



The Application of Arts and Textiles Entrepreneurial Technology in Converting Waste to Wealth

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Abstract

The Nigerian Environment is littered with unnecessary waste that consist problems to mankind. This paper is aimed at explaining Arts, Textiles, Entrepreneurial, Design and pattern, fibre conversion, fibre test, element and principles of Design. Textile Designer as an entrepreneurial and all what waste to wealth is all about. Environmental related issues which entail the application of Art and Textiles Technology to enhance sustainable environment, promote self-reliance, create employment and wealth creation itself. The by-products of human activities which are generated from within the environmental waste, to achieved, attend, amend, repairs, adjustable, reconstructable, fabricated, regenerate to useful products. This paper reveals entrepreneurship, how it is fitted properly to Arts, Textiles and it extend further to reveal the different waste products and how they are converted into finished dynamic products sought after for their usefulness in the society. Therefore, it has come to deem light that assorted waste materials through modern technology are and can be converted into modern and reliable products.

Keywords: Arts, Textiles, Entrepreneurial, Environmental waste, wealth.

Introduction

Nigeria, the giant of Africa is blessed with abundant of natural resources, which are endowed with ecological and cultural resources. The country possesses warm climate, beaches, landscape, rivers, hills, mountains and evergreen vegetation.

According to Jones (2008) the country in the North has Savannah grassland overshadowed by alluring land forms, while in the South, warm Sunny climate, fascinating unique vegetation. Udoh (2015) opines that Nigerians upon all the natural blessing gotten, managed to acquire, stood ground on their different states, cultural heritage, localities, language diversities, assorted manner of dressing, dynamic charisma and the prominent dos or donts circulating round the different localities, their particular life style, involving both men and women, food acquired and their eating styles in communities depict the different traditional set up cult personality and



carriage. Human beings everywhere in 21st century know the value of clothing and Nigerian are not left behind in the fashion line (peters 2014).

According to Mbelu (2005) the developments of textile industries have been one of the greatest factors in the civilization of mankind. Okeke (2002) notes that the textile industry in all its ramification is one of the oldest industries in Nigeria and in the world generally. Moreover, in Gen 37, coverage was first brought into existence by Adam and Eve using leaves to cover their nakedness. However, in the context of education as means of achieving the objectives and policies for art and technology, in schools for art and technology, in school system will strategize students who are arts incline to experiment in diverse art activities of which textiles is not left behind. Art tradition is one of the elements of culture normally developed and sustained overtime, as a creative designer response to the challenges of life (Precious 2011). Eyefoki (2018) asserts that Nigeria is the most populous African country of 374 ethnic groups with its cultural diversity, it has a considerable number of admirable art expressions both ancient and modern. Nigeria is reputed worldwide for its good artistic wealth as reflected in both material and non-material cultural of its people.

The Concept of Art

Art, according to Tom (2019) is the creation, expression of what is beautiful, pleasing, a copy right to nature especially in visual form. No matter how bad an art work is, it cannot be term as completely bad, ugly, out of place. Eyefoki (2015) asserts that no art work is completely bad, there must be an element of beauty in it no matter what. Peters (2014) spells out that works of art are creativity done by man as contrast to that which is natural. Okonofua (2000) sees art as a product of man's imagination as ingenuity born out of purposeful creation, an outward expression of inner craving, a means of communicative expression, achieved through visual interpretation or through dramatization of human experiences. Moreso, from cultural perspective, traditional Nigerian art was closely intentioned with religion, societal beliefs and events, thus, art and cultural activities were closely interwoven with the social life of the people. According to Kukoyi (2013) art is a vast and diverse field of endeavor. It exists in the realm of practice as subject and profession, while, it also exists as manner or dexterity of performance. For example, there is an art of oratory, while there is an art of carving. Moreover, subjects in the area of humanities are also labeled as arts, hence there are different and sometimes conflicting opinions resulting from search of knowledge about art. Notwithstanding, attempt to give a concise or an all-encompassing definition of all areas of art will most likely leave out some areas or at best be bogus.

Egonwa (2011) regards art as the simulation of experience in forms and images and that it is the result of the manipulative skill applied by man, usually a gifted person, to express an idea in a chosen medium. Banjoko (2000) outlined sets of definitions which include, self-expression of inner feelings, act of making skillful use of materials to produce things, visual and non-visual representations of things, universal language of expression.

Kukoyi (2013) exclaims that art can be described as self-expression of man in his cultural and natural environment through the use of some materials, skills and techniques, methods to produce various works of utility, beautification, aesthetics and self-satisfaction. Ogumor (2005) defines art generally as, a way of life it has the power of doing anything, it means any skill, trade, craft or acquired expertise. Art is the skilled manipulation of tools and materials to create a pleasing sensation of object of aesthetics in the eye of the beholder. Art serves many functions and has many values to the society, it is a universal language and a means of communication through illustrations. It is intricately tied to man's cultural and technological advancement. However, as a vocation, it provides means of livelihood and career opportunities. Art develops our creativity by engaging in



three domains of learning, they are as follows; cognitive domains (acquiring knowledge by the use of reasoning), Psychomotor (bodily movement triggered by mental activity and Affective domain (emotional expression and feelings). Also, art as a name given to all creative and skilled activities is broadly divided into two main parts. They are visual art and non-visual art.

- (a) **Visual Art:-** The traditional definition and categorization of visual art refers to aspects of art whose products are able to be seen or noticed. However, the Visual Art is divided into two parts namely; Fine Art and Applied/ Industrial Art.
1. **Fine Art:-** In the aspect of Fine Arts, it involves drawing, painting and sculpture. The Fine Arts are so called because traditionally, their function was confined to the area of aesthetic appreciation only. They have no functional applications.
 2. **Applied/Industrial Art:-** In this one aspect, the involvement include, ceramics, textiles, furniture design, graphics industrial design, interior design and photography. Applied arts are so called because their function goes beyond aesthetics to functional applications.
- (b) **Non-visual Art:-** Non-visual art are those products which cannot be appreciated only with the naked eyes, they are mainly for entertainment and recreation. The non-visual art can also be divided into two different groups which are; (1) performing Art (2) Literary Art.
- (1) **Performing Art:-** performing art includes dance, drama, music and comedy.
 - (2) **Literary Art:-** Literary art involves all forms of folklore, journalism, literature, poetry and writings.

