

CREATIVE USE OF CERAMIC RELATED WASTE FOR INTERIOR AND EXTERIOR DESIGNS

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Abstract

This paper examines Creative Use of Ceramic Related Waste for Interior and Exterior Designs. It believes that the hydra-headed monster “waste” bedeviling our environment today is the unnecessary cost of inefficient practices, systems management which has led to a down-trending economy as evidenced by the staggering mass unemployment and waste of human potentials and environmental degradation. The study x-rays the innate potentialities of ceramic related waste from glass, porcelain, bone China, stoneware, etc, in terms of its utilization in the production of weather resistant mosaic murals for interior and exterior designs. It highlights the history and significance of mosaic murals as a visual means of preserving historical, social and cultural values of a society, as well as aesthetics. It also shows that the high quality nature of the ceramic related waste means a reduction in cost of production of weather resistant mosaic murals to the barest minimum as well as ensuring great strength and durability. The paper recommends that youths and especially students in the field of art and design should acquire these skills and aptitude necessary for self-empowerment with the advantage of very minimal capital investment. A skill very much in demand in the interior and exterior designing of corporate offices, tourism and hospitality promoting organization structures such as hotel buildings, galleria, shopping malls and theatres.

Any nation that mismanages its natural and human resources is bound to experience unquantifiable loss resulting in poverty and its attendant problems even in the midst of plenty.

Nigeria is endowed with ingenious human capital of over 150 million people and a wide range of mineral resources including crude oil and gas reserves, gold, copper, platinum, iron ore, lead, coal, gemstones such as sapphire, ruby, emerald and topaz, kaolin, talc, gypsum to mention but a few. It is expected that armed with such an overwhelming array of assets that it would have become a global player in the scheme of things especially against the backdrop of countries that were in similar or lesser position at the time of independence. Yet economic indices speak volumes of a down-trending Nigerian economy witnessing closure of its major industries due to hostile operational environment. Hard earned financial accruals from oil are frivolously spent on importation of fuel, toothpick, matches, etc -the very products it should be exporting. Able bodied youths now find themselves in a precarious situation of joblessness meanwhile the nation’s educational system still churns out much unemployable manpower. Environmental degradation from gas flaring and oil spillage has become the order of the day. Accumulation of solid waste is steadily on the increase through indiscriminate dumping and disposal of domestic and industrial waste hazardous to health. The desire to achieve a clean, healthy and aesthetically pleasing environment as well as improve the lives of the increasing number of the impoverished and unemployed has called for radical ways of harnessing waste. Vast opportunities for self-empowerment and skill acquisition abound in waste conversion, especially in

these times of perceived job scarcity when many believe that only government jobs can guarantee financial security.

The paper discusses the following:

- The concept of waste
- Harnessing Potentials through Creative Arts
- Mosaic Art: Definition, History Examples and applications in Interior and Exterior

Design

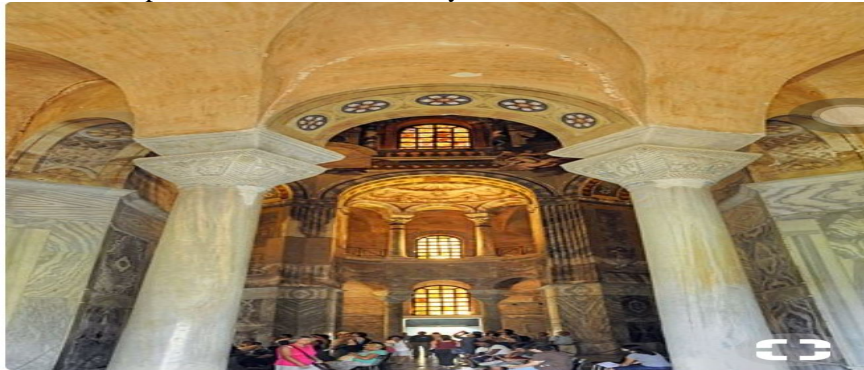
- Recycling of Ceramic Related Waste, Materials and Methods
- Advantageous Qualities of Mosaic Murals made from Ceramic Related Waste
- Recommendations

The Concept of Waste

The term waste is often subjective as it holds different meanings from different perspectives. As an action word, waste is to use or expend carelessly to no purpose, misuse or squander, while materially it can be defined as unwanted, unusable or discarded item. United Nations Statistics Division defines waste as materials that are not prime products, for which the initial user has no further use in terms of his/her own purpose of production, transformation, or consumption and of which he/she wants to dispose. Waste according to Basel Convention (1989) are substances or objects which are to be disposed of, or intended or required to be disposed by the provisions of the law.

