

**EXPRIMENTS IN DECORATIVE HAND BUILDING
TECHNIQUES IN THE PLASTIC STATE**

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**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
TECHNOLOGY
KUMASI-GHANA**

JULY 2004

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**THIS THESIS WAS SUBMITTED TO THE SCHOOL OF
GRADUATE STUDIES, KWAME NKRUMAH UNIVERSITY
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JULY 2004

CERTIFICATION

It is certified that this thesis is the candidate's own account of his research.


.....
DR. E.C. NYARKOH
(Supervisor)

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ABSTRACT

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TITLE: EXPERIMENTS IN DECORATIVE HAND BUILDING
TECHNIQUE IN THE PLASTIC STATE

SUPERVISOR: DR. E. C. NYARKOH

One can make a host of useful and decorative items with clay. It can be gritty, earthy, soft or satiny and invites the hands to mould and shape it. Clay also abounds in Ghana and it is malleable in its raw state but when fired becomes hard and durable.

It is noted that, for a very long time only a few methods have been used in Ghana to make ceramic works in the Senior Secondary Schools. These include the pinch, coil, slab and throwing methods. Most wares are also decorated only in the leather-hard or bisque state using slip painting, using engobes, glazing, incisions and indigenous firing technique. Unfortunately, due to lack of commercial engobes and glaze for ceramic decoration, a large majority of works done by students lack variety of decoration in the plastic or bisque state.

This project involved some experiments to find new ways of making and decorating ceramic wares in the plastic state. The experiment involved making of small shapes or knobs of clay and using them to build ceramic wares, which serve as a form of decoration on the surface.

The various activities involved, making of clay knobs, the building processes using the clay-ball pot technique, half-ball technique, button technique, short coil technique, combined technique and brick technique. These techniques were later introduced to the students of Technology Secondary School in Kumasi and tested.

The result of the experiments was very successful. Different types of pots were produced with very decorative surfaces. These include , clay ball ashtray, flower vase, half-ball multi-purpose ware, penholders, clay button vase, pin container, jewel boxes etc. It was observed that the introduction of these new techniques to the students gave them a feeling of independence and self-confidence. It also promoted uniqueness, co-operation, tolerance and patience. It enhanced the aesthetic quality of their ceramic works.

It is however strongly recommended that the introduction of these techniques to other S.S.S ceramic students in the country and incorporating them in their syllabus will go a long way to bring variety of ceramic decoration in the green state or bisque state.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

To decorate means to add something to an object or a place in order to make it more attractive. It is making something look more attractive by adding ornament to it. In general, decoration can be defined as a mode of composition in art as to please or with the intention of pleasing the beholder through direct perceptual experience, especially the nature and arrangement of sensory qualities such as lines, colour rhythm etc.

Ceramic decoration can therefore be simply put as the process or an art of adorning pots or wares to please and appeal to the eyes of both the maker and the observer.

Ceramic objects are one of the most enduring of human artefacts. They form part of economic activities of the past cultures. They can be used to reconstruct and interpret aspects of those cultures. Lane, (1971:xiii) indicates that, an account of the early Islamic pottery 1947, the fine wares made in the near East from the ninth century A.D. till about 1300, shows that, the medieval wares as a whole represented one of the great creative movements in ceramics and remain unchanged since antiquity.

Today, there are various types of decorative methods including incision, carving cutting, fluting, pointing, squeezing, painting, glazing etc. In view of the numerous types for decorative methods mentioned, only a few are executed in the plastic or

green state in Ghanaian Schools. Most of these techniques are done in the leather-hard or bisque state. It is unfortunate therefore that most of the students' works lack variety of decorations in the plastic state.

1.2 Statement of the Problem

Clay abounds in Ghana and it is malleable in its plastic state. It can be formed into numerous shapes and when fired becomes hard and durable. Clay is being used as a ceramic material to make a host of useful and decorative items in the Ghanaian Senior Secondary Schools. For a very long time only four methods have been used in Ghana to make ceramic works in the schools. These are the Pinch, Coil, Slab and Throwing methods. There are also different ways by which ceramic wares are decorated either in the leather-hard or bisque state. Some of these include slip painting using engobes, glazing, incisions and indigenous firing techniques. Unfortunately, due to lack of commercial engobes and glazes for ceramic decoration, a large majority of works done by students lack variety of decoration in the green or bisque state.

It is imperative therefore to experiment and find new ways of making and decorating ceramic wares in the plastic state. This project seeks to carry out experiments involving the making of small shapes or knobs of clay and using them to build ceramic wares, which will serve as a form of decoration on the surface.

1.3 Objectives

1. To identify and describe the common ceramic decoration techniques used in the Senior Secondary Schools.

2. To make a series of decorative experiments on ceramic wares.
3. To find out how best students will be able to adopt them in the making of ceramic works.
4. To write a report on the findings.

1.4 Hypotheses

1. Decorating ceramic wares using knobs of clay will create variety of decorations in the plastic state.
2. Students will learn the new techniques of decoration and apply them in the making of ceramic wares to enhance their aesthetic qualities.

1.5 Delimitation

The project is based on carrying out experiments involving the making of small shapes or knobs of clay and using them to build simple ceramic wares to serve as a form of decoration on the surface. Also introduce the techniques to students at the Technology Secondary School, Kumasi

1.6 Limitation

Getting a studio to carry out the project and keeping the works was a challenging factor. They were done in the lecture room in the night and left there to dry. These works were several times tempered with thereby causing delays in reproducing them.

It was also not easy getting settled with the target students to introduce the new decorative techniques. They were busy with other activities throughout.

1.7 Definition of terms

Aesthetics: Aesthetics deals with all the qualities that are related to beauty or ugliness of Art works depending on the purpose they serve.

Ball clay: Secondary clay of high plasticity and fine grain, it fires to white or cream colour.

Clay : It is an earthen material, which when in its plastic state can be moulded and then transformed into a hard, dense permanent shape by the action of heat.

Clay body: It is the mixture of different characteristics of clay to get a desired workable clay

Coiling : A hand method of forming pottery by building up the walls with rope-like rolls of clay or with coils of clay.

Engobe : An engobe is another name for coloured clay slip that is used for decoration. Engobe is applied to leatherhard, bone dry or bisque fired wares.

Glazing : It is a process of covering a pot with a layer of glaze, which is applied in a liquid form and allowed to dry before firing. The glaze then melts and seals the pores in the ware.

Plastic state: Clay in a solid but malleable form that has the property of enabling it to be shaped and to hold its body.

Incision : It is a method of decoration in which the motif or design is engraved or incised into the vessel when it is leatherhard.

Inlay decoration : Inlaying is a method of decoration in which an engobe is applied into an incised or impressed decoration on a vessel. The

colour of the engobe should be different from that of the clay surface so that the design will stand out.

Kneading: The pressing and turning of clay using both hands to get rid of air or unwanted materials that are still in clay.

Pattern : A design in which a motif is repeated with regular intervals.

Plastic clay: A quality of clay which permits it to be moulded into shapes without crumbling or sagging.

Porosity : It is the proportion of pores both open and sealed compared with the total volume and normally refers to the fired body of a ceramic work.

Sgraffito : A method of decoration achieved by scratching through coating of coloured slip or glaze to show the contrasting body colour below.

Shrinkage : It is the progressive lessening of clay in length and volume during both drying and firing.

Stamping : Impressed decoration is done by pressing a tool or a firm object into the surface of a leatherhard ceramic product.

Ware : Pottery or porcelain in raw, bisque or glazed state.

1.8 Importance of the study

The experiments involving the making of small shapes or knobs of clay and using them to build ceramic wares which will serve as a form of decoration on the surface

will help the S.S.S. students to produce variety of decorations in the green state. The students will freely express their creative skills practically by making different decorations using knobs.

This method of decoration will also serve as an alternative, especially in rural areas where due to lack of commercial engobes and glazes for ceramic decoration, students find it difficult to decorate their works. They will, therefore, learn the techniques and apply them in the making of the ceramic wares to enhance their surface treatments.

Making of clay knobs and using them to build a decorative form requires qualities such as patience, tolerance, creativity etc. These are the qualities to be exhibited and experienced in the life of the S.S.S students.

Finally, this method involves two processes that is, building and decorating, which will go a long way to promoting therapeutic experience.

1.9 Abbreviation used

K.N.U.S.T Kwame Nkrumah University of Science and Technology.

S.S.S Senior Secondary School

1.10 Organization of the Rest of the Text

The first chapter is the introduction, which contains the Background to the Study, Statement of the Problem, Objectives, Hypothesis Delimitation, Limitation, Definition of Terms, and Importance of the Study, Organization of the Rest of the Text and the Abbreviations used.

The second chapter entails the review of related literature to the project, which includes a brief history of pottery or Ceramic decoration, Definition of Decoration, based on forms, Ceramic Decoration, Principles of ceramic Design, Definition of Clay, Formation, Characteristics and Preparation of Clay, Clay Body and Hand-building techniques and some decorative techniques.

Chapter Three is the Methodology. It deals with the material preparation i.e., the formulation of the clay body, description and uses of the Tools and Equipment used in carrying out of the project and the processes of executing the project. The processes include the preparation of knobs, the building process and the students' activity.

The fourth chapter gives the Result of the findings from the project ie. the analysis and the appreciation of items produced.

Finally, chapter five brings about the Summary, Conclusion and Recommendations.

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1. Runes D.D. Encyclopaedia of Arts Philosophical Lib. Inc. New York, 1946,
p.277
2. Arthur Lane. Artist Potters is England, Faber and Faber, London, 1971,
p.xiii

CHAPTER TWO

REVIEW OF RELATED LITERATURE

In the hand-building processes there are many possibilities for decorating. Some of these include slip painting using engobes, glazing, incision and indigenous firing techniques. There are many methods of clay decoration, including manipulation of the clay itself but there is never only one method suitable for a particular shape.

It is imperative therefore to experience and find new ways of making and decorating ceramic wares in the plastic state. For the purpose of better understanding of decoration in ceramics by readers of this project report, it is important that a review of related literature on the subject is made.

This chapter is therefore to discuss briefly:

2.1. A brief history of pottery or ceramic decoration.

2.2. Definition of decoration.

2.3 Ceramic decoration based on forms

2.4 Ceramic decoration

2.5 Principles of ceramic design

2.6 Definition of Clay

2.7 Formation, characteristics and preparation of clay

2.8 Clay body

2.9 Hand building techniques and some decorative techniques.

2.1 A Brief History Of Pottery Or Ceramic Decoration.

Nelson, (1984: 19) traces the origin of the first pottery and asserts:

The women of Neolithic families gathered wild and cultivated seeds and stored them in tightly woven baskets. Often the baskets were coated on the inside with clay to form a more effective container. Because the oldest in most Neolithic cultures have a basketlike or a corded texture. Many scholars have speculated that pottery making was first discovered by the accidental burning of a basket and the subsequent hardening of its clay lining. (1)

Many writers have their version of how pottery came into being, but what is more important to the subject in review is the 'accidental burning' of the basket leaving the clay to form a container which was described as basketlike or a corded texture. The texture then became a decoration on the clay, which means, decoration can be made consciously and unconsciously on ceramic wares.

Nelson states further that, although the discovery of pottery by early Neolithic culture seems to have taken place independently in many areas of the world, the discovery of glassy ceramic glaze which had both practical and decorative value was not universal (2).

Meaning, there was some form of decoration though was not universal.

Lane (1971: xiii) also states,

Early Islamic pottery 1947, an account of the fine wares made in the near East from the ninth century AD till about 1300. The medieval wares as a whole represented

one of the great creative movements in the potters' art. Their makers had begun with a bare minimum of skill inherited from antiquity and dire to emulate the much-prized porcelain and stoneware that had newly arrived from China.(3)

According to Lane, it means as early as the ninth century creative skills were being executed in the Islamic pottery. This shows how creativity is important in ceramic decoration.

Hugo (1984: 8) recalls,

The so called Neolithic revolution which brought about major development in agriculture and stock breeding called for the storage of food and water, as well as all manner of household pots and utensils. Clay was the obvious material for this early technology and even the earliest examples are decorated, albeit by the imprint of fingernail or cleft stick in the unfired clay. (4)

He further indicates that, "Clay has always served two purposes on one hand functional and on the other decorative using embellishment to make the object a personal expression of the maker". (5)

Hugo traces the history of pottery as far back, as old as man's first paintings and carving on rocks. He realized that even at the time of the so-called Neolithic revolution which brought about development in agriculture and stock breeding, there was the need for storage of food and water as well as all the types of household pots and utensils. Clay then played a vital role as a main material for this early technology where the wares were decorated by the imprint of fingernails and cleft sticks. These

imprints were done when clay was still plastic which suggest a host of decorative activities can be done when clay is in its 'plastic state'.

