mannequin, published research, Journal of Arts, Literature, Humanities and Social Sciences, No. 34, Emirates College of Educational Sciences.

19. *Hassouna, Amr Gamal Eldin (2003): Traditional Moroccan Fashion as a Source of Design and Draping on mannequin, Unpublished PhD. Thesis, Faculty of Home Economics, Helwan University.*
20. *Hijazi, Suzan Ahmed (2005): An applied technical study of the foundations and techniques of shaping and designing leather materials on mannequin, unpublished Master Thesis, Faculty of Home Economics, Al-Azhar University.*
21. *Ismail, Thuraya Nijam el-din (2006): The Effectiveness of Using Open Lab Method in Teaching Draping on the Industrial Body (mannequin) among Female Students in Clothing and Textile Department, Home Economics Department, King Abdulaziz University, MA Thesis, King Abdulaziz University, Jeddah.*
22. *Karunaratne, P. V. M. Mundane Beauty: Female Fashion of Costumes Addressing Drapes and Folds as Fashion Devices used in Female Costumes during 16 th Century in Sri Lanka.*
23. *Sadek, Amal and Abu Hatab, Fouad (2001): Research Methods and Methods of Statistical Analysis in Psychological, Educational and Social Sciences, The Egyptian Anglo Library, Cairo.*
24. *Sayed, Sherine (2006): Aesthetic Effects of Interior Components in Fashion Design, Unpublished Master Thesis, Faculty of Applied Arts, Helwan University.*
25. *Shanab, Mona; Hussein, Islam; Hashim, Ashraf; Al-Hajri, Ibtisam (2010): The effectiveness of an e-learning program to develop the skills of mannequin for students of textile specialty at the University of Menoufia, the Third International Conference on E-Learning, Zain Center for e-learning, University of Bahrain, Kingdom of Bahrain.*
26. *Shoukry, Nagwa; Nabih, Hanan; Abboud, Doaa (2003): modern techniques in the preparation of mannequin for the draping, Cairo, the world of books.*
27. *Shoukry, Najwa (2001): the draping on the mannequin, its development, elements, foundations, methods, contemporary cultures, al-Fikr al-Arabi Publishing House, Cairo.*
28. *Shoukry, Najwa (2006): draping on the mannequin, Dar al-Fikr al-Arabi, Cairo.*

AUTHOR PROFILE

Dr Najlaa Al-Thobiaiti had a Bachelor Degree in Home Economics, Faculty of Education for Home Economics, Umm Al-Qura University, 1997. She studied for the Master Degree in Pattern Design and Clothing Manufacture, Umm Al-Qura University, 2004 and the Master thesis Title is "Study of The Activity Extent of An Educational Program For Padding The Mannequin". In 2009 she studied for the Ph.D. degree in Pattern Design and Clothing Making, Umm Al-Qura University, and the Doctoral thesis title is "A study of Fabric Formability on the Mannequin for Different Dress Designs". All her Publications are in the field of Draping on the Mannequin. She has published many researches, such as "Study of The Activity Extent of An Educational Program for Padding the Mannequin, Home economics journal- A.R.E. NO22 (2006)", "Design supplements Mobs style configuration on the mannequin –journal of Applied Human Science- Helwan University –VOL1 NO -1(2015)", "Innovative designs of knitted fabrics manner modeling over the mannequin –journal of Applied Human Science- Helwan University –VOL1 NO -1(2015)", "Creations in the formation of the mannequin Draping Ribbon warp- home economics journal A.R.E. NO32 (2016)". Recently she published an article with the title of "innovating a reinforcement method to improve the creativity in sleeves draping", International Journal Of Textile And Fashion Technology (IJTFT), 2019."

She was a head of the department of the Fashion Design, College of Design from 2015 to 207. She is a member in many scientific associations. She is a member of the Arab Society of Applied Arts Designers in Egypt. A Member of the Egyptian Society for The Science and Technology of Textile Industries in Egypt. A Member of the Egyptian Association for Home Economics in Cairo" She has much participation in the university activities and exhibitions.