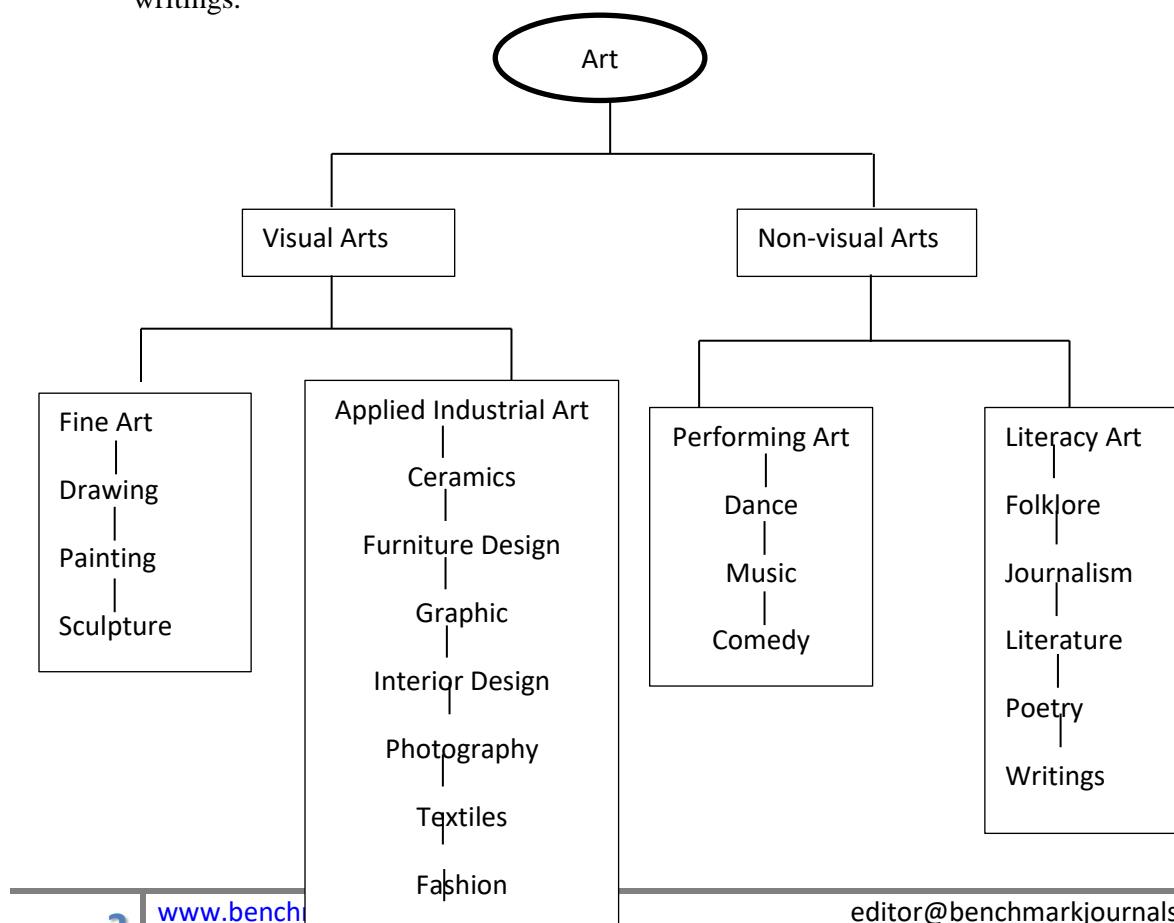
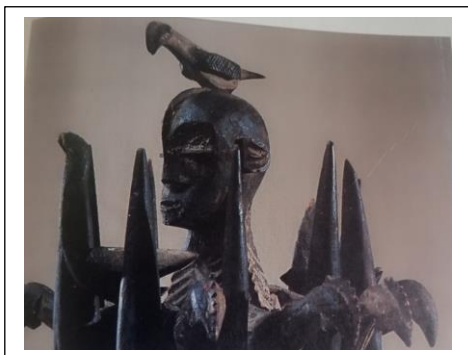




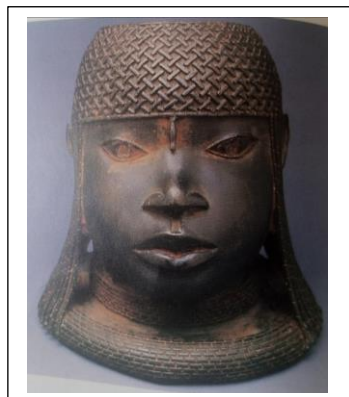
Table 1: Placement of Visual and non-visual Arts.

Nigerian Contemporary Artists and Cultural Expression

Okonofua (2000) opines that the creative ability of any people reflects itself in their arts and crafts. Nigeria is richly endowed with creativity. The long history of artistic tradition and products expresses established culture and presents Nigerians as artistic people.



Ibo dance headdress



Benin Bonze Sculpture



Court of Benin

Plate 1: Ancient Art works

However, today's contemporary Nigerian artists have come into new age methods of propagating and the ability of preserving her rich culture. Udoh (2015) is of the view that in contemporary Nigerian societies when cultures and identities are gradually eroded by western influences, in languages, dressing, marriages, folklores, customs and traditional practices. Notwithstanding, Akwa Ibom's cultural heritage has commendably defied extinction. According to Sambo (2017) the beautiful natural planning of houses in Akwa Ibom is dotted with clusters of Urban splendor where an aerial landscape of rusty corrugated roofs is progressively giving way to scenic architectural masterpieces interspaced with beautiful intra-city roads.

