CERAMIC TECHNIQUES FOR POST-PRIMARY INSTITUTIONS IN KADUNA STATE

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A thesis submitted to the Post Graduate School, Ahmadu Bello University, Zaria, in partial fulfilment of the requirements for the award of the Degree of Master of Arts in Industrial Design,

DEPARTMENT OF INDUSTRIAL DESIGN
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AHMADU BELLO UNIVERSITY, ZARIA.

October, 1987.

CERTIFICATION

This thesis entitled "Ceramic Techniques for Post-Primary Institutions in Kaduna State." by BELLO, FATIMAH BINTU, meets the regulations governing the award of the degree of Master of Arts (Industrial Design) of Ahmadu Bello University, Zaria. It has this day been approved for its contributions to knowledge and literary presentation.

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DECLARATION

I, Fatimah Bintu Bello, solemnly declare that the contents of this thesis is the report of my study on "Ceramic Techniques for Post-Primary Institutions in Kaduna State. I collected my data, made my tools and wares as stated in this thesis. And that, I took and passed the undefmentioned courses as a prerequisite for this thesis.

Ceramic Theory

Mineralogy and Petrology

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DEDICATION

This thesis is dedicated to my parents Alhaji Zakari M. Bello and Hajiya Hadizatu Bello who helped my academic career from infanthood to adulthood, and to my daughter Halimatu Saadiya Shehu with whom I am well pleased.

ACKNOWLEDGEMENT

The interest and guidance of several people made this study possible. I wish to acknowledge the support and encouragement of my major supervisor. Dr. Abashiya M. Ahuwan, Senior Lecturer and Head of Section in Ceramics, Department of Industrial Design, Ahmadu Bello University, Zaria who supervised and adviced me at every stage of the work. I wish to express my appreciation not only for supervising and advising me on my practical work but also for his critical review, prompt attention, priceless intellectual support and close scrutiny which have seen this study through its various stages. Any credit which this study may possess is derived largely from his expert advice and patient guidance.

A special word of gratitude goes to my minor supervisor Dr. T. Oguntona, Senior Lecturer in Textiles Section, also of the Department of Industrial Design, Ahmadu Bello University, Zaria who has been very understanding, accommodating and willing to receive me at short notice. I wish to thank him for his moral support throughout the period of writing this thesis.

My boundless gratitude also goes to Kano State Scholarship Board who sponsored and supported me

financially throughout the period of this study. I am deeply indebted to the principals and students of the schools and colleges for their prompt response and cooperation which has contributed to this study. Special thanks goes to Mr. Ajani who is the staff inspector for Fine Arts in the Education Resource Centre for patiently giving me his time and highlighting some of the problems faced. My gratitude also goes to Mallam Mohammadu Jatau of the Kaduna State Ministry of Education for the help rendered in so many ways during the period of this work.

I express my profound gratitude to Mallam Isyaku Rabiu and Mallam Saleh Dutsan-wai who patiently assisted me in administering the questionnaires to the various educational institutions sampled for this study.

My thanks goes to Jimoh Usman and Hassan Balarabe for their patient work on the photographs, Mr. David Kufana and Mallam Yakubu Abubakar for their help rendered during the photocopying of this work, Mallam Hamza Yusuf, Mallam Mohammed Bayero, Mallam Tanko and all the students and technicians in the Industrial Design Department for their interest, cooperation and help in various ways. To Miss Dorcas Adio of the Department of Fine Arts

Ahmadu Bello University, Zaria; I gave my special thanks for meticulous typing of this work. Endless gratitude goes to my sister and her husband, Mr and Mrs Abubakar of the Faculty of Art and Social Sciences for feeding, shelter and moral support during the last stages of this work. To Anthony Pameda and other technicians of I.D.C., I am also grateful for their help and advice in the making of some of the ceramic tools.

Lastly, I give my gratitude to the entire members of my family for their patience and support.

ABSTRACT

Bello, Fatimah B., Ceramic Techniques for post-primary Institutions in Kaduna State. Master of Arts thesis in Industrial Design, Ahmadu Bello University Zaria 1987. There are 18 tables, 17 figures, 12 plates, 2 graphs and 2 maps.

Clay is a highly fluid and malleable material with a life of its own. potters use it to produce household utencils or works of art that attract the public, not only by the shape they produce or by the beautiful glaze on the pieces, but by clay quality itself. It is with this concept in mind and being an art teacher myself, that the researcher decided to investigate the teaching of ceramic techniques for post-primary institutions in Kaduna State. The purpose of the study is to identify the problems involved in the teaching of pottery techniques in post primary institutions in Kaduna State . and to make recommendations for improvement based on these findings.

The background, significance of the study and the procedures used in collecting and analyzing data are reflected in chapter one. Chapter two surveys related literature as regards its history, the syllabus, detailed construction techniques, decoration and tools,

finishing and firing. In chapter three, under methodology, sample selection, instrumentation, procedures followed, compilation of data and analysis and limitations were also discussed. Chapter four offers the study's findings and chapter five summarises and gives the conclusions and recommendations.

The data for this study was obtained from responses to questionnaires based on frequencies of the individual respondents. Where there are questions that required free responses but could not be categorised, respondents with similar opinions were grouped together rather than tabulating frequencies Questionnaires were administered and randomly sampled to senior year students and art teachers.

In the questionnaires, a general background information about the respondents was included concerning their professional and academic qualifications. There was also a set of oral interview question for the local craftsmen potter which also includes the background information, production, marketing experience and general questions on pottery. This was to give information that could help in the teaching of pottery techniques in post-primary institutions. The interview wan generalized because the responses were very few.

The researcher gave 936 questionnaires to both the students and art teachers in post primary institutions from the chosen zones. A seventy-five per cent return rate was recorded. Based on the analyses from respondents, the following conclusions relating to the teaching of ceramic techniques for post-primary educational institutions in Kaduna State were deduced.

1. That there are more male art teachers than female and that the number of art teachers that responded are very few.
2. Most of the schools do not have a standard art studio. They do their art lessons in their classrooms.
3. The time allocated for the teaching of art is not enough, especially when teaching the three dimensional art.
4. That the students are generally interested in art but the teachers do not use their initiative and skills to motivate their interest.
5. There is no art and craft club existing in most of the schools and colleges.
6. That there are not enough ceramic tools and equipment available in the schools and colleges. Most of the art teachers and are

not familiar or have never heard of the materials equipments and tools.

7. Most of the art teachers only teach the students drawing and painting thus ignoring the three dimensional art which includes ceramics.

8. That the art teachers have difficulty in the purchase of materials due to shortage of funds.

9. Continuous assessment is adopted and students work are assessed weekly.

10. The local craftsmen are willing to help in the teaching of pottery whenever they are invited, provided they would be paid accordingly.

11. Prices of traditional pots were found to be reasonably cheap.

12. Principals give preference to other subjects at the expense of art.

13. 82.4% of the teachers have Grade II Teachers' Certificate. The remaining 17.86% are N.C.E. Graduates.

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Definitions of Ceramic Terms

1. Ageing - Period necessary for the attainment of full plasticity and workability in a clay.
2. Alumina - oxide of aluminium AI_2O. One of the essential ingredients of all clays and glazes. Has a balancing effect between bases and acids and between glaze and body.
3. Ball clay - secondary or sedimentary clay which is very plastic. Alone, it is too fine and slippery for use. Additions of sand, grog and coarser and less plastic clays improve the workability.
4. Ball mill Machine for grinding rocks and minerals. The balls are natural or manufactured pebbles which fall onto one another and thus grind the materials in the mill with water.
5. Bentonite - highly plastic clay originating in the decomposition of volcanic ash. It is extremely fine and can be dispersed widely through bodies and glazes.
6. Blunger - machine for stirring and mixing ceramics materials usually the ingredients of clay body with water.
7. Bonfiring - primitive method of bedding pots in brushwood, heaping wood and grass on top of them and setting the heap alight.

8. Burnishing - The polishing of the surface of clay ware by rubbing with the hand, spatula, glass, spoon or any smooth tool, when it is in the leather hard stage.

9. Centering - Pressure applied to a ball of clay on the wheel as it spins to persuade the whole mass to run true.

IO. Ceramics - derived from the Greek word keramos meaning "burnt stuff" or any "earthen vessel.

II. Coiling - an age-old technique of building by laying coils or ropes of clay one upon another and working them together to form a definite shape

I2. Crack - an unwanted break in a piece of pottery.

I3. Decomposition - The breaking up of chemical compounds, e.g. it is the decomposition of granite rock which forms clay.

I4. Earthenware - Indicate pottery ware with a porous body which may or may not be covered with a glaze. Made from natural clay found almost everywhere. It is a low temperature clay body.

I5. Feldspar - a group of minerals which have decomposed from granite and igneous rocks.

I6. Granite - an acidic rock with a high silica content contains the ingredients of pottery e.g. feldspar, stone, quartz. Originates from a molten magma which

cools slowly within the earth and is therefore of large crystalline grain.

I7. Greenware - unfired pottery, leather-hard clay suitable for turning and cutting.

I8. Grog-fired biscuit incorporated into clay bodies to assist drying or to increase firing strength. It also reduces the rate of shrinkage during drying and firing up to the temperature at which the grog itself was fired.

I9. Hand-building -A convenient term for the forming of ceramics without a wheel. This include coiling, pinching, slab-building, molding or combination of these.

20. Kaolin-china clay AL_2O_3, $2SIO_2$, $2H_2O$ - Purest clay, contains very little iron impurity. It is derive from the chinese "kao" high and "Ling-hill". A ridge of mountain, where the white clay was first discovered in its purest form. It is white when fired.

2I. Kiln - a structure built to conserve heat either by combustion or radiant heat. It must be capable of reaching at least $600^{o}C$ ($III2^{o}F$).

22. Laterite - Brickstone - A general name given to iron-manganese - aluminium ores in hydrated from. It is found in small deposits around the tropical zones and is used as a glaze colourant. Gives brown colour after firing.

23. Leatherhard - A stage in the drying of clay when it has become almost rigid but is still damp.

24. Mesh - a fabric of interwoven threads producing square holes between them. Meshes are measured by the number of threads per linear.

25. Pinching - pressing clay between the thumb and the finger into the desired shape.

26. Plasticity - property which permits a shape to be altered by pressure and yet retains the given shape when the pressure is removed.

27. Polythene - a synthetic material, useful, cheap and a blessing to a potter. Eases the problem of keeping pots and clay moist.

28. Porcelain - vitrified, white and translucent ware. It is kaolin and silica with a little flux fired to vitrification point 1300°c.

29. Porosity - used by potters to indicate the ability of a fired body to absorb water by capillary action.

30. Quartz - a natural crystalline silica SIO_2 or sand used as sources of silica for glazes and bodies.

31. Roulette - a tool for producing a repeat decoration impressed pattern. When rolled over a clay produces the pattern.

32. Secondary clay - clay which has been transported from the site of its formation by water, wind or glacial action. Thus the clay is ground and levigated to fine particle size which increases its plasticity but, inevitably picks up impurities in the process.

33. Shrinkage - the lessening of clay in length and volume during both drying and firing.

34. Slake - to disintegrate in water, clays are said to slake if from their dry state, they can be completely located by immersion in water, such clays crumble as the water surrounds and seperate the particles.

35. Slip - any clay or body mixed with water to a smooth consistency.

36. Stoneware - a vitreous opaque ceramic coutaining a naturally vitrifying clay usually above 1200°C.

37. Terra-Cotta - A reddish brown unglazed clay modelling or architectural ceramic. It is also applied to the colour of fired red-clay.

38. Template - A sheet of card, metal or stiff material cut to the profile of a pot, plate, bowl or mold form and used as a guide to scrape the clay surface to a regular curve.

