LATERITE AS A MATERIAL FOR CERAMIC ART TILE FINISHING

By

MUSAH IBRAHIM-DEY ABUBAKAR (B.A. Industrial Art, Ceramics)

A Thesis submitted to the School of Graduate Studies, Kwame Nkrumah University of Science and Technology In partial fulfilment of the requirements for the degree of

MASTER OF FINE ART (CERAMICS)

Faculty of Art, College of Art and Built Environment

November, 2016

CERTIFICATION

I hereby declare that this submission is my own work towards the Master of Fine Art (Ceramics) Degree and that, to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any other degree in this university or elsewhere, except where due acknowledgement has been made in the text.

Musah Ibrahim-Dey Abubakar

20370091 ....

STUDENT'S NAME & ID Signature Date

Certified by:

Dr. Samuel Nortey ....

SUPERVISOR Signature Date

Certified by:

Dr. Ebenezer K. Howard ....

HEAD OF DEPARTMENT Signature Date

ABSTRACT

Decoration and finishing of the surfaces of ceramic products play an important role in product surface quality. Despite the abundance of local ceramic raw materials, imported foreign glazes and other related finishing materials are becoming the traditional materials for surface finishing in Ghana. Although there have been several attempts by both traditional and studio ceramists to explore new surface finishing materials and techniques for the works they produce, it appears not much has been achieved over the years. It is an undisputable fact that most locally produced ceramic products found in the Ghanaian open market are basically either finished with imported material, different colours of paints or are left in their bisque fired state. The prime motivation for this study therefore was to use laterite as a finishing material for hand-made ceramic tiles. Studio based experiment and observational approaches were used in executing the project. In order to achieve aesthetic look, the application of the laterite as a finishing material was done simultaneously with the production process. A random application of the material further gave the finished work a pleasing effect. The study has underpinned the fact that, the above mentioned material could be used as a surface finishing material for ceramic products.

TABLE OF CONTENT

Contents

LIST OF PLATES

ACKNOWLEDGMENT

All thanks and praise to Almighty Allah for granting me strength, wisdom, knowledge and understanding and making it possible for me to carry out this project successfully. I am also grateful to Dr. Samuel Nortey my supervisor for spending his precious time to supervise my project and Mr. Kofi Adjei my second supervisor who looked at the finality of the practical work. I am indebted to Mr. Rolland Wemegah for his great support and motivation during the composition of my project write up. My special thanks go to my spiritual father, Alhaji Baba (Bolga) for his prayers. I extend my sincere gratitude to Japheth Asiedu-Kwarteng for his numerous contribution towards my project, not forgetting all the lecturers and workers in the Ceramic Section, KNUST, to you all I say God richly bless you.

Finally, my heartfelt thanks go to my family for their prayers and support.

DEDICATION

This project work is dedicated to Almighty Allah and my gracious son Irfan Nchefo Musah Dey

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Potters and ceramists have used variety of techniques to decorate and finish the surface of their wares, from carving plastic clay, incising groves or burnishing leather hard clay surface to achieve varied alluring effects. Revell (2012) explained that, decoration is considered an after-effect, an element that can be differentiated from the object it adheres to, sometimes making it superfluous to the object's function. Generally, ceramic wares are mainly finished either by incising, painting, impression, or covering them with mixture of materials that modify the surface of the ware.

According to Pennisi (1997), surface finishing is any process that is used to alter the surface of a product to enhance its look or to improve its functional purposes. The author adds that surface decoration and finishing can range from the simplest treatment to the most lavish designs depending on one's personal tastes. Product finishing has become a crucial aspect of production value-chains the world over, due to the important role it plays in determining the market demands of finished products. In ceramic production, manipulation of both form and surface of whatever is being produced in clay is of extreme importance, since the effective combination of form and surface is the engine that drives clay medium and makes it unique among other products (Zakin, 2011). Clay allows various decoration and finishing techniques that can be used at various stages of production. The surface may be stained and smoothed or tools can be used to give a textured surface. Surface treatments of pottery vessels, which serve both as decoration and as a means of reducing their permeability to

liquids, include burnishing and the application of mineral pigments, as slip or a glaze (Tite, 2008).

Surface treatment of clay product appear not to be an area of concern for some practicing ceramist as they rely heavily on glaze and other firing processes. But just as a lot of time and energy is spent in building the ceramic forms and designing them, equal considerations need to be given to the surface decoration of the products. For some the most desired qualities would be rich texture or colour and for others exciting application possibilities. The ceramist whose intention is to produce perdurable, utilitarian, and easy-to- clean wares will have a very different idea of what constitutes a good surface than the ceramist who wants to apply a complex, highly textured surface on a sculptural nonfunctional form. The ceramist has to give weight to the character of the form, the purpose of the piece, and the nature of the materials and tools at hand (Zakin, 2011).

The use of ceramic tile for adornment in dwellings and structures throughout history, did not have the required decoration and finishing. Ceramic tile are used in a variety of dwellings and structures, including residential buildings, institutional buildings and religious buildings. Before early civilization ceramic tiles were made by hands, decorated by carved low-relief designs with addition of pigments for colour. Each hand-formed tile was hand-painted making each tile a work of art in its own right (Rahman, 2011). Ceramic tiles were called art tiles when the production and finishing is effected by hand. Early tiles had a wide variety of decoration and finishing effects. However today, the production and finishing of ceramic tile has taken a different dimension, it is no more hand-made or hand-painted in most part of the world. Advent

of machine-driven manufacturing techniques has eliminated hand production until it is time to install the tile.

1.2 Statement of Motivation

According to Zakin (2011) surface treatments go in and out of fashion and that, surface treatment on a ceramic sculpture piece may follow the current fashion or perhaps be in the avant-garde of contemporary practice; or it may harken back to a traditional practice or more rarely be completely independent of both fashion and tradition.

In Ghana, glaze, manganese, white slip, acrylic and emulsion paints and sometimes earth pigment are the dominant materials employed in ceramic surface finishing. Indeed most pottery and ceramic sculpture pieces found on the Ghanaian market are basically finished using one of the above mentioned materials or a combination of them. However, some wares are left in bisque state without any surface or external decoration and finishing. Notable among the Ghanaian ceramic artists who employ some of the above mentioned materials for finishing their works include; Kofi Asante, a retired lecturer KNUST, who uses manganese; J. K. Amoah, retired senior lecturer KNUST, uses manganese, iron oxide and enamel glazes; K. K. Broni retired senior lecturer KNUST, use glazes; Adu Darko a practicing artist, uses glaze and sgraffito effect; James B. Anane, retired senior technician (KNUST) uses manganese and white slip; Frederick E. Okai, a lecturer at Sunyani polytechnic and a practicing artist also employs both manganese, iron oxide and white slip. However, there are other unknown Ghanaian commercial ceramic artists whose works are finished with either glaze, paint or both and are found in the Ghanaian markets. Again, educational institutions such as

KNUST and Takoradi Polytechnic employs either glaze, slip, manganese, paints or both for finishing their wares.

Technically, unlike glazes and other ceramic finishing materials, all non-ceramic materials such as oil paints, acrylics and auto paint that are by chance used in decorating and finishing ceramic products, do not bond well with the clay body as intimately as fired mixtures, nor do they have the surface durability of fired clay wares which are finished with glazes and other related materials. There have been several attempts by both traditional and studio ceramists over the years to develop new and effective materials as well as techniques for finishing ceramic wares and other allied products. But it appears not much has been achieved in that area. However the few traditional potters such as the Sirigu women mentioned by Wemegah (2009), who employs local oxides and in some cases vegetable dyes in finishing their wears have done little on the development of such material due to lack of technical know-how. Again, almost all Ghanaian ceramic artist and industries dwell much on foreign materials such as glazes, stains and other non-ceramic finishing materials like oil and acrylic paints. In this vein, little has been done on the exploration of local ceramic finishing materials. Ceramists in Ghana are therefore constricted in the choice of surface finishing materials and techniques, when finishing their artistic creations. The above challenge therefore presents an opportunity for the artist to use an alternative materials (laterite) and technique which could be used effectively in finishing not only ceramic art tiles, but all other ceramic related products.

1.3 Objectives of the Study

The objectives of the study are to:

1. Experiment laterite in finishing ceramic art work.
2. Produce ceramic art tiles with laterite finish using tree bark textures.
3. Install the tiles as a conceptual ceramic artwork.

1.4 Studio Questions

1. How can laterite be explored and produced as a finishing material?
2. How can ceramic art tile be produced and finished with laterite using tree bark textures?
3. In what way(s) can ceramic art tiles be installed as conceptual art work?

1.5 Delimitation

The study concentrated mainly on exploration of laterite as a finishing material. It was also limited to the use of clay, feldspar, slip and natural textures of tree barks in producing art tiles for aesthetic effect.

1.6 Importance of the Study

The artist is of the view that the outcome of this study would be a useful resource material for students and artist exploring the use of local ceramic surface finishing materials. It is also anticipated that this finishing material would add to the repertoire of ceramic finishing available to both traditional and studio ceramists in Ghana and beyond. Again the study would set the pace for students, artists and researchers interested in exploring and developing earth pigments into ceramic surface finishing materials. And finally, the presentation of the finished work wouldp-- break the

monotony of ceramic art presentation in Ghana in this era of contemporary and conceptual art movement.