However, Murul (1970: 18) tries to trace the history of pottery decoration of Robert Martin (1843- 1932) and says:

He later made carvings for the architect J.P. Seddon and attended the Lambeth school of Decorative Art to study modelling at the time when Jean - Charles was teaching there. Lambeth had been a center of pottery making for at least three centuries and about the year 1862. Doulton's pottery which made such utility wares as salt - glazed drain pipes chimney -pots and ginger bear bottles began the production of decorative jugs and vases, as an addition to the traditional 'Toby ' jugs with embossed figure decorations for which they had been known for a hundred years and more, (6)

Murul reminds us of decorations which were made as far back as 1862. He further makes an important point in his literature about the school of decorative Art, which Robert Martin attended to enable him come out with these decorative pieces mentioned. It is important for a ceramic decorator to study about elements and principles of design to come out with very attractive decorative pieces to be admired by users.

Howard (2001 : 1) contends,

ceramic objects made of baked clay are one of the most enduring human artefact. They do not and did not exist in isolation, but form part of a broader pattern of the productivity and economic activity of past cultures and can be used to reconstruct and interpret aspects of those cultures. Being of baked clay, they are highly durable

and even when broken can provide information about the society that produced them. (7)

He explains further that, the decoration on them is relatively slight, it probably did not contribute greatly to their cost and they would have had little function as symbols of wealth or taste in seventeenth- century (8).

Here Haward is of the opinion that, baked clay is very durable and it formed part of the culture of the people of the past which can provide information about their society but says, the low cost and patronage or taste for the wares may be due to the slight decorations on them. It is therefore necessary for more techniques and improved methods to be introduced, hence the subject in review.

2.2 Definition of Decoration

Meyer (1969: 15) claims that, "Decoration is an art serving to ornament or embellish from fine art, which exist as an end in itself". (9)

Webster adds that, "the act of adorning, embellishing or honouring, ornamentation to promote the intelligent care of public beauty spots and further of the city with trees and plants something that adorns enriches or beautifies embellishment ornament". (10)

The two writers highlight on key words as ornaments, adornment and embellishment. All of them express how to make something beautiful. One of the aims of this project is to make ceramic wares more beautiful in a unique way. The statements quoted,

used words such as "the intelligent care of public beauty" meaning to decorate, will demand an intellectual activity which will be very necessary for customer attraction and patronage. The public must be attracted to works not because foreign materials have been used but the intelligent arrangement or organization of the local materials coupled with the principles of design. Of course there are a few artists who retract this view by thinking that, in abstraction, the work must not necessarily matter to the spectator once the maker is satisfied and can justify his works, it is enough. An early statements quoted by Hugo says, "to make the object a personal expression of the maker".

But Meyer also talks about the decoration, which exists as an end in itself. This happens when the embellishment forms part of the initial building of the ware and it is exactly what this project seeks to introduce.

Webster explains further that, "Arrangement in a work of purely elements as line, shape, texture that stimulates pleasure without regards to meaning". (11)

Webster is of the opinion that the arrangement of the elements of design to appeal to the public does not necessarily need to have any extrinsic values. They are beautiful to be used for pleasure.

Runes (1946: 277) writes

A mode of composition in art as to please or with the intention of pleasing the beholder through direct

perceptual experiences especially the nature and arrangement of sensory qualities such as lines, colour, rhythm etc. the term is applied chiefly in the visual arts but sometimes extended to music and literature (12).

Wolf (1957: 209) adds that, A mode of art composition creative or added in which the details are arranged in such a way as to please the spectator through such sensory qualities in line, colour rhythm etc. (13)

The essence of good decoration is to please the user. Runes and Wolf share the same aesthetic view which underscore the fact that beauty lies in the eyes of the beholder. It is true because no matter how expensive or inexpensive the materials used for the work of art, once it follows the principles of design and the mode of composition, the five senses will justify its quality. This project involves the use of knobs of clay to build wares but the mode of construction makes the surface very attractive, decorative and pleasing.

Clark (1972 : 33) asserts

Decoration should be something that enriches and emphasizes form. It can be either structural or applied structural, when it results from the method of making or natural decorative effects inherent in the particular material, be it glaze or body, applied when patterns, symbols shapes or ceramic materials have been added to the surface, by one or more of many techniques of decoration by hand or by machine. (14)

Clark is of the view that, decoration should enrich or emphasize form, meaning, to make it better and attach special importance or attention to it. This should be well organized in a clear way that lets you see the relationship between the parts. He says

it should result from the method of making it in order to feel the natural effects that give basic or essential features. At times some decorations receive too much touching which rather make the work loses its aesthetic value or vividness. From all the literature quoted, decoration can be defined as the process of making something looks more attractive by arranging and organizing elements to enhance its aesthetic value or vividness.

2.3 Ceramic Decorations based on Forms

Lunn (1948: 22) opines that,

As pottery is a true craft it must be based on sincerity of construction and the student needs to master honesty the simple truths for which it stands. It is therefore best first to take the pottery that is made universally by hand. This provides opportunity for becoming thoroughly acquainted with the nature of clay as well as allowing the student to become more sensitive in handling shapes. Even the most utilitarian and simple forms in the right hands can be given quality and beauty. (15)

According to Lunn, shape must be essentially considered when building form. It means decorations must follow a particular form or shape but not constructing for its sake. A good decoration should be part of the form.

Kenney (1963: 1) says,

Form is something we all know. Our acquaintance with it began in the cradle the first time we reached out to grasp something. We know form, by touch as well as by sight. Our whole life is a series of experiences with form. (16)

Form represents a shape or structure of someone or something. Kenney is of the opinion that form is something we can touch, hold or see and throughout our life time we have been lifting, carrying, holding and seeing such solid things. These solid things must therefore look beautiful to attract attention or must be inviting.

He adds:

The world is filled with forms. There are forms of growth and life that is the patterns we find in living shells, fruits and flower. There are forms of death and decay found in empty seashell broken by waves on the shore or rotten tree stumps. There are shapes of moment arrested found in icicles and candle dripping.
(17)

Here he tries to explain that, we have both the living and the dead forms. In other words there are both natural and artificial forms. In construction, there is the need to observe such structure and shapes as a guide, which is very relevant to the subject in review because it deals with building using knobs of clay.

He maintains:

There are geometric shapes such as spheres, prisms, cylinders functional shape such as bottles, teapots, there are also structural shapes such as building and machines and sphere are also shapes, which are purely accidental.
(18)

Kenney tries to categorize the shapes as geometric, functional, structural and accidental. It is imperative therefore to consider vividly the patterns and shapes to guide the decorative process.

Dingy 1960 cited in Kumatse (1995: 12) argues

Decoration can give the effect of growing out of the pot of being part of its or expressing figuratively its inner nature. This is felt so keenly by many potters that they hesitate to go beyond the decorative effects of glazes or the simplest patterns which serve to throw the character of the pot into relief. (19)

The statement also highlights the expression of form as giving it a relief and emphasizing its features.

Clark (1975: 33) maintains that "When a shape is made it leaves a shape or space which should also play its part in the composition". (20). The consideration of space in pottery decoration is very essential and this is the opinion of Clark. In composition it plays a vital part to show details.

He continues to assert that, Decoration should be something that enriches and emphasizes form or surface with variation of texture, tone line or colour. The nature of the technique used must be in keeping with the character of the ware. (21)

Clark shares the same opinion with Dingy that decoration should make better, give particular importance or attention and serve as a relief to a form. However, he cautions that, the nature of the decorative technique should be in conformity with the character of the ware or form.

Rawson (1971: 100) illustrates,

It is obvious that container pots are normally felt to consist of a number of fundamental parts. The way that these parts are related to each other, the proportions they are given, their scale in relations to the human being and his parts constitute a major element in ceramic expression and it is no accident that we have always used anthroporphic terms to designate these different part of the pot which is seen to be, in some senses, a symbolic analogue of the human body. We therefore talk of the hip, neck, shoulder, belly, waist or foot of a pot. (22)

Rawson helps to identify some basic parts of forms to enable a good building or construction of ceramic forms. It serves as a guide to the decoration of ceramic wares. Some wares do not have attractive shapes therefore whatever decoration added to them will not change. Ceramic students should take the studies of forms seriously in order to produce beautiful works for public consumption. From the views of all the writers discussed, form can be said to be a shape or structure of something. These shapes or structures are categorized into geometric, functional, structural and accidental shapes which have parts that are related to each other in proportion, scale etc.

2.4 Ceramic decoration

Nelson (1978: 101) indicates that, decoration can be incorporated into a form while the clay is soft. Coil and slab can be pinched together or modelled into an endless variety of shapes for both functional and decorative purposes (23).

The opinion of Nelson becomes the main concern of this project. In his view decoration should be included into the form while the clay is soft or "Green". This

time instead of coils and slabs mentioned in his literature quoted, it is the use of small shapes or knobs of clay. The end product will be decorative.

Clark (1972 : 33) also indicates that,

Structural decoration is when it results from the method of making or form natural decorative effects inherent in the particular materials of the glaze or body.

This type of decoration occurs mainly in hand made pottery show by the effect of unsmoothed coil pot or the rich vigorous throwing rings on the surface of a pot. (24)

Clark shares the same view of including the decorations in the form during the building stage in the green state with Nelson. But he emphasizes that; this type of decoration occurs mainly in hand made pottery. This project is hand made; therefore it is easy to adopt these views.

Hugo (1984: 14) maintains that, decoration of the ceramic form can start at any time during making. This could include incision, carving, cutting, and fluting, anything intact that leaves a cut mark in the wet to leather-hard clay. (25)

He argues further that,

With all these techniques available it is simply not feasible to give a definitive list of decorative methods. It must be remembered that combinations of so many of these techniques are used by potters the world over. Today, new methods, based on modern technology (photography and printing processes amongst them have added to the already wide spectrum. (26)

Hugo argues that, the notion of decoration done only in the finishing stages does not always apply in ceramics. According to the literature quoted "decoration of ceramic form can start at any time during making". He explains, it is not possible or reasonable to give a final, complete or best list of decorative methods. This is so because some can be combined in many ways to achieve a decorative purpose.

Nelson (1984: 178) asserts that,

The potter should decide how he or she wants to decorate a piece during the forming stages, because some types of decoration are undertaken while the clay is still plastic. Often freely thrown or elaborately hand built forms are complete in themselves, and some may need only a coating of a single glaze. Other simpler shapes may benefit from plastic additions or a painted design in slip or under glaze for a form while it is being made will help to create a more unified result. (27)

Nelson states clearly that the decision of how a ceramic ware should be decorated must be taken right from the forming or the building stages. In these projects, the knobs of clay are used to build the ware, which will later appear on the surface as decorative. He also emphasizes the need for the decoration to be undertaken while the clay is still plastic as referred in the project.

Nelson however cautions:

Decoration should complement and not overwhelm a ceramic form. The character and shape of a piece will suggest an appropriate type of decoration. There are many methods of decoration including manipulation of the clay itself and the use of colored clay bodies, slips and glazes. However, there is never only one method suitable for a particular shape. (28)

Here Nelson agrees that decoration should complement a ceramic form but warns that it should not overpower or make powerless the ceramic form itself. He explains further that, the ceramic piece or form will suggest the type of decoration to be made on it.

Infact, he made a brilliant point that holds strongly in ceramic decoration by saying "there is never only one method suitable for particular shapes". He also suggested some methods including the manipulation of the clay itself and that becomes the main concern of this project.

From all the literature quoted and discussed about decoration, ceramic decoration can simply be defined as controlling of clay itself using the hand, colour, slip and glazes to embellish a ware either in the forming stage or finishing stages such as leather-hard and bisque stages to please the eye.

2.5 Principles of ceramic design

Norton (1956: 10) opines that,

A good design is the purposeful assembly of various elements into a whole that delights the eye of an observer either because it evokes pleasant to look at or because it is particularly suited to its purpose. (39)

This statement views decoration in ceramics as arrangement of various elements, putting them together in an organized manner intended to achieve its aesthetic qualities. To be successful, the decorator must strictly adhere to the principles of design.

Norton further states that, "to plan an object to best suit its principles of ceramic Design purpose, to seem most pleasing to the sense of those who come in contact with it and to be harmonious with its surrounding". (30)

He is of the opinion that the exercise involves planning or careful thinking of arrangement of elements in agreement with the aesthetic requirement of the observers. The statement therefore applies to the arrangement of the clay knobs, which this projects seeks to experiment.

Ocvirk (1998 : 32) gives the meaning of some principles of design as:

Balance: a sense of equilibrium achieved through implied weight, attention, by manipulating the visual elements within an artwork.

Harmony: the quality of relating the visual elements of a composition; harmony by repetition of characteristic that are the same.

Movement: eye travel directed by visual path ways in work of art. (31)

He adds;

Repetition: the use of the same visual effects a number of times in the same composition. Repetition may produce the dominance of one visual idea, a feeling of harmonious relationship, an obvious planned pattern, or a rhythmic movement.

Differences achieved by opposing contrasting; changing, elaborating, or diversifying elements in a composition to add individualism and interest; the counterweight of harmony in art.

Dominance: the principle of visual organization where certain elements assumed were important than others in the same composition or design. Some features are emphasized and others are subordinated.

Unity; in this same instance means oneness, an organization of parts that fit into the order of whole and become vital to it. (32)

Ocvrik (1998:103) explains further the relationship between shape and principle of design.