39. Throwing - The method of shaping pottery on the potters wheel using only the hands and water for lubrication.

40. Fired Clay - clay that has lost its strength by being over-worked.

41. Warping - deformation which can take place at any stage in the making of a pot.

42. Wedging - a hand process of preparing plastic clay which involves mixing and compressing the clay.

43. Wood-firing - at its best, gives quality to both earthen ware and stoneware which is unmatched by any other fire.

44. Terra Sigillata - is familiar as the burnished surface seen on the classical wares of the early Greek and Romans and on the pottery of many primitive people. It is a very thin opaque finish for pottery usually red or buff, brown or orcher, with a high gloss similar to enamel.

Definitions of Traditional Pots Made in Kaduna State

a. Buta - (Kettle or Kula)

These pots are also used for moslem ritual ablutions before prayer or as flasks for drinking water to be taken on a journey, for a day spent on the farm. They are round with narrow necks and wide rim. They come in different sizes and shapes.

b. Kasco-(Warmer):

These pots are used for either heating water, warming oneself, or even tandas can be placed on them for frying. Have deep shallow shapes and come in different sizes.

c. Kwataniye - (Maternity Pot):

This pot is used for bathing a newly delivered mother. It has a wide mouth and flat belly. Sometime, it can be used for storing oil or smoked fish. They come in various sizes and volumes.

d. Murhu - (Fire Pot)

Used for cooking. It has a horse shoe shape with a wider upper rim on which the cooking pot can stand securely.

e. Randa - (Water Storage):

This type of pot is used for storing water in the house. It is often covered with a raffia

lid on which lies a calabash dipper. It has a wide mouth and short neck and fairly narrow rim. Usually made having both roullete and incised decoration on them. Randa are always kept in a cool place where there is sand. If not, sand is got from outside and place in a bowl. The pot is then placed on it. This keeps it cool always.

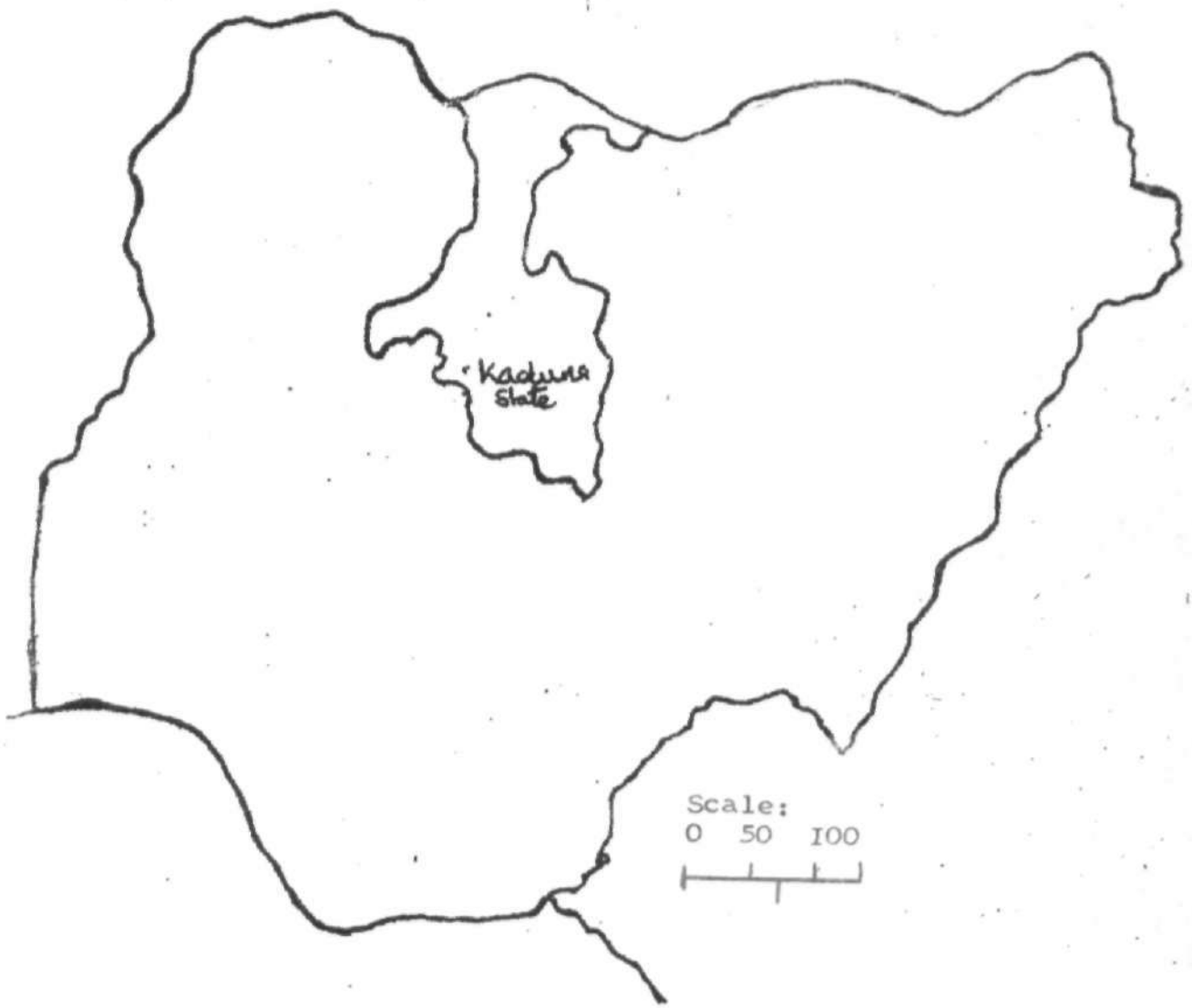
f. Tanda-(Baking Tins):
These are pots with fairly wide rim. They are plain and shallow. The top is divided into sections. This is used for frying bean cake, or baking corn.

g. Tukunyar Fulawa-(Flower Pots):
As the name indicates, they are used for flower pots. They come with plain or have incised decorations on them. Have a hole at the bottom where water can escape. Have fairly wide mouths.

h. Tulu - (Pitchers)
This is often recognised by their globular bodies and small mouth. It is used by women and girls to fetch water from streams or wells and is carried on the head. They may or may not have designs on them. In some parts

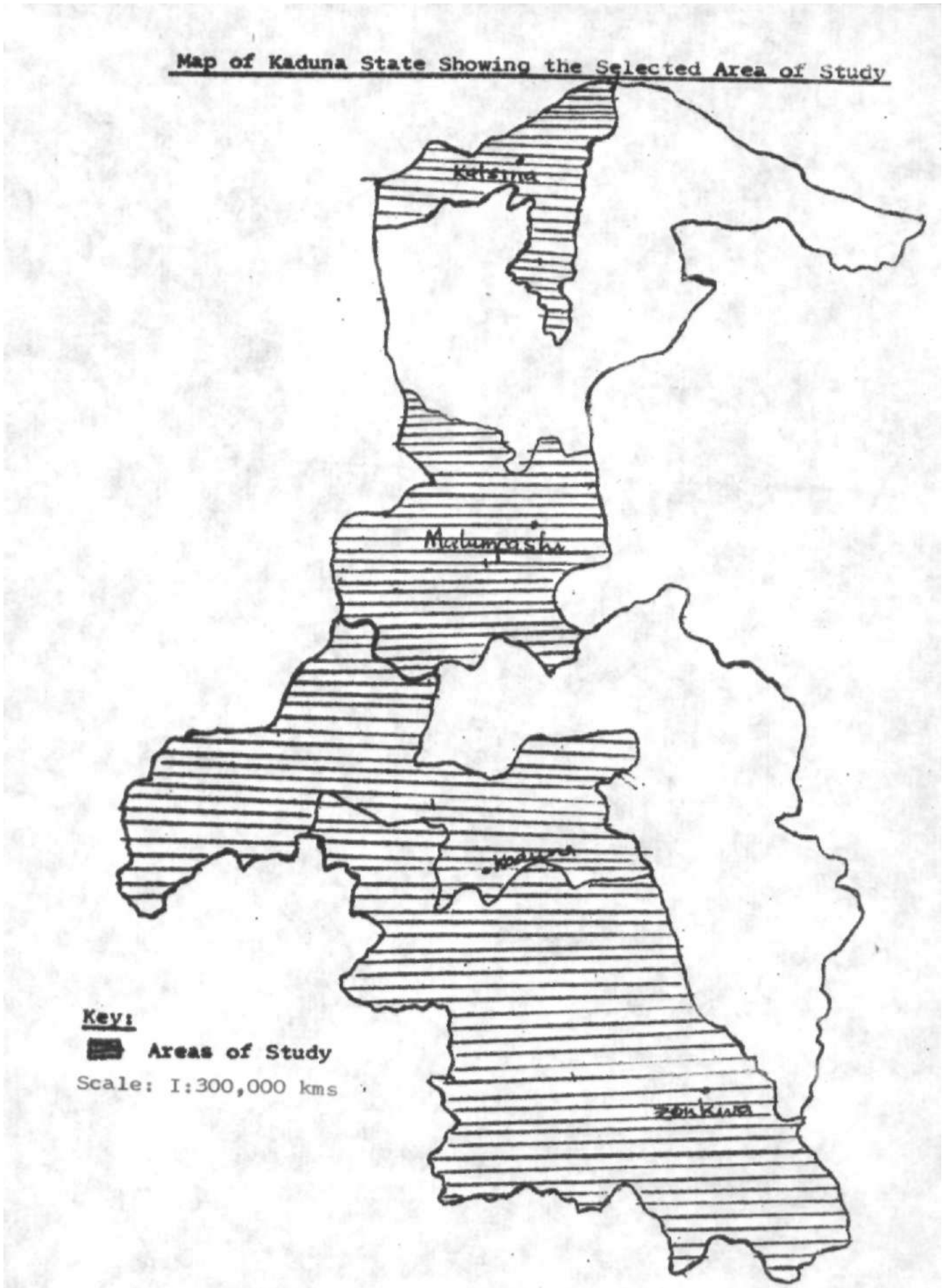
of Nigeria, they can be used for storing giya (alcohol). These tulus are made in different sizes depending on the function.

A Map of Nigeria Showing Area of Study



xxx.

Map of Kaduna State Showing the Selected Area of Study



Key:

Areas of Study

Scale: I:300,000 kms

CHAPTER ONE

INTRODUCTION

Ceramics is one of the most ancient crafts which exists in all races and countries. Wangboje (1984) described Ceramics as the art of making permanent objects of usefulness by the heat treatment of earthy materials. It is a very wide term and it covers a wide field of human activities which includes cement making; glass, bricks and other areas of human activity where clay and other related raw materials are used for making other products. Vegh (1956) and Mand (1956) described Ceramics as derived from the Greek word meaning "Potters earth". They said that in a technical sense, Ceramics includes all objects made from clay or mixtures of clay and other substances baked or fired to hardness. These include, China, porcelain, earthenware, stoneware, terra cotta, tile bricks, etc. Singer and Singer (1963) added by saying that they are products made from inorganic materials which are first shaped and subsequently hardned by heat, Also adding his contribution to the definition of Ceramics, Roberts (1979) defines it as "Crytalline inorganic non-metalic solids of high melting point." Gazio (1973) stated that Ceramics can be defined as anything that man fashions out

of clay and then fires, to achieve permanence in its form. Whatever its definitions, for the purpose of this study we are going to limit the subject to pottery making by hand which has been a major occupation of millions of people all over the world from time immemorial.

Pottery is a unique and exciting craft. It ranges from the purely aesthetic to the purely functional in scope from the architectural wall covering to the small and exquisite cup and saucer, large or small, glazed or unglazed pottery fulfils many functions and reveals at every turn a new beauty. There are different kinds of pottery: earthenware, stoneware and porcelain. Each of these pottery differs in temperature which is controlled by the body composition. There are different shapes and designs to meet different needs and different kinds of decoration in which the potter expresses his own technique, which varies from one period in time and place to another. There are new possibilities, discoveries and techniques that help the potter, but the basic principles of making pottery are the same as Lowenfeld (1979) said "the process of modelling with clay permits a constant and continual changing of form. Figures can be added or taken away or changed in their position and shape". Clay can be squeezed and shaped into almost

anything one wants. According to Igwilo (1983), pottery has been in existence in Nigeria for many thousands of years, may be about 15,000-10,000 B.C., with the dawn of the neolitic age. Examples are those of the NOK culture. All people in all ages have cultures.

