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Instigating Environmental Sustainability and Self Efficacy among College Students through Natural Dyeing

Mrs.Rinsey Antony.V.A

Head of Department, Department of Costume Design and Fashion, Sri Krishna Arts and Science College, Coimbatore, Tamil Nadu,India

Dr. A.Seethalakshmy

Assistant Professor, Department of Psychology, Sri Krishna Arts and Science College, Coimbatore, Tamil Nadu,India

Rithanya.R

Student, Department of Psychology, Sri Krishna Arts and Science College, Coimbatore, Tamil Nadu, India

Abstract:

Textiles are one among the basic need of a human being and now has become a fashion statement. Bright and colourful clothes are always an attraction to humans. Among the major industries in India, Textile industry is growing at a faster pace. Textile Industry also cause major damage to the environment resulting from the discharge of untreated effluents into the water bodies (Bhatia, 2017), mainly non-biodegradable organic compounds, such as textile dyes (Orts, Del Río, Molina, Bonastre, & Cases, 2018). Being a part of this Universe, it is the responsibility of every human being to conserve natural resources and protect our ecosystem for a long and healthy life now and in the future in this planet. Students are future generation and if a Costume and Fashion Designing student is taught to use natural dyes for textiles and then design, the dyeing industry pollution can be reduced and can save our water bodies. This also improves the self-efficacy of the student and can motivate the student to achieve their career goals. Hence the aim of the current research is to Instigate Environmental Sustainability and Self Efficacy among College Students through natural dyeing. Natural dyeing with organic materials was taught to the students of Costume and Fashion Designing over a period of 6 months and made them design textiles. The students Self efficacy before and after the study period was also collected using the General Self-Efficacy Scale which indicated a major increase. Purposive Sampling techniques were used in the research with a sample count of 60 students. The current research contributes to Environmental education and promotes environmental sustainability among students.

Keywords: Environmental Sustainability, Self-Efficacy

Introduction: Environmental sustainability is the responsibility to conserve natural resources and protect global ecosystems to support health and wellbeing in the future. Economic, social and environmental sustainability mandatory in today's business environment. A corporate strategy focusing on sustainability can add brand value, meet consumer demands, increase efficiency, attract valuable talent and create new opportunities. Eco-friendliness has become the keyword in the modern scenario. The term eco-friendliness influences every activity of our daily life. Humanity has started to go back to nature, owing to the after-effect's nature has started to show back to us. According to Suparna and Antony (2016), eco-friendly textiles are any textile product produced and processed in an eco-friendly way. All the process used in textiles right from the first preparatory process to the final process adds value to the fabric. On the other hand, it uses water, energy, chemicals that create severe environmental hazards (Jena & Behera, 2015). The revitalization of natural dyes and eco-friendly processes has been gaining popularity worldwide due to various factors like environmental concern; eco-safety and pollution control (Yusuf et al., 2016). Synthetic dyes are used extensively for textile dyeing, paper printing, leather dyeing, and colour photography and as additives in petroleum products. Pollution from the effluents has become increasingly alarming with the usage of a wide variety of dyes in industries. Interests in natural dyes are also growing throughout the world and people are becoming more aware of the need for eco-friendly materials to come up and dominate the harmful synthetic dyes (Asifa & Hasnain, 2009).

Natural resources are essential inputs for production in many sectors, while production and consumption also lead to pollution. Poor environmental quality in turn affects economic growth and wellbeing by lowering the quantity and quality of resources. Major current environmental issues may include climate changes, pollution, environmental degradation and resource depletion. Natural dyeing is being itself a green chemistry process and when enzyme is used as pretreatment in an ultrasonic bath, the process become even more eco-friendly and greener. Green chemistry applications in textile particularly in the field of dyeing include the utilization of a set of principles that reduce or eliminates the use or generation of hazardous substances in the design, manufacture and application. The natural resources are not only being over-exploited but also becoming contaminated with toxic chemicals making it difficult for survival of future generations.