Also, for accessibility, despite its location at the southernmost extremity of the country, Akwa Ibom is easily accessible from most parts of the state by air, water and land which means one can fly by plane, use boat, drive by cars to any part. Moreso, considering Art and crafts, Ikot Ekpene is known as the "Raffia City, for personalizing raffia, Mbo and other coastal areas are awash with boat makers and fishing – net makers, while wood carvers, weavers, potters, sculptors, blacksmiths and other craft men are visible in both Urban and rural areas.

Natural Resources and it's Ecology

Eyefoki (2015) asserts that over 7,014 square kilometers of land known as Akwa Ibom and its surrounding waters is endowed with a wide variety of agriculture, petroleum, mineral, marine and wildlife resources, all evident of nature's benevolence to a great land of God and the



great people of Abasi Ibom State. Jones (2018) opines that Akwa Ibom is blessed with abundant of natural sights. Itu is Hollywood-in-the making as it provides a perfect epic movie location. Other sights include the mysterious blue and white river “Edem Idim”, whose blue and white bodies never mix in. Ukanafun, Usaka forest in Obot Akara as well as the many waterfronts, beaches in Eket, Oron, Ibeno, Adadia, Nwaniba and Uta Ewa beaches when seeking that refreshing waterside experience.

Bob (2011) view that if you want to hang out with friends over a few drinks, chew fish, suya, isiewu, nkwoobi and snails while seeing all the goodness, beauty of God, you are in for a bigger dilemma because places like Amazon Resort, Afe Ndia, are there for you but if you prefer it out in the open, there are places like Eni Garden, Millennium Park, Regis Bar, G-park, are your choice destinations. Williams (2000) views that whichever entrance through which one enter Akwa Ibom State, hospitality is in the air, whether for business or pleasure, you are guaranteed to be spoilt, secured and housed in one of the many luxury accommodations available. Sambo (2017) opines that Akwa Ibom State is not a ‘home away from home’ but it is completely home with comfort all that is needed. The state is dotted with a plethora of choice locations for that home feel or a bed time; Monty suites, Madelyn hotel, Francines place, De Castle hotel, Rosemohar hotel, Venue hotel, and suites, Entry Point hotel, Georgetown hotel, Eemjim hotel, Resort Christian centre, Davok suite, Villa Marina hotel, Four-points Sheraton at Ikot Ekpene, Ibom Tropicana, Le Meridian Ibom hotel and Golf Resort in Uran to mention but a few.

Relaxation and Recreation in Akwa Ibom State

Peters (2014) asserts that Akwa Ibom is the home of natural drinks like palm wines, they supply alcoholic and non-alcoholic, beverages, complementing with good delicacies such as fish (point and kill), goat, bush meat, cow meat and snail. Also, the cultural dance situation in Akwa Ibom State is more like an institution, not just a form of recreation, talented dancers exploiting every opportunity.

In Cuisine; the state stands out for an impressively enormous cuisine, completely blessed with various delicacies especially soups and a long lists of highly nourishing local delicacies. However, the motivational call from the state governor, Mr. Udom Emmanuel to the people of Akwa Ibom State is for epitomized integrity, hard work, and excellence in the lives they lead. The governor stressed for more ability to arise and cultivate inherent array of skills, talent for personal, collective survival and success. Ubong (2018) is of the view that the Dakkada syndrome drums is calling all the Akwa Ibom people to arise, create, use their God given hands, explore, sale, think ahead, control situations and put aside laziness. This paper, also, drums, speaks, voice out on how to use wasted materials, condemned cans, rubbers, and others to create super art works sought after and demanded by all who come in contact.

The Concept of Textile

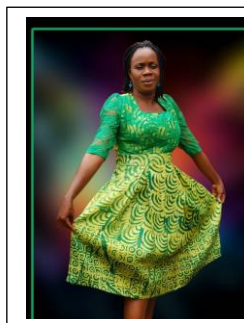
According to Mbelu (2005) textile has been one of the greatest factors in establishing industries for the people due to civilization of mankind. Okeke (2002) adds that textile industry in all its ramifications is one of the oldest industry in Nigeria and in the world generally. Akpan (2014) is of the opinion that textile can be woven, knitted, printed, tufted, tie dye, batik, textile design (Paper work) and finally applique techniques which are applied to the surface of (material) wear to bring out beauty, uniqueness and perfection. According to Kukoyi (2013), textile is the basis for evaluation and appreciation, is an aspect of applied art that can be seen as beauty in its intrinsic property of the human eye and brain, hence it lies in the eye of the beholder. Today, textile is broad and application



to every home, offices, automobiles and almost every aspect of human endeavor. Textile is that aspect of art that employ design patterns and construct fibres for the production of fabrics of all sorts either for body adornment and home applications. It basically consists of two major undertakings which are design and weaving of fabrics. However, from the above classification and branches of art, textile obviously is an applied or industrial design, interior and photography. Though, the term textile originally refers to woven fabric, it is now applied to everything manufactured from fibres, filaments, yarns, natural or man-made and obtained by interlocking. For example, threads, cords, ropes, braids, lace, embroidery, nets-fabrics, cloths made by weaving, knitting, crocheting, felting, laminating, bonding and tufting are textiles. Also, the word textile was derived from the latin verb-texere wingate 1973. Textile is described as an act of fabric production and decoration. They are fabrics or fibres from which fabrics are made. Textile can also be described as a two dimensional art. Textile also involves wrapper designing on paper, tie-dye, batik and printing.



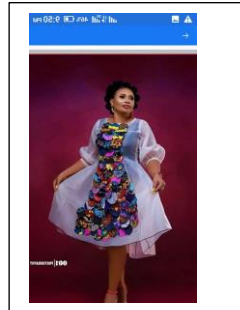
Tie dye - by Jessica



Batik by Roseline



Printing by Roseline



Applique,
courtesy
internet



Paperwork by
Precious

Plate2: Creativities done by hand.