It is one thing to live in a culture and another to study and analyze it. As time passes and old customs die away, it is the study of the culture that enshrines the heritage. Uzoagba (1983) mentioned that art today is a testimony to our culture, a witness to its position, qualities and its limitations, just as the arts of the past are to the culture of the past. Akenzua II (1976) when talking about the culture of Nigeria also contributed by saying that if Nigeria's artistic heritage is to be viewed strand by strand, one must point first to its antiquity, to the sensitive and delicate terracotta of NOK which are known to be at least 2000 years old, bronzes of Ife, Benin and Igho-Ukwu. These five pieces together with the exquisite wood-carvings from all over the country are abundant manifestations of the artistic skills of the people of Nigeria through the ages. In Nigeria, one would feel rather fortunate that the tradition of pottery has been kept alive by the peasant potters. In some parts of Northern Nigeria, it is an exclusive hobby of women as Piggot (1983) points out "Pottery making (like cooking)

is normally a hearthside activity of the women while the use of the potters wheel turns it into a business organized by the men. Generally, pottery in Nigeria is of two kinds: traditional and contemporary. The abundance of pottery materials, especially the different types of clay, have offered a wider range of production techniques. Even though the arts were a major expression of the people's culture in Nigeria, it was the cultural elements of the different population groups that had their effects on the development of this traditional craft. Igwilo (1983) said that pottery is a mirror of civilizations. It helps man to find out more about himself.

It is common knowledge that the growing school enrolment makes it difficult for the teacher to give individual attention to each student, nevertheless students should be encouraged to assume increasing responsibility for their own learning especially to the three dimensional art. Some students whose super **abundance** of energy and internal tension have been a nuisance, could find a legitimate outlet for their bottled-up emotion in pottery making. Lowenfeld (1979) surported the teaching of the craft by saying "the abilities to question to seek answers to find form and order, to rethink and restructure

and find new relationships are qualities that are not generally taught but should be implemented in the minds of the students". He also added that giving the student the opportunity to create constantly with the knowledge he currently has, is the best preparation for future creative action. Limited research has been done on teaching the Nigerian crafts in our schools. This might be due to the fact that the importance the crafts once had no longer existed as a result of imperialism. Ahuwan (1973) supported this by saying,

> "the circumstances that have governed the Nigerian craftsmen for the last fifty years has stripped him off the prestige he once enjoyed. He currently has the choice of making a subsistence living with his craft or other means of making a livelihood . Today the young generation is reluctant to pursue these crafts because they have witnessed provety in craft from their parents. As a result some of these crafts are in danger of extinction".

Through personal experience, the researcher noticed that except in colleges where the principal are broad minded enough, the share of Ceramics is either too small or completely diverted to other uses. This might be due to the relatively high cost of some of the materials. The need then arises to improvise from local materials for example, instead of importing modelling tools good ones could be fashioned

cheaply out of chewing sticks or even out of scrap of wood or bamboo.

Ahuwan (I976) stated that as a developing country, working towards social, economic and political identification, Nigeria needs to formulate its education system in terms of its needs and those of its future. The objective of such assessment should serve as a guide in identifying problem areas as regards the teaching of Ceramics techniques in the short and long term range in some selected schools and colleges within Kaduna State.

I.I Statement of the Problem

The problem of this study is to assess critically the ceramics techniques that can be taught in post-primary institutions within Kaduna State.

I.2 Purpose of the Study

The purpose of this study is to gather information that can help in the improvement of teaching ceramics techniques in post-primary institutions in Kaduna State by effective use of local materials and equipment.

1.3 Aims and Objectives of the Study

This research intends to accomplish the following objectives:

1. To examine the extent of Ceramics materials available in Post-primary institutions in Kaduna State.
2. To determine how often the teachers use the materials available in the classroom.
3. To find out whether the teachers are up to date with the basic methods and ideas, in the teaching of Ceramic Art.
4. To find out the suitable local materials and equipment that can be bought or made inexpensively.
5. To examine the teacher - pupil interaction in the learning process.

1.4 Research Questions

To accomplish the stated objectives in Post-primary institutions in Kaduna State, answers will be sought to the following questions:

1. What kind of Ceramics materials and equipment are available?
2. How often do the teachers use the materials available in the classroom?
3. Are the teachers up to date with simple methods and ideas?

4. Are there suitable local materials and equipments that can be made or bought inexpensively.
5. What is the extent of teacher - pupil interaction in the learning process?

1.5 Basic Assumptions

This research will be conducted on the following assumptions:-

1. That there are not enough qualified Ceramics teachers in the post-primary institutions in Kaduna State.
2. That the teachers do not make use of the the materials available in the classrooms.
3. That the teachers are not up to date with the basic teaching methods and ideas.
4. That there is lack of initiative from the teachers.
5. That there are relevant ceramics materials that can be made or bought cheaply.

1.6 Delimitations

Four zones were randomly chosen for this study out of the eight existing ones namely Kaduna, Zonkwa, Katsina, Dutsen-Ma. Twenty-four out of fifty boarding schools from the four zones were chosen to represent the State under study.

1.7 Background and Significance of the Study

It is well known that the early 20th discovery of African art caused something like a revolution in European art, and today many of Nigeria's greatest works of the past occupy places of honour in the world's major museums. Wangboje (1976) said "these works of art have not only served to show that Nigeria has a cultural heritage that can stand comparison with that of any country of the world. They also reveal vital aspects of her history." The crafts of Nigeria still today show a great diversity, uniqueness of style and fine craftsmanship, as well as a wide variety of artistic forms and innovations. Of the many crafts in Nigeria, the most common and widespread are weaving, embriodery, textile and brassworks. These products are mainly used in the villages or cities while the surplus is being sold at the local markets. The problem facing the Nigerian craftsman today can justifiably be attributed to colonialism. While it contributed to the country's development in one area, it also does some harm in other areas. For example, the cooking pots made by the potter were replaced by the aluminium pots imported from Europe. Ahuwan (1976) explained that with the coming of

the British, new cultural values were introduced into the Nigerian way of life. These new cultural elements of the Western system of economic, political and social life became accepted and became a major part of the Nigerian culture. As a result, the importance that pottery once had, no longer existed. Suleiman (1974) agreed with this when he added that the country had been subjected to the combined impacts of systenatic religious, colonization and modernization changes which in turn have influenced the cultural atmosphere under which the various ethnic elements now constituting the nation live. These he said have influenced the nations entire artistic situation as they precipitated changes in the established roles of the traditional arts while at the same time forcing efforts so substitute foreign art forms and foreign aesthetics for the indigenous ones. It is a general belief that the crafts are meant for the uneducated. This mentality will surely lead to a total abandoning of these crafts if no substitute is made for them by introducing them in our schools and colleges.

Aina (1976) said that, due to the introduction of the universal free primary education in September, 1976 most children were sent to school. The children of master craftsmen (traditional) also went to school. This was no doubt a noble plan to eradicate illiteracy, but fundamental questions with regard the practice of traditional pottery have arisen

Who are to replace the master craftsmen who would eventually pass away? How are the children, the future custodian of our heritage to be made aware of their heritage in this direction? Ceramic techniques at this particular level will cater for those students who would have missed the apprenticeship training in the traditional pottery workshop setting including those who would not have had the oppertunity. They would then be given better opportunity to mould and express themselves, as Dorothy Kemp (1976) said "while they are young and impressionable, a sense of materials and process of form and pattern is borne in upon them through the experience of their own hands with clay". Olusegun (1976) also mentioned that it is an incontestable fact that people express themselves differently. Some do better through verbal expression, some written, some in two-dimensional art, cultural activity programme link classroom with the tradition of the community. It makes the students understand the lifestyle of their people and appreciate other peoples custom. Lowenfeld (1979) said that clay was an important material to use since it provides the opportunity for making a three dimensional material which can be pushed, stretched, squeezed and pounded.

He also said "it provides the child or student the opportunity to use his fingers and muscle in a different way". When talking about the aims of teaching pottery to student, Rhodes (1958), said;

1. It developes his creative abilities and critical powers;
2. With young people, it develops muscle and control;
3. It teaches the student to be aware of things around him and appreciate good craftsmanship which in future he may demand;
4. Gives the child pleasure;
5. To make them have control over material;
6. To create a sense of understanding and a relationship between the student and the craft.

Language is a real problem with children especially in this country, but when art lesson comes on words do not matter and the students have the opportunity to tell you what they feel or what they are talking about. Wangboje (1984) supported this by saying that participating in art activities can provide the student with the opportunity to express his ideas, feelings and mood about people, places,

things in another language that is not literary or verbal. However, Ahuwan (1986) stated that the practical aspect of crafts can in addition articulate the speech ability of a youngster. Uzoagba (1983) said that a student who has received a broad artistic education will have a cosmopolitan mind, not limited by the restrictions of his native environment. He will appreciate the best elements in his tradition more intelligently at the same time, he will be able to understand those of other nations in other parts of the world. As Nigeria is progressing to a position of world eminence today, it makes it more necessary for us to understand the mentality, traditions and cultural backgrounds of the people we have to deal with.

From experience, the researcher noticed that schools hardly offer pottery as a subject though it is included in the school certificate and general certificate of education syllabus. Those who could teach the craft in colleges are very few and where they are engaged in teaching, lack of materials and equipment impair the introduction of the craft. The result of this study will ascertain the extent to which Post Primary Institutions are achieving general and specific objectives in Ceramics,

with the hope of identifying problem areas to be solved and help the teachers improve their teaching and also in assessing the attitude of art teachers and students towards this direction. The teaching of this craft in our schools and colleges will further help in sustaining more employment opportunities to our growing population, especially to our graduate potters trained as designers who should be useful in the growing ceramic industries. The study on teaching ceramics techniques for post-primary institutions with effective use of locally produced raw materials and equipments is therefore of a double advantage to Nigerians.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

In this chapter, the review of related literature is organised into sub-headings namely;

1. Historical - which will discourse the origin of ceramics, introduce the archaic and modern techniques.
2. The syllabus - discourses the present school syllabus.
3. Origin/Preparation of Clay/Construction Techniques. The origin of clay discourses the sources of clay, Preparation - discourses the location and how to prepare it for use. The construction techniques - discourse the different hand building techniques in detail.
4. Decorations + Tools - this discourse the type of decorations that can be adopted in post-primary institutions and the tools which could be used and can be made or bought cheaply.
5. Drying + Firing - describe the drying and firing processes.

2.1 Historical

Claywork is a craft that has been used by man for such a long time that it is not possible to place its beginning. From archaeological discoveries, it has been

established that pottery making has been existing since pre-historic times. The use of clay seems to have been developed independently by different people in different parts of the world. Nomadic races would have little time or use for fragile pottery and so it was with the beginning of the more settled life of the new stone age that the making of pottery developed. Before then, images of men and animals were modelled in clay and were used for magical or religious purposes. Mother goddess with large sexual organs have been excavated in various parts of the world, including the Indus Valley and Mesopatamia. These were part of the religious cult encouraging fertility in women.

