

Utilization of Paper Waste and Dried Leaves as Ceiling Board

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Abstract: The study was developed to minimize, lessen, control waste products in the community such as paper waste and dried leaves and to be useful for waste management, segregation and recycling processes. The study aimed to utilize paper waste and dried leaves as Ceiling Board, specifically it will sought to: 1. Evaluate the qualitative characteristics of paper waste and dried leaves as Ceiling Board in terms of: physical appearance, composition, and odor; 2. Determine the applicability of paper waste and dried leaves as Ceiling Board in terms of; type of paper and dried leaves used, amount of additives or binder, and drying time; 3. Find out if there is a significant difference between two treatments in terms of acceptability such as, color, capacity, texture, and drying time. Experimental method is a research method used to test a hypothesis by seeking to establish a causal relationship between dependent and independent variables. It involves manipulation of the independent variable, while trying to keep all other variables constant (A Dictionary of Nursing, 2008). The qualitative characteristics of paper waste and dried leaves as Ceiling Board in terms of: physical appearance, composition, and odor verbally interpreted as Very Good while the applicability of paper waste and dried leaves as Ceiling Board in terms of; weight, dimension and drying effect verbally interpreted as very applicable. However, the significant difference between two treatments in terms of acceptability such as, color, capacity, texture, and drying time. Treatment A, resulted to be very acceptable. While, Treatment B resulted to be acceptable.

Keywords: Composition, Utilization, Paper waste, Dried leaves, and Ceiling board

I. INTRODUCTION

In this problem, a study that somehow can be used as an alternative for gypsum board, plywood, concrete slab and fiber coated board [1]. To make research, do some experiments, share ideas, knowledge, and thoughts in able to make paper waste and dried leaves into new product for waste management, segregation and business venture as an alternative for commercial one [2]: By this information stated, it can help and improve the skills of each individual. This study enhances the performance level of every person who wants to use this product.

A kind of waste materials like discarded paper and dried leaves which are visible in every street places in our community if it is not properly deposited in right garbage area it becomes a threat and problem that cause flood and global warming. It can be utilize as typical ceiling board, decorative pavement, bricks or tiles making. The essence of this research is ideal for workmanship and for helping our global warming minimizing waste product [3]. It will enhance person ability to work using waste paper and dried leaves into new product as well as promoting paper recycling as a means of protecting world forests [4]. Perhaps it is difficult as first time to introduce the kind of craft but to maintain the ability of innovative mind when it comes to procedures, method and treatments surely we can able to adapt concept of using waste paper and dried leaves as reliable source of materials and to produce for commercialization [5].

Paper waste nowadays are rampant, enormous, and very timely because of much needed by the consumers and even industry production thus it gives environmental effect to the people and to the environment itself [6]. Deforestation is one of the main environmental problems we're facing in these times. 42% of all global wood harvest is used to make paper. Is it really worth it to cut down our life saving trees for this product? Paper pollution is another effect of paper waste and it's a serious problem. It is estimated that by 2020, paper mills will be producing 500,000,000 tons of paper and paperboard each year [7].

The purpose of this study is to utilize paper waste and dried leaves as Ceiling Board which are viable alternative to gypsum board, plywood, concrete slab, fiber coated board and uses of portland cement [8] that are commercially used in the small and large scale businesses [9].

The researcher made use of paper waste and dried leaves as Ceiling Board which will be used by person skilled and not skilled in the art for waste segregation processes, collection, recycling of waste paper and economic development [10].



This study aimed to utilized paper waste and dried leaves as Ceiling Board, specifically it will sought to:

- 1.Evaluate the qualitative characteristics of paper waste and dried leaves as Ceiling Board in terms of: physical appearance, composition, and odor.
- 2.Determine the applicability of paper waste and dried leaves as Ceiling Board in terms of; type of paper and dried leaves used, amount of additives or binder, and drying time.
- 3.Find out if there is a significant difference between two treatments in terms of acceptability such as, color, capacity, texture, and drying time.

II. METHODOLOGY

This study employed an experimental method of research. Experimental method is a research method used to test a hypothesis by seeking to establish a causal relationship between dependent and independent variables. It involves manipulation of the independent variable, while trying to keep all other variables constant (A Dictionary of Nursing, 2008).

III. EXPERIMENTAL DESIGN AND TREATMENTS

In this experimental method of research, the experimental design that had been employed in this study will be Two-group Experimental Design. Two-group Experimental Design, which is when an experiment is done on two groups of subjects and the results are then compared. There are two treatments that had been evaluated. Treatment A composed of 2000g collected paper waste,1000g collected dried leaves,2 kilos Portland cement, 350ml bottled tap water. While, Treatment B composed of 2000g collected paper waste,500g collected dried leaves,1.5 kilos Portland cement, 350ml bottled tap water.These two treatments had reflected on the design of experimentation to determine which of the two treatments will be more acceptable to be one of the key ingredient in the production of the useful product.

