Development and evaluation of gown using fish scales as alternative sequins

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ABSTRACT

This study aimed at developing and evaluating gown using fish scales as an alternative sequin at the Marikina Polytechnic College during the academic year 2013-2014.

Mainly, this study seeks to promote artistry and creativity among GFD students to create something unique and exceptional in terms of fashion and design. It will also raise their awareness that a new product may be produced from trash, besides it being eco-friendly.

Keywords
Development, Evaluation, Fish Scales

Introduction

The very word *fashion* signifies change. This pace of change shows no sign of faltering so that designers are under constant pressure to maintain their creative momentum. Successful design is the product of creative thinking as well as the ability to visualize the assembly of the finished garment as the design evolves.

In Garments Fashion and Design Course, students readily use the commercialized trimmings, most especially the sequins in making gowns. With this in mind, the researcher attempts to conduct new trends in fashion industry to create an eco-friendly material in using sequins made of fish scales, instead of plastic and metal sequins.

Significance of the Study

One of the most important aspects of the Development and Evaluation of Gown Using Fish Scales as Alternative Sequins is its Eco-friendly and it serves as an alternative sequin in adding beauty and uniqueness into any gowns, dresses or accessories. This study is significant because of the benefits that it could offer to the following groups:

To the students to help them realize that developing a product using fish scales is not only for decoration but also for beautifying garments. To the GFD Professors, the result of this study will encourage their students in innovating products for global consumption. To the school community as a whole, the study would help them aware that they can produce useful objects out of wasted materials.

Method

This study used the experimental type of research - its sources of data culled from the freshmen and sophomore students of BTTE, BIT, COT class officially enrolled during the academic year 2013-14, and their 20 instructors and professors.

Statement of the Problem

This study aimed at developing and evaluating gown using fish scales as alternative sequins during the academic year 2013-2014. Specifically, the research sought answers to the following questions:

1. How did the BTTE, BIT, COT freshmen, sophomore students and their professors/instructors evaluate the gown

using fish scale as an alternative sequin with regard to the variables of appearance, odor, usefulness, texture?

2. Is there a significant difference in the evaluation of the four groups of respondents?

3. What are the comments and suggestions of the groups of respondents?

Conceptual Model of the Study

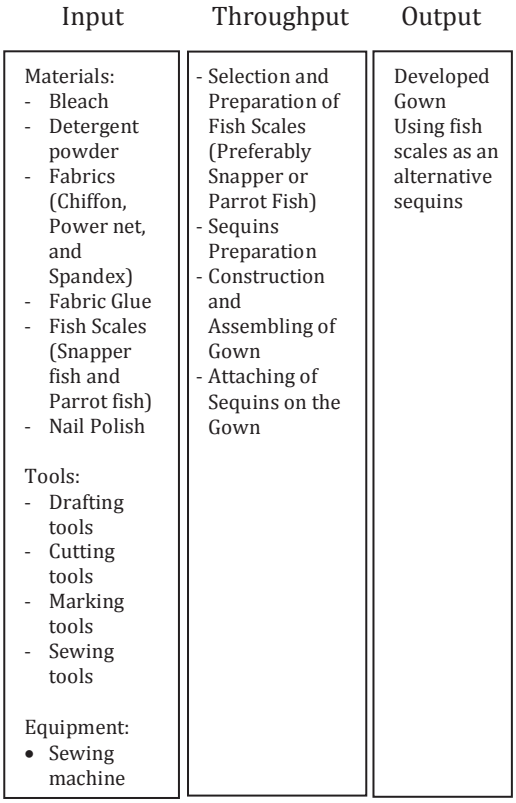

Figure 1. Conceptual Model of the Study for the Development of Gown Using Fish Scale as Alternative Sequins

The input consists of materials: bias tape, bleach, detergent powder, fabrics (chiffon, power net, and spandex), fabric glue, fish scales (snapper fish and parrot fish), and nail polish; tools: drafting, cutting and marking tools; equipment: sewing machine. The throughput includes selecting and preparing fish scales (preferably snapper or parrot fish), preparing sequins, constructing and assembling of gown and attaching of sequins on the gown. The output of this study is the developed gown using fish scales as alternative sequins.