1.7 Definitions of Terms

The following terms have been defined to facilitate the understanding of the study.

Finishing: an operation applied to the surface of an article (ceramic) in order to lend it the desired property and appearance not possessed by the article in its unfinished form.

Bisque: This is the first firing process of clay products usually at low temperature which converts ware from dissolving when it comes into contact with water. There is a change in the chemical phase of silica as it melts and bonds with alumina.

Impressing: Is to indent a design or textures into soft clay by pressing different shaped objects into it. Materials with strong textures, such as canvas, or objects like rings, coins, crosses, etc. can be used.

Laterite: This is a product of intensive and long lasting tropical rock weathering which is intensified by high rainfall and elevated temperatures.

Oxide staining: This is a technique applied to bisque fired textured pieces of pottery. A mixture of oxide/carbonate and water is applied to the piece with a brush or sponge taking care to apply the colorant to the recessed areas as well as the high areas.

Installation: A term in art used to describe mixed-media constructions or assemblages usually designed for a specific place and for a temporary period of time.

Vitrification: The progressive reduction and elimination of porosity of ceramic composition with the formation of a glass phase as a result of heat treatment.

1.8 Organization of the Study

The rest of the study has been segmented into four chapters. Chapter two captures reviewed literature pertinent to the subject under study; this includes both empirical and theoretical reviews. Chapter three also looks at the materials and methods, while chapter four gives a detailed account of the results and discussion. Summary, conclusions and recommendations are presented in chapter five.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Overview

The aim of this chapter is to support the study with sound comparative literature related to the area under study. It explained cardinal constructs and essential terminologies, as well as harmonize the works of scholars in the subject matter, to constrict the problem and make the study executable. The information obtained from literature was critically analysed, in appreciation of what other writers and studio practice artists have produced in relationship to the project topic under discussion. This review centre on key areas, namely; Clay, Feldspar, Art tile, Surface Decoration and Finishing, Historical Development of Pottery and Ceramic Surface Decoration and Finishing, Surface Decoration and Finishing Techniques for Pottery and Ceramic products, Ghanaian methods of decoration and finishing, as well as Materials Employed for Pottery and Ceramic Surface Decorations.

2.2 Clay

The word clay was derived from the German word *kleben*, which means 'to stick to' (Staubach, 2013). Clay is the common name for a number of fine-grained, earthy materials that become plastic when wet. Chemically, clays are hydrous aluminum silicates, ordinarily containing impurities such as potassium, sodium, calcium, magnesium, or iron, in small amounts. Clay is known to be the oldest ceramic raw material. Clay becomes useful after it has been manipulated and fired to a stone-like object. Staubach (2013) states that, clay and the products created from it are often classified by the firing temperature.

Worrall (1986) explained that clay may take various forms, however it frequently occurs as rock owing to compression and is not initially plastic and almost impermeable to water. The origin of clays, whether primary or secondary, is important in understanding the properties in terms of particle size, plasticity, and the presence of iron and other contaminants. Some clays are coarse, not quite plastic, but are useful for the making of bricks and other heavy clay products such as tile and drainage pipes; whiles other clays are too plastic and sticky to be used by themselves and must be blended with other less plastic clays to be useful. Many clays, however, are usable just as they come from the earth and may be modelled or thrown on the potter's wheel without any adjustments in composition.

There are many clay types in Ashanti Region, some of which include Mfensi clay, Afari clay and Trabuom clay. One of the commonly used type of clay in the above mentioned Region is Mfensi. According to Nsiah (2007), Mfensi clay is mostly used for brick and tiles, and also suitable for earthenware and stoneware. Nsiah further adds that the clay turns to yellowish –brown at a temperature of 1100°C.

2.3 Feldspar

Feldspar is classified as the second most important material in the ceramic industries after clay. It is an important and common fluxing material added to clay bodies to reduce their firing temperatures so as to minimise cost. According to Madan (2014), feldspars are among the most abundant group of minerals in the earth's crust and are mainly used in industrial applications for their alumina and alkali content. Feldspar encompasses a whole range of materials used in glass making, ceramics and to some extend as filler and extended in paints (Madan, 2014). The above author again

explained that, natural deposits of feldspar are generally solid solutions of either the soda and potash feldspars or the soda and lime feldspars. Chemically, the feldspars are silicates of aluminium, containing sodium, potassium, iron, calcium, or barium or combinations of these elements. Ceramic and pottery products are the second largest consumer of feldspar and are use as flux to form a glassy phase in bodies, thus promoting vitrification and translucency (Kogel, 2006).

2.4 Laterite

Laterite is a weathering material usually reddish in colour which mostly hardens into solid rock in air and is therefore suitable as a construction material. It is mostly composed of iron, aluminium, titanium, and manganese oxides. There are various kinds of laterites and these are grouped or named depending on the high content of a particular oxide. A report by Aleva (1992) revealed that, Laterite is a highly weathered material rich in secondary oxides of iron, aluminium, or both. It is nearly devoid of bases and primary silicates, but it may contain large amount of quartz and kaolinite. Variety of rocks defined as true laterite are those in which one of the constituents is present in relatively large amount, namely; the highly aluminous variety (bauxite), highly ferruginous variety (lateritic iron-ore), and the highly manganiferous variety (manganese-ore). According to Cambridge Advanced Learner's Dictionary (2016), laterite is a type of reddish clay soil containing iron and aluminium, found especially in tropical areas.

2.4.1 Uses of Laterite

Every earth material be it soil or rock, is formed under different chemical, physical and biological conditions which results in formation of a wide and distinct group of minerals and hence they find applications in various fields. Laterite as a material can be in the form of either soil or rock and has variety of usage as a result of its many features and properties. It is known to be one of the oldest rocks with fine grained and used for making sculpture and figurines (Kosambi, 1965). The author further indicated that, the use of laterite depends greatly on the formation and its properties.

Laterite, a natural material has continuously been put to use in various areas of production. Despite its wide use there is much to be explored in its functional property as ceramic finishing material. Colour plays an important role in ceramic finishing and laterite possess such quality. Laterites vary in colour, but are usually brightly coloured (Lemougna, et al, 2011). Although laterite physically has element of red colour, it should not be mistaken for red sandy-clay soil.

In Ghana, laterite rocks are used for various purposes starting from construction of roads, bridges, buildings, decorative and domestic pots in kitchen, as well as soakaways. Evidence of the use of earth pigment for pottery finishing in Ghana is limited to a few traditional potters. A study by Wemegah (2009), showed how assorted earth pigments such as red oxide and limestone preparations were applied onto the body of pots formed by Sirigu potters and burnished to give them aesthetic appeals.

2.5 Art tiles

Ceramic tile is a term that covers many different kinds of products, ranging from wall tiles through floor tiles to tiles used on countertops. Tile products come with different variety of finishes, from smooth to rough, and from flat to irregular. They are produced from a category of different products, such as clay, porcelain, ceramic and glass.

The production of tiles dates back to ancient times and are made of a mixture of clays that are pressed into shape and fired at high temperatures. The tiles were made by hands, decorated them by carved low-relief designs and adding pigments for colour onto the surfaces. Ceramic tiles are the simplest form of ceramic art being originally a by-product of earthenware pottery (Radtke, 2010). Radtke again explained that, decorative tiles, now generally called tiles was invented in the near east, and the best can be seen from Tunisia and Iran. The above mentioned author further mentioned that, early decorative tiles were devoid of human images as a result the prohibition of human images in Islamic art, and were mainly floral designs involved with geometry. The artisans concentrated on ornate flora intertwined patterns on the tiles then creating larger overall patterns by combining a number of the decorated tiles together.

Connell (2007) states that, in medieval England encaustic tiles were made by inlaying one coloured clay into another and then use to create decorative floors for important buildings such as manor houses, monasteries, cathedrals and churches. Tiles once formed are controlled dried (slowly and evenly) to avoid warpage, and then fired in a kiln at temperatures up to 1200°C or more. Tiles may be glazed and fired or fired without the application of glazes. Denser tiles with mostly harder glazes were fired at higher temperatures. Ceramic tiles mostly require ones firing to achieve low porosity and become vitrified or glasslike, however, highly decorated tiles are fired more than

once, while's non-vitreous and semi-vitreous tiles are fired at lower temperatures and are much more porous.

Today due to technological advancement, tiles are either pressed or extruded into desired shape and fired in kilns at high temperatures. Again the production materials are no more limited to clay but a multiple mineral-based natural materials. Although these tiles can serve as a finishing material, they also have an aesthetic function (Herbert and Huggins, 1995). Ceramic tiles are versatile in application and can be used almost anywhere including walls, fireplaces, ceilings and floors.

2.5.1 Types of Art tiles

All tiles are referred to as art tiles. The composite material, method of production and the rate of their firing temperature as well as their mode of application have led to their classifications. However the recent technological advances have resulted in rubber or glass tiles for both interior and exterior decorations (Grimmer and Konrad, 1996). There are several types of tiles used for residential and commercial applications. Among these are ceramic tiles, quarry tiles, porcelain tiles, mosaic tiles, marble tiles and many more. Some are also categorize into facial, roofing wall and floor tiles.