Textile Design

Textile Design is the process of creating designs, patterns and structures for knitted, woven, non-woven or embellishment of fabrics. Textile designing involves producing patterns for cloth used in clothing materials, house-hold textiles and decorative textiles. Some designs are created on machines in large quantities while others use traditional techniques like embroidery, tie and dye, batik, printing, paper design to produce short length of textile (Kukoyi 2013).

Textile Designer

Textile designers are those who create two dimensional designs that can be used, often as a repeat design in the production of knitted, woven and printed fabrics or textile products. A textile designer is responsible for the creation and development of the design or pattern which are woven, knitted, tie-dyed, printed, applying of applique technique on to fabric (Kukoyi 2013)

Textile designers may work in associated industry function, for example, designing wrapping paper, and packaging. Most textile designers are self-employed while others work as part of a design team. Kukuyi (2013) adds that working in industrial and non-industrial locations, they often specialize, work in a specialist context within the textile industry. However, the three major fields are; (a) interior (b) fabrics (c) printed

- (a) **Interior:-** These involves productions of upholstery, fabrics, soft furnishing, cotton/window blinds, bed spring, puff (throw pillows) and carpets.



- (b) **Fabrics:-** These are textile for clothing and accessories, it involves woven, knitted, tie dye, batik, applique, carpet weaving, tuften and so on.
- (c) **Printed:-** There are paper based products where the design are first drawn, printed on papers, and sample materials.

According to Udoh (2015) the development of the textile industries had been one of the greatest factors in civilization. The modern woman owes a debt to her primitive counterpart, because until machinery was invented, she held the textile industries in her hand. The need for food, clothing and shelter caused the early inhabitants of the earth to use the materials spread about them by nature to supply their needs. However, branches of trees were interlaced to cover floors of rocky caves, to make a shelter above the entrance; or defense out of it. They also used animal skins for many purposes; they used it for shelter by throwing it on top of interwoven branches. They also spread it on the floor, wore it about the body, dried or cut it into strips with sharp stones, used it for binders and for decorations. Also, textile is any filament, fiber of yarn that can be made into fabric of cloth and the resulting materials itself. Mbelu (2005) went on to expatriate that the word textile is derived from the latin word textile and the French texture meaning, to weave. Originally it was referred to only woven fabrics but now it includes knitted, Appliqued, felted and tufted fabrics as well. The fundamental raw materials used in textile production are fibres either from natural source, for instance, wool from sheer, cotton from vegetable fibres or those produced from chemical substances.

Fibre classifications are as follows: (a) Natural fibres (b) man-made fibres, (manufacture, artificial fibres).

Textile fibres are classified into two main classes of natural fibres and manufactured fibres or man-made or synthetic fibres

Table 2: Classification of fibre

The following table summarizes the general classification of fibres.

Natural fabres		Manufactured or man-made fabres		
Animal	Vegetable	Mineral	Cellulosic base	Non-Cellulosic base
Silk	Cotton	Asbestos	Rayon, modified fibres	Nylon, Acrylic,
Wool	Linen		Acetate and	Mod-acrylic,
Hair	Ramie		modified fibres	polyester, Spandex,
	Jute, hemp,			Anidex, Vinyon,
	Paper Rush straw			Saran, Nytril, Vinal,
	Coir, kapok, sisal			Olefin, Synthetic
				rubber-based fibres,
				Metallic-based fibres,
				Glass, Protein based
				fibre

Source: Kukoyi 2012

Textiles are evaluated for strength, fineness, length, elasticity, heat light and ability to withstand laundering or dry cleaning.



Conversion of Fibre into yarn and yarn

Yarn into Fabric

Mbelu (2005) opines that before fibres are converted into yarn, natural fibres are treated to remove impurities or under sable constituents in the first section called Blow Room. Moreso, the stalks, sticks, leaves are removed in the case of vegetable fibre for instance.

Natural textile fibres: These are fibres that are obtained from nature and they can be divided into three groups:- (1) Animal fibre (2) Vegetable fibre (3) mineral fibre.

Animal fibre: These are animal or protein based fibres which includes wool and silk.

Wool: Wool is obtained from fleece of sheep and hair of camels; it is second most widely used natural fibre in clothing application. The fleece is remove from the body of the animal either by shearing or by pulling after chemical loosening. Although, wool is produced in several countries like Australia and New-Zealand. It is the more difficult and more expensive to produce than cotton, the cost being on the average is about three times that of cotton. Also, it is a highly cherished fibre especially in temperate countries where it is warmth and comfortable. It gives protection from rain and sudden chills, however, wool has a characteristic surface scale structure, some of which include: (a) warmth (b) soft full (c) Resiliency (d) Durability (e) crease-resistant (f)Easily tailored

1. Warmth
2. Soft full handle arising from its natural crimp
3. Resiliency
4. Durability
5. Crease-resistant
6. Easily tailored

Silk:- According to Kukoyi (2013) silk cultivated or wild is the product of the silkworm and is obtained from its cocoon.

Silk fibre is a fine continuous stand unwound from the cocoon of a moth caterpillar known as the silk worm. There are two varieties of natural slik. They are as follows:

Cultivated silk, Wilk silk (tussah)

Moreso, Williams (2000) opines that the cocoons are processed to obtain threads which are reeled together into yarn and woven into fabrics. Silk fibres are characterized by a smooth appearance; soft lustre, fairly good crease recovery properties and warm handle. They have excellent draping qualities especially when used in light weight fibric. Kukoyi (2013) asserts that silk is a luxury fibre and is the most expensive natural fibre. A wide range of fabrics can be made from silk, ranging from cotton to firmer doss and suiting materials, to heavy brocades and rich pile velvets. Also, silk yarns are used for the manufacture of ties, scarves and velvet pile. Silk is produced chiefly in France, Italy, China and Japan. Kukoyi (2013) is of the opinion that there are some animal fibres that are less important; these include hair fibres from camels, rabbits, cats, horses, goats and cattle.

Notwithstanding, microscopically, they differ from wool and are stiffer and more wiry than wool and do not felt well because cash mere, goat fibre and camels hair are quite soft. Hoe-be-it, for fur felts, cat and cow hair can be used as textile fibre. Although, harsh and coarse, cow hair when mixed with other fibres can be used for production of blankets and carpets.