How the discovery was made that dried clay, subjected to red heat (about 600^{o}C) would become hard and not disintegrate in water, is not known. It is probable that the idea developed over a considerable period of time. Cooper (1972), said that there are two theories to account for it. The first, possible and more valid is the hearth theory. He said that fire was a valuable and vital part of man's early existence which would be carefully tended, for it was much easier to control and maintain than to create. He went on to say that holes were made in the ground and these could well have been lined with

clay. The fire kept in them would turn the clay into pot and when the fire was eventually put out a crude vessel would be left. The second theory is that baskets would have been lined with clay to render them water-proof and in due course, as the clay dried out and contracted, a simple pot would be formed which could have either held fire or been put into five. Alternatively, such clay lined baskets could have been burned in the fire which would have left a simple fired pot behind. Such theory presuppposes the existence of basketry. *Adding to the second theory, Nelson (1978),* stated that the cordlike markings found on some early pots have led to the belief that baskets lined with clay initially were used to hold small seeds. The accidental burning of a basket, and thus the firing of the clay resulted in the first pot. Angelo (1974), said that pottery made its appearance at the same time as cereal agriculture and domesticated animals. He went on to say that the technique was used to make objects for domestic purposes, usually containers, which have since been found in tombs where they were buried to accommodate the dead. It is evidence of a state of civilization. Pottery was widely practised in ancient countries like

Egypt, Greece, Rome, etc. Newman (1974), added that pottery dated back to the sixth millennium B.C. in the Middle East at Jerico in Palestine and spread to parts of North Africa. She went on to say that people of the Nok of Northern Nigeria created pottery of nearly life-size, which were transmitted to Ife (Yoruba culture). These exhibited many of the lost-wax process decorations, like those appearing on bronze forms of Benin. The Ibo also fashioned red clay figure groups and placed them in shrines to serve as guardian spirits for the dead. The Bakengo of Southern Ghana created figure-shaped pottery vessels. The Ashanti and Cameroon grasslands fashioned clay pipes. Walls of Bakuba huts were hung with groups of pots attached to the framework. In his contribution about the arts of the Benue, Neyt (1986), said that the culture dates back several centuries. Katsina-Ala formed part of the Nok culture, which dates back to the fifth century B.C. In the Igala arts, one can distinguish between the royal masks in their political religious settings and the Akpan and Dekina styles. He said that the Dekina could well branch from the very ancient Akpoto culture. Igwillo (1983), mentioned that pottery from the Greek civilization was similar to those of Egyptian and Mesopotamia and that the same similarities existed between that of the Pueblo Indians of New Mexico and Nigeria.

Today, comparable works of art are still made in immense number by the same method, though there is a range of variation in the methods used, varying from one place to another. However, the technical character of the ware does not change. It is always made without a wheel, always opened fired at a very low temperature. Nelson (1974), said that an unbroken line of tradition joins the twentieth century with counterparts of perhaps 12,000 years ago. And while modern technology has done much to increase both convenience and versatility, many of the same simple forming and decorating methods that were practised by primitive artisans are still followed today. Some of these hand-building techniques are coiling, modelling, pinching and moulding techniques. The more modern techniques are slabbing, throwing, jiggering and jolleying and slip casting technique.

Historically, most Neolithic and Bronze Age peoples produced good coiled pottery and continued to do so for large storage jars when the wheel became used for smaller repeat items.. Samples of coil pots could be seen on wares made in Western Asia, the Mediterranean and Northern China. Hammer (1975), added that Pre-Columbian American pottery and West African pottery are usually quoted as good examples of coiling. Leach (1973), said that the making of

pots by coiling ropes of clay was derived from basketry. Coiling is done by rolling out coils or ropes of clay which are joined to a flat or rounded base and gradually shaped to build the desired form. Only rarely are coils left showing the method of construction and then it is as a decorative feature. Tools used in coiling are simple, being coarse combs, hard scrapers of metal, plastic or natural shells, seed pods and beaters.

As one of the most ancient ways of forming pot, modelling is also considered as the most simple The plastic quality of clay allows it to be shaped directly, either with fingers or with few rudimentary tools like spatula, scraper or knife. Large scale works in bas-relief are usually cut into a number of parts, each of which is partially hollowed out so as to dry better, shrink more evenly and be safe from accidents due to expansion. Examples of this technique can be found in figures found in burial sites or on offering bowls made by the primitive people.

Leach (1973), described pinching as the most primitive and instinctive way of making pottery by the simple fact of hollowing a cavity with the thumb in the middle of a ball of clay, and then preceding to make the wall thinner by squeezing it repeatedly with a regular pressure of the fingers in a slow

spiral movement. Most Chinese and Japanese rakus tea-bowls were made using this technique. Potters in Nigeria use old broken biscuited potsherds as supports when making pinch pots. Cooper (1972), added that primitive people made their pinch pots by putting out clay from a lump using an outside paddle and an inner support. These tools are known respectively as the paddle and anvil and were also used in the Indus Valley to complete the form of a pot thrown on the wheel.

Another old age technique is the moulding technique. The neolithic people use this technique also. Moulded pots which required some sort of model, were formed either over natural forms such as gourds or man-made forms or over moulds made specifically from clay. Clay was smeared on the outside in the case of solid mould like stones. Angeli (1972), mentioned that this technique was not only understood by early Mediterranean civilizations but also by Pre-Columbian Americans. The latter not having mastered the wheel, developed moulding as their main property technique. Essentially moulding consists of pressing down clay on and onto a negative form of the shape desired. Ancient moulds were generally made of terra-cotta. In Nigeria,

particularly the Northern parts, Potters from Ilorin Zaria and Kaduna areas still use old inverted pots as moulds.

Having discussed the archaic techniques, we shall begin the modern techniques starting with slabbing. This technique consists of forming a pot from sheet of clay that are rolled out, often with a rolling pin to the desired thickness, which is then folded, wrapped or cut and joined together. Bottles vases can be made using this technique. Nelson (1974), added by saying that when this technique is used in combination with modelled coiled or thrown sections, slab construction has many more possibilities.

Nobody knows exactly when the wheel was first invented. It was known to have existed in Egypt from the commencement of recorded history from China and Europe. Leach (1973), stated that it dated back to at least 2,000 B.C. Savage (1950) added that it was developed very early in historic times and was used in Egypt as early as 4,000 B.C. In Nigeria, the wheel was first introduced by D. Roberts a British in 1918. Nevertheless, Cooper (1972), said that the introduction of the show wheel enabled pots to be made.

much more quickly. The wheels were either pushed or kicked round with the foot. Nowadays, we even have the electric wheels, which move faster and relieve the leg work. Throwing is the action of making pots on a quickly rotating wheel, using the hands, and water for lubrication. Hammer (1975), said that the technique involves centering a spinning lump of plastic clay upon the wheel-head. When the piece is running true, it is opened in the centre, an inside base is formed and the walls of the pot are lifted from the remainder of the clay by a series of upward movements involving the balanced pressure of fingers inside and outside the pot. He went on to say that the wheel-head usually rotates anti-clockwise.

Another modern technique is the Jiggering and Jolleying technique. These techniques are generally used in production work for making plates, cups, saucers and other circular wares which are identical The principle is much like throwing except that one surface is formed against a plaster mould which is set on the wheel-head and must run true. Singer and Singer (1971), proposed the two terms to differentiate between shaping the concave or convex surface on the mould, thus Jiggering is the process of shaping an article on a convex plaster mould-meaning

the inside of the chosen ware and Jolleying is the process of shaping an article in a concave mould- meaning the outside of the ware. Jiggering can therefore be understood as the technique of forming a pot by using a spinning mould, usually of plaster which gives the inside form. Jiggering is used for plates. The outside of the plate is formed by a metal profile which is fasten to a pivoted arm. This arm is brought down onto the mould and is so adjusted that it leaves the correct clay section. Jolleying is forming a pot by using a spinning mould also of plaster, which shapes the outside pot. First the fingers and then a metal profile are used to shape the inside of the pot. The metal profile is on a pivoted arm which brings it into action against the clay but is adjusted so that the correct section of clay is given. Jolleying is used for cups and deep bowls. These two techniques are mostly used in the industries or commercial centres.

Slip casting is another modern technique which is also used in the industries to produce wares in large quantity. It is a pottery forming process which uses moulds to give the forms and uses liquid clay (slip). Singer and Singer (1971), described the technique as the method of shaping ceramic article by pouring liquid slip into a porous mould which was invented some 150 years ago.

The slip is poured into porous moulds which absorb some of the water from the slip. A layer of clay thus builds up against the wall of the mould to give a cast. When the excess slip is poured out, the clay forming the cast is left adhering to the mould. The cast is stiffened, removed from the mould, dried, trimmed and fired in the usual way.

2.2 2.2 The Syllabus

Looking at the arts and crafts syllabus for the Junior Secondary School (J.S.S.), the education objectives were stated as follows:-

1. Develop a language for expressing ideas, feelings, emotions and moods through a variety of art experiences (creative growth).
2. Learn adequately and effectively the proper use of certain tools, equipment and materials.
3. Develop interest for future vocation in arts and crafts.
4. Have adequate skill and competence for establishing a small-scale workshop.
5. Be adequately equipped to establish studios where works of arts can be practised.

6. Learn and gain understanding of media of expression.

A breakdown of the subjects to be taken shows pottery classified under year three. This shows that pottery is recognised as an aspects of the arts and must be taught likewise, but this is not so since most of the post-primary schools visited do not do pottery. The aim now is to find out the reason for this, as stated in the researcher's objectives.

In the syllabus for Senior Secondary School (S.S.S.), one would come across sentences like this "modelling simple objects in clay or paper pulp", "clay-work-moulding fruits, animals, etc.", "modelling head of a model", "modelling from natural objects using clay or paper pulp". All these sentences show evidence that ceramic is considered as one of the art subject.

In the West African Examination Council Regulations and Syllabus for the Joint Examination for the School Certificate in Art, students are expected to take three papers out of the seven. One each should be taken under section A & B. Section A deals with papers 1, 2, 3, while B deals with 4, 5, 6 and 7. For the purpose of this research, we are only concerned with paper 7 which comes under crafts. This is further sub-divided

into namely; (a) pottery, (b) weaving, (c) textile design, (d) embroidery, (e) basketry, (f) puppetry (g) calabash decoration, (h) book binding, (i) leather-work, (j) theatre-design, (k) wall decoration, (l) print-making, (m) any other craft (that is not named)

In (a) - Pottery - candidates are expected to submit a pottery vassel, such as jug, bowl, dish vase, etc. which the student has either moulded, hand-built or thrown on the wheel, and decorated= if the student so wishes, or any other object made in pottery, such as animal or figure, an ornamental roof tile, etc. Examples of unfired clay are not to be accepted. This, of course, is not possible since the few schools who use clay do not even fire their wares.

With the Teacher Colleges, a look at the syllabus at the G.C.E. level indicated the teaching of crafts as stated to provide candidates with the opportunity for aesthetic, emotional, and visual development through creative activities. These candidates should be able to respond to questions which seek to evaluate.1. The level of development of expression of ideas, feelings, emotions and moods with materials, 2. Acquisition of knowledge and skills in the use of tools, equipments and materials. 3. Understanding of various art media

of expression. 4. Awareness of values and qualities of different works of arts, either natural or man-made. 5. The correlation of the usefulness of art in the other subject area and everyday life of the individual and the society.

In their scheme of work, ceramics is associated with sculpture and comes under modelling in year four. As a ceramic teacher or any art teacher interested in teaching the subject, the teacher can experiment with clay in the making of forms, modelling a head, making animals or fruits. However, the researcher noticed that in these Colleges, usually wood is used for carving and where clay is used, pots are not made but the clay is used for making sculptural pieces or metric forms as regards to sculpture. In their examination scheme, candidates are expected to do 3 papers. The compulsory paper from section "A", one from "B" and one from "C". Our main concern here is art which is under section "C" and is titled Sculpture/Crafts. The specimen of sculpture and the craft work should have been executed within nine months before the examination. This paper is divided into two alternative (a) Sculpture, and (b) Crafts. In (b), the instruction is that candidates must submit one craft work he or she has executed in any of the listed crafts as mentioned earlier in that of the School Certificate. Those doing pottery are

expected to make jugs, bowls, dishes, etc., which they should have moulded or hand-built or thrown on the wheel, or make toy animal or figure, etc.

The researcher noticed that in the Teachers' Colleges, most teachers make the mistake of teaching only sculpture, using clay and ignore pottery which should generally come under the crafts, and in the Secondary Schools, pottery is not done at all.