2.6 Surface Decoration and Finishing

In product manufacturing both artists and industry adopt a broad range of processes in decorations and finishing of the manufactured product in order to attain certain product standards and quality. Surface finishing is an operation applied to the surface of an article in order to lend it the desired property and appearance not possessed by the article in its unfinished form (Series, 2012). Although there are a number of artists who

mostly prefer to discharge their art works in the unfinished form which still serves its purpose, the above source argues that in terms of commercial importance, decorative application represents the bulk quantity in surface finished products. Decoration may increase the value of an artefact, give status and indicate social position, or it may show social affiliation (Hodder, 2012). It is of this reason why pottery products finished from one region of the country are differentiated from another region of the same country. This means hand pottery within the Akan community cannot be the same as those in a Gonja community.

Contributing to the above discussion, Revell (2012), justified decoration as an after-effect, an element that can be differentiated from the object it adheres to, sometimes making it superfluous to the object's function. It can be adjunct to the surface or structure of an art work but it needs not be an arbitrary consideration. Revell further opines that, it is decoration and finishing that can be the catalyst in the design process either by representing an idea or through analysing its methods of manufacture (production) to inform ways in which disparate materials, mediums or elements can be combined to create a remarkable outcome. Decoration and finishing of ceramic tile plays an important role in its surface quality, and cost, usually for ceramic tiles manufactured for decoration (Wang, et al, 2002).

2.7 Historical Development of Decoration and Finishing

Pottery and ceramic production traditions are as old as humanity. Early pottery wares were decorated with simple patterns made by using caving techniques and impressing found objects onto the bodies of various pottery wares (Savage, 1959; Mills, 2008). According to Peterson and Peterson (2003), decoration can be a random texture or

prescribed pattern. The authors write that techniques of stamping or pressing objects into clay, scratching or carving clay in the wet or dry state, and appliquéing clay pieces to other clay pieces, appear very early in ceramic history, before glaze or even colours were developed. Prior to advance technological evolution of surface decorations, slip and painted decorations were used by many potters and ceramists; these slip and painted decorated wares were fired in kilns with controlled temperatures and atmospheres required for the production of unglazed earthenware (Tite, 2008).

Between the beginning of the sixth and the end of the fourth centuries B.C., black and red figure techniques were used in Athens to decorate fine pottery while simpler, undecorated wares fulfilled everyday household purposes. Largely, the style is characterized by drawn red figures and a painted black background (Montgomery, 2012). Contributing to the discourse, Rast (1992), writes that during the late Bronze Age a decorative technique called "bichrome ware" was introduce where red and black paint were used to finish pottery. The source again reveals that during the same period another decorative technique consisting of dark brown paint on white surfaces was applied to vessels and these were termed "chocolate on white ware". The most common finishing technique is dipping the vessel in slip to fill in any tiny irregularities in the fabric and to prepare the pot for decoration (McCarter, 2012). The author further explained that as ceramic traditions mature, some cultures maintained their decorative methods whiles others adopted new and more complex techniques. In Crete around 1600 BC, a new system of decoration "dark on light" was introduced and first used for a combination of geometric motifs and floral and grass designs (Wilson, 2013). The source again reveals that by 700 BC, Corinth introduced a new technique of decoration called "black figure" method, which involved painting the figure in clay slip.

Molina Giralt (2014), opined that one of the most important innovations in the Islamic culture was the introduction of tin oxide as a white opaque pigment in the glazes to highlight the colour decorations during the 9th century AD. Molina Giralt again states that several underglaze and overglaze colour decorations were used with varying colours and designs as shown in plate 1. According to the author, lustre decorations started being used on tin glazed ceramics during the 9th century AD in Bashra (Iraq). Giralt advances that lead and tin oxides were also developed around this historical time frame, as glazes for ceramic and pottery wares.

Plate 1: 9th century Iraqi bowl with a red ruby glaze. (Musée du Louvre)

Meri and Bacharach (2006), articulate that the technique of lustre decoration on glass was already practiced in Egypt and Syria as early as the fifth century; however, Iraqi potters appear to have been the first to experiment with lustre decoration on opaque-glazed ceramics in the ninth century. The source again indicates that between twelve and thirteenth century in Iran, a new type of glazed pottery called enamel ware was developed, epitomized by its wide-ranging colour scheme.

2.8 Decoration and Finishing Techniques

Throughout history different coloured clays have been put together for distinctive decorative effect. According to Baizerman, et al (2000), pottery decoration consists of applying a two-dimensional image or design to the surface of a three-dimensional object. Numerous process and techniques have been adopted by both traditional and studio ceramic artists in the decoration and finishing of pottery and ceramic products. Triplett (2000) concurred with Rhodes, et al (2010), by articulating that pottery has been decorated with variety of techniques and styles. The approaches to decoration are as widely varied as the individuals who do it. Standard methods are adopted, personalized and expanded upon. Techniques can be combined in new ways, and new processes are invented in attempt to get just the right look. Expertise in pottery decoration and finishing are usually acquired and transferred across generations (Sánchez, 2011).

Decorating and finishing of ceramics products is one of the most rewarding aspects of working in clay. It is the time when the artist can add colour and life to a clay surface and show off his creative talents. There are various number of decorating and finishing techniques available for potters and ceramists. Among these techniques are: incising, impressing, slipping, glazing, painting to mention just a few.

2.8.1 Incising

Incision is a technique for decorating ceramics that involve cutting linear designs into the surface of an object. This technique involve removing clay by cutting into the surface to create a pattern and was used for urns, vases and boxes in China in the

thirteenth-century (Mills, 2008). African potters deliberately create thick walls on larger pieces to ensure deep carving and incision (Triplett, 2000).

Plate 2: Incising

2.8.2 Impressing

Impressing, also known as stamping, is a technique of pottery decoration produced by pressing patterns into the surface of a clay when still soft. There are a number of cultures which made pottery with impressed designs. Early Japanese use rope for making impressions on their pottery wares (Grimbly, 2013). Stamping, impressing, scratching and incising of clay in the wet or dry state, as well as appliquéing clay pieces onto other clay pieces, are some of the early decorative methods used by artisans; but impressing is the most common decorating technique for prehistoric pottery (Green, 2012; Peterson and Peterson, 2003; Dillehay, 2014). Dellehay (2014), adds that regardless of which technique used, burnishing, or polishing usually follow the decoration and finishing stages prior to firing.

Plate 3: Stamping

2.8.3 Slip Application

Slip is a loose clay or non-plastic material and water mixed together into a creamy consistency. It is usually of contrasting colour to the body of the vessel. The use of slip as decorative technique has been known from earliest times and appears to have originated from the far east, where fragments of red-slipped pottery, thought to be 5000 years old, have been found in Japan (Donachie, 2000). Slip trailing is the application of slip on to the surface of a ceramic ware using a fine-pointed dispenser. Slips are generally applied to leather-hard work, even though some can be applied to bone dry or even bisque ware.

Contributing to the discussion, Mathieson (2010) asserts that there are no rules or prohibition attached to the slipping technique and an artist may discover original technique for him or herself. Most potters as well as ceramists apply slip when the ware is at its leather hard state, and a few when the work is dry. However, as the final outcome of the finishing or decoration technique is visible on end product it may be influenced by others. And so as artist introduce new techniques, potters took full advantage of their creative opportunities to explore them (Hopper, 2000).

Plate 4: Slip finished

2.8.4 Painting

Most pottery and ceramic pieces are finished by covering them with paints. Paints do not have the durability of most fired materials, nor do they bond with the clay body as intimately as fired mixtures. On the other hand, they are easily controlled and flexible in use. Hopper (2004), declares that the main difference in approach to using a ceramic

and paint method is that in painting there is no firing process, and in ceramics it is nearly impossible to get a full spectrum of colour without multiple firing under different atmospheric conditions.

Plate 5: Painting finished

2.8.5 Glazing

Glaze plays important role in finishing pottery and ceramic products. In theory glazing is very simple, but in practice it can be a very complex undertaking. The effects are limitless depending on formulation, application and combinations. It may be glossy or matte, translucent or opaque, smooth or even textured. Moulson & Herbert (2003), opines that glaze are applied when particularly smooth or easily cleaned surfaces are required. There are various methods through which glazes are applied and among them are dipping, pouring, spraying, and painting (Triplett, 2000). The source explicate that

dipping and pouring are the common methods of glaze application and are usually done once or twice depending on the appropriate glaze-coat thickness an artist require to achieve.

Hopper (2004), infer that, spraying involves the use of spray-gun with compressor and is often the best alternative for applying glaze to large pieces and fragile ware since it involves less handling and much water is evaporated from glaze between the tip of the spray gun and the piece. On the other hand brushing requires a bit of patience, but the result can be indistinguishable from dipping or pouring (Britt, 2004). However Peterson & Peterson (2003) states that each application technique leaves its own marks, and only even applications finish even. The selection of certain decoration and finishing techniques instead of others for clay art object being it functional or for aesthetic are established from a design concept.

Gold (2009), points out that many contemporary ceramic artisans use varied techniques to shape, fire, and finish their wares. The author proclaim that, it is because much of the pottery and ceramic products produced are destined for urban markets and souvenir shops. This significant transformation in surface finishing considered as creative knowledge, go hand in hand with the changes in our modern societies there by making it a challenge for artists and artisans to produce the desired decorative effect using any decorating technique available or discovered.