Vegetable Fibre:- Ogale (2016) views that vegetable fibres are fibres obtained from plants for the production of textile fabrics. There are a number of vegetable fibres used in the production of textile fabric (consumer's goods) are cotton and linen.

Cotton: Peter (2016) say's that cotton comes from the cotton plant, a small bush related to the hollyhock. Cotton (*Gossypium herbaceum*) is obtained from the fibres of cotton bolls surrounding the cotton seeds. The plant grows in tropical regions with heights varying from 0.92m to 1.84m, however, as it obtains maturity, the boll burst, which can be picked by hand or by machine. Moreso, after picking the cotton fibres are separated from the seeds by "ginning", a machine process which quickly and conveniently makes the fibres available for textile use. The fibres are graded for quality and pressed packed into bales of about 225kg weight ready for sale. It is grown in China, Russia, India, Sudan, Turkey, Egypt, Asia, South America and Nigeria.

Cotton fibres can be treated with bath of caustic soda either after they are made into yarn, fabric or cloth, which are modified cellulose fibres.

The purpose of the treatment called "mercerization" is to:

- 1) Give strength to the fibres
- 2) To increase the lustre
- 3) To also improve their affinity for dye.

Also, the physical properties of the cotton form can be modified by cross linking of molecules. This technique improves the fabric wrinkle recovery and is good for wash and wear.

Linen: Kutoyi (2013) views that linen is also called "flax fibre", which is obtained from outside the woody core of the flax plant. The fibre inside of the plant when dried is spun into yarn. It is grown mostly in Russia, Belgium, France and Ireland. Linen is rarely mercerized because it is naturally stronger than cotton and possesses good natural lustre. Linen like Hessian or Substitute linen is made from jute which is grown in tropical countries. The fabric is used for making sacks for the packing of farm produce and also ropes. Nigeria, India and United States of America are countries that grow jute.

Mineral Fibres: Asbestos is a mineral obtained from rocks, primarily in Quebec, Southern Rhodesia, South Africa and Russia. There are different types of asbestos, all of which are mined. The most important of them is "Chrysotile". Asbestos from Canada and U.S.S.R can be spun and woven into cloths because of the fibre which is over one quarter inches long. The fibre are white in colour, soft and silky and they also resist all liquids except strong acids.

Man-made or manufactured fibre: Man-made fibres comprises of a much greater number of fibres, which include the following:

7. Cellulosic base fibres, Non-cellulosic base fibres
8. Non-Cellulosic base fibres

(1) **Cellulosic base fibres**

According to Kutoyi (2013) some fibres such as rayon and acetate have a base of natural plant cellulose. The same as cotton while other fibres are based on protein found in milk, soya beans and corn meal. Also, some other ones are based on natural rubber from the rubber tree while others are derived from sand (silicon) made into glass marbles.

- (a) **Rayon:** Rayon is made both from wood pulp which is obtained from western hemlock and southern pine including cotton linter fibres adhering to cotton seeds. The raw materials used in making rayon contain a large amount of cellulose. Rayon, like other manufactured textile fibres is made by converting the base raw material into a solution



that can be extruded through small holes in a nozzle or jet and then hardened into fibre. Moreso, rayon is highly absorbed and is suitable for all clothing and other uses requiring this property. It is also, dye-able with the common dyes, but the unmodified fibre is inferior to cotton in terms of physical strength, durability and chemical stability, (Kukoyi 2013).

- (b) **Acetate:** Akpan (2014) opines that acetate is primarily made from cotton linters. Fibres are derived from chemical compounds of cellulose which is two thirds cellulose and one-third acetyl. Acetate fabrics have an attractive, soft handle and excellent draping quality and crease little when dry. Moreso, they are less absorbent than viscose rayon and less comfortable in hot water. However, fabrics made from acetate filament yarns may be used for dresses, evening wear, dresses, gowns, shirts, and ties. Finally the pleasing handle and lustre of cellulose acetate makes it particularly useful for a whole range of clothing lining fabrics.

(2) Non-Cellulosic Base Fibres

Ekanem (2014) opines that the fibres in this classification are all produced in a test tube. This means that the fibre-forming substances are not natural based but complex in chemical compounds. Moreso, these same compounds used for extruding textile fibres may be used for plastics (non-textiles) and for finishes and coatings of textiles, there are way resin (plastic) used for textile fibres, such as polyamide resin used for making nylon fibres and acrylic resin. Examples of fibres obtained from a non-cellulosic base are nylon, acrylics, modacrylces, polyester, olefin and spandex.

- (a) **Synthetic fibres:** Bob (2011) asserts that unlike the man-made fibres so far discussed, the synthetic fibres are derived from substances which are entirely non-fibre forming such as coal and petroleum based chemicals. Their formation are gotten or achieved by reacting low molecular weight compounds (monomers), either alone or with other suitable compounds to form high molecular weight compounds called polymers. These polymers are converted into fibres (filaments) by melting and extrusion processes.
- (b) **Polyester Fibres:** This fibre was first discovered in 1941, but commercial production did not begin until the early 1950. Also, it was obtained by reacting two substances, terephthalic acid and ethylene glycol. However, the resulting fibre is called polyethylene terephthalate (PET) and is probably the most important synthetic fibre, (Kukoyi 2013). She went on to say that polyester fibre is thermo-plastic and has very low moisture absorption and is a very good resistance to abrasion. Example is nylon, it is high in tensile strength which enables it to be used not only for clothing but also for industrial purposes and sail cloth. The strength dimensional stability and outstanding crease-resistance makes polyethylene terephthalate most suitable for woven and knitted wash and wear fabrics. Moreso, the blends of polyester and cotton are by far the most popular blends in the textile industry. Also, these blends are of great importance in shirting, bed sheets, raincoat, and tropical suiting, (Kukoyi 2013).

