ENRICHING RESEARCH H0 RIZONS

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DEPARTMENTOFHOMESCIENCEAND
CENTERFORRESESEARCH
ST. TERESA'SCOLLEGE(AUTONOMOUS),ERNAKULAM

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ST. TERESA'S COLLEGE (AUTONOMOUS) ERNAKULAM
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PREFACE

Humans have evolved through their intellectual pursuits and quest for new knowledge. Research is fundamental to all human progress. Research is said to be incomplete and ineffective if findings are not made available to others to ponder on. Thus research promotion in every field is the need of the hour and it is also imperative to publish quality papers in each field. Moreover, promoting and improving the quality of research in Indian universities and colleges is greatly recommended by UGC. In this context, Department of Home Science and Centre for Research is providing a platform to the young researchers in disseminating their finding through Research Advancement Programme (ReAP) every year.

The Research Advancement Programme (ReAP), initiated by the Department of Home Science and Centre for Research is an interdisciplinary contest which is held every year to inspire, motivate and empower researchers in various fields. This year interdisciplinary research fair with theme 'Enriching Research Horizons' (ReAP 2K19) aims at fostering a climate for research there by facilitating a forum for original ideas and creative dialogues for publication.

The proceedings of the research fair includes 2 invited talks and 38 scientific papers paper which was presented in the research fair as oral presentation and poster presentations. Prizes were awarded for winners in different category.

Dr. Susan Cherian
Dr. Nisha Vikraman

Conveners ReAP 2K19

MESSAGE

"Education is not learning the facts but training the mind to think"
- Albert Einstein

This year's theme "ENRICHING RESEARCH HORIZONS" for the Research Advancement Programme (ReAP 2019-20) is apt with the vision with which the interdisciplinary research fair is conducted by the department of Home Science and centre for research, every year.

Research is the search for knowledge or a useful investigation without any prejudices and with an open mind. Research methodology is the mantra of achieving accuracy and exactness when it comes to facts and knowledge about something. It is the right approach to pursue knowledge since it leads to a better understanding of a fact or phenomenon. Research is the practical experience of the fact known by others. The Seminar is an opportunity for the young minds to develop research aptitude and aspirations,

I congratulate Head of the department, Conveners and the faculty of Department of Home Science for their tireless effort year after year to instill research skills among students. It is also creating a knowledge sharing platform to showcase the findings for research scholars and students.

Dr. Sajimol Augustine M.
Principal
St Teresa's College (Autonomous),
Ernakulam.

FORWARD

"I believe in innovation and that the way you get innovation is, you fund research and you learn the basic facts. "

- Bill Gates

Research as a course of study and it's application, has been playing a substantial role in the Home Science post-graduate curriculum. Dept of Home Science and Centre for Research of St Teresa's College is the first research centre for Home science under M G University, established in the year 1985. The Research Advancement Programme (ReAP) is an interdisciplinary research fair conducted annually by the department of Home Science and Centre for Research. The aim is to bring together researchers from the related disciplines of Home Science at the National level and to promote inter-disciplinary research.

ReAP, 2K19, conducted on 5th and 6th December, 2019 is a National Seminar with the theme " Enriching Research Horizons". The main objective of ReAP, 2019 is to provide a platform for researchers to disseminate knowledge among fellow scholars; to sensitize students on the advancements in research trends and to familiarize them on how to write research proposal for various research grants.

It is with a great sense of pride that the Department of Home Science and Centre for Research is bringing forth the proceedings of ReAP 2K19. Our sincere gratitude to the Director of the College, Dr. Sr. Vinitha and the Principal, Dr. Sajimol Augustine M., for their unwavering support for research initiatives. I congratulate the Conveners of ReAP, 2K19, Dr. Susan Cherian and Dr. Nisha Vikraman for the successful and smooth conduct of the programme. Sincere thanks to all the participants of the Seminar from various Institutes, faculty members, students, research scholars and non-teaching staff of the Home Science department for their valuable inputs.

Dr. Thara Sebastian
Head, Dept of Home Science & Centre for Research,
St Teresa's College, (Autonomous), Ernakulam.

CONTENTS

DEVELOPMENT OF ECO-FRIENDLY PROCESSED YOGA MATS

Reny Simon and Honey S Nair

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INTRODUCTION

Textile is a flexible material consisting of a network of natural or artificial fibers, yarns etc. they are formed by weaving, knitting, knotting, felting or braiding. Weaving is the main method of fabric production. Handloom was used widely for many years before the invention of automatic loom. Organic cotton is grown organically in subtropical countries, without the use of any synthetic agricultural chemicals such as fertilizers or pesticides. Its production is supposed to promote and enhance biodiversity and biological cycles. Natural dye were the main source of colorants for textiles until the end of 19th century. They are dyes or colorants derived from plants, minerals etc. The majority are vegetable dyes from plant sources. The ease of application, availability of wide range of colors, better reproducibility, improved quality of dyeing at lower cost are the main advantages of synthetic dyes. Synthetic dyes releases harmful chemicals that are allergic or carcinogenic to environment and to the human body. Natural dyes have better biodegradability, non- toxic, easily available, they are not harmful to environment, which makes it so appealing for consumers. The shades produced by them are usually soft, lustrous and soothing to human eye.