With the introduction of the 6, 3, 3, 4 System, meaning that Primary School Education is 6 years, Junior Secondary School 3 years, Senior Secondary School 3 years and 4 years for a typical University or Higher Education Course (depending on the normal number of years of the chosen course). At its inception, the Government said that the system made room for pupils to opt for vocational studies in technical schools, after the Junior Secondary School (J.S.S.) and in the official gazette the Federal Government (in its Decree on Education for Secondary and Teachers Colleges), has made provisions for developing and projecting Nigerian Culture, Art and Language as well as the universal and cultural heritage; and for the teachers to encourage the spirit of inquiry and creativity. The present administration policy on industrialization emphasizes

self reliance in goods and services produced locally. To achieve this, the cooperation of our technical colleges is needed in the area of training and research into the use of our local material and this is where claywork comes in. The introduction of subjects like pottery, will give the students a wider range of subjects which develop practical abilities that provide alternative to other subjects like chemistry, mathematics, etc. This means that the students could make up in pottery what they lack in science subjects. With this in mind, we must wake up and tackle the inadequacies in the country's educational system, if our dreams to equip future Nigerians with functional education is to be realised.

2.3 Origin, Preparation of Clay and Construction Techniques

2.3.1 Origin of Clay:

The raw material of which pots are made is of fundamental importance. Clay is a simple material. It is abundant, cheap, easily acquired and prepared and does not need extensive processing. Its plasticity and workability varies widely, so that some clays which serve quite well for one thing are useless for another. For example, in the studio, clay which is used for sculptural pieces would not be good for throwing but throwing clay could well be used for sculptural pieces. Clay shrinks when it dries and shrinks more when fired. In order to understand clay as a raw material, it is

necessary to consider its geologic al origin. Norton (1956), said that clay is a secondary product in the earths crust which results from decomposition by weathering of the older rocks of the feldspar type. Fournier (1977), described clay as the result of the decomposition of granite and igneous rocks. Billington (1978), also contributed in clay genesis by adding that clay is the product of the disirtegration and decomposition of granitic and feldspathic rocks which are of volcanic origin and are composed of feldspar, crystalline silica, mica and other silicious compounds through the action of water, frost and carbonic acid. Rhodes (1958), said that clay is an important part of the earthy material which makes the surface of the earth. He went on to say that clay may be defined as a mixture of clays and other earthy mineral substances which are blended to achieve a specific ceramic product. The ceramists describe clay as the product got as a result of kaolinization. Ahuwan (1984), said that kaolinization change the mineral nature of the rock due to the presence of Co_2 (Carbon dioxide) and H_2O (Water). This rock is called granite which consists of three major elements namely: feldspar, mica and quartz. Kaolinization is the process by which the CO_2 and H_2O created with the feldspar K_2O. $Al_2O_3 . 6SiO_2 + 2H_2O + CO_2 = Al_2O_3.2SiO_2.2H_2O$ (clay) + K_2CO_3 +(soluble potas +$4SiO_2$(frec silica.)

Many clays found in nature serve very well as they are. The potters in pre-scientific times, relied largely upon such clays for their raw materials and made little or no additions to them. Sometimes, however, adjustments were made for better working properties. For example, some sand might be added to reduce the shrinkage and lessen the tendency of the clay to warp when dried or fired. Extraction techniques vary, depending on the place and the level reached by local industry. In local pottery, through long experience, potters are able to locate and know good workable clays suitable for pottery-making. They hardly know the geological origin of these clays but they know whether a particular is suitable for pottery or not. Modern geologists and ceramist are able to classify clays into various categories. These in general terms are primary (non-plastic) and secondary (plastic) clays. Most of the local traditional potters in this country use the secondary clays which in most cases is plastic and contains impurities. All that the potters bother about is a clay which has not go much coarse sand (quartz) which when used, may injure the hand in the process of pottery making. Three basic requirements of clay are:

(a) Workability: describes how the clay behaves when you are making something with it. You should be able to manipulate and shape the clay with ease. The clay must be plastic

and rigid enough to keep its shape without cracking.

(b) Fireability: describes the clays' ability to withstand the great heat of the kiln whether in low, medium or high firing Some clays have good workability and no fireability. Other clays have the opposite.

(c) Fusibility: describes the clay's ability to fuse together into a solid body during firing and for a glaze to fit properly onto the body. That is why potters must often work with a mixture of clays to get the best result.

Before pottery can be formed, clay must undergo a series of operation which includes locating of site, digging, preparing of the clay.

2.3.2 Clay Preparation:

The first thing to do is for the ceramic teacher to find a location near the school where clay could be dug to avoid the problem of transportation. Teachers and students are adviced to look at the landscape around them. They should look for where there are streams of water, any wide cuts in the land from highway construction. Clay is usually found where the earth's surface

has been cracked or moved either by man or nature. Wangboje (1984), supported this when he said that clay can be found at a particular place that has been dug out or where a stream or natural occurance has cut into the land. If there are no brick works or clay pits in the neighbourhood, miners, well diggers, geologists, road builders or even farmers could be consulted as to othe whereabouts of sticky clays and fine fresh water sand. Always allow the students help in the preparation of their materials for that is a valuable part of their learning and training experience.

When digging, dig down deeply (about 5 - 6 feet), and look for a bed of soft clay material. If clay is not properly prepared, the potters effort and skill may be wasted. Clay preparation may be mechanised or manually done or by a combination of both. For post-primary institutions, the mechanised methods is not possible, probably due to high cost of machine. For example, blunger or pugmills. This being the case, ceramic teachers have to look for ways of preparing their clays without incuring high cost. This means utilizing all odds and ends disposable to the teachers. Clay dug could be dried and pounded into powder in a wooden motar or beaten

and sieved.through a mesh before mixing with water to desired consistency or soaked to slake and consequently mixed by hand, breaking up any lumps, coarse sand and removing other unwanted pieces. This method of mixing are still being used today by both the local craftsman and the studio potter (who mixes his clay manually). With the local potter, dry clay is marched either with the feet or beaten with a stick or pounded in a motar before soaking and mixing. Mixing is necessary in order to uniformly distribute all ingredients throughout the clay body. It also provides proper consistency for working the clay and increases its plasticity. The clay should not be hard as to be difficult to work with nor so soft that it sticks to the fingers. Clay of proper consistency can be stored in a plastic bag, buckets or drums for an indefinate length of time until it is ready to be used. You can then wedge the clay to remove air bubbles. Wedging is the combination of banging and slicing of clay to remove air bubbles before kneading. Failure to do so will result in the collapse of pots during firing. When you have finished wedging and kneading your clay, and if the clay is not to be used immediately, you can store the clay in a cool damp place, wrapped with polythene or plastic bags. For some pieces,

ordinary dustbin is very convenient as practised in the Ceramic Section· Larger quantities can be kept in a damp room, cellar or a brick-box. Soaked wooden containers can also be used for storage.

2.3.3 Construction Techniques:

For the purposes of this research, the different hand-building techniques will be introduced. Since we are dealing with post-primary institutions and which in most cases do not have any teaching or learning experience, introducing them to hand-building techniques is considered to be in order. Cardew (1979), said that long before the invention, in the third or fourth millenium B.C. of this comparable tool (the wheel), potters were producing master pieces of form and decoration and since that remote time, in parts of the world, where the wheel was not introduced, noble and beautiful post in vast number were and are still being made by the hand-building methods. Hand forming methods are especially suited to the beginning students because they require no investment in special equipments. All the necessary items are common household activities as confirmed by Norton (1956), "these simple tools are not rapid, but through their use, the beginning potter learns that only by exercising care and good workmanship in every step can a creditable piece be obtained".

Coil Technique

This technique permits the forming of excellent pieces with simple tools and requires short training. It is also excellent for the beginning potter, though the process is relatively slow. While pinching exploits the plasticity of clay for the extension of a form, coiling exploits the plasticity of clay for the making of units with which a form can be built up. The process of coiling therefore offers a far greater range of possible scale. Grog or sand can be added to about 20% of the total weight of the clay. Students must remember that clay must be well wedged before work is started. A round slab of plastic clay is pounded out to the desired thickness to form a base. If the base is going to be round, take anything circular, you can find, for example, a cup or bowl of the clay size you want. Press it lightly into the clay and cut round with a knife. The base is placed on a plaster, wood or cardboard bat or on a turning wheel. The bat can be placed on a table or a level surface where the student can have easy movement. We can now make the coils. A lump of plastic clay is squeezed into a rope-like form and rolled with the flat of the hand lightly on a level surface. Clay consistency for coiling is important.

The clay itself should never be dampened directly during rolling, otherwise, it simply cannot be rolled out. The clay should not be so moist that it sticks to the fingers, nor so dry that cracks develop. Roll the cylindrical clay back and fourth. The pressure of the hands should be light and even; the motion should be outward toward the end of the cylinder. In a few rolls, if the size in length and diameter is alright, you pick the first coil and wind it round inside the base pressing down lightly with the thumb. When the first coil has been positioned, you roll some few more coils and press them onto the first lightly so as to wield them together. Unless they are for immediate use, coils should not be simply left on the bench or flat surface when rolled. In fact, it is much wiser to roll a few often than to make a large number. With practice, even coils can be produced, although at first, it may be difficult to maintain a uniform pressure to prevent this spots. You can dampen your hands to prevent too rapid drying of the clay. Some potters prefer to cut the coil after one turn has been made join the ends and start a new turn. This takes longer and makes a weaker structure (because of the joints) and therefore is not recommended. The coils are joined inside and out with a vertical

Figure 1:
Laying the first coil on the slab base





Figure 2:
Joining the coils with a wiping motion

Figure 3:

Using a wooden tool to join the coils.



wiping motion of the fingers. Smooth the inside of the pot with a sponge or rib by putting your right hand inside, while it is being built and keep the wall on an even thickness. The process is continued until the wall is high enough. The student should constantly bear in mind, the shape of the pot he or she hopes to make and each coil should be placed in relation to the one below so as to give the proper final contour. Effort shuld be made to maintain symmetry by turning the piece and looking at it from all sides as the work progresses. While working on the inside, the other hand should support the outside, taking care not to dislocate the shape. Larger, fuller forms need to be built more slowly to prevent the wall from sagging. It is often necessary to allow the piece to dry out slightly (with the top edge covered with a rag or polythene) before continuing to allow it support the weight above it. If you think your forms needs alteration in any way, this must be done immediately, while the clay is still plastic and

soft. Works can be covered with a plastic bag, damp rag to prevent its becoming too stiff, for if the clay dries beyond leather-hard stage, damp coils cannot be applied nor can handles or other additions be made. When work is resumed on a particularly dried piece, the top-most joint must be scored (roughened and slashed with a knife or any sharp tool) and slip applied to facilitate joining. Incised or pressed decoration can be added to the form. When the form is finished, the lip may be trimmed to give a rounded edge. The sides and bottom should be scraped with a flexible scraper or knife to give a more even surface. The finished piece is covered with a plastic or polythene bag so as to allow moisture content to equalize or cracks will develop.

Modelling:

This is the process whereby a lump of plastic clay is taken and shaped into anything the potter desires. This is especially good for the beginning potter as it gives him or her complete freedom to do whatever he likes without any specific rules. Wangboje (1984), describes it as the building of solid forms for casting in another material or when hollowed, for firing as terracottas. Any form built of solid clay which exceeds a thickness of about 50mm, has to be cut in half, hallowed out and be rejoined. There is no particular difficulty attached to this pot. It is important that it is done at the right time. The clay must be hard enough to support its own weight when the form has been hallowed out, and it must not be so hard as to make rejoining risky. It must also be soft enough to allow the possibility of subsequent building onto the surface. When you've hollowed out your form and rejoin (with slip) additions could be added to the surface if needed. It is then smoothened and allowed to dry slowly covered either with a polythene or a damp rag. It should be kept in a cool or damp room.