It is interesting to note how waste is defined in other context and not as related to material things. In relation to government McKinney (1986) posits that waste is the unnecessary cost that results from inefficient practices systems or control. Baran (1959) in Stanbury and Thompson (1995) claims that waste is the difference between the level of output of useful goods and services that would be obtained if all factors were allocated to their best and highest uses. Lox et al (1995) asserts waste as an output with a negative market of no economic value.

Egun (2012) posits that not all waste is of secondary value and that waste in itself can never be wealth otherwise generator will never discard it. He further defines the waste to wealth concept as moving waste from a platform of exhausted utility to valuable and desirable level.



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The 5th – 6th century Ravenna mosaics of Basilica Sant Vitale, St Apollinaire Nuovo



The 13th century Great Pavement in West Minister Abbey



<https://en.m.wikipedia.org/wiki/Invader>...

The 20th century mosaic of French artist Invader

Mosaic murals were not popular in Nigeria until it permeated the Nigerian society through Susan Wenger and her circle of Oshogbo artists. Udeze (2013). Popular mosaic artworks by Nigerian artists include:

Jimoh Buraimoh's 1989 mosaic mural "THE ELDERS" commissioned and installed by the city of Atlanta Georgia in the city's Howell Park.

Yusuf Grillo's stained glass works which adorn government buildings and Muritala Mohammed Airport, Ikeja.

Francis Uduh's mosaic murals at some of the jetties at Osborne, Ikoyi, themed on the typical lifestyle of the riverine people. His colorful mosaics also adorn maternity homes in Lagos.

Recycling of Ceramic Related Waste, Materials and Methods

According to Science Clarified (2018), Ceramic is a hard, brittle substance that resists heat and corrosion and is made by heating a nonmetallic mineral or clay at an extremely high temperature. Crystallinity of ceramics ranges from highly oriented like in diamond and porcelain to semi crystalline to vitrified and often completely amorphous (as in glass).

The properties of ceramics according to Woodford (2018) Include:

High melting points (so they're heat resistant).

Great hardness and strength.

Considerable durability (they're long-lasting and hard-wearing).

Low electrical and thermal conductivity (they're good insulators).

Chemical inertness (they're unreactive with other chemicals)

These make ceramic the ideal material for weather resistant mosaics.

The traditional ceramic component in domestic and industrial waste consist of bottles, broken glass , porcelain and bone China wares, broken tiles, which can be recycled into reusable products. Glass normally comes in limited colours. Common are transparent green, blue, amber and flint (clear glass). Porcelain has high content of kaolin, characteristically opaque white or stained with various colour pigments under glazes. Bone China is the strongest of porcelain and translucent in nature. (Wikipedia).Glass recycling uses less energy than manufacturing glass from sand, lime, and soda. Glass recycling can be done by first sorting according to colours for chemical compatibility and their resistance to heat. The sorted glass can then be melted at high temperatures, homogenized, bleached and remolded to produce other glass items.

Materials and tools required for the production of mosaics murals from ceramic related waste include: Discarded or broken glass porcelain, china and tiles, Glass cutter, Pliers, Tile nipper, Metal rule, Cement, iron rods Sketch pad, Permanent marker pen, Brown paper, Paint (oil or enamel), Transparent sticker film, Artist brush .

Method of Production:

Glass waste for the production of mosaics murals need not undergo the process of melting.

➤ The first step is the gathering of waste glass and ceramics (broken discarded window glass, broken plates and mugs, waste pieces of glass from glass cutter's shop, broken bottles, etc),from immediate environment. It may take a while to gather the required colours

➤ The importance of safety precautions through the use of safety goggles, overall and gloves cannot be over emphasized.

➤ The gathered ceramic waste are washed clean and then cut into chips of various sizes and shapes as required.

➤ Pictorial sketches of the mosaic artwork are made and colour schemes determined.