Yoga is a systematic practice of physical exercise, health control, relaxation, diet control and positive thinking and meditation aimed at developing harmony in the body and mind. Fabric dyed using organic herbs and medicinal plants provide relief from metabolic disorders. Ayurvedic yoga mats is hand woven made of organic natural materials

The present study was focused on the construction of ecofriendly yoga mats, which is naturally processed, dyedand printed. They have a subtle beauty that cannot be recreated by synthetic dyes.

OBJECTIVES

- To develop eco- friendly processed yoga mats
- To evaluate the colorfastness of the developed products.

MATERIALS AND METHODS

I. SELECTION OF YARNS

Pure organic cotton yarns were used for the study. 8 skeins of yarns were purchased from the market.

II. PRE-TREATMENT OF YARNS

A. DESIZING

The yarns were desized using soap nuts, about 8-10 soap nuts were added into the boiling water of 100 degree temperature. After 30 minutes the yarns were taken and washed using cold water

B. SCOURING

1 litre of Soda ash solution were added into the boiling water of 100 degree temperature. After 30 minutes the yarns were taken out and washed thoroughly in cold water

C. BLEACHING

Soak the scoured yarns in hot water with a cup of sliced lemon for overnight.

III. DYEING OF YARN

Madder and natural Indigo dyes were used for dyeing the yarns. 100 % shade were added into the hot water of 100 degree temperature. Myrobalan, natural mordant were added simultaneously at regular intervals to improve the dye penetration. After 1 hour dyed yarns were taken out, washed well and dried under shade.

IV. WEAVING

Weaving is done on handloom in plain weave order. Dyed yarns and undyed yarns were combined to produce the fabric.

V. MAKING OF YOGA MATS

4 articles were produced in the standard size of 68 x 24 inches.

A. PRINTING

Yoga mats were printed using hand-made screens. The printing paste were prepared by mixing of mango kernel powder in 20-25 ml of water. Then the paste was boiled with certain amount of water, till the desired thickness was obtained. Selected concentration of mordant and dye concentrate was added to the paste. Then the printing paste were applied to the fabric through screen printing technique. The rubber blade, which is contained in a wooden or metal support, is drawn steadily across the

screen at a constant angle and pressure. The pressure exerted must be as similar as possible.

VI. EVALUATION OF YOGA MATS

The dyed and printed yoga mats were evaluated for color fastness to washing, rubbing, sunlight and press using the methods prescribed by the BIS. The color fastness grading was given by grey scale

A. COLOR FASTNESS TO WASHING

Cut two specimen samples of 10x4cm size. Cut four staining pieces of 10x4cm size. Made two composite specimen (sandwiched), the test piece between two staining pieces sewed along. The required quantity of soap solution at the rate of 10g/l of water. This composite is treated for 45 minutes at 80ºC. Then the fabric is kept for overnight. The samples were squeezed, opened and dried in air. The change in color of dyed samples were assessed with gray scale. Place a piece of the original dyed samples and the test side by side in the same plane. The visual difference was compared between the original and tested material with the difference represented by the gray scale

B. COLOR FASTNESS TO SUNLIGHT

The apparatus used for testing of fastness to sunlight was the exposure rack. The fastness to sunlight was carried out according to IS: 686- 1985 method. The test specimen was mounted in exposure rack in such a way that half of each specimen was covered and the other half was exposed to light. The samples were exposed to daylight every day from sunrise to sunset, keeping the exposure rack in proper angle. The change of color of the exposed portion was compared with that of the unexposed portion with gray scale

C. COLOR FASTNESS TO RUBBING

Cut two fabric samples of 20x15 cm size for dry and wet samples for rubbing. Cut four white finished cotton samples with the help of the template. Took the fabric sample (first piece) and fixed it firmly to the rubbing device with the help of bolts. Clamped the rectangle sample to the finger of rubbing device. Put down the support and the handle was rotated 10 times. So that the horizontal plane was moved to and fro on the horizontal plane along the track of 10 cm length. Evaluate the degree of staining of the test piece (undyed cloth) with the help of geometrical gray

scale and assign their reading. The sample procedure is repeated with wet undyed sample (soaked the fresh piece of undyed sample in distilled water and squeezed it so that it contains its own weight of water)

D. COLOR FASTNESS TO HOT PRESS

The sample is placed on the piece of dry cotton cloth on a smooth horizontal surface. Place the iron on the sample and leave it for 10 seconds. The change in color of the sample is evaluated to gray scale.