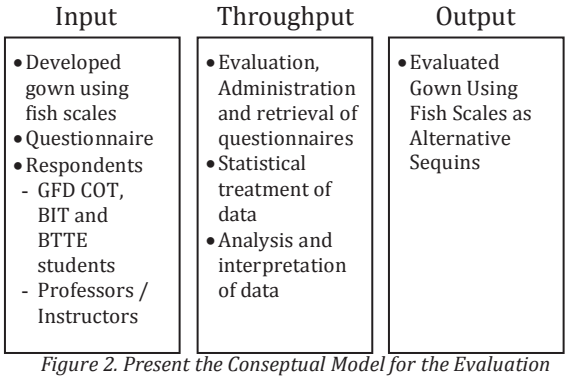

Figure 2. Present the Conseptual Model for the Evaluation of Fish Scales as an Alternative Sequin.

The input consists of the developed gown using fish scales as an alternative sequins, questionnaire checklist (5 point likert's test), Respondents Professors/ Instructors and GFD COT, BIT and BTTE students. The process covers the evaluation, administration and retrieval of the evaluation checklist statistical, treatment of data, Analysis and interpretation of data. The output produced the developed and evaluated gown using fish scales as an alternative sequin in terms of: appearance, odor, usefulness, and texture. There is no significant difference on the four groups of respondents on the above mentioned variables.

Related Literature. Fish scales contain a silvery substance called "pearlesence" or natural fish silver. This gives fish such as herring–and -their pearly certain types of lipstick and nail polish sheen. Because of the natural iridescence in fish scales, some artists have used them for decorative purposes.

Historically, fish scale art has involved ornamentation and jewelry making. Claudia Miclaus in an April 15, 2008, Buzzle.com posting notes a Red Deer College in Alberta, Canada, class offering of "Mixing Beads & Fishscale Art." (Anonymous, 2014).

An article of Miguel Escaño of the *Philippine Daily Inquirer* claimed, "FILIPINIANA IN FASHION calls for the use of

traditional materials such as piña and abaca. With his latest collection, shoe designer Brian Tenorio turns Filipiniana on its head. He uses modern materials, but the design sensibility is unmistakably Filipino. The Filipiniana collection showcases colorful footwear with names such as *Kalabaw*, *Tilapia* and *Sabungero*… Tilapia incorporates the design of fish scales in quality shoes. The pair is made of genuine box leather with a recurring pattern of leather cutouts mimicking the tilapia's scales -- a true designer delicacy."

According to Miclause, (2011), fish scales have a very natural beauty; they are silvery shiny, sometimes with touches of pink or purple, or brown. He further explained that these scales are simply lovely and they remind us of beautiful sea shores, when sitting on beach early in the morning to wait for the breathtaking sunrise. They can really look like very fine pieces of jewelry.

"As stated by Jane Fryers, she saw in a newspaper, that a girl had made a bikini out of fish leather (fish skin). So she got in touch with her and gave her a few samples. She says that it is really nice to work with it is very soft, just like fabric. Then she thought she would take it a step further, and use the scales as decoration. Later she went to the local fishmonger and asked for some fish scales; so she literally got a fish and scraped the scales off for her. She had pots of fish scales that she used instead of sequins and said that they are beautiful." (Campbell, 2006).

"Ali Charisma's fish scale-inspired dresses caught the attention of many spectators at the Hong Kong Fashion Week for Fall/Winter 2009. The black gowns are covered in shiny discs, similar to oversized sequins. These circles vary in size and overlap one another to create the amazing scale-like effect." (Charisma, 2009)

Method

This study utilized the experimental type of research to achieve its main objective. Teddie (2009:18) declared experimental research as a type of research design in which the investigator manipulates or controls one or more independent variables (treatments) to ascertain their effects on one or more dependent variables. As Calmorin (2012:74) stated, experimental research design is a problem solving approach that the study is described in the future on what will be variables one carefully controlled or manipulated.

The data gathered in this research came from the freshmen and sophomore students from COT, BIT and BTTE class officially enrolled at Marikina Polytechnic College (MPC) during the semester, academic year 2013-2014.

Some 72 students from the COT class of freshmen and sophomore students, 56 students from the BIT class of freshmen and sophomore students and 23 students from the BTTE class freshmen and sophomore students comprise the group of evaluators, by using the Sloven's formula. Contrastingly, 5 GFD teachers, 10 technology teachers and 5 academic teachers represented the other group of evaluators.

Presented in Table 1 is the group of sample-student respondents officially enrolled in Garments, Fashion and Design during the school year 2013-2014 who evaluated the Fish scale.