**Table 3:** Different test for the fibers, identification of each fibres, showing Behavior and Burning Test of Fibres

S/N	Fibres	Approaching flame	In flame	Removed form flame	Ash characteristics
1.	Cotton	Does not fuse or shrink away from flame	Burning without melting	From flame	Does not leave a knob or bead
2.	Silk	Fuses and curls away from flame	Burns slowly with some melting	Burns very slowly, sometimes self-extinguishing	Leaves soft, fluffy with black ash
3.	Rayon	Does not fuse or shrink away from flame	Burns without melting	Continues to burn without melting	Does not leave a knob or bead
4.	Wool	Fuses and curls away from flame	Burns slowly with some melting	Burns very slowly, sometimes self-extinguishing	Leaves soft, fluffy with black ash
5.	Acrylic	Fuses away from flame	Burns with melting	Continues to burn with melting	Leaves hard, brittle, black irregular shaped bead
6.	Acetate	Fuses away from flame	Burns with melting	Continues to burning with melting	Leaves brittle, black irregular-shaped bead
7.	Polyester	Fuses and shrinks away from flame	Burns slowly with melting	Usually self-extinguishing	Leaves hard, tough, black, round bead
8.	Nylon	Fuses and shrinks away from flame	Burns slowly with melting	Usually self-extinguishing	leaves hard, tough, gray, round bead
9.	Modacrylin	Fuses away from flame	Burns very slowly with melting	Self-extinguishing	Leaves hard, black irregular-shaped bead
10.	Olefin	Fuses, shrinks and curls away from flame	Burns with melting	Continues to burn with melting	Leaves hard, tough, tan, round bead
11.	Nytril	Fuses away from flame	Burns slowly with melting	Continues to burn with melting	Leaves hard, tough, gray, round bead
12.	Spandex	Fuses but does not shrinks away from flame	Burns with melting	Continues to burn with melting	Leaves soft, fluffy, black ash

Source: Kukuyi 2012



According to Ragans (1992) art is a powerful language, through it artists communicate thoughts, ideas, and feelings. Also, like most languages, the language of art has its own special vocabulary, unlike the vocabulary of art is not made up of words. Rather, it is made up of visual elements. The visual elements include colour, line, shape, form, space, and texture. Cyril-Egware (2014) opines that designs cannot be made or drawn successful without the combination of the element of designs. However, she went on to spell out that it consist of line, colour, texture, value, space and form.

1. **Colour:-** Colour relies on light. In fact, colour is what the eyes see when light is reflected on an object. However, clour has three properties or traits. They are as follows (a) Hue (b) value and (c) Intensity.
 - (a) **Hue:-** Hue is the name of a colour, such as red, blue or yellow. Hue are arranged in a circular format on a colour wheel.
 - (b) **Value:-** Value is the lightness or darkness of a hue. The value of hue can be changed by adding white or black.
 - (c) **Intensity:-** Intensity is the brightness or dullness of a hue. Pure hues are high intensity colours but dull hues are low intensity colour.
2. **Line:-** An element of art that can be used to send different messages to viewers in a line. Precious (2020) defines line as a visible connection between two points. The art of illustration must logically begin with a line. Ragan (1992) asserts that line is the path of a moving point through space. For example, you can draw lines on paper or scratch a line in net clary with a tool. Moreso, lines can be seen in your environment, such as web of a spider or the railing on a stair. However, there are five kinds of lines; (a) Horizontal lines (b) vertical lines (c) Diagonal or stanting lines (d) zigzag lines (e) curved lines
 - (a) **Horizontal Line:** are line which run parallel to the ground, appear to be at rest.
 - (b) **Vertical lines:** vertical line are line that run up and down, it seen to show dignity, formality and strength.
 - (c) **Diagonal or slanting lines:-** These are lines that signal action and excitement.
 - (d) **Zigzag line:** Zigzag lines are lines which are made from combined diagonal lines, it can create a feeling of confusion of suggest action.
 - (e) **Curved lines:** These are line that expresses movement in a graceful and flowing way.
3. **Shape and form:** Peter (2014) is of the view that every object has a shape. It could be a house, cube of sugar, orange, and table. Shape is an element of art that refers to an area clearly set of by one or more of the other elements of art. Shapes are limited to two dimensions, they are: length and width. Ragans (1992) opines that all shapes belong to one of the two classes (a) geometric (b) Organic
 - (a) **Geometric:** Geometric shape are shapes that look as though they were made with a ruler or drawing tool. For example, the square, circle, triangle and rectangle.
 - (b) **Organic shape:** Organic shapes are called free form, organic shapes are not regular or even.
4. **Space:** Williams (2000) opines that all objects take up space. Space is an element of art that refers to the distance between, above, around, below and within things.
5. **Texture:** Texture is an element of art that refers to the way things feel or look as though they might feel, if toughed.



The Principles of Art

The principles of art are so different from mere language expression. These principles or guidelines, govern how artists organize the visual elements to create a work of art. The principles of art include balance, variety, harmony, emphasis, proportion, movement and rhythm.

- (a) **Balance:** Balance is the principle of art, concerned with arranging element. So no one part of work over powers or seem heavier than other part. Although, in art balance is seen or felt by the viewer.
- (b) **Variety:** Variety is a way of having, getting different things. Bob (2011) explains that the same routine day after day can become dull. The same colour or shape repeated over and over in an art work can become equally dull. However, to avoid dull artists use the principles of variety in their works. Ragans (1992) opines that variety is a principle of art concerned with combining one or more elements to create interest by adding slight changes.
- (c) **Harmony:** Peter (2014) assumes that if too little variety can become boring, too much variety can create chaos. Artists avoid chaos in their works by using the principle of harmony. Ragans (1992) opines that harmony is a principle of art concerned with blending elements to create a more calm, restful appearance.
- (d) **Emphasis:** According to Ragans (1992) emphasis is to attract a viewer's attention to important parts of a work, artist use the principle of emphasis to demonstrate that. Also, emphasis is making an element in a work stands out. Moreso, emphasis can be created by contrast or by extreme changes in an element.
- (e) **Proportion:** Proportion is the principle of art concerned with the relationship of one part to another and to the whole. The principle of proportion is not limited to size, elements such as colour can be used in differing proportions to create emphasis.
- (f) **Movement:** Williams (2000) views that one may not have realized it, but when you look at a work of art, your eye moves from part to part. Artists use the principle of movement to lead the viewer's eyes throughout the work. Movement is the principle of art used to create the look and feeling of action and to guide a viewer's eye throughout the work of art.
- (g) **Rhythm:** Ragans (1992) opines that often artists seek to make their works seen active. However, when they do, they call upon the principle of rhythm. Rhythm is the principle of art concerned with repeating an element to make a work seen active or to suggest vibration. Also, sometimes to create rhythm, an artist will repeat not just elements but also the same exact objects over and over, which when this is done, a pattern is formed.