COLOR FASTNESS TO WET PRESS

Dry sample is placed onto the undyed wet cotton fabric. Then pressed it for 10 seconds at the determined temperature. The change in color of the sample is evaluated to gray scale.

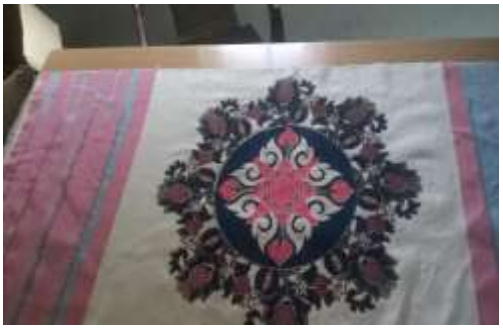
Grey scale for staining and color change (IS: 768 - 1982)

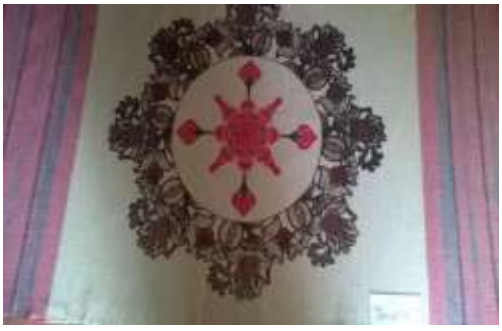
Degree of change and staining	Rating	Grade	Remarks
No stain/change	5	A	Excellent
Slightly stained/changed	4	B	Good
Noticeable stained / changed	3	C	Fair
Considerably stained/changed	2	D	Poor
Heavily stained/changed	1	E	Very poor

RESULTS AND DISCUSSION

I. MAKING OF YOGA MATS

ARTICLE 1 **ARTICLE 2**





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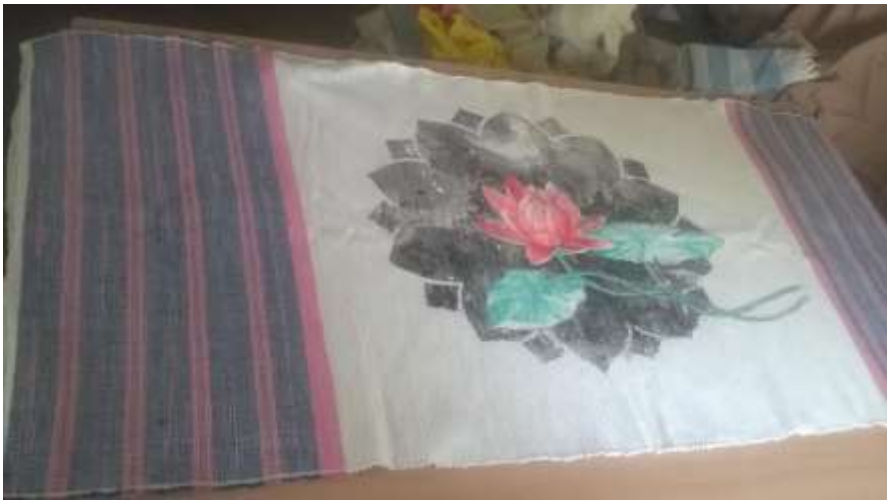

II. EVALUATION OF YOGA MATS

A. COLOR FASTNESS TO WASHING

SL.NO	GRADE	RATING
Article 1	A	5
Article 2	A	5
Article 3	A	5
Article 4	A	4/5
		Average =5

REMARKS: EXCELLENT

B. COLOR FASTNESS TO SUNLIGHT

SL NO	GRADE	RATING
Article 1	C	3
Article 2	C	3
Article 3	C	3
Article 4	D	2
		Average =3

REMARKS :FAIR

C. COLOR FASTNESS TO RUBBING

SL NO	GRADE	RATING DRY	WET
Article 1	A	5	5
Article 2	A	5	5
Article 3	A	5	5
Article 4	A	5	5

REMARKS: Excellent

D. COLOR FASTNESS TO PRESS

SL NO	GRADE	RATING DRY	WET
Article 1	A	5	4/5
Article 2	A	5	4
Article 3	A	5	4/5
Article 4	A	4/5	4/5

REMARK: Excellent- Good

CONCLUSION

The present study was focused on the construction of ecofriendly yoga mats, which is naturally processed, dyed and printed. They have a subtle beauty that cannot be recreated by synthetic dyes. The dyed samples were subjected to color fastness to Washing, Sunlight,Rubbing and Press. Result showed that it is acceptable and was ranging between excellent and good. This concept is to bring the traditional organic natural dyeing method to modern textile industry for making eco-friendly textile products. The natural ecofriendly yoga mats will produce a positive harmony in body and mind.

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