Table 1
Distribution of Student-Respondents as evaluators of the development and evaluation of gown using fish scale as alternative sequins.

Course	First (1st) year	Second (2nd) year	Total enrolled	Number of Respondents
BTTE	7	16	23	17
BIT	28	28	56	41
COT	51	21	72	52
TOTAL	86	65	151	110

It can be gleaned in Table 1 that 151 students were officially enrolled in Garments, Fashion and Design during the academic year 2013-2014. Using the Sloven's formula, 110 sample-respondents out of 151 students evaluated the scales as an alternative sequin.

Presented in the Table 2 is the group of sample-teacher respondents - Instructors in Marikina Polytechnic College (MPC) during the year 2013-2014 who evaluated the gown using fish scales as alternative sequins.

Table 2
Distribution of Teacher-Respondents as Evaluators of the Development and Evaluation of Gown Using Fish Scales as Alternative Sequins

Instructor In Marikina Polytechnic College	Number of Respondents
GFD Instructor	5
Technology Instructors	10
Academic Instructors	5
Total number of respondents	20

As indicated in table 2, some 20 teachers served as respondents of the developed and evaluated of gown using fish scales as alternative sequins.

Data Gathering Procedures

The researcher asked permission from MPC's registrar to supply the actual number of officially enrolled COT, BIT and BTTE freshmen and sophomore students taking up Garments, Fashion and Design (GFD). Given the complete list, Sloven's formula was administered to determine the sample size from the total population. All questionnaires were administered and retrieved personally by the researcher.

Data Gathering Instrument

A questionnaire checklist was made by the researcher for gathering data from the COT, BIT and BTTE freshmen, sophomore students and GFD teacher-respondents. It was administered to the three groups of respondents–students and teachers.

Four criteria were evaluated by the four groups of evaluators: the students from the COT, BIT and BTTE freshmen and sophomore class and the teacher-respondents follows:

Scale		Verbal Interpretation	
5	-	Highly Acceptable	(HA)
4	-	Acceptable	(A)
3	-	Moderately Acceptable	(MA)
2	-	Slightly Acceptable	(SA)
1	-	Least Acceptable	(LA)

Statistical Treatment of Data

Below are the statistical tools used in this study:

1. Frequency to determine the number of respondents who identified the Sloven's Formula.

2. Ranking to identify and to be developed based on the Fish scale as an alternative sequin.

3. Mean to determine the students and teacher-respondents in regard to the evaluation of the Developed and Evaluated Gown Using Fish Scales as Alternative Sequins. The following were descriptive value of the scale to evaluate the fish scales as an alternative sequin, as perceived by students and teacher-respondents as to appearance, odor, usefulness and texture.

Range	Scale	Verbal Interpretation
4.50 - 5.00	5	Highly Acceptable
3.50 - 4.49	4	Acceptable
2.50 - 3.49	3	Moderately Acceptable
1.50 - 2.49	2	Slightly Acceptable
0 - 1.49	1	Least Acceptable

4. One Factor Anova to determine if the evaluation of four groups of respondents has significant difference on the fish scales as an alternative sequin. It was tested with 0.01 level of significance.

Results and Discussion

The evaluation of the students and teacher-respondents on the development and evaluation of gown using fish scales as alternative sequins was determined using the following criteria namely: Appearance, Odor, Usefulness and Texture

Appearance. Table 3 presents the weighted mean and verbal interpretation of the four groups of respondents on the development and evaluation of gown using fish scales as alternative sequins with regard to appearance.

Table 3
Assessment of the Four Groups of Respondents on the Development and Evaluation of Gown Using Fish Scales as Alternative Sequins with regard to appearance

Criteria	COT		BIT		BTTE		TEACHER	
	WM	VI	WM	VI	WM	VI	WM	VI
1. The fish scales look like real sequins.	3.51	A	4.24	A	4.41	A	3.90	A
2. Color is evenly distributed.	3.92	A	4.04	A	3.88	A	4.10	A
3. It has a shiny appearance	4.23	A	3.92	A	4.58	HA	4.0	A
General Weighted Mean	3.88	A	4.06	A	4.29	A	4.0	A

Legend: 1.00-1.49 (NA); 1.50-2.49 (SA); 2.50-3.4 (MA); 3.50-4.49 (A); 4.50-5.00 (HA)

It can be seen in table 3 that 3 out of 3 items have weighted means of 3.51, 3.92 and 4.23 interpreted as acceptable by the COT students; 4.24, 4.04, 3.92 interpreted acceptable by the BIT students; 4.41, 3.88 interpreted as acceptable and one item rated by the same group of evaluators with weighted mean of 4.58 interpreted as highly acceptable by BTTE students and 3.90, 4.10, 4.0 interpreted as acceptable by teacher-respondents.