A. Materials, Treatments, and Process used in waste paper

The materials, treatments, and processes used in paper waste and dried leaves into ceiling board.

B. Materials

The following are the materials to be used in the process of making paper waste and dried leaves into ceiling board; Aluminum spoon, mixing bowl, tap water, waste paper and dried leaves, Portland cement as binder, cylinder, metal spatula, Weighing Scale, and scientific lux meter for temperature determination.

Materials Used	Properties
Waste Paper	Coupon bond paper substance 16, 18 & 20 Newspaper magazine
Dried Leaves	Talisay, Gemilina and Santol Tree
Pull push Rule	L x W x H - Sample size: 50mm x 300mm x 400m
Weighing Scale	1.5 kilo (1500grams)
Photo/lux meter	1499 lumens - 35.2 (°C)
Treatment A	Treatment A
2000g collected paper waste	2000g collected paper waste
1000g collected dried leaves	500g collected dried leaves
2 kilos Portland cement	1.5 kilo Portland cement
350ml tap water	350ml tap water

C. Cost Analysis

Quantity	Unit	Description	Value	Remarks
2	kilos	Paper waste		Collected
1/2	kilos	Dried leaves		Collected
3 1/2	kilos	Portland Cement	350	Purchased
1	pale	Mixing Bucket		Owned
1	set	Metal Spatula (for Mixing)		Owned
2	set	Wooden Molder		Fabricated
		Total	350	

IV. RESULTS AND DISCUSSION

The data showed in table 1, that the qualitative characteristics of paper waste and dried leaves as Ceiling Board in terms of: physical appearance, composition, and odor a grand mean of 4.34 which verbally interpreted as Very Good. This implies that paper waste and dried leaves as Ceiling Board can be used indoor home decor and interior designing as well as effective used for ceiling board.

In terms of physical appearance, a grand mean of 4.31 which verbally interpreted as very good implies that the materials are made of paper waste and dried leaves, can easily be mixed with water and cement and roughness are seen through its texture.

In terms of composition, got a grand mean of 4.36 which verbally interpreted also as very good implies that the mixture are determine through weighing scale, Portland cement as additives or binder and tap water are added for softness of mixture and compactness.

In terms of odor, a grand mean of 4.34 which verbally interpreted as very good which implies that the quality of mixture is well-presented, having encountered unpleasant smell while mixing, and upon drying no smell or any property detected by the olfactory system. Table 1. Gives the required information of this about the result of evaluation.

Table 1. Evaluate the qualitative characteristics of paper waste and dried leaves as Ceiling Board in terms of: physical appearance, composition, and odor.

Physical Appearance	Mean	Verbal Interpretation
1. The materials are made of paper waste and dried leaves.	4.25	Very Good
2. Can easily be mixed with water and cement.	4.30	Very Good
3. Roughness are seen through its texture	4.38	Very Good
Total Mean	4.32	Very Good

Composition	Mean	Verbal Interpretation
1. Mixture are determine through weighing scale.	4.45	Very Good
2. Portland cement are use as additives and binder.	4.35	Very Good
3. Tap water are added for softness of mixture and compactness.	4.29	Very Good
Total Mean	4.36	Very Good

Odor	Mean	Verbal Interpretation
1. Quality of mixture is well-presented.	4.40	Very Good
2. .Having encountered unpleasant smell while mixing.	4.35	Very Good
3. Upon drying no smell or any property detected by the olfactory system.	4.28	Very Good
Total Mean	4.34	Very Good
Grand Mean	4.38	Very Good

The data showed in table 2, the applicability of paper waste and dried leaves as Ceiling Board in terms of; weight, dimension (L x W x Thickness), and drying effect got a grand mean of 4.37 which verbally interpreted as very applicable.

In terms of amount of capacity got a mean of 4.37, implies that mixture are determine using weighing scale, mixture of both organic and Portland cement are being calculated and effective used of measuring scale for the validity and reliability of the result. In terms of Amount of Additives/Binder, got a mean of 4.40 this implies that mixture are compatible, compactness of cement is useful for binder effect and tap water is being utilized for softness of mixture.

However, in terms of Drying Time, got a mean of 4.36, implies that sunlight heat temperature are applied, photometer or lux meter are used for the heat temperature upon drying and time element also determine the dryness of the mixture. Table 2. Gives the required information of this about the result of evaluation.

Table 2. Determine the applicability of paper waste and dried leaves as Ceiling Board in terms of capacity, dimension (L x W x Thickness), and drying time.