The Fashion industry depends heavily on natural resources. The fashion industry is one of the largest polluters in the world majorly causing water pollution. Textile synthetic dyeing is the world's second largest polluter of water, since the water leftover from dyeing process is often dumped into rivers, ditches, or streams. The fashion industry is responsible for 20% of all industrial water pollution worldwide (Bailey et.al,2022). The resources that are available to the future generation are dependent on the way we are using it. According to McKinsey survey (2019), eco-friendly cloths market in India is growing steadily even as the industry is at a nascent stage. Manufactures adopt better practices to produce cloths that leave little impact on the environment. The toxicity of the dyes and chemicals, inappropriate discharge of waste has led to skin diseases and respiratory problems among many workers.

This has given an impetus to the rising demand for producing textile products through environment friendly and sustainable dyes and processes. The consumer's pattern shows a shift towards eco-friendly clothing.

Natural dyes are those dyes or colourants derived from natural sources such as vegetables, plants etc. Finishing the fabric dyeing process in a green way can be achieved by using chemical-free dyes and by using environment friendly processes. Natural dyes, obtained from plants, insects/animals and minerals, are renewable and sustainable bio resource products with minimum environmental impact and known since antiquity for their use, not only in coloration of textiles (Kadolph,2008) but also as food ingredients (Dweck, 2002) and cosmetics (Frick, 2003). With the discovery of synthetic colorant by W.H. Perkin in 1856 and subsequent development in research, production and application of synthetic dyes, use of natural colorants slumped sharply (Holme,2006). However, the application of a number of synthetic dyes has detrimental effects on environment and associated allergic, toxic, carcinogenic, harmful responses.

Undeniably, the natural dyes are healthier products, purely because they do not comprise chemicals that are damaging the environment. The people who do natural dyeing is able to contribute towards environmental sustainability. There is a growing interest for using natural dyes to dye leather (Sivakumar et al., 2009; Selvi et al., 2013 and some plastics (van den Oever et al., 2004); to add color to cosmetics (Kapoor, 2005; Kapoor et al., 2008); to dye hair (Boonsong et al., 2012; Komboonchoo and Bechtold, 2009; Rao et al., 2008) is seen in the new generation designers and entrepreneurs.

According to Albert Bandura (Bandura, 1977, 1986, 1997), self-efficacy is a person's belief in their ability to succeed in a particular situation. It plays an important role in how you feel about yourself and whether or not you successfully achieve your goal in life. According to Bandura, high self-efficacious individuals tend to form more challenging goals, overcome difficulties and have higher level of motivation (Locke & Latham, 1990). On the other hand, low self-efficacious individuals may avoid executing the courses of action (Pintrich & Schunk, 2002). Moreover, higher self- efficacy beliefs help individuals encountering difficulties and determine how to overcome challenges (Bandura, 1977; Pajares, 1992). In this point of view, the researcher objective is to find whether a student of costume design and fashion, if taught the natural dyeing process their self-efficacy will improve? As today's students are tomorrow's entrepreneurial citizens, and if they believe they can contribute for a green and clean environment, definitely they will adopt the same. Thus, can teaching the student's natural dyeing process will instigate environmental sustainability and enhance self-efficacy is the objective of the current research study.

Aim: The major objective of the research is to find an improvement in Self Efficacy by instigating Environmental Sustainability through natural dyeing process among college students.

Methods

Hypothesis:

H 1: There exists a significant difference in Environmental Attitudes among college students after learning and implementing natural dyeing process

H 2: There exists a significant difference in Self Efficacy among college students after learning and implementing natural dyeing process

Sampling: This study enlisted the participation of 48 young adults between the age of 18-22, from Tamil Nādu, inclusive of all genders. The Quasi Experimental Research Design and Random Sampling Technique was used to analyze whether there are any significant differences in Environmental Attitude and Self-Efficacy before and after the process of natural dyeing among college students between the age 18-22.

Measures: The following instruments were used to collect data from the sample: Participants were asked to give their demographic details, Age, gender and complete the General Self-Efficacy Scale (GSE) German version developed in 1979 by Matthias Jerusalem and Ralf Schwarzer, and later revised and adapted to 26 other languages by various co-authors. The current research study has used revised scale developed by Schwarzer, R., & Jerusalem, M. (1995). The scale is usually self-administered, as part of a more comprehensive questionnaire. Preferably, the 10 items are mixed at random into a larger pool of items that have the same response format. Time: It requires 4 minutes on average. Scoring: Responses are made on a 4-point scale. Sum up the responses to all 10 items to yield the final composite score with a range from 10 to 40. No recoding. The scale has high validity and reliability with Cronbach’s alphas ranged from .76 to .90, with the majority in the high .80s. The scale is unidimensional.