He says

If artist wish to create order unity and increase attention span, they have to conform to certain principles or order of design. In observing these principles, they are often forced to alter shapes from their natural appearance. It is in this respect the building blocks of art structure. (33)

He emphasizes the need to observe certain rules or principles of order or design. For example with balance, he says as artists seek compositional balance, they work with the knowledge that, shapes have different visual weight depending on how they are used. For direction, he says, artists can use the elements of form to generate visual forces that direct our eyes as we view the work, and then the unifying and rhythmic effects provided by the eye path are modified by the number and length of the pauses in the eye journey. This applies to the arrangement of the clay knobs, which is the subject in review. He says, harmony ensures that all things seem to belong together. These need not always be an identical likeness but perhaps, merely enough to see their relationship.

Variety is the other side of the coin. Enough difference must exist to make for challenging viewing. He maintains that these differences are attractions that grasp and hold our attention for period thought necessary by the artist or the potter.

Our attention is constantly being manoeuvred about the surface of a ceramic work by the degree of emphasis given to the various areas that surface. The movement of our eyes is directed to another, passing over, or through the "rest" or de-emphasized areas.

Clark (1978:37) concludes,

Decoration must really be designed throughout and related to the form. By taking aspects of a drawing and applying the basic principles and contrast on line, mass, colour, movement, etc. with the shape always in mind, some form of decoration should result. The drawing should primarily be seen as a composition of formal shapes and marks within a given area. Only when we appreciate these elements and see them objectively can we begin to use them as decoration. (34)

Obviously, form is the complete state of a work. The potter produces this overall condition using elements of art, structure, subject to the principles of organization. The ceramist plan is usually a mix of intuition and intellect. Ideally, the plan will effectively communicate his feeling, even though it may change, that, the potter should always bear in mind the shape of the ware, subject to the principle of design to achieve a decoration form which is pleasing to the eye. In this case, the knob when well organized based on the principles of design will produce a beautiful and unique work.

2.6 Clay (defined)

Worrall (1986: 1) defines clay as

an earth that forms a coherent sticky mass when mixed with water when wet this mass is readily moldable, but if dried it becomes hard and brittle and retain its shape. Moreover, if heated to redness it becomes still harder

and is no longer susceptible to the action of water such a material clearly tends itself to the making of articles of all shapes. (35)

Hugo (1984: 14) also adds that, "clay has two distinguishing properties, it can retain the shape given it by the various forming techniques and it can change successfully, that it without faults, into permanent materials when subjected to heat". (36)

Fournier (1977: 248) gave the composition of clay as " $\text{Al}_2\text{O}_3 \cdot 2 \text{SiO}_2 \cdot 2\text{H}_2\text{O}$ ", and said this never occur pure in nature" (37). Clay is the main material for this project therefore it is imperative to get a better understanding of its behaviour. From the various definitions it is obvious that, clay has two properties. It allows itself to be shaped into different forms including making of clay knobs in its plastic or wet state. Secondly it hardens when dried and changes its state permanently when subjected to heat.

Clay can then be defined as an earthen material which when crushed, pulverized and wet becomes plastic that can be modelled but when dried, it hardens known as leather hard and on firing becomes permanently hard.

2.7 Formation, Characteristics and Preparation of Clay

Hugo (1984: 8) states

The discovery of the origin of clay involves a study of the formation of the earth itself. The earth's crust is predominantly made up of granite type rocks, the very rocks which potters ultimately derive many raw

materials including most clays. Millions of years ago granite domes thrust up by the violent activity of hot magma cooled slowly and were subjected over a period of time, to hypogene action. Hot gases such as carbon dioxide boron and fluorine were forced through the domes, decomposing the hard rock and 'weathering' it. The mineral feldspar is a product of this decomposition and by hydrolization it becomes clay. (38)

He continues

The first is the primary or residual clay found where it is formed. China is the chief one in the group. It comprises an average 98 percent of the materials Kaolinite ($\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$) which has regular ordered crystal structure that resists weathering. Its particle size is comparatively large so it is not very plastic. (39)

Hugo concludes that, "the other main group is the secondary or sedimentary clays. These contain disordered Salinity with an irregular crystal structure that is easily broken down. Secondary clays also differ in physical structure and chemical composition". (40)

Hugo explains that clay is formed as a result of the breaking down of rocks. The process is referred to as weathering. The point relevant to the subject or the project is to know which types of clay are less plastic to avoid breaking.

Hamilton (1978: 20) opines

Clays are formed by the decomposition of felspatic rock under the weathering action of wind and rain or erosion by rivers. Clays, which decompose upon the site of the original, are known as primary clay and are characterized by their shape during making and firing but tend to crack. (41)

He states further that,

They are relatively refractory and fire white or light cream in colour. Clays which have been transported from the site of decomposition and deposited on the beds of rivers or lakes are known as secondary clay. These are far more plastic but relatively impure because during their passage they will have taken up impurities present in other rocks, which have similarly decomposed. Nevertheless both these types of clay are given the standard chemical formula of $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$ (42)

Hamilton explains that the clays, which remained at their places of decomposition, crack during making of pots and firing, while those, which have been transported from the site and deposited on the riverbed are plastic but not pure. The relevance of this literature to the project is to help in the choice of the required clay. This will therefore demand the composition of clay bodies for effective work.

Nelson (1984: 3) asserts that,

Clay derives from the disintegration of granite and other feldspathic rocks that as they decompose, deposit alumina and silica particles. The most valuable clays for the potter consist mainly of the mineral kaolinite, which has an ideal formula of $\text{Al}_2\text{O}_3 \cdot 2\text{SiO}_2 \cdot 2\text{H}_2\text{O}$. (43)

Woody (1975: ix) opines that,

Clay has some unique characteristics that make its use for the formation of vessels and other objects both possible and exciting. Clay is plastic when contains the right amount of water. That means it can be pushed and stretched into almost any shape and it will hold that shape. Clay hardens as it dries and when subjected to sufficient heat; it vitrifies and becomes almost indestructible. (44)

Woody also highlights on the characteristics of clay but made very interesting choice of words such as "it can be pushed and stretched" and "when subjected to sufficient heat it vitrifies and becomes almost indestructible". This is why it is possible for the experiments to be carried out in this project. Clay preparation includes all the treatment given to clay from its raw state to a desired workable state. Among others are washing, aging, wedging and kneading.

Johnson (1977: 12) writes

Apart from the air- drying clays and modelling substances, all clays must be prepared before you can make pottery objects from them. A clay may seem ready from the plastic bag or bin which you keep it, but it is likely to have air bubbles in it and equally important is probably inconsistent in texture. (45)

Johnson suggests, all clay must be well prepared before use because of the presence of foreign materials, which may affect the end products during drying and firing stages. This statement is very important.

Nelson (1984: 89) also adds that, "aging allows the microscopic particles to come completely wet causing them to cling together. If clay is aged for several months, light chemical breakdown occurs much like the original formation process". (46)

Nelson explains why there should be aging of clay and said it allows small particles to cling together for effective plasticity. It is true that clay that is lumpy and uneven is difficult to work with moreover trapped air bubbles will explode if the piece of work

is fired. Good preparation of clay makes the potter gets "feel" of the actual workable clay

Nelson (1984: 91) sees wedging as "an important process in clay preparation. The clay is kneaded to force out air bubbles, to align coarse particles and develop a homogeneous consistency". (47)

Fournier (1977: 248) states that, "originally, the cutting of two wedge shapes from a block of clay and banging them together now often loosely applied to the whole process of hand mixing of clay and working into a consistent, bubble-free mass". (48)

From all the three sources quoted, they have all expressed the need to and maintain consistency after mixing both clay that has been cut into wedges to remove unwanted materials. That is why Nelson (1984: 89) defines the process as "process by which clay is kneaded by hand to remove air pockets which has considerable effect in increasing plasticity". (49)

Johnson (1977: 12) also adds that "this action again is to drive out the air and helps to align clay particles so that your kneaded lump is plastic and easy to work" (50).

The two writers share the same view that after so many clay preparatory processes up to the wedging state, there may be some materials, which are unwanted together with some air traps. They can cause breakages during drying or firing if they are not removed. Kneading is important for this project because it also helps the clay to have a smooth texture.

2.8 Clay Body

Hugo (1984:10) opines

Depending on what use the clay body is put to, there are materials which can be added to obtain the desired qualities. For example a throwable clay free from sand or grog should be used for fine table ware; the body for large garden pot will have additions of either, or both, of these materials. A hand-building clay is best for coiled forms that will need to be taken from the hot kiln, rolled around in sawdust and plunged into cold water, as is common in the Raku process (51).

Hugo explains that there are different types of clay but depending on what a particular type of clay will be used for, may need a mixture of desired qualities. This project is concerned about a plastic hand building body suitable for making knobs of clay without cracking.

Hugo (1984: 22) adds:

All clay bodies have to go through an extension process of preparation in order to bring them to the correct working state. All the different ingredients that go into making up the body are cleaned and processed separately, then blending together in liquid form to produce a solution known as slip. Raw materials tend to vary a great deal and the craftsman potter is able to vary his methods of making- if the body dries too quickly he used more water, if fusing does not take place in the kiln he adjust the firing time or temperature. (52).

There are different types of clay such as kaolin, ball clay, stoneware, fire, earthenware, slip clay and Bentonite and they all have different characteristics. It is obvious that no one-clay type can be regarded as perfect for use in ceramics. Hugo shares the same opinion and says the type of clay should be well prepared, mixed well

and bringing them to a 'correct working state'. They should be mixed to get desired workable clay, which is termed clay body.

Nelson (1978: 7) asserts that, an earthenware, stoneware or porcelain body that is completely satisfactory for the potter seldom occurs in nature. The clay may not be plastic enough, may have unattractive colour may not fire at the desired temperature (53).

Here the literature explains how clays from even the same bed could vary slightly in chemical and physical qualities, which need to be mixed to achieve the workable body. For example, clay from Pankronu in Ashanti region may not chemically and physically be in the same quality as that from the Kpando in the Volta region or Abonku in the central region. When these different characteristics of clay are mixed, a desired workable body may be obtained.

Nelson adds:

Occasionally, the clay will lack sufficient flux to fire hard enough at the desired temperature. When this occurs, inexpensive materials containing fluxes such as feldspar, talc, dolomite, nepheline, syenite, or bone ash are usually added. If the colour is not important, you can use iron oxide. In some cases, a small amount of lower-firing clay can be added, which has the advantage of not cutting down on plasticity. If on the other hand, there is too large a proportion of fluxes and the clay body deforms at relatively low temperature, you must either begin with a different clay or add clays that are higher in alumina or in silica and alumina. Either a Florida kaolin or plastic fireclay of high maturity will work for this purpose (54).

Nelson gives some reasons why clay body is necessary. He states them as, for plasticity, good firing, colour etc. since this project involves building also, it is necessary to take into consideration, the making of clay bodies. He lists the basic clay bodies as Raku bodies, earthenware, stoneware, china, and porcelain. Special clay bodies include sculpture bodies, ovenware and flame ware bodies, and colorant.

Clay body can therefore be defined as mixing of clay of different characteristics in terms of firing, colour, plasticity, porosity and shrinkage to achieve a desired workable condition.

2.9 Hand-Building Techniques And Some Decorative Techniques.

Johnson (1988:8) states

The main tool, the paramount one in every case is the hand. In practically no other craft is the relationship of hand to material so important. That is why countless thousand of craftsmen potters amateur or professional, find clay modelling such a satisfying means of self-expression (55).

The opinion of Johnson is that in everyday activities, the hand is used as the main tool for clay modelling. He specifies that, the relationship between the hand and the clay is more important than the materials. Well, other writers may contend this statement, but the most important issue is how it allows itself to be manipulated to achieve desired shape, as some say, it "obeys". However the process therefore of using the hand to model, mould, squeeze or build clay to achieve a desirable shape is called a hand-building technique.

Nelson (1978: 88) asserts that,

Hand-building with clay is one of the oldest craft activities known. The techniques are followed today in almost the same manner as they were ten or twelve thousand years ago. It is likely that small figurine and animals were modelled long before the first pots were made. Few of these unfired figures have survived, but some have been found in Middle Eastern burial mounds. They were probably used as fetishes in connection with hunting, planting and harvesting (56).

He also says that,

Throughout the history of ceramics, hand-building techniques have been used to make both functional and sculptural forms. In skilled hands, pinching and coiling produce remarkably symmetrical pots. Even after the introduction of the potter's wheel, many cultures continued to prefer the flexibility of these hand methods (57).

The literature explains that hand-building techniques started long ago. Despite the introduction of the machine and other technological advancement, many cultures still continue to prefer the "flexibility of these hand methods". This supports Johnson's view about the swift relationship between the hand and the material clay.

Nelson discussed some few hand-building techniques; pinching; coiling; and slab construction.

Pinching: The potter starts with a small ball of wedged clay, the size of a tennis ball or slightly larger. A depression is made in the center with the thumb. Then the ball of clay held in one hand, is squeezed between the thumb and forefinger of the other hand. More pressure from the inside will make a wider shape, while more pressure with the forefinger against the thumb will result a taller form.