Plate 6: Glazed finished

Varied pottery products have been produced and used by many ethnic communities in Ghana. The production of pottery and ceramic products is one way or other accompanied by decoration and finishing. According to Skibo and Feinman (1999), investment in decoration is targeted for multipurpose social contexts, rather than a special purpose social context. The above statement is universal and Ghana is not exception when talking about countries that pottery have contributed greatly to the development of its people.

Wemegah (2009) agreed with Asmah, et al (2013) that Ghanaian traditional art serves both aesthetic and functional purposes and is said to have had cultural significance with pottery production accompanied by varied decoration techniques, styles and methods. Halluska's (1999) study of pottery traditions of the people of Vume in the Volta region, shows that both slip and burnishing methods of pottery decoration and

finishing were used by the artisans. The author details that the slip was usually applied to both internal and external surfaces of the pot by the artisans, and subsequently burnished with improvised nylon or plastic tools. The burnished products were then coated with laterite preparations before firing. This gives the pottery wares a very smooth and shiny finishing Halluska (1999).

Some pieces in contemporary pottery and ceramic products in Ghana are often marred by the kind of finishing given to them, such as inappropriate glazes and the use of non-ceramic finishing material like oil paint and acrylics. These products are not able to compete with the influx of foreign ceramic wares (Kyei, & Poku, 2016). Asmah et al, (2013) again argued that, despite the varied finishing techniques of contemporary pottery and ceramic in Ghana, for their aesthetic, philosophical and utilitarian values, there has not been any achievement that translate into any meaningful economic growth of the country. The dominant use of foreign finishing materials on indigenous products which turn to have same appearance with the influx imported product and cheaper will at no point be able to compete with them. Most often achieving variety in product presentation, desired finishing effects, with the philosophical dimensions of the ware which is almost non-existence in this case. The artist however believed this can be corrected if diversification of finishing materials and techniques are considered. This bring to the fore the need for the exploration of the available local materials that could be used for finishing both pottery and ceramic wares.

2.9 Materials used for Surface Decoration and Finishing

Clay products have a range of surface decoration and finishing techniques that can be used at different stage of production. A finishing and decoration technique is employed

taking into consideration the material(s) and the body on which the finishing is to be applied. For instance, under no circumstance should a potter apply oil paint or acrylic to a bowel meant for food. This was affirmed by Triplett (2000) that glazes are only one of several substance that a potter has at his or her disposal and a work may only need to be glazed if it will be use to hold food or beverages.

For centuries minerals have been used to produce varied colours for use in ceramics as well as dyes (Casper, 2007). A wide variety of materials are used in finishing pottery and ceramics to protect and provide the desired appearance of a ceramic art work. These materials are mainly coloured clays, metallic oxides and stains. The stains and oxides are chemical compounds that act as colouring agent in clays, glazes and slips. According to Triplett (2000), stains come in a wider variety of colours than oxides and are mainly incorporated into clay or clay slip for decoration. The author further indicate that stains may also be applied directly on clay body. One of the common names given to iron oxide is laterite, and this in clay gives a rich orange colour after firing to 900°c (Hamer & Hamer, 2004). Hamer and Hamer further mentioned that oxides could also be added to any clay either in solid or slip state for decoration.

The advent of technology and research into new materials in the 21st century has made it possible for processing varied finish materials with different properties such as texture, colour and feel for decorative effects. Many materials and oxides have demonstrated a refreshing aptitude for experiment and innovation, whiles still remaining basically true to the fundamentals of surface finishing. The modern way of finishing ceramic objects is, at best, part science and part intuitive art. Therefore a broad understanding of the fundamental possibilities about ceramic materials for

ceramic artist is important in other not to leave them with myths and inaccurate information on glaze formulas, stains, slips and other decoration and finishing methods. Pottery and ceramics are an endeavour that involves many steps which includes decoration and finishing, any of which can cause total failure. Both traditional and studio ceramic artists often misguidedly cling to a set method or technique that they think will provide a guaranteed result. Often, these guidelines are based on incomplete information or a misunderstanding of how ceramic materials function forgetting that what worked for one potter might not work for another.

It is evident from the literature review that not much works have been done by Ghanaian ceramic artist and researchers in the area of developing pottery and ceramic surface finishing materials from our indigenous available materials and oxides. Very little is observed from the local traditional potters and a renowned potter like J. K. Amoah who combines both slip and enamel glaze in finishing his pots. The remaining artists relied on already available materials like manganese, imported glazes as well as the non-ceramic finishing pro ducts such as acrylic, oil and auto paints.

CHAPTER THREE

MATERIALS AND METHODS

3.1 Materials

The following materials were used for the execution of the project. Mfensi Clay, obtained from Mfensi in the Nkawie district of Ashanti Region, Kumasi along the Sunyani road. Laterite, a material usually reddish in colour which mostly hardens into solid rock. Feldspar, a naturally occurring mineral and important ingredient for clay bodies and glazes. It was obtained from the ceramic laboratory in already processed form. It acted as fluxes to the formulations.

3.2 Equipment

Equipment used for the processing include:

Crusher for crushing the laterite rock into smaller particles. The Grinder for grinding the crushed laterite rock into semi powdered form. The pulveriser was used to mill the semi-powdered material into fine powder. Pug mill was also used to mix the clay into a homogenous constituency. The Kiln was used for firing the works after drying.

3.3 Research Design

Studio base research Approach was used; it is a practice-led research usually initiated by an artist in response to his own particular studio or design practice (de Freitas, 2002). Indeed the only fully compelling method of establishing causation is to conduct a carefully designed experiment in which the effects of possible lurking variables are controlled (Moore & McCabe, 1993). Gay (1992) who strongly concur with Moore & McCabe asserts that, it represents the most valid approach to the solution of educational problems, both practical and theoretical, and to the advancement of

education as a science. This provides a systematic and logical method for answering questions.

3.4 Source of Inspiration

Sources of inspiration play an important role in the creation of an art work, both in defining the context for new designs and in informing the creation of the art work. Eckert & Stacey (2000), opine that almost all art works or design proceed by transforming, combining and adapting elements of previous arts and designs, as well as elements and aspects of other objects, images and phenomena. There is no limited source of inspiration for an artist. An artist can be inspired by anything found in his or her environment.

Replication of tree bark textures has been the focus of the artist. The bark of a tree is similar in many ways to the human skin and essential for the survival of the tree itself. Many other species take advantage of niche in forest ecosystem. Tree bark textures might not appear as most exciting theme or subject but, in fact, it is both (Popova, 2013). Popova further asserts that, 'not only do we come in contact with it constantly in our daily lives, from cinnamon to cork to chewing gum to rubber, but it's also a beautiful textured piece of living matter that looks like the skin of some magnificent mythical dragon'. Different species of trees have varied characteristic textures to their bark as shown in plate 7 to plate 10. This influences the species that live upon it as well as the kind of inspiration that could be drown from it by an artist. To whet people's enthusiasm, it was important to find ways of treating tree bark textures in a completely new way using clay, finishing it with laterite and present it as a conceptual ceramic art piece for appreciation.

It is a fact that nature has played a vital role in the creative expression of man. The natural habitat which man rely on for daily survival figures how one view and interpret the world around him or her. Therefore, the art one creates from nature's inspiration becomes part of personal and cultural identity. Nature can bring a lot of beauty into our lives. It has a way of affecting our moods and it can inspire us to change our plans.

Plate 7: Mahogany tree bark

Plate 8: Teak tree bark

Plate 9: Mansonia tree bark

Plate 10: Golden shower tree bark

3.5 Concept

Concept is the idea behind a design. It is how one plan and solves the design problems in front of him or her. Concept is the underlying logic, thinking, and reasoning for how one will design an art product (Bradley, 2010). Bradley stress that every design decision one makes will fall back on the concept for direction.

3.5.1 Identity

The concept '*Identity'*, a name given to the work by the artist was influenced and inspired by the magnificence and splendour of the natural tree bark textures as seen on plates7 to plate 10. Taking into consideration the environment which the artist come from, the name '*IDENTITY'* was used to contextualise clay with the impressed tree

bark texture as a colony. Despite the vastly increased and general interest in identity, the concept itself remains something of an enigma (Fearon, 1999). For many, nature is an endless source of rejuvenation, it could also be a place of peace where one can escape to when the reality of the modern world get to be too overwhelming. In this project the artist tried to bring out the power and beauty of nature which are inherent in natural tree backs. Bringing nature into home has been an ambition that humans have strived for over the centuries.