It implies that the fish scale as an alternative sequin is accepted as to Appearance, as evidently shown in its over-all weighted means of 3.88, 4.06, 4.29 and 4.0 respectively by COT, BIT, BTTE students and Teacher-respondents.

Odor. Table 4 presents the weighted mean and verbal interpretation of the four groups of respondents on the development and evaluation of gown using fish scales as alternative sequins with regard to odor.

Table 4
Assessment of the Four Groups of Respondents on the Development and Evaluation of Gown Using Fish Scale as Alternative Sequins with Regard to Odor

Criteria	COT		BIT		BTTE		TEACHER	
	WM	VI	WM	VI	WM	VI	WM	VI
1. The fish scales don't have a fishy smell.	2.23	SA	2.83	MA	2.82	MA	4.55	HA
2. It has a pleasant smell.	3.71	A	3.95	A	3.52	A	4.60	HA
3. It doesn't smell like acrylic.	3.07	MA	2.83	MA	3.05	MA	4.50	HA
General Weighted Mean	3.0	MA	3.20	MA	3.13	MA	4.55	HA

Legend: 1.00-1.49 (NA); 1.50-2.49 (SA); 2.50-3.49 (MA); 3.50-4.49 (A); 4.50-5.00 (HA)

It can be seen in table 4 that 1 out of 3 items has weighted means of 2.23 interpreted as slightly acceptable, 3.71 interpreted as acceptable and 3.07 moderately acceptable respectively by the COT students; 2 out of 3 items have weighted mean of 2.83, 2.83 interpreted as moderately acceptable, and another item were rated by the same group of evaluators with a weighted mean of3.95 interpreted as acceptable respectively by BIT students;2 out of 3 items have weighted mean of2.82, 3.05 interpreted as moderately acceptable, and one item rated by the same group of evaluators with a weighted mean of3.52 interpreted as acceptable by BTTE students and 3 out of 3 items have weighted mean of 4.55, 4.60, 4.50 interpreted as highly acceptable by teacher respondents.

It implied that the developed and evaluated gown using fish scales as alternative sequins is moderately accepted as regards odor, as evidently shown in its over-all weighted means of 3.0, 3.20, 3.13 by the COT, BIT, and BTTE students, but teachers-respondents have a general weighted mean of 4.55 interpreted as highly acceptable.

Usefulness. Table 5 presents the weighted mean and verbal interpretation of the four groups of respondents on the development and evaluation of gown using fish scales as alternative sequins as to usefulness.

Table 5
Assessment of the Four Groups of Respondents on the Development and Evaluation of Gown Using Fish Scale as Alternative Sequins with Regard to Usefulness

Criteria	COT		BIT		BTTE		TEACHER	
	WM	VI	WM	VI	WM	VI	WM	VI
1. It is acceptable as alternative sequins.	4.57	HA	4.65	HA	4.41	A	4.80	HA
2. It beautifies garment and accessories	4.67	HA	4.80	HA	3.88	A	4.80	HA
3. It can be used in the fashion industry	4.38	A	4.65	HA	4.58	HA	4.85	HA
General Weighted Mean	4.54	HA	4.70	HA	4.29	A	4.82	HA

Legend: 1.00-1.49 (NA); 1.50-2.49 (SA); 2.50-3.49 (MA); 3.50-4.49 (A); 4.50-5.00 (HA)

It can be seen in table 5 that 2 out of 3 items have weighted means of 4.57, 4.67, interpreted as highly acceptable and one item were rated by the same group of evaluators with a weighted mean of 4.38 interpreted as acceptable respectively by the COT students; 3 out 3 items have weighted mean of 4.65, 4.80 and4.65interpreted as highly acceptable respectively by BIT students; 2 out 3 items have weighted mean of 4.41, 3.80 interpreted as acceptable and one item were rated by the same group of evaluators with a weighted mean of 4.58 interpreted as highly acceptable respectively by BTTE students and 4.80, 4.80, 4.85 interpreted as highly acceptable respectively by teacher-respondents.