Characteristics of a textile Designer

Textile designers may work in associated industry functioning for example, designing wrapping paper, and paper works. Most textile designers are self-employed while others work as part of a design team.

A textile designer, according to Kukoyi (2013) is expected to have the following:

- a. Have knowledge of craft and design
- b. Be interested in fashion and textile (fabrics)
- c. Enjoy working with range of different styles and techniques



- d. Be artistic, creative and able to draw
- e. Have an eye for colour, texture and pattern
- f. Develop good attention to details
- g. A textile designer should understand the properties of different materials, dyes and the production processes of textiles
- h. Have good organizational ability and be able to work out deadline and within budget.
- i. Have good understanding of computer Aided design (AD) skills
- j. Have knowledge of the market and be able to predict new trends
- k. A textile designer should have good business skill.

Typical activities of a Textile Designer

Some of the activities of a textile designer are listed below, they are:

1. To liaise with clients and accurately interpret and represent their ideas
2. Undertake research for ideas and inspiration
3. Experimenting with different materials, colour and textures
4. Producing design ideas, skittles, worked up designs and sample for presentation to customers
5. Determining how the textile will be used and what properties it needs.
6. Working out designs formula for a group of samples
7. Researching and experimenting the properties of materials used in industry.
8. Assessing and approving completed items and production standards
9. Working independently, if self-employed or liaising closely with colleagues as part of a small team.
10. Producing designs using computer Aided Design (CAD) programs (software) to develop a range of designs.
11. Keep of up-to-date knowledge of new design and production techniques
12. Develop new design concepts
13. Working to deadline and within a budget.
14. Sourcing fabrics and other materials of trade fairs, markets and antique shops.
15. Attending trade show as a delegate or as an exhibitor, this may involve representing the company with a display or stand or appraising the work of competitors.
16. Keeping up to day and spotting new fashion and trends, design and production techniques in fabric design by reading forecasts in trade magazines and using internet resource.
17. Developing a network of business contracts.
18. If self-employed, managing marketing and public relations, finances and day-to-day business activities and maintain websites.

The Basic Tie/Dye Techniques

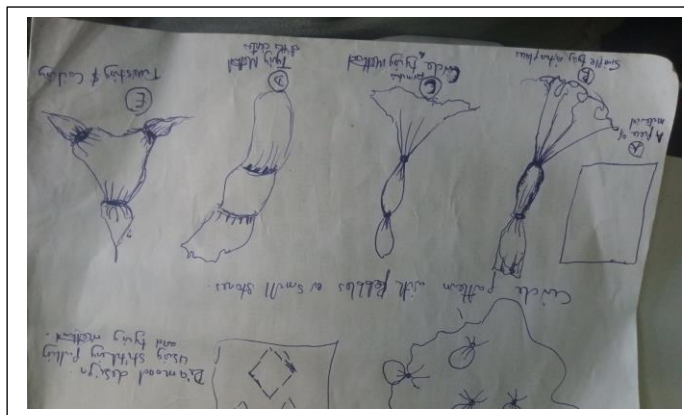
The different tie dye method involves plaiting, folding, tying, twisting, sewing, knotting, stitching, pulling and tying.

- a. **Fabric Pre-treatment:** First soak wash off the starch on the material after buying. The success in dyeing and finishing of any textile fabric depends to a large extent on the preparatory treatment given to the fabric. Also, when fabrics are bought, they are in their rough state, this, however makes them to appear to be rough and harsh to handle. A badly prepared fabric cannot give a good and even dyeing and such a fabric is bound to be



patchy. Fabric finishes from the industry come with impurities such as starch, fatty and oil substances and nitrogenous matters (Cyrol-Egware 2014).

Different Tying Methods



Roseline

Plate 3: Derivation of unique design in tie-dye

Batik Materials

1. **Batik free hand method:** This method does not need strict planning. The broom or brush used repeatedly can do the magic giving it an unrepeatable design on fabric as organized by the artist. Notwithstanding, such designs could come out as splashes, blocks, spiral and strips or in some cases definite simple compositions.
2. **Painting Method (Free Hand):** This is done with either brush, thick foam shaped with a pointed tip like a pencil or a tjantjin. This could also be done as lines, thick, thin, zigzag or shapes.
3. **Block Method:** Block can be carved on wood or thick foam after design or motif is drawn on the paper or surface.
4. **Starch Resist method:** Starch resist method of fabric design is a technique of applying cassava starch on fabric to create designs.

The Concept of Fashion

Bob (2011) is of the opinion that fashion is the reigning wear of a certain time and period. It comes and goes. Peter (2014) recommends fashion to be reigning wear in vogue where women, men demand and rush for at a particular point in time. However, these fashion does not last for long, it focus and disappears only to be seen again years after Obot (2018) agrees that fashion comes with glamour and liftment at a certain time. It flashes deep, colourful, dashes penetrating, calling and begging for attention and eventually when it is achieved fade away unconsciously to be focus with another. It does not take time, it changes, revoke and repeat after a decade or so.