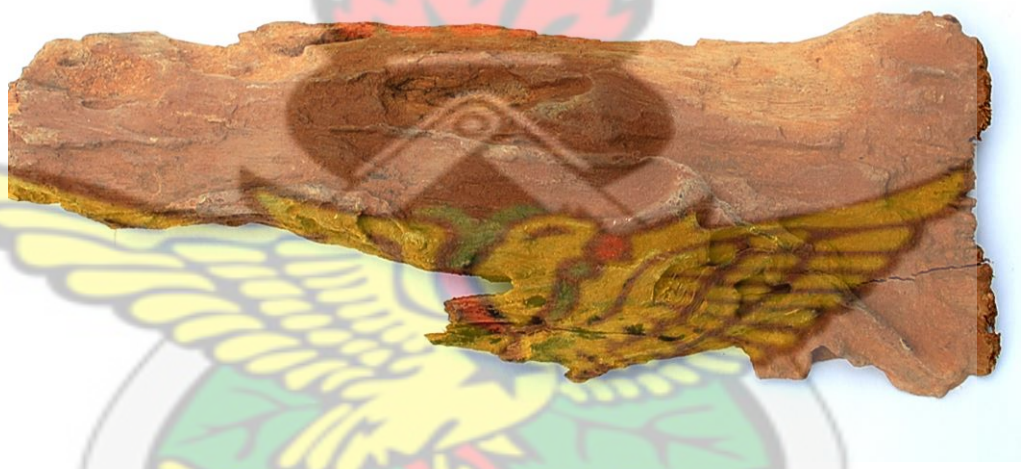

Plate 11: Sample tree bark texture used for the impressions

Plate12: Sample tree bark texture used for the impressions

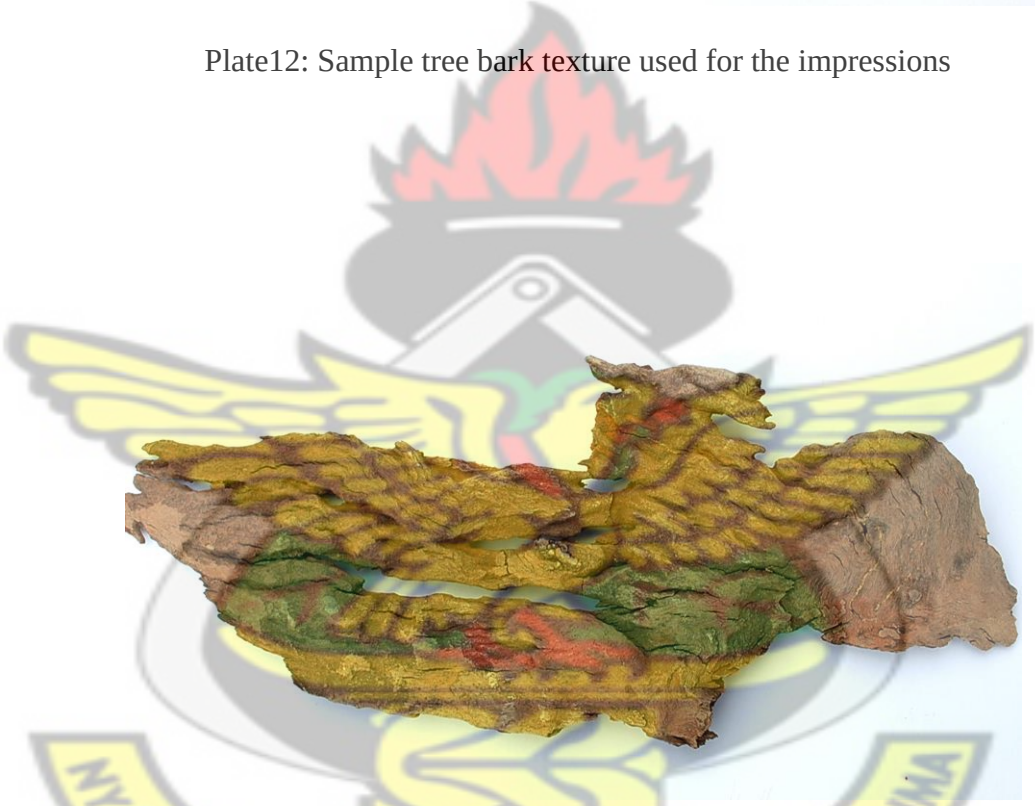

Plate 13: Sample tree bark texture used for the impressions

3.6 Experiments

Although earth pigment have been used as surface finishing by traditional potters, the fusion of the prepared laterite on a clay body is of importance to the artist. To ensure adequate fusing of the prepared laterite to the surface of the tiles and obtain interesting

shades of colour after firing, there was the need for an experiment. Specimens were produced with varied percentages of laterite and feldspar in the following order: (30% laterite + 70% clay, 20% laterite + 80% clay and 10% laterite + 90% clay) as shown in plate 14 to 16. Corresponding sample tiles were also produced to examine their colour effect. A prepared feldspar which served as fluxes to the formulation and laterite were mixed in proportion of 80% laterite and 20% feldspar and then applied randomly both on the surfaces of both the specimen and the sample tiles. They were fired to a temperature of 1180°C for observation.

The varied shades of colours obtained from the specimen after firing as shown in the test below are, light brick-red, brick-red and brown. The ununiformed effect of colour obtained on the sample tiles were as a result of random application of the laterite.

3.6.1 Sample of Specimen showing shades of Colours obtained

Laterite30% + Mfensi clay 70% = Brown

Plate 14: Colour obtained from specimen T1 ***(test piece (left), sample tile (right))***

Laterite20% + Mfensi clay 80% = Brick-red

Plate 15: Colour obtained from specimen T2 (*test piece (left), sample tile (right)*)

Laterite10% + Mfensi clay 90% = Light brick red

Plate 16: Colour obtained from specimen T3 *(test piece (left), sample tile (right))*

3.7 Search for textures

In order to ensure appropriate replication of tree bark textures, there was the need to go in for texture search. With a machete, the artist went around and within the KNUST campus as well as its botanical garden to fetch a number of interesting tree bark textures appropriate for the project. One major characteristic feature of the project the artist aimed achieving was to give a random display of varied textures in the work. Because there was going to be pressure on the texture during replication, only strong

and interesting tree barks were selected. The ultimate aim was to replicate interesting and appealing tree back textures on clay tiles. For this reason the artist searched many textures as possible.

3. 8 Preparation of Materials

3. 8. 1 Preparation of clay

The Mfensi clay, soaked in the pit for one week to age was conveyed on to the working bench with the help of a spade and wheel barrow. Gradual feeding of the pug mill with clay through the feeder smashed and blended the clay lumps and extruded homogenous bars of clay. The clay came out in cylindrical bar as a result of the round die which is the outlet of the pug mill. The clays were then packed in a box lined with polythene sheet to prevent them from drying.

3. 8. 2 Processing of the Laterite rock

Laterite is one of the abundant materials found in Ghana either in a loose form or in a compacted rock form. In its bulky rock form, as shown in plate 17, a hammer was used to break the rock to reduce it to smaller sizes to enable easy feeding through the feeder of the jar crusher, as show in plate 18. The crusher breaks down the rock into small particles for grinding. The grinder further breaks down the crushed particles and then reduces them from a smaller particle size to a semi-powder form. Although the material is in semi-powdered form it still had to be completely milled in to powder with a pulveriser. The material was pulverised into finer particles. The powder was then sieved through 80 mesh as shown in plate 19.