It implied that the fish scales as alternative sequins is Highly Accepted with regard to usefulness, as evidenced by its over-all weighted means of 4.54, 4.70 and 4.82 by the COT, BIT, teachers but the BTTE teachers-respondents have a general weighted mean of 4.29 interpreted as acceptable.

Texture. Table 6 presents the weighted mean and verbal interpretation of the four groups of respondents on the development and evaluation of gown using fish scales as alternative sequins with regard to texture.

Table 6
Assessment of the Four Groups of Respondents on the Development and Evaluation of Gown Using Fish Scales as Alternative Sequins with Regard to Texture

Criteria	COT		BIT		BTTE		TEACHER	
	WM	VI	WM	VI	WM	VI	WM	VI
1. The fish scales are smooth.	4.21	A	4.02	A	2.82	MA	4.40	A
2. It has fine texture.	4.32	A	4.34	A	3.52	A	4.50	HA
3. The fish scales don't have sharp edges.	2.30	SA	2.60	MA	3.05	MA	4.55	HA
General Weighted Mean	3.61	A	3.65	A	3.13	MA	4.48	A

Legend: 1.00-1.49 (NA); 1.50-2.49 (SA); 2.50-3.49 (MA); 3.50-4.49 (A); 4.50-5.00 (HA)

Table 6 yields that 2 out of 3 items have weighted means of 4.21, 4.32 interpreted as acceptable and one item rated by the same group of evaluators with a weighted mean of 2.30 interpreted as slightly acceptable by the COT students;2 out of 3 items have weighted means of4.02, 4.34 interpreted as acceptable and one item rated by the same group of evaluators with a weighted mean of2.60 interpreted as moderately acceptable by BIT students;2 out of 3 items have weighted means of2.82, 3.05 interpreted as moderately acceptable and one item rated by the same group of evaluators with a weighted mean of3.52 interpreted as acceptable by BTTE students; 2 out of 3 items have weighted means of 4.50, 4.55 interpreted as Highly Acceptable and one item rated by the same group of evaluators with a weighted mean of 4.40 interpreted as acceptable respectively by teacher respondents.

It implied that the fish scales as alternative sequins is accepted as to texture evidently shown in its over-all weighted means of 3.61, 3.65 and 4.48 by the COT, BIT,

students and teachers, but BTTE students have a general weighted mean of 3.13 interpreted as Moderately Acceptable.

Table 7 presents the weighted mean and verbal interpretation of the summary evaluation of four groups of respondents on the development and evaluation of gown using fish scales as alternative sequins.

Table 7
Summary of the Evaluation of the Four Groups of Respondents on the Development and Evaluation of Gown Using Fish Scales as Alternative Sequins

Criteria	COT		BIT		BTTE		TEACHER	
	WM	VI	WM	VI	WM	VI	WM	VI
Appearance	3.88	A	4.06	A	4.29	A	4.0	A
Odor	3.0	MA	3.20	MA	3.13	MA	4.55	HA
Usefulness	4.54	HA	4.70	HA	4.29	A	4.82	HA
Texture	3.61	A	3.65	A	3.13	MA	4.48	A
General Weighted Mean	3.75	A	3.90	A	3.71	A	4.46	A

Legend: 1.00-1.49 (NA); 1.50-2.49 (SA); 2.50-3.49 (MA); 3.50-4.49 (A); 4.50-5.00 (HA)

Table 7 shows that 2 out of 4 items have weighted mean of 3.88, 3.61 interpreted as acceptable, one of the items has weighted mean of 3.0 interpreted as moderately acceptable and the other one has weighted mean of 4.54 interpreted as highly acceptable by the COT students; 2 out of 4 items were rated4.06, 3.65 interpreted as acceptable, one of the items with a weighted mean of3.20 interpreted as moderately acceptable and the other one item rated by the same group of evaluators with a weighted mean of 4.70 interpreted as highly acceptable by the BIT students;2 out of 4 items have weighted mean of 4.29, 4.29 interpreted as acceptable and the other 2 have weighted mean of 3.13, 3.13 interpreted as moderately acceptable by the BTTE students; 2 out of 4 items have weighted means of 4.0, 4.80 interpreted as acceptable and 2 items rated by the same group of evaluators with a weighted mean of4.55, 4.82 interpreted as highly acceptable by teacher respondents.