The participant was asked to fill the A Brief Version of the Environmental Attitudes Inventory (EAI-24) developed by Milfont, T. L., & Duckitt, J. (2007). Average scores are calculated for (1) each of the twelve first-order factors, (2) the two second-order factors (i.e., Preservation = Scales 1, 2, 3, 6, 8, 11, and 12; Utilization = Scales 4, 5, 7, 9, and 10), and (3) an overall score (i.e., Generalized Environmental Attitudes).

Results

Table: 1

Paired ‘t’ Test on Self Efficacy Pre-Dyeing and Post-Dyeing

Variable	Pair	N	S.D	t-value	df	p-value
Self-Efficacy	Pre –Dyeing	48	2.8	10.449	47	.000*
	-					
	Post-Dyeing					

p<.05, **p<.01, ***p<.001

The results of paired sample t there is a significant difference in the Pre values and Post Values.

He results suggest that, the significant difference in Self efficacy is due to the learning and applying the Natural dyeing process.

Table: 2

Paired 't' Test on Environmental Attitudes Pre-Dyeing and Post-Dyeing

Variable	Pair	N	S.D	t-value	df	p-value
Environmental Attitudes	Pre –Dyeing - Post-Dyeing	48	6.697	38.752	47	.000*

p<.05, **p<.01, ***p<.001

The results of paired sample t there is a significant difference in the Pre values and Post Values.

The results suggest that, the significant difference in Environmental Attitudes is due to the learning and applying the Natural dyeing process.

Discussion: The current study examined Instigating Environmental Sustainability and Self Efficacy among College Students through natural dyeing. The present study consists of a population of 48, all are females. The statistical analysis of the collected data revealed a significant difference on Environmental Sustainability and Self- Efficacy. The result concluded that there is a significant difference between before and after producing the cloth using natural dyeing among college students. Thereby the study concludes that the self-efficacy of college students has been increased after producing the cloth using natural dyeing process. Those with a strong or high sense of self-efficacy believe in their own capability deeply, seeing challenges as tasks to be learned rather than threats to be avoided. (Bandura, 1977). Bandura was responsible for bringing the term to self-efficacy, but psychologists have studied self- efficacy from several perspectives. Kathy thinks that believing in one's own abilities can be vital in measuring cognitive strength (Kathy Kolbe, 2009). These studies reported that university students have positive attitudes towards having a sustainable life style (Sahin, Ertepinar & Teksoz, 2008), that they have admitted to take action (Tuncer, 2008), and that they have enough background knowledge (Emanuel & Adams, 2011).

Research efforts by individuals and organizations and exchange of available information through various seminars, symposiums, workshops, and research articles have now revealed various natural dye sources. Plenty of information about different sources of natural dyes is now available in the literature (Bechtold et.al (2009), Siva et.al (2007), Samantha et.al (2009), Hill et.al (1997), Cardon et.al (2007)) Students' environmental attitudes became more environmentally favorable when they understood the process of natural dyeing. After conducting this research we came to know that many people are willing to contribute to environmental sustainability through their actions. This has led to the realization that there has been a significant need for environmental sustainability in today's world.

Limitations and Future Research: The current research study is with a small population of only 48 students. The gender is limited to female. Natural dyeing process was carried out as a part of curriculum and the study was done with minimal mechanical process as the setup is in a laboratory of a college.

The research is a pilot study and as it seems to meet the hypothesis, the researchers plan

to include the same as a mandatory part of syllabus of Costume Design and Fashion. Moreover, now the naturally dyed cloth is made, more to be explored on the life duration of the colour in the fabric and to develop Costumes on these clothes. The researcher believes that this can give the students more confidence in their work and may motivate to use natural dyes and save the environment from various pollution.