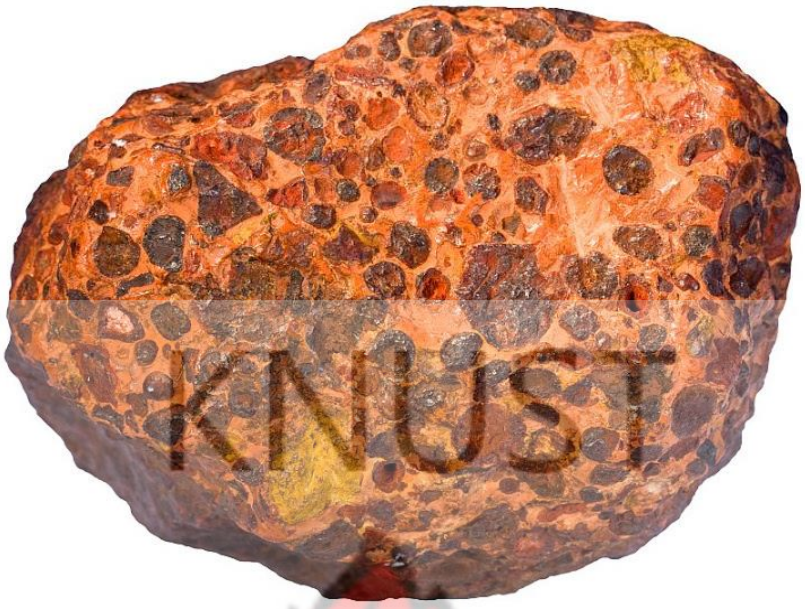

Plate 17: Close up view of laterite rock

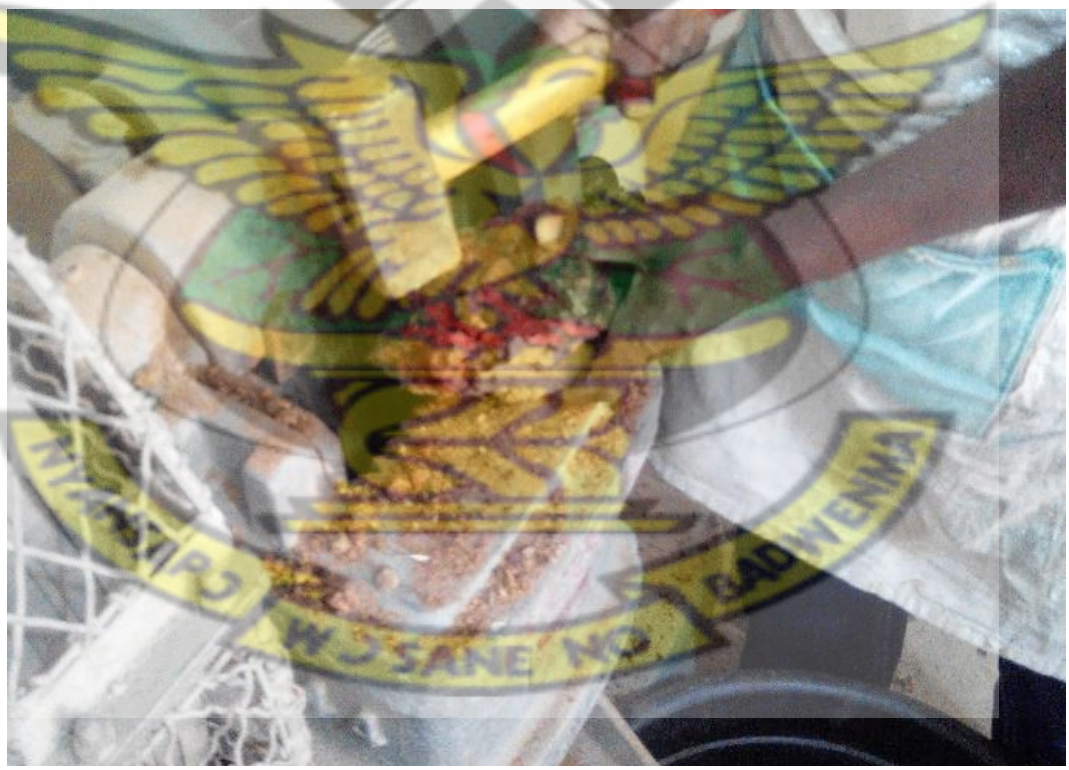

Plate 18: Crushing the laterite rock

Plate 19: Sieving the milled laterite

Plate 20: Powdered laterite

3. 9 Production of the '*Identity*' Ceramic Art Tiles

Plastic method of production was employed to enable manipulation and easy registration of the tree bark textures during pressing. Below is the demonstration of step by step production process of the art tiles.

3. 9. 1 Mixing and kneading

To obtain a random patched colour effect on the pressed tiles, the powdered laterite was mixed with the already pug-mill clay in varied proportion. This was done randomly with the laterite serving as the finishing material and the clay being the main material for production. The clay mixed with laterite shown in plate 21 was kneaded together for good mixture.

Plate 21: Mixture of Clay and laterite

Plate 22: Kneading the mixture

3. 9. 2 Rolling of clay

Clay-laterite body was rolled on a sack-board between set of guide sticks, measuring 2.5 cm thickness with a rolling pin as shown in plate 23. The guide sticks determined the thickness of the slab rolled. Plate 24 indicates how prepared mixture of laterite and feldspar (20% feldspar and 80% laterite) was sprinkled randomly on the surface of the rolled slab. Evidence in plates 25 and 26 explains the process of making impression of the tree bark texture onto the rolled slab. A template of 8.5cm x 16.5cm dimension was used in cutting out the impression on the slab into tiles, as shown plates 20 and 21.

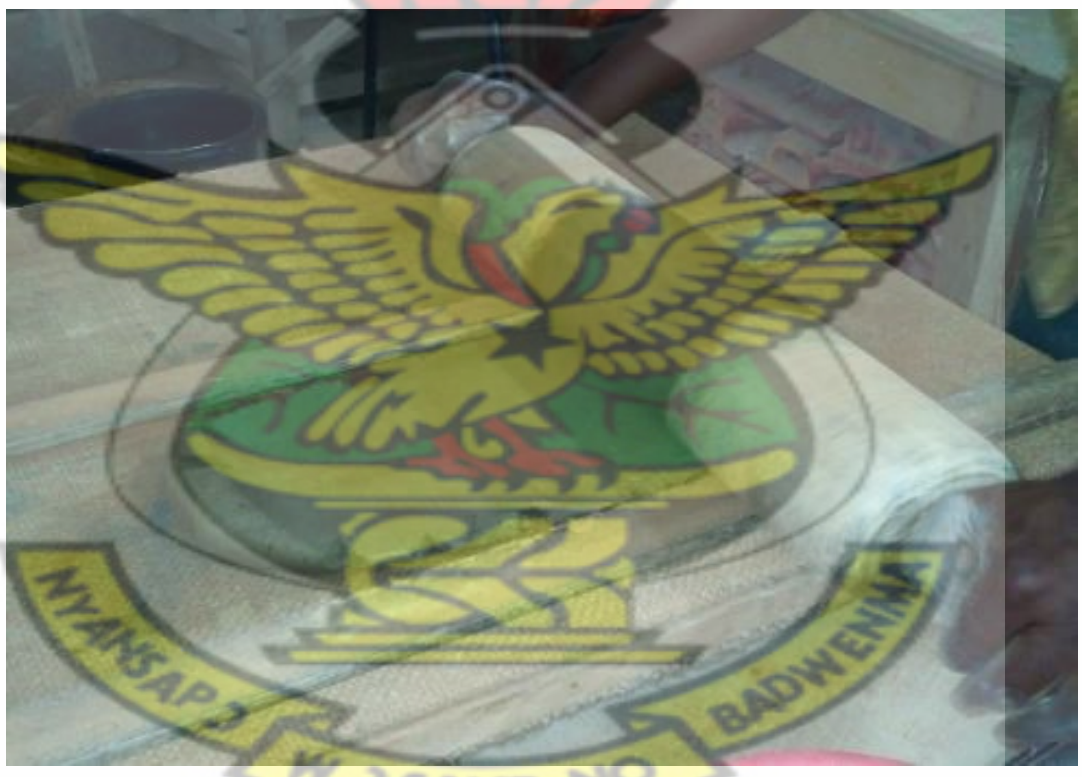

Plate 23: Rolling slab for tile

Plate 24: Sprinkling of laterite on slab

Plate 25: Making an impression

Plate 26: An impression on the slab

Plate 27: Making template mark on slab

Plate 28: Cut out impressed tile

3. 9. 3 Drying of tiles

The "green" tiles were dried on racks and the tiles were regularly turned to ensure even drying and to avoid warping. At leather hard stage, the tiles were trimmed to the required size of 4cm x 8cm before they are bone dried. The trimmed tiles were packed and were put under load for 3 days to maintain their straightness. This activity is evidence in plate 29. They were finally arranged on shelves for complete drying when almost all the moisture in the clay seem to have been evaporated and there was no possibility of severe warping. The tiles upon further drying were ready for firing.

Plate 29: Drying tiles on rack

Plate 30: Turning the tiles

Plate 31: Displayed turn tiles

Plate 32: Tiles under weight

3. 9. 4 Firing of tiles

On the shelves the tiles were allowed to dry further before firing. The tiles were loaded into the kiln and fired once to a temperature of 1180°C. The random application of laterite during production of the tiles account for the varied shades of colours after firing. Again it is also important to note that, the artist took advantage of an even circulation of heat in the kiln which contributed to the varied appearance in colour. Sample shades of colours achieved after firing are shown on plate 34.

Plate 33: Finished fired tiles at 1180°C

Plate 34: Shades of colours obtain after firing at 1180°C

3.10 Installation of the *Identity* ceramic art tile

Installation of the finished work was important so as to convey the conceptual message of the work for appreciation. Kelly (2010) Opine that, installation art is a broad term applied to a range of arts practice which involves the installation or configuration of objects in a space, where the totality of objects and space comprise the artwork. It is a mode of production and display of artwork rather than a movement or style. From the above context, the work of identity tile for an installation art is of no doubt that after its installation configures almost everything within it as part of the theme of the work. In installing the work, half of the total tiles were perforated using drilling machine as shown in plate 35 to enable treading them with white nylon thread. The white nylon thread normally called invisible thread was used to ensure that, it is not seen on the

work after installation when looked from afar. The tiles which are rectangular in shape and having four corners, the perforation was done in all the corners. The four holes in the four corners of the tile was done to avoid wobbling of the individual tiles after threading. The tiles were threaded in such a way that they could not be easily seen after their installation. As displayed in plate 36, the nylon thread were made to pass through the front of the tile then lie vertical and across the back of the tile. Fifteen tiles were threaded in a roll, measuring 114cm making up a strip for installation, evidence in plate 30. Arrangement of both the threading and installation process followed the random technique of the production, hence an advantage of replacing a tile in the course of any casualty. The invoking effect of the applied material and tree back texture makes it easier for the artist not to follow a particular parting for the arrangement of the tile as this can be seen in plate 38.

In terms of the work and its space of display in relation to the theme, everything including the viewer is seen as part of the work. The theme as it goes, '*Perception on Identity, an ancient canker today'* in relation to the work every one will have something that relates him or her to the work.

Plate 35: Drilling of holes through tiles

Plate 36: Threading tiles together with nylon thread

Plate 37: installation process of the Identity ceramic art tiles

Plate 38: installed Identity ceramic art tiles (12ft x 8ft)

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Finishes

Generally the production of form and finishing of surfaces in ceramics are mostly done in different stages using different methods or techniques. Finished ceramic product goes through the main production process of manipulating form before investing time on their finishing using either glazes, stains or any related finishing material. Finishing of pottery and ceramic products over the years has gone through several transformation by both traditional and studio ceramists as well as industries, yet still, depend greatly on imported finishing and decoration materials such as glazes, stains and the use of non-ceramic finishing materials like auto base colours, oil and acrylic paints. Decorations are done to increase the value of the artefact produced, give status and indicate social position, or to show social affiliation (Hodder, 2012).