1. **Silent Fashion War in Worship Centers:** Secret Fashion goes on in worship centers especially in churches on Sunday services. Women try their best to have a certain class of



their own, this mode has driven them to buy, order, expensive clothing, hairdo (wig), beads, jewellerys, shoes and handbags to go with them. Peters (2014) asserts that weekly women spend time to plan on the dresses to wear. They called it 'dress to kill', secret competition in the house of God, where people wearing expensive good clothes are group, selected to the fore front. Udoh (2015) is of the opinion that the fashionable educated women gathered, cluttered themselves to particular section of seats, unconsciously, the uneducated ones due to inferiority complex have their grouping too at the back section of any gathering.

2. **Fashion Graciness in Secondary /University Levels:** According to Williams (2000), students no longer face their studies, they prefer mixing pleasure with studies, their hairdo, and haircut is of a class of its own. Bob (2011) opines that the bigger students are conscious of their environment. They friends the keep, their dressing styles, and the way they carry themselves in order to attract the opposite sex. Also, selection is being done mentally, children of richer parents stick together in batches to differentiate the classes they belong to, leaving the poor ones to themselves.
3. **Fashion madness in Wedding Occasion:** Wedding is a place of happiness, love, hope, joy and togetherness. However a colourful wedding is set out to be fun and elaborate people wear unique clothing, specially "designer" to wedding to differentiate them into a class of their own.

The role of Arts and Technology in converting waste to wealth



Source: Idara /Blossom



Portrait by Stanley



Daker by Chidi Ndubisi

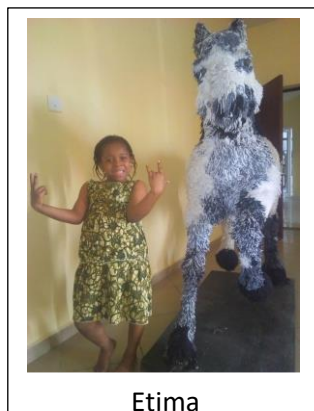


Basket player by
Obinna Ajero

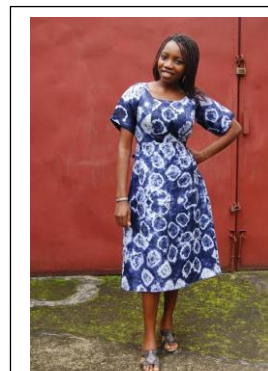




Source: Roseline



Etima



Source: Roseline

The Concept of Textile Entrepreneurship

Egbule (2018) opines that the word entrepreneur originated from the French word, “*enterprendre*” which means to undertake”. The term was first used by a French man Irish economist. Richard Cantillon had first appeared in the French Dictionary in 1923. However, undertaken to initiate, maintain or make profit through production or distribution of economic goals and services.

According to Timmon’s (1987) entrepreneurship entails creating and building something of value from practically nothing, creating and distribution of something of value and of benefit to individuals, groups, organization and society. Sambo (2017) asserts that entrepreneurship is the willingness and ability of an individual to seek out investment opportunities in an environment and be able to establish and run an enterprise successfully based on identified opportunities. Entrepreneurship occurs when an individual develops a new venture or a new approach to an old business or idea or a unique way of giving the market place a product or service by using resources in a new venture under conditions of risk, (Burgers 1993). Bob (2011) sees entrepreneurship as a human creative act by which enterprises or organization, come into existence and involving the effort of an individual in identifying viable business opportunities in an environment, managing, exploiting the opportunity for value creation, regardless of the resources at hand. Essentially, entrepreneurship is the power of initiating, organizing, managing and assuming risks of a business venture. It is a process by which organizations come into existence.

Characteristics and Traits of Textile Entrepreneur

Initially, the term entrepreneur was taken to mean anyone who undertakes tasks in a production process. Williams (2000) defines an entrepreneur as a person who makes money by starting or running business, especially when this involves taking financial risks.

Entrepreneurs are characterized by the need to be independent, to create value, to contribute to family or society, to become rich, largely detest idleness and being unproductive. Peter (2014) opines that entrepreneurship has the process of creating something new with value by devoting the necessary time and effort, assuming the accompanying financials, psychological, social risks and receiving the results in monetary, personal satisfaction. Vesper (1980) sees an entrepreneur as an ally, a source of supply, a customer or someone who creates wealth for others, as well as finds better ways to utilize resources, reduce waste or produce jobs others are glad to



get. Also, Sambo (2017) views entrepreneurship as a purposeful activity of an individual or group of associated individuals

Williams (2000) asserts that it is worthy of note that a textile entrepreneur is an independent person who starts his or her venture or business and enjoys the fruits of the success and bears full risk of his failure. However, some core components of a textile entrepreneurship activity are risk taking, creativity, independence and rewards. Also, the characteristics or traits of textile entrepreneurs are numerous, some positive, others negative. Successful textile entrepreneurs are known to possess certain positive characteristics which are as following; Ambition, self-confidence, creativity, decision making, risk taking, physical stamina and health, leadership, aggressiveness, character, personality and intelligence.

Conclusion

This paper considers the art and technology in converting waste to wealth in textiles. This paper maintains that environmental waste with proper hardly could be with artist creativity, technology has manufactured excellent textiles and they have been crafted together, going side by side and therefore they should be utilized to earn foreign exchange, provide employment and ensure economic stability of the nation. The various processes of yarn, fibres, filament were highlighted covering all the production of materials itself from man-made to machine works. In the light of environmental waste to wealth in textiles creativity manufacturing of brilliant materials for different uses in Nigeria, the paper made the relevant recommendations to enhance their utilization.

Recommendations

1. Akwa Ibom State government on regular basis should organize training/workshops for all artists including people who have the flare for art works, for the purpose of giving them entrepreneurial skills.
2. The main thrust of government policy should be on arts and technology in order to generate exchange, development promotes tourism-based enterprise, generate employment and accelerate rural-urban integration.
3. The Ministry of Information and Culture should embark on massive and aggressive publicity campaign both in print and electronic media on the potential and significance of environmental waste to wealth in our national developmental waste to wealth in our national development at home and abroad.

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