Figure 4:
Top of the head is cut with a wire





Figure 5:
Both halves are trimmed to a thickness of ½ to 1 inch

Figure 6:

The edges are scored and coated with slip and then joined



Pinch Technique:

This is one of the easiest methods of making bowls. It deals with the construction of miniture (small forms) due to the extent to which the fingers can stretch. In his text book for arts and crafts for Junior Secondary School, Wangboje (1982) said that it is instructive to experiment widely with this process, aiming on one hand at a spontaneous and unpredictable freedom and on the other hand at a planned control. He went on to say that whatever the end result, the nature of the process, the way the form is elongated is identical. The first thing to do is to take a lump of clay and roll it into a small ball. Hold the ball gently but firmly in your left hand. Make a hollow into the centre of the ball of clay to within ¼ inch of the bottom with your right thumb. Keep your thumb in the hole and bring the four right fingers to rest on the outside of the ball and slowly rotate it anti-clockwise into your left hand. Pinch your thumb towards the supporting fingers to form the base of the pot. After every complete revolution, move the pressure slightly down from the base and continue until the edge is carefully finished. Now repeat the pinching process from the base to the top as before, but with the base resting on the bench or table or any felt surface with careful

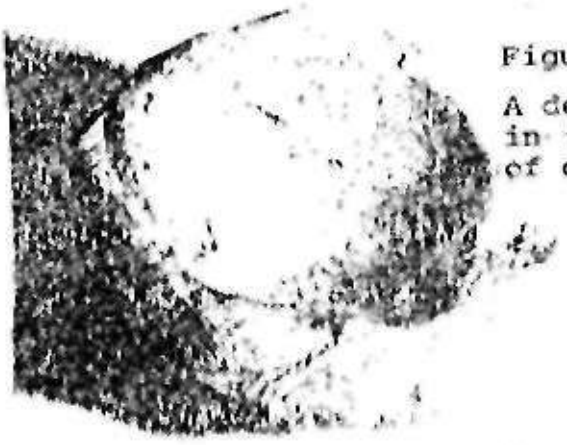


Figure 7

A depression is made in the center of a ball of clay

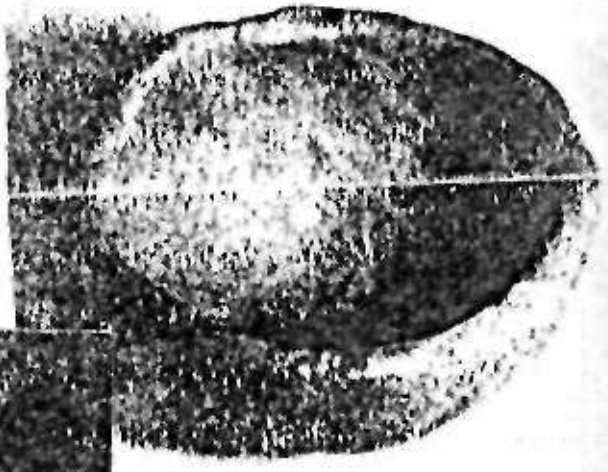


Figure 8

Thinning the walls with even, gentle pressure between the thumb and figure



Figure 9

Smoothening the interior with the thumb to heal the cracks

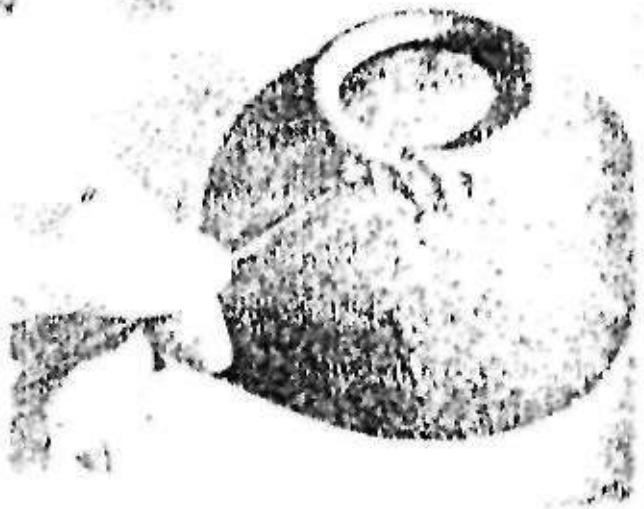


Figure 10

Coil is added at the bottom to serve as a base or foot

pressure between the fingers, the wall is gradually thinned and the form is developed. You should always bear in mind that if it is too stiff, there is the tendency for the form you are making to crack. By pressing the fissures together and smoothing with fingers, any small cracks can be healed. If you like, you can keep it for sometime and cover until it stiffens a bit, then you can continue. You then finish the shape you want and smoothen the rim with your sponge, both inside and outside the pot. Legs or a coiled foot can be added when the piece is leather hard.

Molding Technique

This technique is done usually on an inverted form. The mold can be a biscuit fired pot. The form is covered with a piece of dried cloth, grog or ash. This is to prevent the clay from sticking to the form. Clay is rolled out to the desired thickness either with a rolling-pin (as used for baking) bottle, iron rod, etc. on a table. The resulting sheet or slab is dropped over the mold and pressed to conform to it. The clay is now gently patted down on the form, starting at the centre and working towards the edge, to remove any air. Next, the edges are trimmed with a knife and the piece is allowed to dry for a few hours. As soon as it is stiff enough to handle safely, the piece is lifted off the form and is finished with a scraper and sponge. If desired, small "rim" or "bottom" may be attached. While this method is hardly creative, nevertheless, it is a good project especially for students who are just starting pottery and need a bit of early success to sustain their interest.

Slab Technique:

This is a method in which a plastic clay is flattened and cut into shape which when joined together form the desired object. Wangboje (1982) described it as the process whereby slabs of clay are rolled out flat



Figure 11

Sheet of slab draped over a mold



Figure 12

Clay slab is patted down with even pressure to make it conforms to the mold



Figure 13

Feets are added to the form to form the base

and cut into shapes, and joined together to form a pot. This is also a method which requires very little special equipment and no great amount of experience to turn out creditable pieces. Most slab built pots are geometric in shape. We begin by rolling clay into a sheet of uniform and desired thickness. Damp cloth or grog should be put on the table to prevent clay from sticking to it and to allow easy transfer. The roller should be washed occasionally and wiped dry or scraped with a scraper or knife to also avoid the sticking of clay. The student should always roll from the centre to the outer edges and note that the rolled sheet is free from cracks or tears, for example, when making a box; you make a paper or card board template for the four sides and combined bottom of the box place it on the sheet of clay and use a knife to cut around the pattern or you can use your ruler to measure out the length and breadth of your box directly on the clay and cut with your knife. Remove your cut out clay and place it on a board or bat. Cut a shallow grove around the bottom where the sides fold up. Leave to harden for some minutes or for a few hours covered with a polythene or damp cloth if not going to be used immediately. The moisture in the clay will escape gradually but not too fast. Get some slip, score the surface of the slab which will



Figure 14
Cutting out the box,
using a template.



Figure 15
Beveling the corners



Figure 16
Reinforming the corners
with slip

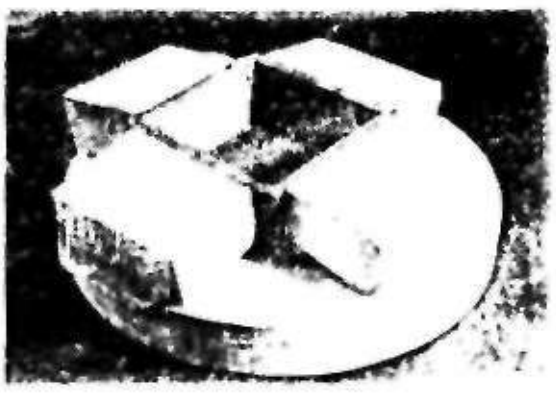


Figure 17

Supporting the sides
for drying

form the base along the other edges. Apply sufficient slip onto the surface. Fold up the sides of the box and hold them in position with blocks of wood for support or you leave the cut pieces to stiffen enough before joining. The surface may be scraped or sponged and the top edge squared off. You can either keep your box in a damp closet or in a cool place to dry slowly so as to prevent the outside from drying too rapidly and causing sides to bow in (common defect in slab building). You should always remember that joints that are made need to be well enough to withstand the drying and firing stages, every clay form has to go through. To make the cover, clay sheet is again cut out and joined at the corner. A rim made from a narrow strip of clay is pressed onto the underside of the cover. The edges are trimmed after the cover has been leather hard. If desired, a knob may be attached to the top when partly dry. The cover is finished the same way as the box.

Counts (1973), said that learning from history gives you a chance to acquire skills and develop a work process that would yield a sort of

freedom. No potter must be bound by a tradition of passed-down ignorance. With a knowledge of many traditions and well-learned techniques, he can be free to do, to be and to create. Without a background of culture and appreciation of beauty, combined with a knowledge of the range of materials and techniques employed in the craft, no truly contemporary pottery can succeed Uzoagba (1983), further added that in teaching the enjoyment of the art of the past, we should also lead the students to enjoy the art of the present, for art today is a testimony to our culture.

2.4 Decoration and Tools

2.4.1 Decoration

The desire to decorate wet clay has always been a very strong urge with potters right from the prehistoric times. The neolithic man scratched patterns on his pots to make it look more beautiful and more appealing to the eye. Leach (1973), added by saying that the earliest methods of decoration were derived from the process employed in making pots. The impress of basket moulds, for example, led to the imitation of woven patterns. Roughly fashioned tools of

bone wood or stone were used to give these repeated impressions scraping or turning is now done with iron or steel implements, but formerly pieces of flat stone, like slate, were used, and also wood such as bamboo. From that period up to now, both local and college trained potters always practice one form of decoration or the other on their pots. Pots should however not be decorated in just any manner. A badly decorated pot could spoil the beauty which the pot possess on its own. Decoration can be divided into three stages:

1. Before bisque - The decoration can be made when the were is wet or leather hard. For example the use of slips or oxides give wide range of possibilities.

2. After bisque - Ceramic colours applied usually on a biscuit and covered with a transparent glaze.

3. After glaze - This applied particularly to coloured glazes. Many glazes can be used alone and no other decoration is required. Various techniques can be employed to give tonal variations, for example, window dipping, double dipping etc.

For the purpose of this research, we shall be dealing with the decoration before bisque which could be applied for Post-Primary Institutions. This is so because the second and third are used mostly when using glazes. As we are not using glazes; decoration before bisque is therefore more suitable.

(a) Incised Decoration

Incising consists of carving lines with a tool into a clay surface. Lines are drawn in with a sharp wooden tool with pointed ends. These lines can be deep cuts providing a strong accent or shallow ones following the contour of the pot. This deocration is done mostly during the leather-hard stage. When a glaze is applied, it shows subtle tonal change.

(b) Applied or Additive Process

Clay added to the pot as soon as the latter is hard enough to handle may be treated in a variety of ways. Clay is added to a pot in forms of rope, strips or thin slabs for decorative effects which can be twisted, notched, combed stamped or smeared.

(c) Stamping or Impressed Decoration

This is one of the oldest decorative techniques for Ceramic objects. Many neolithic pots have impressed designs of weaves, cards or basket patterns. These devices are still used today to provide interesting textural decoration. Other possibilities of stamps include shells, leaves, pebbles, and an infinite variety of found objects. Clay should be soft enough to yeild to the impression and not so soft that it distorts the shape . Always support properly with one hand, the part of the pot which is being impressed or else it might split.

(d) Roulette Decoration

Made by either impressing the pattern if it is on a soft maleable material or by twisting and tying knots if it is straw or fibrous material. Bones with serrated edges can be used. They are rolled against the surface of the pot to produce a repeat pattern.