4.2 The finished *Identity* tiles

The finished identity tiles were produced and finished using impressing technique with locally prepared laterite. Conceptual installation of the art tiles for a colony, where locally prepared laterite, clay and tree back textures were used, is a subject for motivation to our traditional and studio ceramists in exploration of local finishing materials. Finishing, which is mostly an after-effect is as stated by (Revell, 2012), usually follows the traditional method of dipping, pouring, spraying and painting effect. In the case of identity tiles however, an alternative was offered to be an excellent jumping-off point.

Plate 39: The final installed Identity ceramic Art Tile (24ft x 16ft)

4.3 Method used for the Production and Finishing of the tiles

There are varied methods and techniques used in finishing ceramic wares, however the rule of the game which is mostly term as after-effect (Revell, 2012), was not the artist consideration. The method and technique employed by the artist contributes to the innovation and application of local materials within his immediate environment and finishing of the art tiles was contrary to the traditional methods of finishing. The finishing material which was in its dry powdered state was first mix randomly with the clay, kneaded to disperse it within a fresh lump of clay before rolled into slab. The dried powdered material was again applied on the slab surface and the tree bark was used to impress on it, evidence in plates 24, 25 and 26 in chapter three. The impression effect which was classified among the earliest technique of decoration by (Dillehay, 2014), aid in the replication of the tree bark textures onto the clay. In the production of these tiles, the artist bestow a style of his own in the finishing. In the replication of the tree bark textures, varied techniques such as random application of the powdered laterite on the rolled slab, interwoven of the varied tree bark textures during the

impression process. The mode of applying the laterite during production subjected the tiles to different shades of colour as shown in plate 34.

Over the years, ceramic tile finishing and presentation have been in particular direction such as functional and decorative purposes. A fundamental change to the presentation of finished ceramic tile artwork by the artist for a conceptual art installation has diversify the finishing and presentation of ceramic art tiles. It is important to indicate that, although the art tiles have been named ***Identity*** and installed conceptually by the artist, it has other varied applications such as its use on architecture. The success of this integration confirms the fact that locally processed ceramic finishing material can be used in finishing art works.

4.4 Appreciation of finished work

Art appreciation involves having an understanding of all the qualities that comprise a great work of art. It is the intelligent discussion about works of art, a silent and deep thinking about them (Barrett, 2007). Appreciation differs from art criticism in that criticism is an evaluation of art and is a judgment. Everyone has their own opinion about what they think is a good art or not. Appreciation enables us to assess and appraise a work of art without passing judgment on it and entails everything in art that can be enjoyed.

Identity is a conceptual installation of ceramic art tiles produced in the year 2016. The work shown in plate 38 was produced using Mfensi clay, tree bark textures and powdered laterite stone. Mfensi clay was used because of its physical properties. Aside the plasticity of the clay which makes it practically better for the registering of textures,

it is also high refractory as observed by Nsiah (2007). The tiles were pressed using hand production method and impression technique. The textures on the surface of the tiles were impressions from different species of tree bark textures. The individual tiles making up the entire work measures 4 by 8 inches each. However the installed work measures 16ft by 24ft. The varied shades of colour on the individual tiles is after firing effect of the prepared laterite rock powder. Both the impression and the application of the laterite was done randomly so that, each individual tile can be displayed as a unique art piece on its own. Each of the tile has varied shade of colour as a result of the fired laterite effect. The effect ranges from light reddish brick to dark brownish colour. Transparent nylon thread was used in threading the tiles into strips and these measures 114cm each.

4.5 Interpretation of the work '*IDENTITY'*

Identity is an impressions of tree back textures from various species of trees, some of which are indicated in plates 7 to plate 10 in chapter three. The variety of textures and random application of the laterite as a finishing material gave the individual tiles shades of colours ranging from light brick-red to a dark-brow. This represents the flow of life from new, growth and old. The interwoven of textures on the individual tiles created by the impression of the tree back textures and the flowing effect of the laterite after firing stands for love, happiness and loyalty.

According to the powerful account of Picasso and Van Gogh, expression validates the artist's vision by channelling to consciousness of images that originate in the unconscious mind (Gorak, 1991). "Solemnly, the expressions created with clay, a primary material found on earth, provided a fertile ground for the ceramic artist to

express his emotions through the medium like the painter does with his colours"(Okai, 2012).

The work was inspired by the magnificence and splendour of the natural tree bark textures. The ceramic art tiles can be versatile in application, however it was conceptually installed as *Identity* for evaluation and criticism from public views, professional ceramicists and other artists. Verbal expression of critics on the installation indicates that, the finishing effect of the laterite on the individual tiles was highly alluring.

Ceramic objects are usually made to address basic functionalities and be visually appealing. In this project the artist focus was on the use of locally prepared material (laterite stone) for finishing art tiles. The work is a concerted attempt to express an emotion and promoting an aesthetic effect of nature by the creative process. The work explores a true aesthetic of nature, using clay, tree bark textures and laterite effect. The artist involved identity and perception and created varied textures from nature on clay tiles where he questioned the very core of nature in people's mind. The artist's goal was to first break down the preconceptions and give a very new and undefined experience, open up the viewer to new thoughts and then leave them curious for more. The artist's fundamental feature of conceptual art is using creative processes, combined with natural object and materials, thus tree bark textures and prepared laterite rock, to create a conceptual understanding of people within an environment. A visual language was created through series of clay tiles pressed with different species of tree bark textures and finished laterite. The work has however created an awareness that, the more closely a person gets to, and attention given to a particular society or

environment, the more information (present) in that society one acquires. Carpenter et al (2009) defines perception as the process by which individuals detect and interpret environmental stimuli. The above author further explained that, people do not exclusively respond to the stimuli in an environment, but they go beyond the information that is present in such an environment, pay selective attention to some aspects of the environment, and ignore other elements that may be immediately evident to some people. Investigation of conceptual art by the artist was to identify a topic of exploration. Finding one's identity has been an ancient canker in the world today, and it is a struggle that relates to a large population, whether they have given up or have attempted to.

Contributing to the discussion, Fearon (1999), clarified that despite the immensely increased and broad-ranging interest in "identity," the concept itself remains something of an enigma. However, it is still common coming across people who feel they have control over their emotions and perceptions, as they perceive their identity to be higher or lower class over others. The identity experience is central to the artist approach, which he deem the work will expose the transparency of what is actually happening within, how this conception can take over, affecting us as a people. From this the artist was aspired to create awareness through art tiles, investigating the notion and effects of identity, and to gain an understanding of how our concept of identity affected the beliefs we have.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

In summary, this project has shown that laterite as a ceramic finishing material is effective in achieving high quality aesthetic ceramic products. It also ascertains that materials such as the various kinds of laterite if explored, could be a wealth of additional resources to enhance indigenous pottery products.

The first objective of the study was to experiment laterite in finishing ceramic art work. This was seen in the production of the art tiles in chapter three, evidence in plate 21 to plate 28. The material was collected from a nearby community and processed at the laboratory as shown in plates 18, 19, 20 and discussed in the previous chapter for use. The careful preparation, mixing and random application of the material influence the aesthetic effect and finish of the *Identity* art tiles.

The second objective of this project aimed at producing ceramic art tiles with laterite finish using tree back textures. Finishing the tiles with the material is efficient even though the tile surface was rough and matte with respect to the end use of the final work. Due to the technique employed by the artist each of the individual tile produced is a unique art piece on its own.

In Ghana, after decoration and finishing of most ceramic tiles they are constrain for decoration and functional use. In this project, the artist has gone contrary to the conventional way of disposing finished ceramic tiles there by breaking the monotony in its presentation. On the other hand, an impression technique was used to decorate

the tiles with tree back textures. However, aside the conceptual presentation of the art tiles, it could also have other varied application. Plate 40 and 41 shows a computer rendition of the tile on both building and wall. The aesthetic effect of the tiles on the structures after rendering presumed the economic importance of this project.

Plate 40: Computer rendition of laterite finished hand-made ceramic Art Tile

Plate 41: Computer rendition of laterite finished hand-made ceramic Art Tile

5.2 Conclusions

The results in chapter four clearly reveals that, laterite as a material could be explored and used as a surface finishing material for ceramic products. Laterite is abundant in the country and could be obtained anywhere and so the artist is of the view that, if more consideration and attention is given to the material, it would help in generating employment for the youth, and presenting alternative material for finishing ceramic wares.

5.3 Recommendations

Out of the findings and conclusions drawn from this project, the artist recommends that:

1. Ceramic companies such as Vicalex Brick and Tile Company Limited and Clay Tile Ventures should employ the use of laterite material in finishing the surface of the tiles they produce. This will enhance the tile surface, bring about variety and increase the aesthetic appeal of the tiles there by whetting the appetite of consumers to patronize these products. As such, the laterite finished hand-made tiles should be promoted to ensure their incorporation and usage in architectural designs.
2. The individual way of making the impression on the tiles was time consuming, so it is recommended that in future a mould could be made with varied tree bark texture so as to speed up production process.

References:

Aleva, G.J.J., (1992). Corlat handbook (2nd draft, rev. ed.) ISRIC Report/01, Wageningen. Retrieved from http://www.isric.org/sites/all/modules/pubdlcnt/pubdlcnt.php?file=/isric/webdocs/docs/ISRIC_Report_1992_01.