Capacity	Mean	Verbal Interpretation
1. Mixture are determine using weighing scale.	4.38	Very Applicable
2. Mixture of both waste product and Portland cement as additives are being measured.	4.27	Very Applicable
3. Effective used of measuring scale for the validity and reliability of the result.	4.45	Very Applicable
Total Mean	4.37	Very Applicable
Dimension	Mean	Verbal Interpretation
1. The measurement are base upon the exact amount and used of paper waste and dried leaves.	4.41	Very Applicable
2. Wooden frame are utilized for the exact & needed size of the sample product.	4.45	Very Applicable
3. Required size are done through measuring tools.	4.34	Very Applicable
Total Mean	4.40	Very Applicable

Drying Time	Mean	Verbal Interpretation
1. Heat temperature from sunlight are applied.	4.42	Very Applicable
2. Photometer or lux meter are used for the heat temperature upon drying.	4.37	Very Applicable
3. Time element also determine the dryness of the mixture	4.28	Very Applicable
Total Mean	4.36	Very Applicable
Grand Mean	4.37	Very Applicable

The data showed in table 3, that the significant difference between two treatments in terms of acceptability such as, color, capacity, texture, and drying time. Treatment A got a grand mean of 4.36 which verbally interpreted as very acceptable.

However, Treatment B got a grand mean of 3.98 which verbally interpreted as acceptable. This implies that Treatment A is considered to be very acceptable than Treatment B in terms of color, capacity, texture and drying time.

Treatment A composed of 2000g collected paper waste, 1000g collected dried leaves, 2 kilos Portland cement, 350ml bottled tap water, the data showed that a mean of 4.25 for color, 4.40 for capacity, 4.35 for texture, drying and 4.45 for drying time.

Treatment B composed of 2000g collected paper waste, 500g collected dried leaves, 1.5 kilos Portland cement, 350ml bottled tap water, the data showed that a mean of 4.35 for color, 3.40 for capacity, 4.20 for texture, drying and 4.00 for drying time. Table 3. Gives the required information of this about the result of evaluation.

Table 3. Find out if there is a significant difference between two treatments in terms of acceptability such as, color, capacity, texture, and drying time.

	Significance Difference			
Acceptability in terms of:	Treatment A 2000g collected paper waste 1000g collected dried leaves (Talisay, Gemilina and Santol Tree) 2 kilos portland cement 350ml plastic bottled tap water	Verbal Interpretation	Treatment B 2000g collected paper waste 500g collected dried leaves (Talisay, Gemilina and Santol Tree) 1.5 kilo portland cement 350ml plastic bottled tap water	Verbal Interpretation
	Mean		Mean	
1. Color	4.25	Very Acceptable	4.35	Very Acceptable
2. Capacity	4.40	Very Acceptable	3.40	Very Acceptable
3. Texture	4.35	Very Acceptable	4.20	Very Acceptable
4. Drying time	4.45	Very Acceptable	4.00	Very Acceptable
Grand Mean	4.36	Very Acceptable	3.98	Very Acceptable

V. CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn:

Utilization of paper waste and dried leaves as ceiling board, a source to produce kind of product in terms of forming as typical ceiling board, can be decorative pavement, pot or tiles making for waste management segregation and business venture and to help minimize global warming. A research study to develop and very useful for product buyer and user especially home decor, construction firm, job satisfaction, environmental advocacy and for economic development.

The characteristics of paper waste and dried leaves in terms of: physical appearance, composition, and odor implies that paper waste and dried leaves as ceiling board can be used indoor home decor and interior designing as well as effective used for ceiling board. Moreover, applicability of paper waste and dried leaves as ceiling board in terms of; weight, dimension Length, Width and Thickness (L x W x T), and drying effect implies that mixture are determine using weighing scale, mixture of both organic and Portland cement are being calculated and effective used of measuring scale for the validity and reliability of the result. The significant difference between two treatments in terms of acceptability such as, color, capacity, texture, and drying time. Treatment A got a grand mean of 4.36 which verbally interpreted as very acceptable. However, Treatment B got a grand mean of 3.98 which verbally interpreted as acceptable. This implies that Treatment A is considered to be very acceptable than Treatment B in terms of color, capacity, texture and drying time.

RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations are forwarded.

Utilization of paper waste and dried leaves as ceiling board is recommended to lessen the problem of paper waste products and utilizing the dried leaves not only for agricultural fertilizer. Therefore, it may suggest that proper implementation of Local Government Unit (LGU) Ordinance from different barangays in terms of waste segregation management system, Garbage collection, institution and commercial establishment will get involved to become part of advocacy for climate change. Further innovation, includes using machine or device as molder wherein paper waste and dried leaves will be molded to lessen traditional way into faster utilization of this product. Further study is also recommended that other material except paper waste and dried leaves should be utilized to create or produce other reusable product. With that, it is encouraged also to improve the mixtures that could be added or tested to enhance the usefulness as ceiling board and to test according to Universal Test Machine (UTM) for compressive strength.

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