- Waste glass comes in limited colours. Common colours are deep blue, green, amber and flint (clear), while the opaque ceramics of bone China and porcelain come in peculiar white and glazed tints of various colours.
- To achieve colours that are not available, chips cut from transparent clear glass were painted on one side in required colours as determined in the pictorial sketches using acrylic nail paints and subsequently coated with transparent nail lacquer. Artist oil paints were also used and allowed to dry.
- The pictorial sketch is enlarged to the size of wall on which the mosaic work is to be mounted using the grid system on brown paper.
- The enlarged sketch is then traced on a transparent sticker film in a mirror- like reflection.
- The chips can be cast on concrete in two ways: by direct or indirect methods. The direct method involves pasting the chips one by one directly on the wet plaster on the wall. Though this method allows the artist to clearly see the work in progress, it can be a very tedious task and time consuming for large artwork.
- The indirect method means: The enlarged sketch is then traced on a transparent sticker film in a mirror- like reflection
- The sticker paper on film is peeled off gradually and the coloured chips arranged face down accordingly on the sticker film (for support) to follow the traced picture as seen through the sticker film. It is important to note that the improvised coloured glass chips are pasted with the glassy surface facing downwards on the film and the painted surfaces upwards, while the already tinted glazed ceramic chips are pasted with the tinted glazed surfaces facing downwards on the sticker.
- A prepared wooden frame the size of the artwork and not more than one inch in depth is placed over the prepared sticker film with pasted chips. The extended edges of the film under the frame are stretched and pinned to the frame tautly.
- A cement mixture (bonding agent) was poured over the stretched sticker film thereby embedding the arranged chips within the framed area and prevent overflow of concrete mixture at the edges.
- The poured mixture was embedded with iron mesh for reinforcement, covered with plastic and left to solidify slowly for a few days.
- The wooden frame was dismantled, the solidified slab raised and the sticker film pulled off to expose the smooth glassy surface of the mosaic mural.
- The finished work was then mounted for exhibition.
- Alternatively to cast the chips on the wall, the surface area of the wall to be cast is reinforced all over by nailing one inch nails (approximately 10cm apart) into the wall, leaving a quarter inch of its head sticking out of the wall. This is to ensure a firm grip and good support for the weight of the finished mosaic work on the wall. Wet plaster about one inch thick is applied on the reinforced surface area and the stretched sticker film on frame placed over it with the chips embedded in the plaster. The frame is nailed to the wall for support and the work left to properly solidify for a few days. The sticker film is then peeled off, exposing the glassy surface of the finished mosaic work and the wooden frame replaced with a decorative one.



5ftx3ft Mosaic mural. Awili I. & Atugbokoh E

Conclusion

Advantageous Qualities of Mosaic Murals made from Ceramic Related Waste A close study of the ceramic related waste reveals high quality nature of the materials which had previously undergone the expensive processes of vitrification and glazing before its primary use and to a large extent need not undergo much production process except for washing and the mechanical process of cutting into chips of various sizes and shapes.

- Unique to this artwork is the improvised glass chips derived from discarded glass. The painted surfaces of the glass chips are embedded in the bonding medium (cement), giving the colours of the mosaic depth and luminescence in contrast to most conventional factory made opaque chips.
- Variety of colours and shades required are achievable when using the improvised chips. The durable nature of glass and ceramics ensures long term preservation of the mosaic work and weather resistance. Ceramics were glazed and fired to create smooth, colored surfaces, decreasing porosity through the use of glassy, amorphous ceramic coatings on top of the crystalline ceramic substrates.
- History records have proven that mosaic murals serve effectively as a visual means of preserving and passing down history, social, cultural, and religious values of a society to the younger generations as well as enhance the aesthetic value of both interior and exterior public places. As Banard (1921) puts it, a picture is worth a thousand words.

Recommendation

- a. Much of African and specifically Nigerian history and cultural values which were passed down orally are fast becoming extinct, compounded with the fact that the younger generations have

sacrificed their native tongues on the altar of western culture. It behoves our nation, government, the people, and artists to radically explore and employ this visual means as one of the effective ways of preserving our social and cultural legacies.

- b. Our environment which is in dire need of restoration can and should be transformed by the effective use of ceramic related waste for the production of weather resistant mosaic murals for beautification of interior and exterior public and private places and resultant reduction in environmental degradation. .
- c. Youths and especially students in the art and design should acquire these skills and aptitude necessary for self empowerment with the advantage of very minimal capital investment. A skill very much in demand in the interior and exterior designing of corporate offices, tourism and hospitality promoting organization structures such as hotel buildings, galleria, shopping malls and theatres.

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