Asmah, A. E., Frimpong, C., & Asinyo, B. (2013). Enhancing the Value of Indigenous Pottery Products with Surface Decoration Methods & Macramé. *International Journal of Arts and Design Studies//* ISSN 2224-6061 (Paper) *Vol.8, pp.1-2.*

Baizerman, S., Downey, L., & Toki, J. (2000). *Fired by Ideals: Arequipa Pottery and the Arts and Crafts Movement*. Pomegranate, p. 84.

Barrett, T. (2007). Teaching toward appreciation in the visual arts. In *International handbook of research in arts education* (pp. 639-656). Springer Netherlands.

Bradley, S. (2010) Thoughts on Developing A Design Concept. Retrieved from http://vanseodesign.com/web-design/design-concept-thoughts/

Carpenter, M. A., Bauer, T., & Erdogan, B. (2009). *Principles of management*. Washington, DC: Flat World Knowledge.

Casper, J. K. (2007). *Minerals: Gifts From the Earth*. New York: Infobase Publishing.

Ceramic Studio Prague (2016). Decorative and finishing techniques. Retrieved from http://ceramic-studio.net/umeni-keramiky/cena/dekoracni_techniky

Connell, J. (2007). *Coloring Clay*. Pennsylvania: University of Pennsylvania Press, p. 9.

de Freitas, N. (2002) Towards a definition of studio documentation: working tool and transparent record. Working Papers in Art and Design 2

Dillehay, T. D. (2014). *The Teleoscopic Polity: Andean Patriarchy and Materiality* (Vol. 38). Springer Science & Business Media, p.238.

Donachie, M. J. (2000). Slipware at Port Royal, Jamaica, World Wide. Web URL, http://nautarch.tamu.edu/PROJECTS/PR-project/slipware/sliphome.html

Eckert, C., & Stacey, M. (2000). Sources of inspiration: a language of design. *Design studies*, *21*(5), pp. 523-538.

Fearon, J. D. (1999). What is identity (as we now use the word). *Unpublished manuscript, Stanford University, Stanford, Calif*.

Gay, L. R. (1992). *Educational research (4th Ed.)*. New York: Merrill, p. 298.

Gold, J. N. (2009). *Culture and customs of Honduras*. ABC-CLIO, p. 111.

Gorak, J. (1991). *The making of the modern canon: genesis and crisis of a literary idea*. A&C Black, p. 94

Green, M. (Ed.). (2012). *The Celtic World*. London: Routledge, p. 334.

Grimbly, S. (Ed.). (2013). *Encyclopedia of the ancient world*. Routledge, p. 224.

Grimmer, A. E., & Konrad, K. A. (1996). *Preserving historic ceramic tile floors* (Vol. 40). US Department of the Interior, National Park Service, Cultural Resources, Heritage Preservation Services.

Halluska, D. (1999). Pottery and Progress: Traditional and Contemporary Pottery in Vume, Ghana. *African Diaspora ISPs*, 14.

Hamer, F., & Hamer, J. (2004). *The potter's dictionary of materials and techniques*. Philadelphia: University of Pennsylvania Press, p. 187.

Herbert, T., & Huggins, K. (1995). *The decorative tile: in architecture and interiors*. Phaidon Press.

Hodder, I. (2012). *The Present Past: An Introduction to Anthropology for Archeologists*. Pen and Sword, p. 185.

Hopper, R. (2000). *Functional pottery: Form and aesthetic in pots of purpose*. Wisconsin: Krause Publications Craft, pp. 28-29.

Hopper, R. (2004). *Making Marks: Discovering the Ceramic Surface*. Wisconsin: Krause Publications Craft, p 84, 186.

Kelly, N. A. (2010). What is Installation Art? Ireland: Dublin Institute of Technology.

Kogel, J. E. (Ed.). (2006). *Industrial minerals & rocks: commodities, markets, and uses*. SME, p. 458.

Kosambi, D. D. (1965). *The culture and civilisation of ancient India in historical outline*. Routledge and K. Paul.

Kyei, K. A., & Poku, P. K. (2016). Design and Production of Clay Flower Vases Using Drawings and Splatter Paintings as a Form of Decoration. *International Journal of Innovative Research and Development|| ISSN 2278–0211*, *5*(4).

Kyonka, J. C., & Cook, R. L. V. (1954). The properties of feldspars and their use in whitewares. *Bulletin/University of Illinois, Engineering Experiment Station; no. 422*.

Laterite. (2016). In Cambridge Advanced Learner's Dictionary. Retrieved from http://dictionary.cambridge.org/dictionary/british/laterite

Lemougna, P. N., Melo, U. F. C., Kamseu, E., & Tchamba, A. B. (2011). Laterite based stabilized products for sustainable building applications in tropical countries: review and prospects for the case of Cameroon.*Sustainability*, *3*(1), 293-305.

Madan, G. (2014) *S.Chand's Success Guides (Questions and Answers) Inorganic Chemistry: For B.Sc. I, II & III (Pass & Hons.).* Rajendra Ravindra Printers Pvt. Ltd, p. 694.

McCarter, S. (2012). *Neolithic*. London: Routledge, p. 97.

Meri, J. W., & Bacharach, J. L. (2006). *Medieval Islamic Civilization: AK, index* (Vol. 1). Taylor & Francis, p. 144.

Mills, M. (2008). *Surface design for ceramics*. New York: Sterling Publishing Company, Inc, pp.12, 16.

Molina Giralt, G. (2014). Colour and technology in historic decorated glazes and glasses.

Montgomery, H. (2012) Red-Figure Pottery. *Ancient History Encyclopedia*. Retrieved http://www.ancient.eu /Red-Figure Pottery/.

Moore, D., & McCabe, D. (1993). *Introduction to the practice of statistics.* New York: Freeman, p. 202.

Moulson, A. J., & Herbert, J. M. (2003). *Electroceramics: materials, properties, applications*. John Wiley & Sons, p. 119.

Nsiah, J. K. (2007). The study of Mfensi clay in the Ashanti Region of Ghana. *Ghana Journal of Science*, *47*(1), 123-129.

Okai, F. E. (2012). Diversity and Style: Production of Multi-Sectional Decorative Ceramic Pots Using Geometrical Forms. (M.F.A. Dissertation, School of Graduate Studies, Kwame Nkrumah University of Science and Technology).

Pennisi M. S. (1997). Surface finishing – introduction.
Retrieved from https://www.google.com.gh/search?q=SURFACE+FINISHING-+introduction+by+Mario+S+Pennisi+pdf&hl=en&ei=RRtOVaOcBaHN7QbYkIDgCw

Peterson, S., & Peterson, J. (2003). *The craft and art of clay: a complete potter's handbook*. Laurence King Publishing, p. 110.

Popova, M. (2013). Brain pickings. *Brain Pickings RSS*.
Retrieved on 24th January, 2016 from https://www.brainpickings.org/

Radtke, K. (2010), History of Tile 101 – Part one.
Retrieved on 24th January, 2016 from http://tinyurl.com/pmtz8gu

Rahman, S., (2011) Evolution of tiles.
Retrieved on 28th January, 2016 from http://www.thedailystar.net/news-detail-177840

Rast, W. E. (1992). *Through the ages in Palestinian archaeology: an introductory handbook*. A&C Black,p. 97.

Revell L. (2012). A decorative effect. (M. A. Dissertation, School of Architecture and design, College of Design and Social Context RMIT University).

Rhodes, D., Liden, T., & Zakin, R. (2010). *Pottery form*. Courier Corporation, p. 205.

Sánchez, G. H. (2011). *Ceramics and the Spanish Conquest: Response and Continuity of Indigenous Pottery Technology in Central Mexico* (Vol. 2). Brill, p. 58.

Savage, G. (1959). Pottery through the ages.
Retrieved on 24th March, 2016 from https://www.britannica.com/contributor/George-Savage/2598

Series, IC. L. (2012). Surface Finishing. *The Hong Kong Polytechnic University, Industrial Centre*. Hong Kong SAR.

Skibo, J. M., & Feinman, G. (1999). *Pottery and people*. University of Utah Press, p. 165.

Staubach, S. (2013). *Clay: The History and Evolution of Humankind's Relationship with Earth's Most Primal Element*. UPNE.

Tite, M. S. (2008). Ceramic production, provenance and use: a review. *Archaeometry*, *50*(2), pp. 216-231

Triplett, K. (2000). *Handbuilt ceramics: pinching, coiling, extruding, molding, slip casting, slab work*. Lark Books, p. 60.

Wang, C. Y., Wei, X., & Yuan, H. (2002). Polishing of ceramic tiles. *Materials and Manufacturing Processes*, *17*(3), pp. 401-413.

Wemegah, R. (2009). Architecture, mural decoration and pottery in Sirigu Culture. (M.F.A. Dissertation, School of Graduate Studies, Kwame Nkrumah University of Science and Technology).

Wilson, N. (2013). *Encyclopedia of ancient Greece*. Routledge, p. 604.

Worrall, D. M. (1986). *Clays and ceramic raw materials*. Springer Science & Business Media.

Zakin, R. (2011). *Ceramics-Mastering the Craft*. Winscosin; Krause Publications, p 110.