Coiling: Coiling is done by the rolling out coils or ropes of clay to a desired thickness. Often these coils are joined to a flat rounded base and gradually shaped to

build up the desired form. The coils should be pressed together firmly and joined marks smooth on the inside.

Slab method: Slabs are sheets or slices of clay that are rolled out, often with a rolling pin, to the desired thickness and wrapped, folded or cut and joined together (58).

Nelson (1984: 183 & 184) also describes some ways of decoration and reiterates,

Incising; the technique of incision consists of carving lines with a tool into a clay surface. These lines can be deep cut providing a strong accent or shallow ones following the contour of the pot. Incised lines can also carve out a design that may be glazed late in a contrasting.

Slip Decorating: Slips can be applied to leather-hard clay in many ways. For decorative purposes, oxides are added to the liquid slip to produce colors. Slip can be brushed over the entire surface of a pot, painted on in designs or applied in bands. Once the coating has dried, lines can be scratched through to the clay beneath. This technique is called sgraffito. (59)

Nelson continues,

Stamping: One of the oldest decorative techniques for ceramic objects is stamping. Many Neolithic pots have impressed designs of weaves, cords, or basket patterns. These devices are still used today to provide interesting textural decoration. Other possibilities for stamps include shells, leaves, pebbles and an infinite variety of found objects.

Potters also carve stamps out of clay and bisque-fire them for increased durability and to prevent their sticking to wet clay. Stamps should be applied with fair amount of pressure to make a clear impression. If a vertical wall is being stamped, the wall must be supported with the hand to determine the proper pressure needed. The moisture content of clay is important. If it is too dry, the clay may crack; if too wet, the stamp may stick. (60)

Nelson adds,

Rolled stamp decoration has the advantage of greater speed in application but generally produces a less complex design. Applied clay pressed with a finger or a stamp will create a raised patten and a more ornate texture effect.

Engobes oxides: Dry clay may be brushed with engobes and oxides to create coloured designs and patterns. An engobe is a slip that has reduced clay content to lesson contraction problems. Usually, half the clay is replaced by feldspar, silica, and a flux and a small percentage of such plasticizers as bentonite or macaloid can also be added. Coloring oxides and stain are also painted on raw clay, but too thick an application will flake off or cause faulty adhesion of clay of the glaze. A small amount of the flux or feldspar added to the colorant and water mixture will help seal the color to the body and make it less susceptible to flaking during the glaze firing. (61)

He concludes that,

Glazing: Glazing in the bisque state is the most common procedure. Normally, bisque ware is fired between cones 010 and 06 (1641°-1830°F, 894-999°C). At this stage the bisque is hard enough to be handled without mishap yet sufficiently porous to absorb the glaze readily. Bisque ware fire at lower temperatures will absorb too much glaze and the clay structure may break down, if fired too high it is especially difficult to glaze for the glaze tend to run off. (62)

The few decorative techniques described above by Nelson are among those used to make host of useful and decorative items in Ghanaian Secondary schools. This goes to buttress the point that, most of these ceramic wares are decorated either in the leather-hard or bisque state. It is imperative therefore to experiment and find new ways of making and decorating ceramic wares in the green or plastic state.

From all the literature quoted in this chapter, it can be deduced that since ceramic decoration is concerned about enriching and emphasizing forms or the surface of wares to be pleasing and appealing to the eye, there is never one method suitable for it. The potter should decide how he or she wants to decorate a piece of work during the forming stage because some types of decorations are undertaken while the clay is still plastic and this is exactly what the subject in review seeks to do.

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CHAPTER THREE

METHODOLOGY

This chapter involves the Experimental, Descriptive and Analytical research methods to execute the project.

Experimental research method, according to Best, (1981:112) "Is a process that provides a systematic and logical procedure of identifying and evaluating the relationships between variables that create a particular state of affairs under controlled condition". Experimental method can therefore be understood to mean a research based on something done in the hope of making a discovery or as a test of the hypothesis of making knobs of clay and use them to build wares in the green state which later appeared decorative on the surface. The method is also used in this project to find, classify, thorough and logical methods of identifying and evaluating different ways of decorating ceramic wares in the plastic state.

Descriptive method is defined by Best, p.99 as "the collection of data for the purpose of describing and interpreting existing conditions prevailing, practice, beliefs, attitudes, on-going process etc. However, the central purpose of descriptive research is not just the description of what is, but also the discovery of the meaning". This method can also mean, tracing out, drawing or giving an account of anything in words and explaining an existing condition, present and on-going process. In this project, descriptive method was used to describe and explain the preparation of the material (clay), the tools and equipment and their uses. It is also used to describe and explain

step by step, the various methods or processes of making decorative ceramic wares in the green state.

Analytical method, Best, p.102, asserts that, "the process by which we try to uncover what is beneath the surface of a state of affairs. What relationships between the various variables are responsible for creating the state of affairs, as we perceive them". This involves the breaking up of a whole into its elements or parts, to examine the relationship between the different decorative activities. The analytical method was therefore used to discuss the result of the final works philosophically, psychologically, symbolically and aesthetically.

MATERIALS TOOLS AND EQUIPMENT

3.1 Material Preparation

The main material for the project is clay. All clay must be well prepared before effective pottery work can be done. This part of the chapter describes only the preparation of the clay body used for executing the project. A little knowledge of the way clay bodies are developed and how they behave will take away some of the mystery surrounding clay.

A clay body is a mixture of clay and other materials, either worked as it comes from the earth or prepared by the user. It may happen that the clay may be less plastic or more plastic, may not fire at the desired temperature or may not have an attractive colour, which must make it necessary to mix clays in order to achieve a workable

body. For example making pots or wares using clay knobs and firing them at a low temperature does not require the use of high-fire porcelain clay but rather porous earthenware.

The forming of clay body for this project was necessary for various reasons such as shrinkage and warping, plasticity, firing at a desired temperature.

Shrinkage / Warping

This occurs as the clay form dries in the air and bisque fired or glazed. The more plastic clays will always shrink the most. Very fine clays shrink more when they dry than those with larger particles. Kaolin was added to the body to reduce the plasticity which also reduces the shrinkage.

Plasticity

This project required the use of less-plastic clay hence the mixture of Wenchi clay with kaolin. The feldspar is also added to reduce the plasticity of the clay

Desired temperature

The maturing temperature of clay bodies varies tremendously from low-fire earthenware to high-fire porcelains. Feldspar is added to the body acting as a flux material to fuse in firing.

3.1.1 formulating the clay body

Types of materials:

- a. Wenchi clay (representing ball clay)

b. Kaolin

c. Feldspar

d. Flint

3.1.2 material processing:

a. Crushing

The 'Jaw Crusher' equipment was used to crush the materials and reduced to smaller particles. (Plate 1)



Plate 1 Crushing clay

b. Grinding

After crushing the materials into smaller particles, the 'Disc Grinder' was used to reduce them to powdered form eg. Feldspar. (Plate 2)



Plate 2 Grinding clay

c. Sieving

The materials were sieved through the ' 60 mesh ' to remove larger particles and foreign materials. (Plate 3)

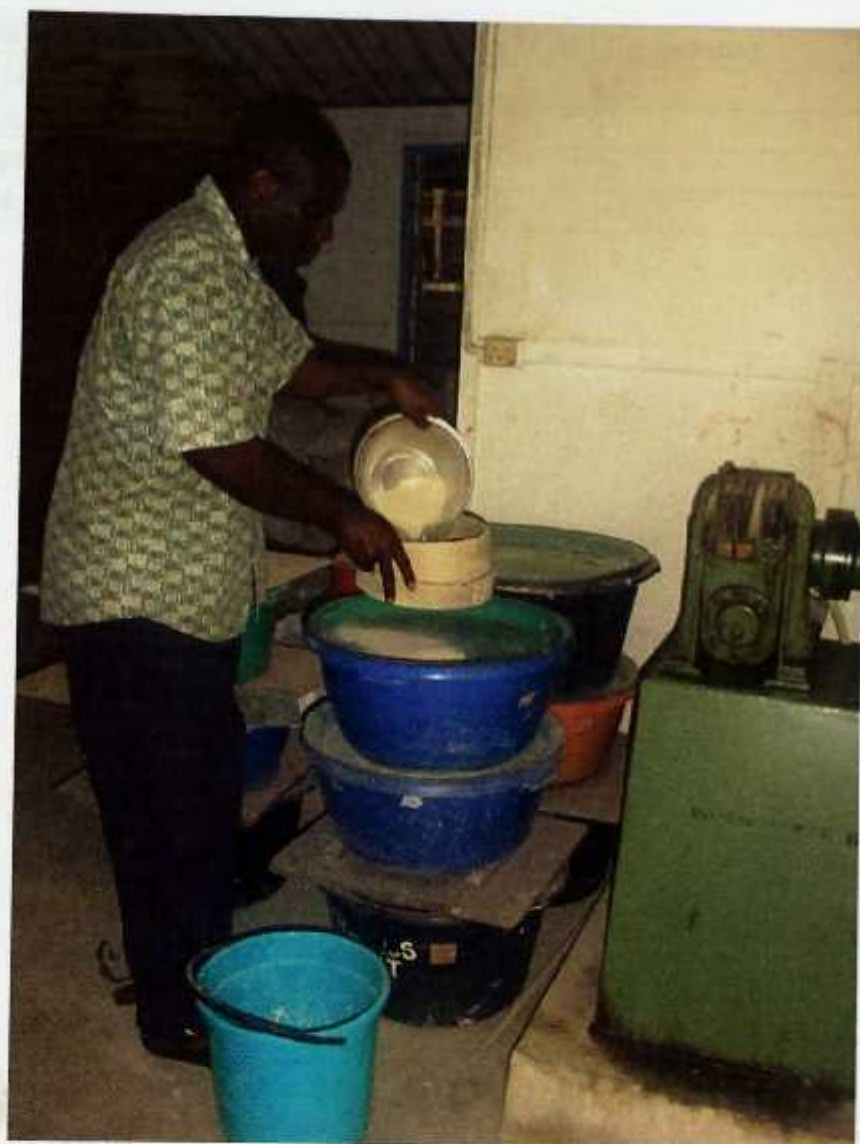


Plate 3 Sieving clay

d. Weighing

The different types of clay materials were weighed. The result of a 100 gram clay body was as follows: (Plate 4)

Table 1: Different types of clay materials and their weight

MATERIAL	WEIGHT(in grams)
Wench clay(Ball clay)	45
Kaolin	25
Feldspar	20
Flint	10



Plate 4 Weighing

e. Mixing

The two different mixing stages are:

- i. Dry mixing
- ii. Wet mixing

i. Dry mixing

The required powdered materials were dry mixed thoroughly in a plastic bowl.

(Plate5)



Plate 5 Dry mixing

ii Wet mixing

After the materials have been dry mixed, the required amount of water was added and mixed to a workable consistency. Eg. A 1 kilogram clay body was mixed with about a half (1/2) pint of water or more depending on the workable consistency needed for each technique. (Plate 6)

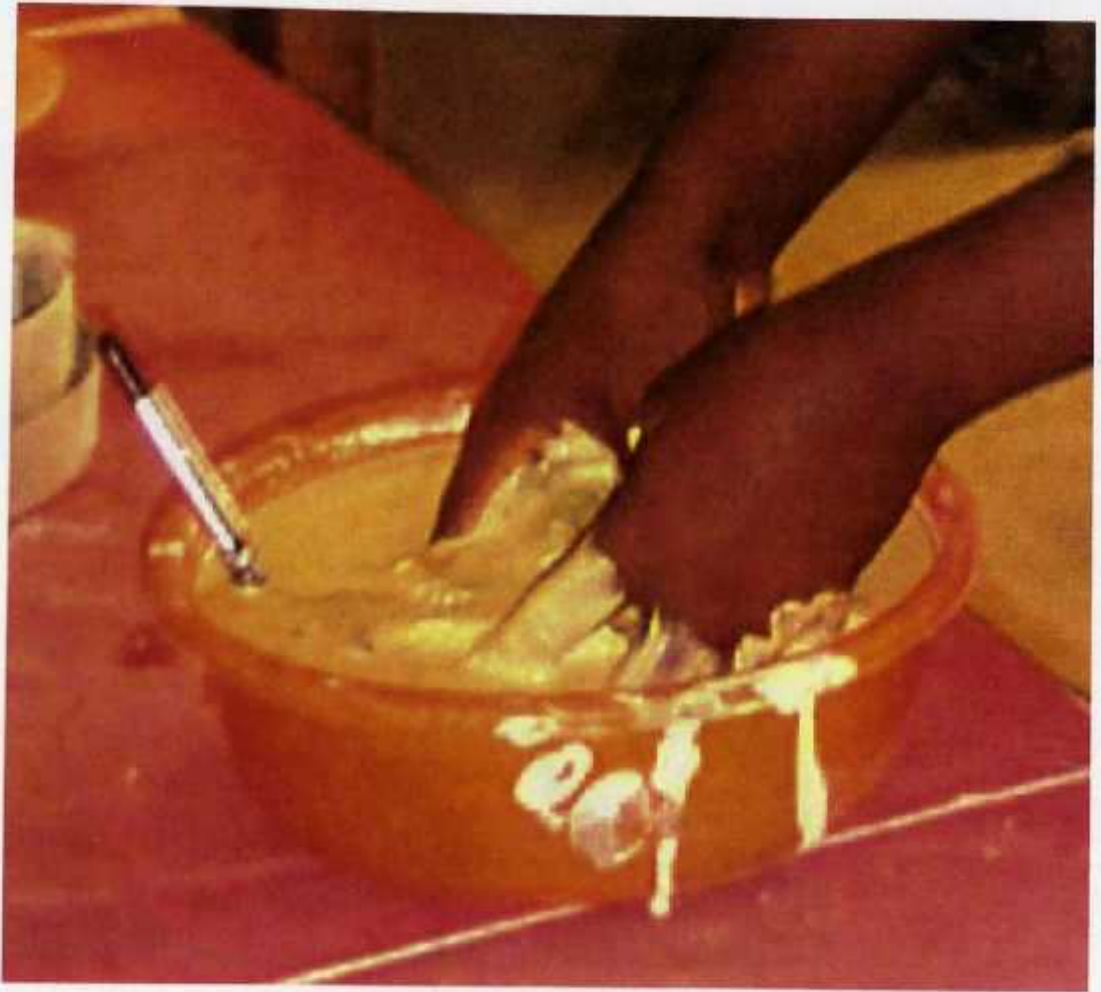


Plate 6 Wet mixing

f. Aging

It is very important and necessary for clay body to be left alone for a period of time to allow water to permeate the particles completely. Like bread, it is improved by the action of bacteria. These bacteria develop acids and gels and secrete enzymes that help break the clay into smaller particles. This body was therefore aged for two weeks before used for the project. (Plate 7)