(e) Slip Decoration

Coating a pot with a layer of slip or engobe (liquid coloured slip used for decorating a pot or changing the natural colour of the clay) makes possible differential forms of surface decoration. Slip must adhere closely to the clay body during drying and firing. Any cracking of the slip coating or flaking at the rims and edges is assumed that

the pot and the slip are shrinking at different rates. There are several ways of using the slip. It can be poured, or trailed and then combed through to reveal the clay beneath or applied with a brush. The pot can then be burnished. For the purpose of this research, the Terra sigillata method of slip application was used. Terra sigillata is familiar as the burnished surface seen on the classical wares of the early Greek and Romans and on the pottery of many primitive people. It is a very thin opaque finish for pottery usually red or buff, brownor orcher, with a high gloss similar to an enamel. Clay or shale can be used as the material. Any type of clay can be used (preferably ball clays) depending on desired colour and firing temperature. For this research, red laterite clay and attakar clay were used. The treatment given were both the same. Lawrence (1972) said that one can use the same clay as the body or it may be advantageous to use a clay having a lower maturing temperature than the body with the composition of

80% of water

20% dry clay

and any defloculant if desired, for example sodium hydroxide 0.5% or less based on dry weight. This is to aid in keeping the particules floating.



Plate I

Terra Sigillata is mixed thoroughly and allowed to settle



Plate 2: Red slip is used on the wares to give different forms of surface decoration

Conrad (1980) added by saying that small amounts of potash, soda, zinc or rutile are added to the mixing clay. In this research, the clay was not ball milled as should be the procedure but was mixed with water and soaked for two days. Using large containers to transfer the resultant slip, a sieve was used to remove the impurities. After removing the impurities which consisted of dead leaves and pebbles, the water from the surface is decanted off. Rhodes (1958) said that about the top ⅓ or less of the clay slip is skimmed off for use and the rest is discarded. Lawrence (1972) added that the amount of terra sigillata recovered usually amounts to 25 - 45 percent of the original weight of clay. He went on to say that this however depends on the particle size distribution of the starting material. If other natural colours are desired, he said that the following batch may be used.

Dry Terra Sigillata 30%
Colouring oxide 3% based on dry weight of clay
Water 70%.

Terra sigillata may be applied by dipping, painting and spraying on damp or dry ware. It should be applied very thinly, otherwise the layer of slip may dry during shrinkage. The surface

may be burnished before firing by rubbing with a hard instrument like the back of a spoon. Rhodes (1958) contributed by saying that most terra sigillatas are at their best when fired to temperatures below cone 08. He went on to say that if the temperature of firing is too great, the terra sigillata loses its smooth surface and looks very much like any other unglazed engobe.

In the studio; after the application of terra sigillata on some chosen pieces, they were then burnished and fired. After firing, the attakar clay was okay but the laterite slip applied to a clay tile was discovered to have peeled off. This might be due to some particles of sand being present or that it was applied thickly. The researcher then sieved the clay with a 80mm mesh and added some borax (20 parts of borax tc 80 parts of wet clay). The slip was then applied to some wares and fired to the temperature of 800^{o}C. The result this time was much bette . At this point, it should be noted that although terra sigillata may make a piece of pottery somewhat impervious to moisture, it does not seel off the surface of the clay positively as does a glaze.

Advantages of terra sigillata as described by

Lawrence (1972):

1. It is cheap.
2. Easy to prepare and supply.
3. No special handling or cleaning is necessary before firing.
4. Can be stacked without sticking.
5. Produce durable, impervious, appealing coatings.
6. With-stand auto clave test, fit most bodies.
7. Various colours are possible.

Disadvantages of Terra Sigillata

Conrad (1980) described the following as the disadvantages of terra sigillata.

1. Flaking away of the glaze from the pot because of shrinkage differential.
2. Saturation of clay with water during the glaze application, which causes thin-walled pots to collapse.
3. Deformation of fine detail of the green ware as the glaze is painted.

(g) Burnishing

As described by Fournier (1977) is the polishing of the surface of a clay body by rubbing. He said that the burnishing tool can be any conveniently shaped smooth object like bone, plastic, metal, hard

wood or kitchen spoon. The only essential is a perfectly smooth surface without sharp corners or edges. Burnishing can be lost if the firing is too high, 850°C is sufficient. Angel (1974) said that this technique has been used as a pre-treatment for glazing in Greece, for instance, coloured oxides can be in-corporated in burnishing, thus giving it a decorative function. Examples of this can be seen in certain pre-columbian ceramics.

The traditional potters also do burnishing as part of their work. Burnishing is accomplished before the slip dries by rubbing briskly with a hard smooth stone or back of a spoon. Only the amount of wet slip that can be polished immediately is applied at one line. Occassionally the traditional potters touched their clay with a trace amount of lard or oil with a smooth cloth. This does not only moisture or lubricate the surface but also enhances the sheen. Excess pressure may destroy or crack the pot more especially if the pot is very thin. The student should always remember that burnishing is done when wares are in the leather-hard stage.



Plate 3: Burnishing the back of an ash-tray with the back of a spoon



Plate 4: A burnish bird which has undergone bush firing

Other possible ways of decorating our pots in Post-Primary Institutions after the bisque firing are:

(h) Brewed Concoction

By adopting the traditional potters method of splashing brewed concotion from special types of trees on wares. For example, Makuba (locust bean pod). A boiled solution of the mentioned material is applied to a pot immediately after firing to give a shiny surface on the pot. The effects resemble those of glazes but makuba is not a glaze and is generally regarded as pottery polish. Cardew (1969) described such polishes as "non-ceramic" aids to beauty. When a pot is removed from the fire using rags for lifting (as the pots are still hot) the solution is splashed on the pots, using brooms. The liquid sinks into the pot, giving it a dark brownish colour. The stain strengthens the pots and makes them less porous. It also gives pots very shiny surface which helps the impressed decorative patterns to show more prominently.

(i) Wood Polish

This can be purchased and applied to fired pieces to give a good shiny finish to the already fired pot.

(j) Paint

After the biscuit firing, paint can be purchased and painted on the wares using variety of colours. This also becomes a form of decoration. The application can be done either with a painters brush or a chewing stick.

2.4.2 Tools That Can Be Made or Bought Cheaply:

The following simple tools can be made or bought cheaply by the students if needed at any time in making pottery. Students should try and follow the examples of the traditional craftsmen whenever the need arises. Gradually, better tools will emerge as every day working experiences demands

(a) Banding Wheel

This is a floor standing wheel normally used by the potters. It is handy for use during glaze application and also for turning a fragile piece during hand building construction. To make it, cut two disks to the required diametre in inch out of a plywood. Make a shallow hole in one of the disks to be used as a base, cut a middle section that will be as a support between the top disk and the bottom. Cut out a square shaped wood and cut off the middle about an inch in diameter. Also make a hole in your top disk about an inch in diameter. Use a nail and harmmer to fix the square shaped

plywood to your top disk. Glue the middle section to the base disk so that it becomes one piece. Then place your top disk to the base disk, file round edges and polish. Your binding wheel is now ready.

(b) Bats

A disc on which clay objects are formed and dried. It can be applied to various types of sheet materials. A bat shaped piece of wood for beating pots or stirring a glaze. This can be made from a variety of material. Plywood is good because it is durable and easy to cut. A saw can be used to cut out the desired shapes. Students ca.. go to any building sites to collect scraps around that may be useful to them.



Plate 5: Wooden bats



Plate 6: Types of bats used by traditional potters

(c) Calipers

A compass of metal, wood or plastic with curved arms or curved at the ends. It is used for measuring the inner circumference of pots. Their most frequest use is for fitting of lids. Large ones are needed for precision throwing. You first draw the desired shape and length on a paper. Cut out the shape and place on the material you are using. For example, if you are using plastic, you place the cut paper on to the plastic and cut. Use a knife or drill to cut the holes needed and fasten the knots.

(d) Cutting Wire

This is used for cutting clay or removing bats on wheel heads. It consists of fine bronze wire with wooden handles at the ends. This can be single or double and twisted. Get your piece of wood and make a dent in the middle with your knife. Get your steel wire and fold round the dent in the wood and twist a couple of times to fasten. Hold the wire ends and gently stretch on in each hand. Get a helper to hold the other end where you fasten with the wood. Twist evenly as you move your hands. Wrap the twisted wire ends

around it and secure it firmly, making sure no sharp points of wire will later present problems. As you learn to make pots, you will need several cutting wires in a variety of lengths.

(e) Cut-Off Needle - or Pricker in American Term

Used for cutting clay, especially for the rims of thrown pots. There are many cut-off tools in the market but some have needles which are too thick to work well. You can make one by forcing the eye end of a long thin needle into the end of a 4" length of wood. Do this by clamping the needle in a vise and pushing, pounding or hammering the wood over the eye end of the needle.

(f) Knives

Used for incising decorations, trimming of excess clay. The blade is about ½ inch wide with a fairly fine back edge, together with a comfortable handle usually made of wood. These knives are sold cheaply in the market. A small kitchen knife will do.

(g) Trimming Tools

These tools are used for either trimming pots to remove excess clay or scraping the bottom of pots to give a smooth and even finish. The tools usually come in many shapes of rectangle, triangle,



Plate 7: Trimming Tools

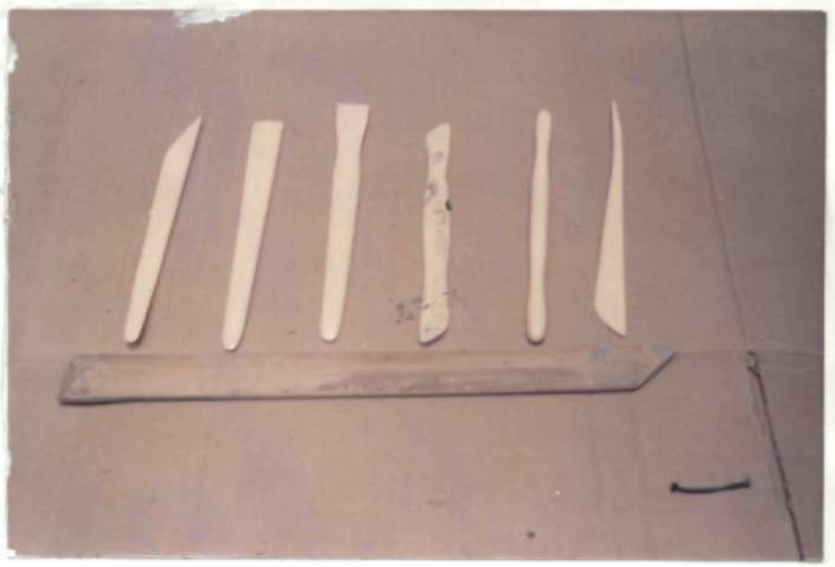


Plate 8: Wooden Spatulas

(h) Spatula

A tool with a flattened, curved and rounded end. It can be of wood or metal and is also useful in the smoothing or burnishing of pots. The shape required can be cut out and smoothened with a file. It can also be obtained cheaply in the market. Some ready-made ones can also be picked in building sites.

(i) Sieves

Regular mesh on perforations which will control the grain size of a material which is passed through the sieve. Made of metal wire, nylon. Frames can be made of metal, wood or plastic. You can make your own frame yourself using nails to fasten, or buy it cheaply in the market. Kitchen sieve can also be used.

(j) Sponges

Natural firmly-grained and supple sponge used for delicate touches such as cleaning rims, and absorbing accumulated water from the inside bottom of pots. A large coarser, one is used for mopping the wheel head frequently during throwing process, so as to prevent water from splashing on the thrower or can be used for general scrubbing-up after each throwing session is completed. A sponge

tied to a stick is convenient for reaching into deep vessels. Foams from discarded mattresses can be used, baby's bathing sponge can also be used or it can be obtained cheaply in the market.