Conclusions: Textile is one of the basic needs of a human being. But the growing Industry is also causing major damage to the environment resulting from the discharge of untreated effluents into the water bodies mainly non-biodegradable organic compounds, such as textile dyes. In the textile industry, the usage of non-toxic and eco-friendly products has become a significantly important concept due to the environmental hazards caused by the chemicals and other hazardous substances used in processing and dyeing. The current market has more demand for Eco-friendly products. The available solution is going back to nature and finding renewable resources to supplement the current need. Educational institutions have a lot of potential for exploring new methods of teaching, the college campus is a great resource to make studies more interactive. By learning and implementing natural dyeing process the researcher was able to find out that the students of Costume Design and Fashion technology show more environment friendly attitude. Moreover, there found to be a major improvement in their Self Efficacy. The students seemed to be more confident and this can change the textile industry by generating more environment friendly future entrepreneurs.

Reference:

1. Afia, G.; Hasnain, S. (2009), Production dynamics of *Bacillus subtilis* strain AG-1 and EAG-2, producing moderately alkaline proteases, *African Journal of Microbiology Research.*, 3(5), 258-263.
2. Bailey, K.; Basu, A.; Sharma, S. The Environmental Impacts of Fast Fashion on Water Quality: A Systematic Review. *Water* 2022, 14, 1073. <https://doi.org/10.3390/w14071073>
3. Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215.
4. Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.
5. Bandura, A. (1997). *Self-Efficacy: The exercise of control*. New York, NY: W. H. Freeman.
6. Emanuel, Richard & Adams, J... (2011). College students' perceptions of campus sustainability. *International Journal of Sustainability in Higher Education*. 12. 79-92. 10.1108/14676371111098320.
7. Bechtold, T., Mussak, R.: *Handbook of Natural Colorants*. John Wiley and Sons (2009)
8. Siva, R.: Status of natural dyes and dye-yielding plants in India. *Current Science-Bangalore* (2007), 92(7): 916
9. Cardon, D.: *Natural dyes: sources, tradition, technology and science*. London:

Archetype (2007)

10. Demirci, S., & Teksöz, G. (2017). Self-efficacy beliefs on integrating sustainability into profession and daily life: in the words of university students. *International Electronic Journal of Environmental Education*, 7(2), 116-133
11. Hill, D. J.: Is there a future for natural dyes? *Review of Progress in Coloration and Related Topics* (1997), 27(1): 18-25.
12. Jena, B., & Behera, L. (2015). Ecofriendly processing of Textiles, *Materials today: Proceedings*, 2 (4-5), 1776 – 1791.
13. Kolbe, Kathy (2009) "Self-efficacy results from exercising control over personal conative strengths", *Wisdom of the ages*. doi: <https://e.kolbe.com/knol/index.html>
14. Milfont, T., & Duckitt, J. (2010). The Environmental Attitudes Inventory: A valid and reliable measure to assess the structure of environmental attitudes. *Journal of Environmental Psychology*, 30, 80–94. <https://doi.org/10.1016/j.jenvp.2009.09.001>
15. McKinsey & Company Covid-19 Consumer Pulse Survey, 2022 Global Sentiment Survey
16. Schwarzer, R., & Jerusalem, M. (1995). Generalized Self-Efficacy scale. In J. Weinman, S. Wright, & M. Johnston, *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35-37). Windsor, UK: NFER-NELSON.
17. Samanta, A. K., Priti, A.: Application of natural dyes on textiles. *Indian Journal of Fibre & Textile Research* (2009), 34: 384-399.
18. Suparna, M, G., & Antony, R. V. A. (2016). Eco-Friendly Textiles, *International Journal of Science Technology and Management*, 5(11), 2394 – 1529.
19. Tuncer, Gaye. (2008). University Students' Perception on Sustainable Development: A Case Study from Turkey. *International Research in Geographical and Environmental Education*. 17. 212-226. [10.1080/10382040802168297](https://doi.org/10.1080/10382040802168297).
20. Yusuf, M., Mohammad, F., Shabbir, M., & Khan, A.M. (2016). Eco-dyeing of wool with *Rubiocordifoli* root extract: Assessment of the effect of *Acacia catechu* as biomordant on color and fastness properties, *Textiles and Clothing Sustainability*, Springer Open, 2 (10), 1-9.