Plate 7 Aging

g. Wedging

Wedging is a process of mixing plastic clay of different hardness by cutting and slicing clay and slamming them together. The body was wedged to make it uniform in texture and also helped to break up lumps of clay after the wet mixing and aging.

(Plate 8 - 11)

Procedure

1. A bulk of clay was readily placed on a hard surface.
2. It was cut with a cutting wire into slices and some unwanted materials found still remaining in the clay were removed.
3. Each slice was raised high with both hands and banged down with controlled force on top of the other.
4. This process was repeated several times till satisfaction.

Plate 8: A bulk of clay to be wedged



Plate 8 A bulk of clay to be wedged



Plate 9 Cutting clay wedges



Plate 10 Clay wedges

Plate 11 Measuring the clay slabs at each stage



Plate 11 Banging the clay slices on each other

h. Kneading

Kneading is the pressing and turning of clay using both hands to get rid of air or unwanted materials that are still in the clay after wedging. It is the final clay preparation before it is fashioned into a ware. It involves the rolling of plastic clay with fingers and the heel of the palm in a rocking spiral motion.

In this project, the kneading was done to mix the clay better, get rid of air pockets or bubbles to make the clay more homogenous and remove foreign matter.

Kneading procedure

1. The wedged clay was placed on a hard surface.
2. The heels of the hand were firmly pressed on the lump in a downward and forward movement.
3. The clay was pulled over and towards the front and again pressed down firmly. (Plates 12-15)



Plate 12 Wedged clay ready to be kneaded



Plate 13 Downward and forward movement



Plate 14 clay pulled over and towards the front



Plate 15 Pressing down to complete kneading

3.2 Tools

This project requires only a limited number of tools since the hand does most of the work. Most of the tools were also improvised to suit the modelling process. These tools were only used for the joining and smoothening of the inside of the wares in order to allow the decoration effective on the surfaces. They include knife, cutting wire, joining tools, smoothening tools, 60 mesh, pestle, mortar etc.

3.2.1 Modelling tools (Bamboo/Wood)

Description: They are carved and designed tools of various sizes and shapes made from bamboo and wood. They were prepared and carved with knife and smoothen with sandpaper.

Use : These tools were used in joining the various clay knobs to build the pots. (Plate 16)



Plate 16 Modelling tools (Bamboo/Wood)

3.2.2 Modelling tools (metal)

Description: They are shaped metals joined to pieces of wood serving as handles.

Use : Metal tools were also used to join the clay knobs from the inside to build the pots. (Plate 17)



Plate 17 Modelling tools(metal)

3.2.3 Smoothing tools

Description: smoothing tools were made from bamboo and wood of different sizes and shapes. Each of them is called Spatula.

Use : They were used in smoothing inside the pots after joining the clay knobs. (Plate 18)



Plate 18 Smoothing tools

3.2.4 Knife

Description: One sided sharp metal with a plastic or metal handle.

Use : It was used for cutting clay (Plate 19)



Plate 19 Knives for cutting clay

3.2.5 Cutting wire

Description: It is made of an old copper wire with short sticks tied to both ends

Use: Cutting wire was used for cutting clay into sections. (Plate 20)

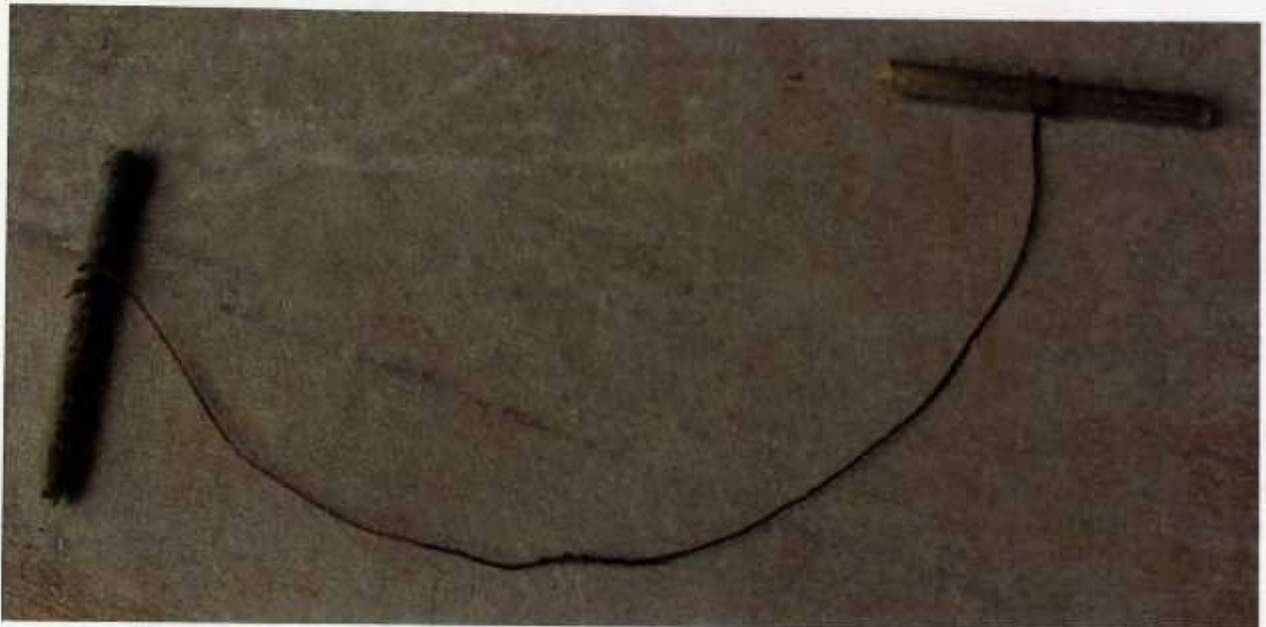


Plate 20 Cutting wire

3.2.6 Sieve

Description: It is a curved wooden bowl with a sieve attached to one side.

Use : It was used for sieving clay to remove unwanted material (Plate 21)

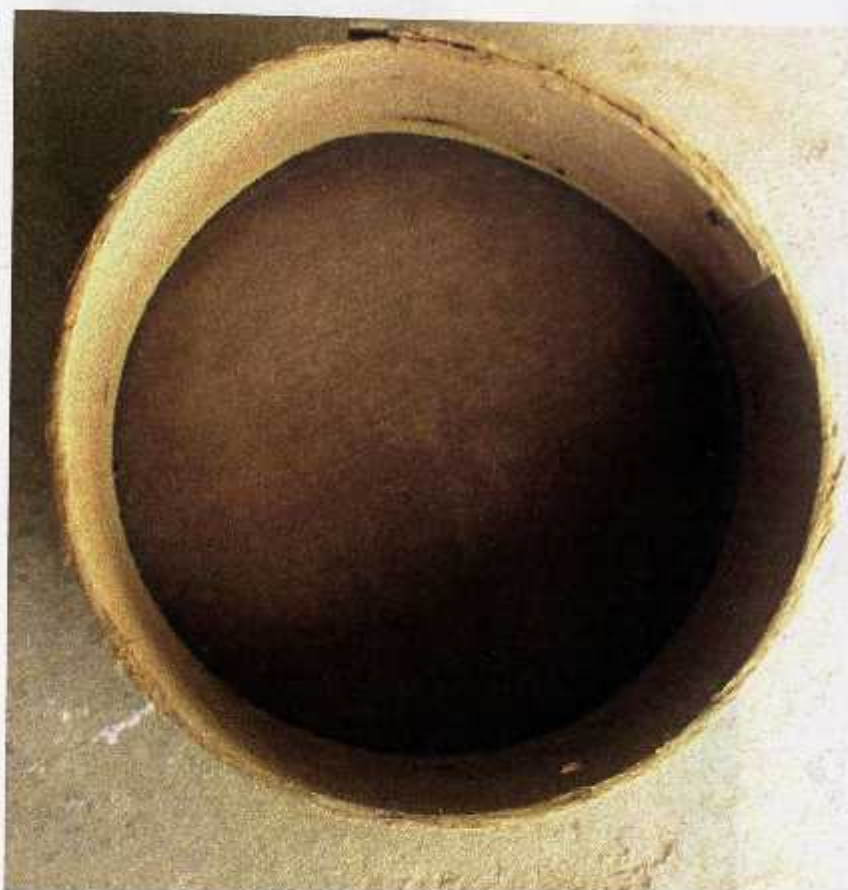


Plate 21 A sieve

3.3 Equipment

3.3.1 Jaw crusher

Description: It is an equipment made with metal which has two openings.

Use : It was used for crushing the materials and reduced them to smaller particles. (Plates 22 & 23)



Plate 22 Jaw crusher 'A'

1.2.4. Jaw crusher

Description: It is also a mill-like machine with two openings. It has the mouth and the jaw - set.

Use: It will be used to reduce the materials to powdered form. (Plate 24)

Note: In the structure of both the Jaw crusher and the Disc grinder, mortar and pestle are used to grind the clay before working.



Plate 23 Jaw crusher 'B'

3.2.8 Disc grinder

Description: It is also a mill-like machine with two openings. It has the mouth and the let –out.

Use: It was used to reduce the materials to powdered form. (Plate 24)

Note: In the absence of both the Jaw crusher and the Disc grinder, mortar and pestle can be used to pound the clay before sieving.

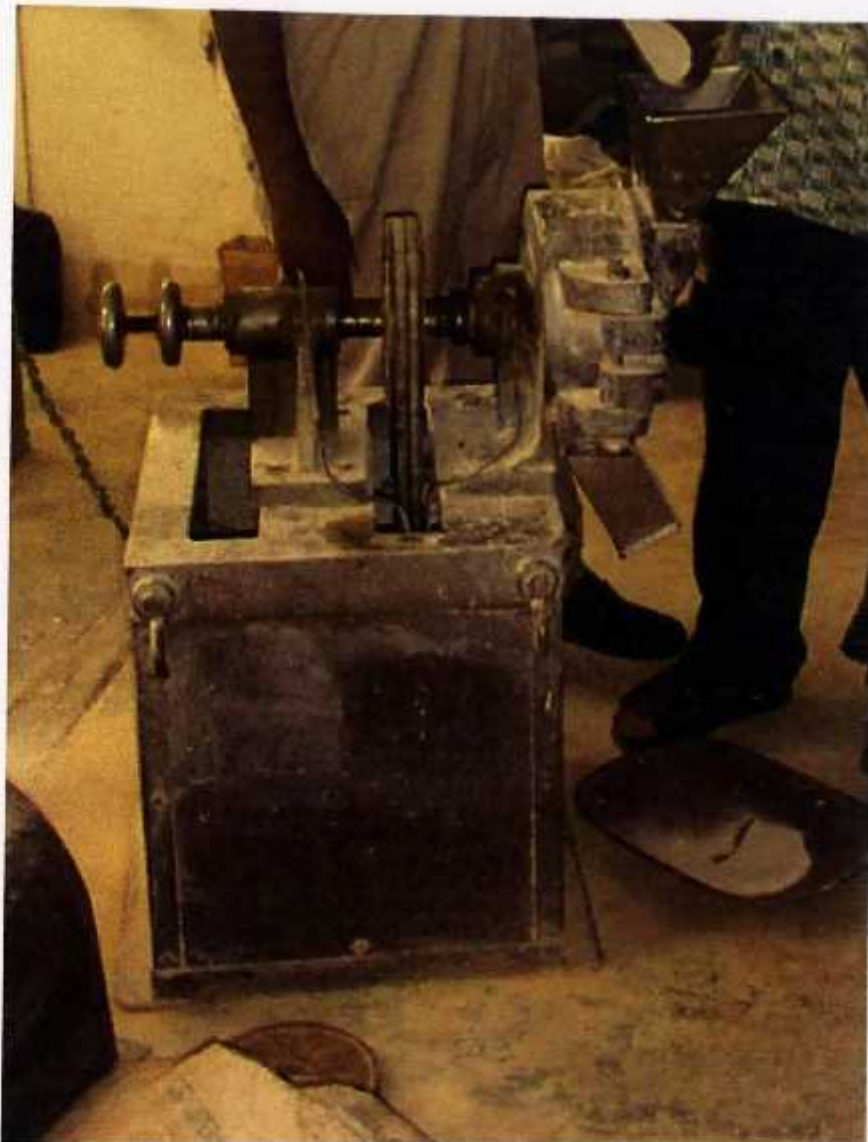


Plate 24 Disc Grinder

3.2.9 Scale

Description: It is a metal balance with a pan at one side and the different sizes of weights on the other side.