It can be inferred that the development and evaluation of fish scales as alternative sequins is accepted, as evidently shown in its over-all weighted means of 3.75, 3.90, 3.71, and 4.46 respectively by COT, BIT, BTTE students and teacher respondents.

Comparison of the Evaluation of the Four Groups of Evaluators with Regards to the Development and Evaluation of Gown Using Fish Scale as Alternative Sequins

Table 8 presents the computed *F* value and tabular *F* value on the assessment of the four groups of evaluators on the development and evaluation of fish scales as alternative sequins.

Table 8
Significant Difference On The Assessment Of The Four Groups Of Respondents In Regards With Fish Scales As Alternative Sequins

Appearance

Source of Criteria	Sum of square	Degree of Freedom	Mean square	Computed F Value	Tabular F Value 0.05	Decision	Interpretation
Between Column	0.25	3	0.08	1.14	7.59	Accept *Ho*	Not Significant
Within Column	0.56	8	0.07				

Note: Computed *F* value > Tabular *F* value (Reject Ho); Computed *F* value < Tabular *F* value (Accept Ho)

The table above shows that the computed *F* value of 1.14 is less than the tabular *F* value of 7.59 at 1 degree of freedom leading to the acceptance of research hypothesis at 0.05 level of significance. This implied that there is no significant difference in the assessment of the four groups of evaluators regarding the appearance of fish scales as alternative sequins. It meant that they all agreed that the development of fish scale is well prepared.

Odor

Source of Criteria	Sum of square	Degree of Freedom	Mean square	Computed F Value	Tabular F Value 0.05	Decision	Interpretation
Between Column	4.65	3	1.55	5.34	7.59	Accept *Ho*	Not Significant
Within Column	2.37	8	0.29				

Note: Computed *F* value > Tabular *F* value (Reject Ho); Computed *F* value < Tabular *F* value (Accept Ho)

The above table revealed that the computed *F* value of 5.34 is less than the tabular *F* value of 7.59 at 1 degree of freedom, leading to the acceptance of research hypothesis at 0.05 level of significance. This implied that there is no significant difference in the assessment of the four groups of evaluators regarding the odor of fish scales as alternative sequins. It meant that all respondents agreed that the development of fish scales has a pleasant smell.

Usefulness

Source of Criteria	Sum of square	Degree of Freedom	Mean square	Computed F Value	Tabular F Value 0.05	Decision	Interpretation
Between Column	255.51	3	85.17				
Within Column	.25	8	31.90	2.66	7.59	Accept *Ho*	Not Significant

Note: Computed *F* value > Tabular *F* value (Reject Ho);
Computed *F* value < Tabular *F* value (Accept Ho)

From the above grid, the study yielded that the computed *F* value of 2.66 is less than the tabular *F* value of 7.59 at 1 degree of freedom leading to the acceptance of research hypothesis at 0.05 level of significance. This implied that there is no significant difference in the assessment of the four groups of evaluators regarding the usefulness of fish scales as alternative sequins. It meant that they all the evaluators agreed that the developments of fish scales are useful.

Texture

Source of Criteria	Sum of square	Degree of Freedom	Mean square	Computed F Value	Tabular F Value 0.05	Decision	Interpretation
Between Column	103.71	3	34.57				
Within Column	96.04	8	12.00	0.29	2.87	Accept *Ho*	Not Significant

Note: Computed *F* value > Tabular *F* value (Reject Ho);
Computed *F* value < Tabular *F* value (Accept Ho)

The computed *F* value of 0.29 is less than the tabular *F* value of 2.87 at 1 degree of freedom. It leads to the acceptance of research hypothesis at 0.05 level of significance to imply that there is no significant difference in the assessment of the four groups of evaluators regarding the texture of fish scales as alternative sequins. They all agreed that the development of fish scales has smooth texture.

Conclusion and Recommendations

Based on the findings of the study, the following conclusions were arrived at Marikina Polytechnic College had produced a new eco-friendly product. The developed gown using fish scales as alternative sequins is well constructed and accepted by the GFD students and Professors/Instructors in the Administration should encourage the faculty to develop new product that could be a source of income of the college.

In light of the conclusions drawn from this study, the following are hereby recommended:

1. Further study be done to determine the marketability of the fish scale sequins and its production cost.

2. Parallel study be conducted utilizing the fish scale sequin in other garments and accessories.

3. The Administration encourage the faculty to develop new products that could be sources of income of the college.

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