Use : It was used to weigh the different types of clay before making the body of clay for the project. (Plate 25)



Plate 25 Scale

3.4 Preparation Of Knobs

To make clay wares from knobs of clay, first start with making a lot of knobs. The preparation of knobs for the project was done by first making coils or ropes of clay that are then cut and rolled in the palm into small balls or knobs. To be able to get a good result, a long rope of clay or coil of clay should be made first.

Procedure

1. A bulk of well-kneaded clay was placed on the work surface.
2. Bits of clay were cut from the kneaded clay.
3. Each bit was rolled out into a long out coil or rope of clay to a required diameter.
4. The coils were cut into smaller lengths, each of which contains the same quantity of clay.
5. Each segment was rolled in the palms of the hands to get the clay knobs of the same size (Plate 26-32)



Plate 26 A bulk of clay



Plate 27 Cutting bits of clay



Plate 28 Rolling a coil



Plate 29 cutting the coil with knife



Plate 30 Rolling into Balls 'A'



Plate 31 Rolling into balls 'B'



Plate 32 Prepared balls or knobs

3.5 Building Processes

There are many decorative activities associated with the building. This project was based on the following activities:

- A. Clay-Ball technique.
- B. Half Clay-ball technique.
- C. Button technique.
- D. Combined technique.
- E. Brick technique
- F. Short coil technique.

3.5.1 Clay-Ball technique

It is the use of small balls of clay to build pots or containers.

Procedure

1. A shape of the container to be built was drawn on paper.
2. A base was made by gathering a number of balls of clay on a surface.
3. The fingers or a building tool was used to join the balls of clay to look smooth in the inside.
4. The building started by adding the balls of clay to each other.
5. The pot was turned round as the balls of clay were added.
6. The balls were joined inside the pot but caution was taken not to join the outside of the pot.

7. The smoothening tool was used to smoothen the inside of the pot.
8. The balls, which appeared irregular outside the pot, created a decorative look. (Plate 33-37)

Clay-ball pots formed from shapes of containers

This method involves the use of knobs of clay to build pots or wares in containers made of paper, plastic, metal etc. After the process, the container is taken off leaving the pot or the ware in the shape of the container.

Procedure

1. Oil was smeared in any container apart from paper with the top well opened.
2. The knobs of clay were arranged and join to form the base.
3. Each clay ball was added to the other while building
4. The inside was then joined and smoothened as the building of the walls continued. . (Plate 38-48)

Plate 38-48 Building clay balls at the base



Plate 33 Arranging clay balls at the base



Plate 34 Joining clay balls at the base



Plate 35 Adding clay balls to raise the wall



Plate 36 joining the clay balls to the base



Plate 37 Raising the wall of the ball pot by joining the clay balls



Plate 38 Smoothing inside the wall of the clay ball pot

Plate 40 Arranging clay balls in the base of the pot



Plate 39 The box



Plate 40 Arranging clay balls at the base in the box



Plate 41 Joining the clay balls at the base in the box



Plate 42 Raising the walls in the box by joining the clay balls



Plate 43 Smoothing inside the wall in the box



Plate 44 A section of the ware in the box

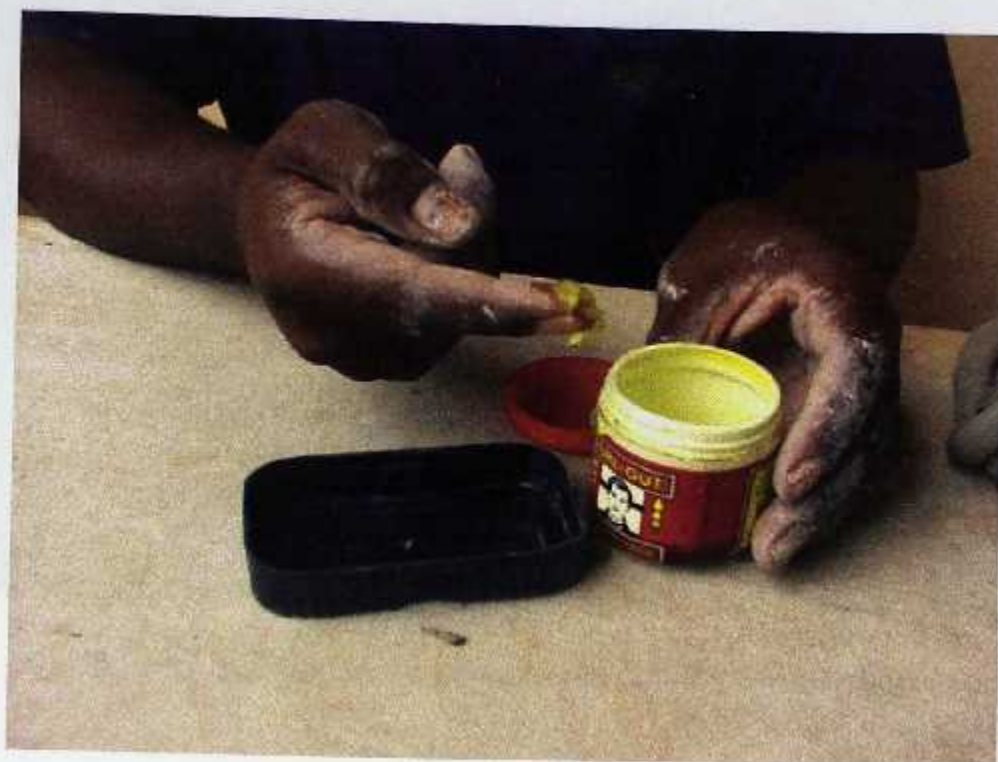


Plate 45 The oil and the container



Plate 46 Applying oil in the container



Plate 47 Building in the container by joining the clay balls



Plate 48 A section of the ware formed in the container

3.5.2 Half Clay-Ball Technique

Half-ball technique involves cutting into equal halves of clay balls and using them to build a pot.

Procedure

1. The clay balls were spread on a surface.
2. These were cut into equal halves.
3. A base was built with full balls.
4. The building up of the pot was done using half balls of clay. (This time the half balls were overlapped on each other).
5. Then as usual, the inside of the pot was joined and smoothened. . (Plate 49-51)



Plate 49 Using knife to cut the clay balls into two equal halves



Plate 50 Making the base for the half ball pot



Plate 51 Raising the wall by joining the half clay balls

3.5.3. Button Technique

This technique involves the making of clay balls and then pressing the thumb on the balls to make buttons. These buttons are joined together to form a pot or ware.

Procedure

1. The balls of clay were spread.
2. The thumb was pressed into the balls of clay to make buttons.
3. The buttons were added to the base of the pot made of knobs of clay.
4. The buttons inside the pot were joined with a building tool or finger.
5. The buttons of clay to each other as the pot was turned round and round.
6. Smooth the inside of the pot smoothened as the building of the walls was taking place. . (Plate 52-56)



Plate 52 Pressing the thumb on the clay balls to make buttons



Plate 53 Arranging the clay buttons on the base



Plate 54 Joining the clay buttons to the base

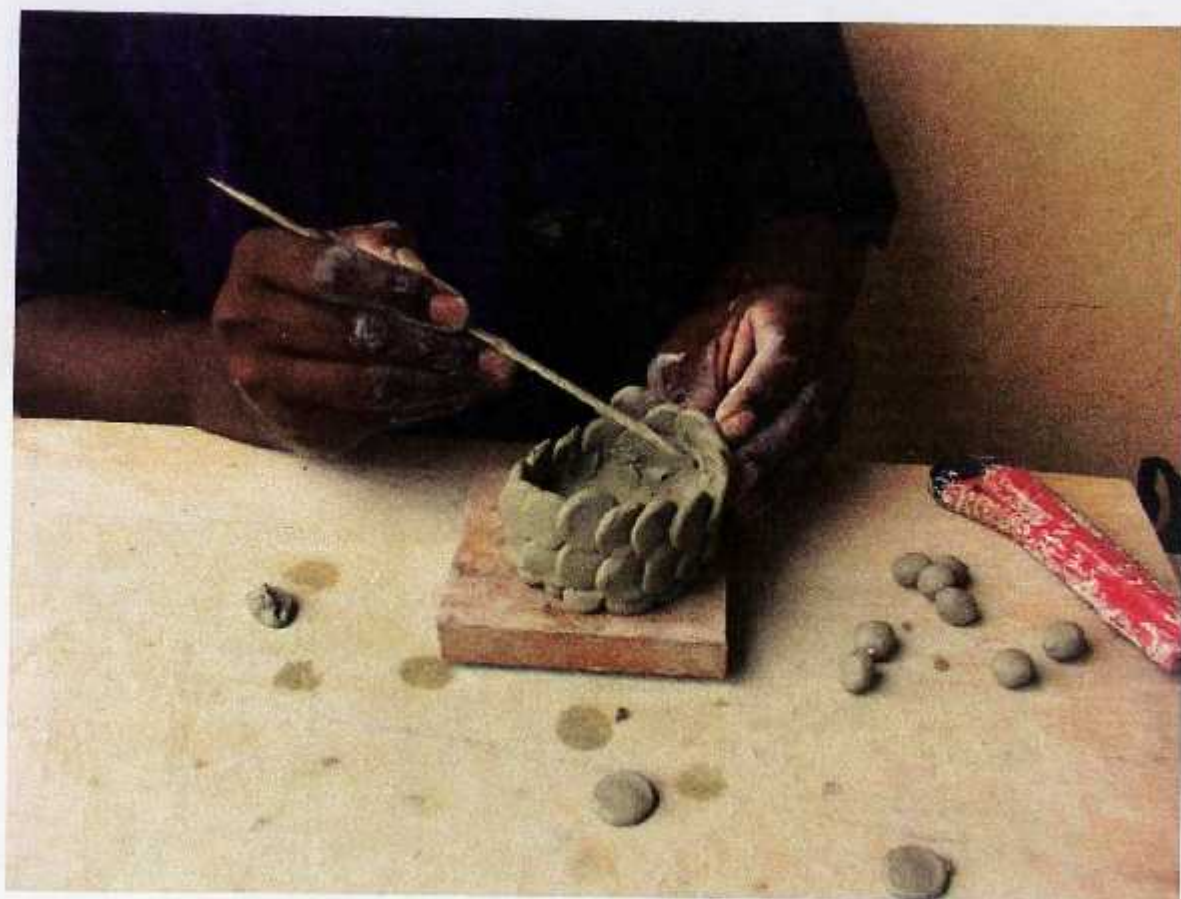


Plate 55 Raising the wall by joining the clay buttons



Plate 56 Smoothing inside the clay button pot

3.5.4 Short-Coil Technique

This technique is the cutting of long ropes of clay into short lengths and using them to build a pot or ware.

Procedure

1. Long coils or ropes of clay were made.
2. They were cut into short lengths eg. 1 cm.
3. These were turned widthwise allowing the cut surface to appear outside.
4. The inside of the pot was joined with a building tool.
5. It was later smoothened with the required tools. (Plate 57-60)



Plate 57 Cutting the short coils using cutting wire



Plate 58 Arranging the short-coils at the base



Plate 59 Joining short coils at the base



Plate 60 Raising the wall by joining the short coils

3.5.5 Combined Technique

This is the technique that combines the clay balls with other hand-building techniques to form a pot.

Procedure

1. A desired shape was sketched on paper to guide the building of the pot.
2. Any technique was used eg. Slab, pinch or coil, to get a base.
3. Clay knobs were combined with any of the above-mentioned techniques while building the pot or ware.
4. Then the inside of the pot was again joined and smoothened. . (Plate 61-63)

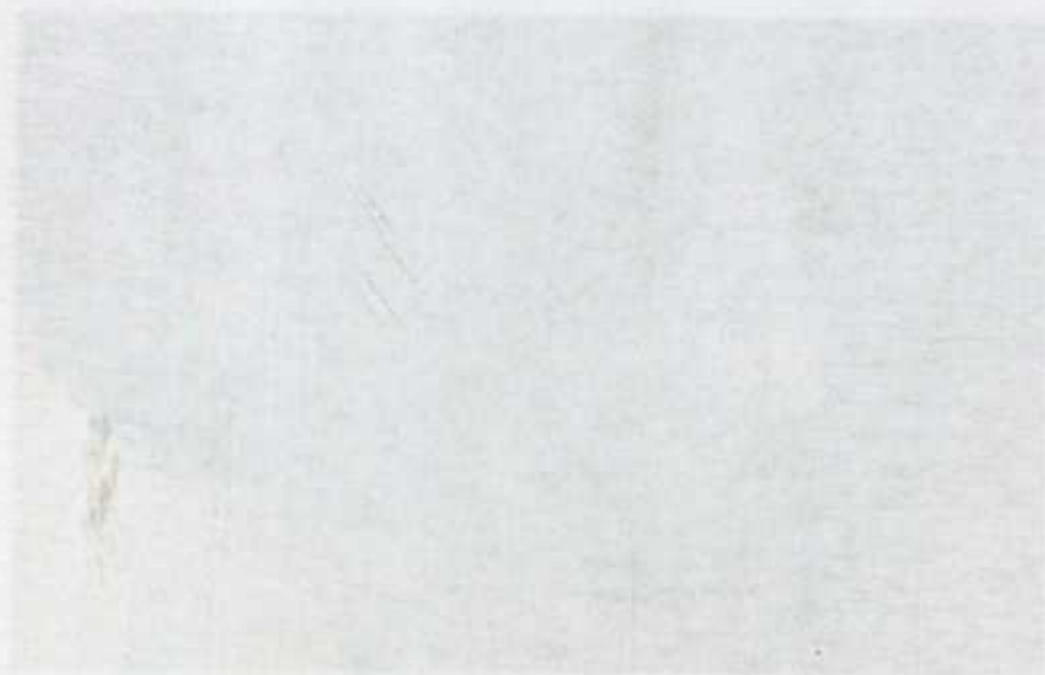


Plate 63 Showing the wall by joining the various techniques



Plate 61 Combining the various techniques on the base



Plate 62 Raising the wall by joining the various techniques



Plate 63 Smoothing inside the pot made by joining the various techniques

3.5.6 Brick Technique

Brick technique makes use of knobs of clay cut from slabs of clay looking like bricks. They were arranged and joined to each other to build a pot or ware.

Procedure

1. A desired shape was sketched on paper.
2. A coil of clay was rolled and later flattened into a slab form by the palm or a roller.
3. A special tool was used to cut the small bricks.
4. These bricks were used to make the base.
5. The bricks were then arranged on the base and joined with a building tool.
6. The inside was then smoothened with a smoothening tool.

(Plate 64-69)



Plate 64 Clay slab



Plate 65 Making bricks

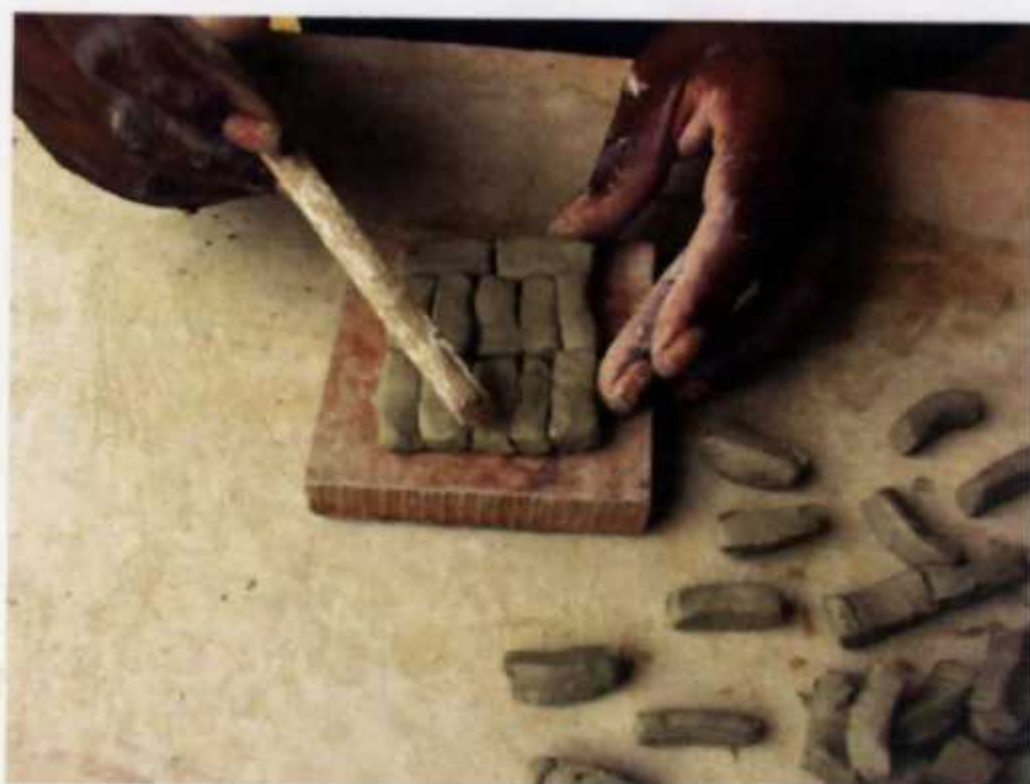


Plate 66 Arranging bricks at the base



Plate 67 Joining bricks at the base



Plate 68 Raising walls by joining the bricks

A. Evaluation Activity

For evaluation, school and workshop were introduced to Technology Secondary School students to evaluate the technical quality of their ceramic works. These students have an ability that you cannot produce. (Plate 65-74)



Plate 69 Smoothing inside the brick ware

3.6. Students' Activity

New decorative technique samples were introduced to Technology Secondary School students to enhance the aesthetic quality of their ceramic works. These students form part of the third year ceramic students. (Plate 65-74)



Plate 70 Students making clay knobs



Plate 71 Students observing a demonstration by the researcher

Plate 71 Students building pots using clay balls



Plate 72 Students building pots using clay balls



Plate 73 Students making clay buttons and using them to build pots



Plate 74 Students busily making pots using other new techniques

REFERENCE

1. Best, John W, Research In Education, Fourth Edition, Prentice Hall, Inc, Englewood Cliffs, New Jersey, 1981, pp.99-112

CHAPTER FOUR

RESULT

This chapter embodies the result of experiments in decoration of ceramic wares in the green state

4.1 Analysis

The success of carrying out experiments involving the making of small shapes or knobs of clay to build ceramic wares which serves as a form of decoration on the surface in this project has confirmed the enhancement of their aesthetic quality.

The experiments were done using about six techniques. These techniques include clay- ball technique, half-ball technique, button technique, combined technique brick technique and short-coil technique.

The differences existing between the various techniques should not to be overemphasized. The clay ball technique for example differed from half-ball technique in terms of construction. The balls stood out independently in the ball-technique while the half-balls overlapped. The clay buttons in the button technique also overlapped but produces very light works for which care must be taken when constructing. The brick technique stood out independently but the laying of the bricks were arranged just as building a house. Then the short-coils were arranged such that one can view a space of depth created between each of them.

However there were some similarities in their line formation which was common to all the techniques. There are intricate lines created in-between the knobs, which might be described as irregular. They lead the eyes to the construction of each individual knob against the other. Much is not said about other techniques because each of them might be used to produce them.

The works were executed uniquely which re-emphasized the philosophy of Roger Fry cited in Rader et al (1976:58) that, "Art is an expression of a stimulus of this imaginative life, which is separated from actual life by the absence of responsive action" He explains further that the relation between the negative and positive aspects is by no means accidental. The negative aspect liberates feelings and imagination so that they can devote their powers wholeheartedly to the enrichment of perception. What we behold then becomes a thing of vision invested with vividness and poignancy.

It means art is, forcing out of pressure or feeling that arouses the mind, or influences that cause a reaction and this is separated from the actual life. The poignancy in this context refers to the keen interest. The conduct of these experiments in the project confirmed the above statement because the various techniques were things of vision. The inspiration was drawn from the symbolism of shapes used as decorations. These have their individual meaning in the Ghanaian traditional setting.

The appreciation of the works produced from the various techniques will give more details of a clear interpretation of their aesthetic qualities and symbolism. In appreciating the works, it is imperative to consider the words of Rader (1976:88), which says, uniqueness or originality is an important characteristic of a genuine or

good work of art. The language of appreciation and criticism is replete with terms that recognize the quality. An excellent work of art is 'inimitable'. He says, to ascribe to style is basic praise. "Conversely, to be derivative is in a work of art to be less than great". He further says, uniqueness or originality, is a prime character of art. But the uniqueness that is possible to a work of art and in terms of which we praise it, is a relative not an absolute or total uniqueness.

The works in this project are unique and original. It is possible that the vividness of the individual qualities may detract from the formal excellence of the work. In judging how the details should be treated we must bear in mind the intent of the work.

4.2 Appreciation

4.2.1 Clay-Ball Pots

Items produced are ashtray, flower vase, jewel box and a ceremonial jar. The ashtray is round with the size 10cm wide and 6cm high, flower vase 8cm wide and 12cm high, Jewel box 11cm wide and 7cm high, Ceremonial jar 8cm wide and 25cm high. The clay balls were irregularly arranged. The idea of round balls was linked with the philosophy of circles in the Ghanaian society. Circle traditionally symbolizes the presence and power of God. It also symbolizes the spirit of the male in society, purity and holiness hence their use in this project. The balls were constructed to stand out and it is the philosophy of independence. Aesthetically, the surface though rough creates a natural beauty as the lines in-between the balls were automatically arranged intricately. The vase has a rectangular feature but closed up with a round mouth. The works can be placed on a table in an office or a living room. (Plate 75-77)

Pot from the shape of a container

The item produced from this technique is a jewel box. The balls symbolize perfection of God, purity and holiness. The box also made in a square or rectangular form symbolizes power of a ruler. Most jewels are used by rulers hence the creation of a jewel box to signify it. It is obvious that where jewels are kept must be pure and holy to prevent them from being stolen. Here the construction is controlled by the container in which it was formed thereby taking to its shape. It looks more straight and regular. The lines still create the decorative features on the surface. (Plate 78)

Plate 78 Clay-jar, Japan



Plate 75 Clay-ball Ashtray



Plate 76 Ceremonial Jar



Plate77 Clay- ball flower pot



Plate 78 Pot made from a box

pot holder can also be used as a flower vase on a table in a living room or office. The overlapping nature of the construction of the work, did not allow the lines to cross deeply into the work as the left rectangle has very intricate. The multi-purpose ware is 34cm wide and 14cm high, while the Pediculet is 2cm wide and 10cm high.

(Plate 79-80)

4.2.2 Half Clay-Ball Pots

Items produced are multi-purpose ware and a pen holder. The half-ball symbolizes the philosophy of the crescent moon or half-moon as the characteristics of a female influence in society. The female is believed to exhibit affection, gracefulness and calmness. For example the multi purposed ware which was produced functions both as a vase, a pencil-holder and a decorative pot. This signifies female qualities and responsibilities which they contribute in society in terms of numerous works such as household chores, nursing of babies and others. The difference between ball technique and half-ball technique in terms of construction is very significant. With half-balls they overlap on each other showing dependency, while in the ball technique, the balls stand out on their own signifying independency. The females, despite their numerous responsibilities in society depend on their husbands or their counterparts for help. The pen holder can also be used as a flower vase on a table in a living room or office. The overlapping nature of the construction of the work, did not allow the lines to create depth into the work as the ball technique but are very intricate. The multi-purpose ware is 14cm wide and 14cm high, while the Penholder is 9cm wide and 10cm high.

(Plate 79-80)



Plate 79 Multi-purpose half-ball ware

4.2.3 Clay-Button Pots

Items produced are a decorative pot which also serves as a flower vase 8cm wide and 8cm 19cm, high a pen holder 9cm wide and 15cm high and a pin container 9cm wide and 6cm high. The buttons also have the round nature symbolizing perfection but in the construction, they represent a scale-like feature. The scale is believed to symbolize protection. The philosophy is that scales of a fish and other animals are supposed to have protected their skin. Here, the perfection and protection are worked together for the purpose of the use of the pots. Wisdom, faithfulness, justice, courage and fairness are being perfected and protected. For example, the pin-container protects the pins, buckles and other tiny items used by tailors and seamstresses from getting missing. The decorative piece which also holds flowers protects them from destroying. The clay buttons also overlap in the construction giving a vivid aesthetic appearance.

(Plate 81-83)

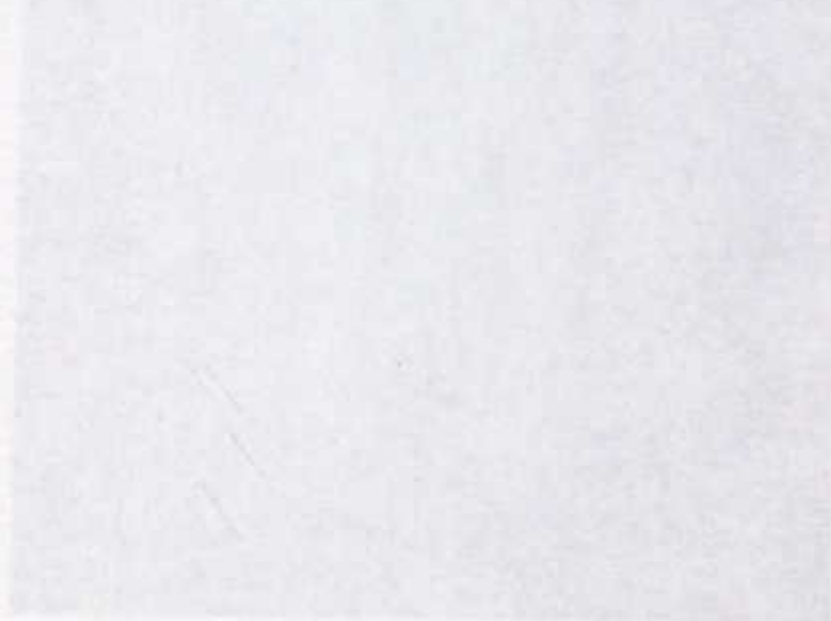




Plate 81 Clay button decorative flower pot



Plate 82 Clay – button pot (pen holder)

The bowl produced under a good size. The rectangular shaped clay bowl used in the construction of the bowl is a variety of pottery in the style of God's influence on society.

Again in this project, it is clear that the different kinds of clay were used to keep them in a good place. And as the clay is dry, the construction was done in a number of steps, trying to make the very structure. The bowl is 2 feet wide and 1 foot high.



Plate 83 Pins container

5.2.4 Brick Pots

The item produced is also a jewel box. The rectangular shaped clay bricks used in the construction symbolizes sanctity or purity in the male or God's influence on society.

Again in this project, it signifies how delicate jewels are and the need to keep them in a pure place. Just as the name implies, the construction was done in a manner of brick laying looking very attractive. The box is 9.5cm wide and 7cm high. (Plate 84 & 85)



Plate 84 Brick Jewel box 'A'

Decorative Techniques

The jewel box is a decorative pot, which also serves as a pedestal and a small jar. The construction of different techniques have significant value. The decorative pattern consists of a series of the same, clay balls, with and clay buttons. It is made with red. It has high. The result is very vigorous and appealing to the eye. The entire structure is made of clay balls and with. Each piece can be used in a variety of ways (Plate 85).



Plate 85 Jewel box 'B'

4.2.5 Pots From Combined Techniques

The items produced are a decorative pot, which also serves as penholder and a small ash tray. The combination of different techniques here signifies unity. The decorative pot/penholder combines a slab at the base, clay balls, coils and clay buttons. . It is 7.5cm wide and 11.5cm high. The result is very vivacious and appealing to apprehend. The ashtray combines only clay balls and coils. Both items can be used in the sitting room or office. (Plate 86 & 87)

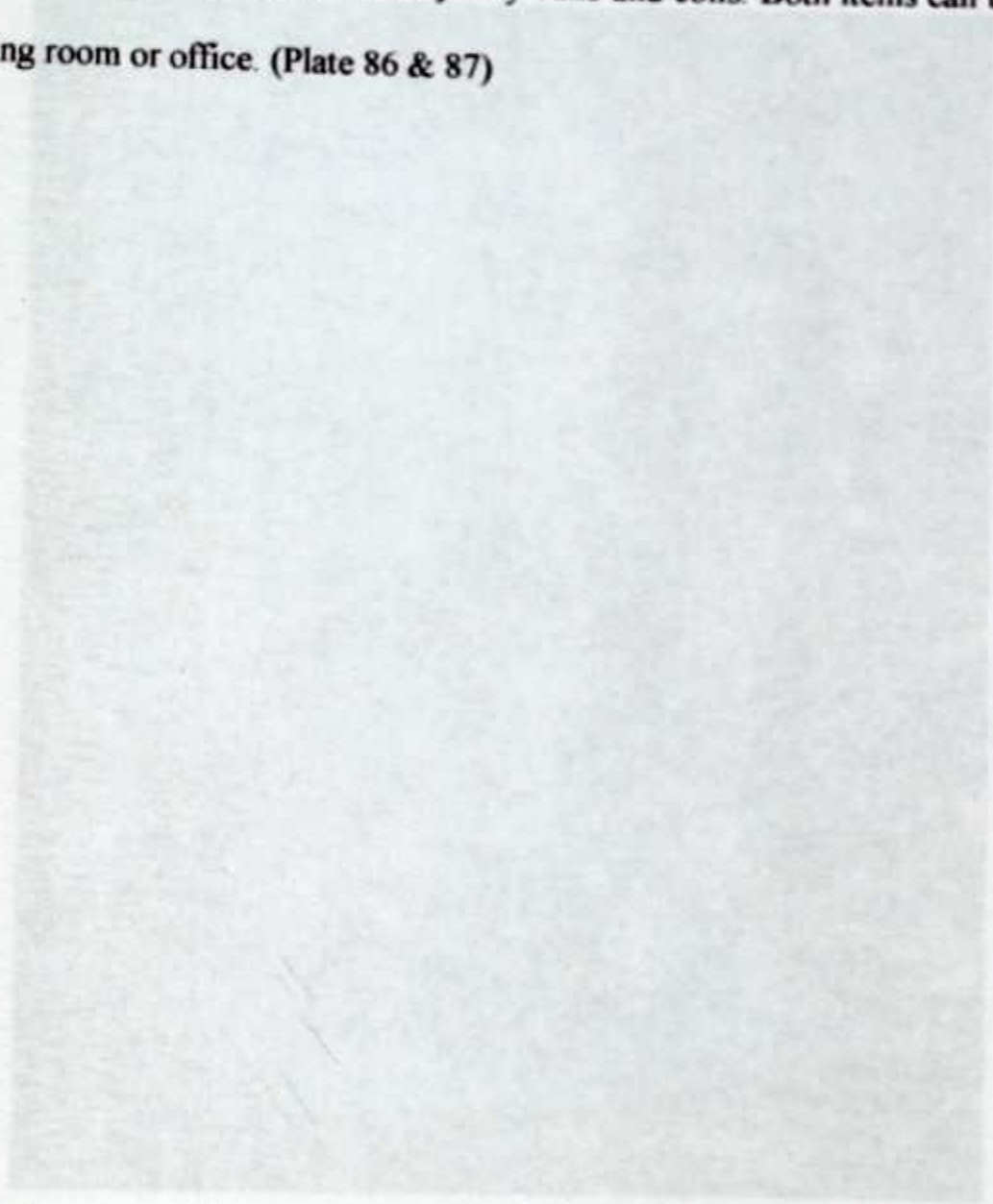


Plate 86. A decorative pot holder



Plate 86. A decorative pen holder

The plate is very decorative and also serves as a flower pot. It is 15cm wide and 15cm high. The plate is made of clay and is decorated with a pattern of raised circles. The circles are arranged in a grid pattern, with each circle having a small hole in the center. This pattern is known as a "combined technique". The surface of the plate is very smooth and has a glossy finish. The plate is also very sturdy and can hold a small plant without any problem. It is a very beautiful and useful piece of pottery.



Plate 87 Ash tray from combined technique

4.2.6 Short Coil Pot

The item is very decorative and also serves as a flower pot 15cm wide and 12cm high. The coils create depth on the surface making each individual coil protruding and standing on its own. It symbolizes independence. The surface also looks like dots have been created just as that of the ball technique, which in the broader sense can be referred to as “ceramic pointillism”.



Plate 88 Short-coil clay pot

4.3 Students' Work

The researcher has therefore made some observations which include the interest and enthusiasm expressed by the students of Technology Secondary School in Kumasi. The students created forms accurately using the new decorative techniques. This shows there were some hidden ideas, which have been expressed practically. It gave the students a feeling of independence and self-confidence and indicates that student in the Senior Secondary School can work on their own. The works of the students also indicate their uniqueness and creativity, which goes a long way to enhance aesthetic qualities of their ceramic works. Co-operative work has been achieved. This was expressed through the group work done during the making of clay knobs. The students appreciated their own works. They found the works fantastic and wished the techniques were introduced to all S.S.S institutions. Some of the selected items are Ball-pot 9cm wide and 14cm high, Half-ball pot 9cm wide and 15cm high, clay-button pot 10cm wide and 11cm high, Brick pot 7cm wide and 15.5cm high and combined technique pot 8cm wide and 11.5cm high. (Plate 89-93)



Plate 89 Students appreciating their selected finished works



Plate 90 Clay-ball pot



Plate 91 Half-ball pot



Plate 93 Brick pot



Plate 92 clay-button pot



Plate 94 Pot from combined technique

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS

The project seeks to make a series of decorative experiments on ceramic wares and find out how best students will be able to adopt them in the making of ceramic works.

Chapter one gave the introduction which included the background to the study, the statement of the problem, the objectives, the hypotheses, delimitation, limitation, definition of terms, importance of study, abbreviation used and the organization of the rest of the text while chapter two reviewed the literature related to the topic. Chapters three and four have represented the activities in carrying out experiments involving the making of small shapes or knobs of clay and using them to build ceramic wares which serve as a form of decoration on the surface and introduction of the new techniques to Technology Secondary School students to enhance the aesthetic quality of their ceramic works. This chapter therefore summarizes the project, draws conclusion and gives recommendations.

Summary

This project explored experiments in decoration of ceramic ware in the plastic state. Chapter one was the introduction that involved the background to the study, the statement of the problem, the objectives, the hypotheses, delimitation, limitation, definition of terms, importance of study, abbreviation used and the organization of the rest of the text. Chapter two reviewed the literature related to the topic. The topics included a brief history of pottery or ceramic decoration, definition of decoration, ceramic decoration, ceramic decoration based on forms, ceramic decoration,

principles of ceramic design, definition of clay, formation, characteristics and preparation of clay, clay body and hand building techniques and some decorative techniques.

Chapter three dealt with the methodology of the project. It represented the preparation of the materials in terms of making the clay body suitable for the experiment. This is important because it helps to get rid of air bubbles, foreign materials and the inconsistencies in texture. The formulation and preparation of clay body for this project was necessary for reasons of shrinkage or warping, plasticity and firing at a desired temperature. The preparatory activities involved crushing of the material, grinding, sieving, weighing, mixing, ageing, wedging and kneading and also the description and uses of tools and equipment.

The Chapter also focused on the processes. These techniques include the preparation of knobs, clay ball technique, half-clay ball technique, button technique, short coil technique, combined technique and brick technique and introduction of the new techniques to students of Technology Secondary School.

Chapter four reported the results of the project. The end product of the new techniques were displayed and appreciated including the students' works.

Conclusion

The results and observations show that the project was successful. The findings were that results of the experiments stimulated creativity uniqueness, co-operative work,

self-confidence, tolerance, patience and enhanced the aesthetic quality of ceramic works as stated in the research problem.

The students of Technology Secondary expressed their keen interest, enthusiasm and were fascinated. They have now found out that clay can be used as a ceramic material to make a host of useful and decorative items without restricting themselves to the use of only the existing methods as slip painting, engobes, glazing, incisions and indigenous firing techniques. Though time and some facilities did not permit the researcher to introduce other new techniques, the study would be useful in exposing students in the S.S.S to exploring more methods of decorating ceramic wares on their own. The study would also bring variety in the decoration of ceramic works in the syllabus as well as enhancing the quality of work.

However, much work needs to be done on this project because more techniques needed to be explored and also make sure they are incorporated in the S.S.S ceramic syllabus to create variety.

Recommendations

The researcher based on a few observations made the following recommendations to enhance the building process using the new techniques.

- The clay should always be soft enough to work with.
- It does not involve the use of slip for joining.
- Work each individual bits of clay directly into the construction of the pot as the clay is still soft.

- More skills are required, since it involves the use of the thumb or fingers not to destroy the decorative effects on the outside.
- The secret is to place the balls carefully next to each other and smooth with your fingertips from the inside to make the joints.
- You can wet your fingers with slip if you find joining and smoothing difficult.
- Keep your outside hand dry always in order not to lose the decorative effect.

Ceramic Students in the S.S.S should be encouraged to make their own simple tools and equipment to suit the type of decoration required to promote variety, originality and easy handling.

Developmental sketches of ceramic forms should also be introduced in the ceramic syllabus to enhance quality and beauty of their works.

The students should also be allowed to explore more decorative techniques on their own to serve as motivation for creativity and originality.

Finally it is strongly recommended that a studio should be set-up for the Art Education Department, College of Art, K.N.U.S.T. for students to be able to carry out their project works successfully. In addition, these new techniques should be incorporated in the S.S.S. syllabus to enhance the aesthetic qualities of their ceramic works.

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