(k) Ribs

These are useful for smoothening both the inside and outside of pots. They are fashioned in a number of different curves to enable shaping of desired pots. Made from smoothly sanded hard wood which does not splinter easily and is about ¼" thick. The hole in the middle of the rib reduces the possibility of hand cramps from excessive tension. Other materials like rubber plastic or translucent fibre glass can also be used. They can be cut to desired shape with a jig-saw, band-saw or metal cutting shears. The edges can be sanded or filed. smooth.

circular or a v-shape. They can be made from saw blade which can be obtained from any wood working shop. You can ask any carpenter to save a broken blade for you. These are often several feet long, therefore one will be enough to make several trimming tools. Begin by cutting 4" - 5" length of the blade with metal shears. Cut off the teeth and sharpen both edges of each piece of blade on a bench grinder or a file. You can bend the blades with your hands or pliers. The ends of the blade must be even and parallel. Another way of making a trimming tool is by getting a thin metal and cut to the desired size. Bend to the desired shape with the hands and attach to an empty shell of a biro, wood or any desired handle. Any trimming tool becomes dull with use and will need to be sharpened occasionally. The sharpening can be done on a bench grinder or with a file if the steel is not too hard.

(1) Scraper

A tool with a flattened, curved and rounded end. It can be of wood or metal and is a most useful tool for a potter. Can be obtained in the market easily and cheaply. It is used for scraping excess dry or wet clay from working tables, wheel heads, etc.



Plate 9: Sieves with 60 and 80mm mesh

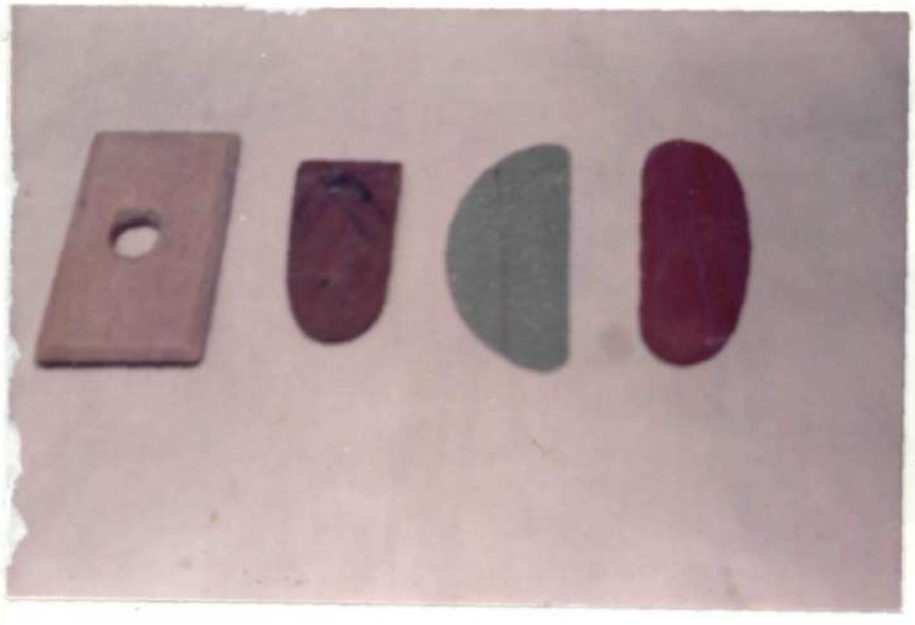


Plate 10: Different types of ribs



Plate 9: Sieves with 60 and 80mm mesh

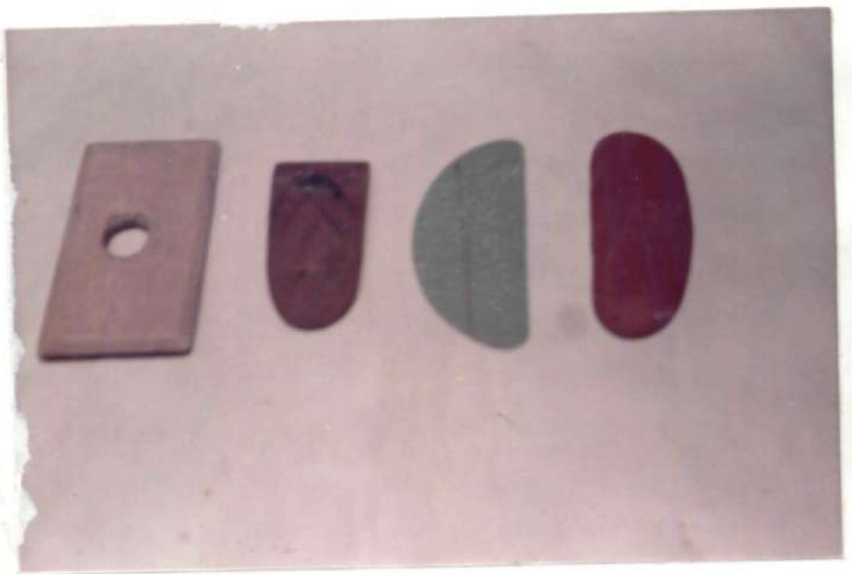


Plate 10: Different types of ribs



Plate 9: Sieves with 60 and 80mm mesh

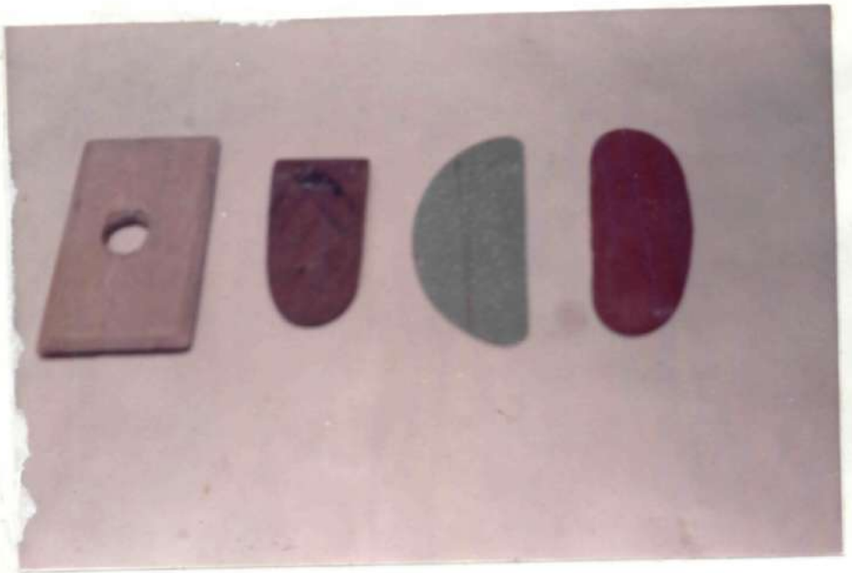


Plate 10: Different types of ribs

2.5 Drying and Firing

Drying begins from the moment a pot is finished. Generally, a lot of water is used to make clay plastic. The water that is used in mixing clay is called the water of plasticity. In addition to this water, the clay particles have water in them which naturally forms part of their molecular structure. To test whether your pot has dried enough for firing, you touch the pot with the tip of your tongue. If it sticks to it immediately, it means the pot is dry enough and is ready for firing. This is the bone dry stage. When you feel the pot cool against your cheek, then there is still some moisture in it. This should be allowed to dry completely before any attempt is made at firing. Another way of knowing if a pot is dry is through the colour. Naturally, clays gradually become paler and once this change is complete and is uniform throughout the pot, the pot can be said to be dry and ready for firing.

Firing is the last decisive hurdle in pottery production. The firing of pottery involves the controlled application of heat to a sufficient degree and for a sufficient length of time for certain chemical and physical changes to occur. Firing is the culminating process in which the craftsmanship and experience which have gone into

making an object at various different stages are put to test. It is understood as being an important part of the whole pottery process. Clay loses its crumbly, shapeable qualities and can no longer be mixed with water. Instead, it becomes hard and strong and will never recover its former plasticity. Depending on the composition of the clay and glazes, the chemical changes take place in an oxidizing atmosphere and others in a reducing atmosphere. They occur at precise moments during firing. Disasters in firing will always occur and have always occured. It is important that diasters and happy and unhappy firing accidents are to be studied for as much as the things which occur predictably, they can lead to greater understanding of processes and materials. Angeli (1972) said that a potter practicing the art of ceramic is neither a physist nor chemist. His knowledge of the possibilities of clay is empirical. He learns to imagine how a pot will turn out, but also accepts something different and bear a rich harvest from experience gained this way. He went on to say that all we should expect from firing is a result somewhere near our predictions. There are two ways of firing pots. The traditional way of firing will

be more acceptable as the schools do not have kilns.

2.5.1 Traditional Method: Bon or Open Firing

In the traditional set-up, firing is normally done as a group. The success of this process depends solely on the weather condition. It is either done in the early hours of the morning or late in the evening. Firing is usually done on the outskirts of village or towns or nearby open spaces or bushes. This is to reduce to the barest minimum, any air pollution. No kiln system is used here. Fuel include wood, grass, twigs, cowdung, sawdust, corn-stems. There is a division of labour for each potter as regards the above mentioned fuel. For the bon-firing, wood is spread in layers on the ground to serve as base foundation and the pots are piled on top upside down avoiding contact. This is to ensure that the pots are balanced properly the first time. Any movement may knock or crack the fragile pots. Here in Samaru, the bigger pots are place at the centre with medium ones at the sides, edges or on



Plate 11: Bigger pots are placed at the Centre with medium ones at the sides



Plate 12:

Bush firing conducted in the studio using bricks

top. The small pots can be put into the bigger ones. If the potters have built many pots, the pile could reach about 6ft high. It is then covered with grass, corn stalks, dried leaves, twigs or pieces of wood. Finally, a hood is provided by means of cowdung or ashes thrown on top of twigs and grasses. This is to slow down the burning. Fuel is lit from different angles and firing begins. Some openings are left to provide a draft. Potters should always be around to keep the fire under control and also to re-fuel at regular interval with remaining grass and pieces of wood. This firing does not last long, 1- 2 hours but never exceeds 3 hours. Igwillo (1984) said that the temperature range reached in open - air firing in normally between $600^{o}C$ - $650^{o}C$. Pots fired this way are found to be porous even though they have developed their resistance to thermal shock. Pots can now be used for cooking over open fires without breaking.

Students should always remember that before the main firing,, the pots expected to be fired should be pre-heated first. The pre-heating is done by putting dry grass inside the pots and lighting them. This is significant because by so doing, the residual water in the pot can be removed. The pre-heating temperature is between $100^{o}C$ - $200^{o}C$.

Another local way of firing is the pit firing, as Igwillo (1983) described it.

Pit Firing:

Here, a sizeable pit is dug in the ground. This should be about 18" deep and preferably circular and slanting towards the centre. The sides are supported with broken shelves or potsherds or even pieces of metal plates. Outside, the edge should be supported with slabs of stone. But care is taken to avoid the stones that might explosde during firing, then loading proceeds.

The advantage of this technique is that it gives a more compact support, especially during loading when wood is laid around the pots prependicularly. Also the pit helps to keep in the heat.

CHAPTER THREE

METHODOLOGY

The findings in the review of related literature in chapter two shows that craft in general, plays a very effective part in the education process today. Based on the reviewed literature, a questionnaire was developed as the instrument for the study. Copies of the questionnaire were sent to four randomly selected zonal areas out of the eight existing, namely: Kaduna, Zonkwa, Katsina and Malumfashi. 234 questionnaires were sent to each participating zone, 210 for the students and 24 for the art teachers. There was also some oral interview questions for the local craftsmen potter. All data collected were analysed and tabulated.

3.1 Instrumentation

Two questionnaires were constructed as the instrument for this study. The first questionnaire was for students, starting with the demographic data. This asked the students to give the names of their individual schools, and about their art experiences in general. This was followed by a set

letters of permission were obtained from the office of the Permanent Secretary in the Ministry of Education, Kaduna State for each of the participating zone, namely, Kaduna, Zonkwa, Katsina and Malumfashi. These letters were taken to the zonal offices in each zone. There, other letters were obtained which were given to the principals of the individual schools participating. The principals in turn distributed the questionnaires to the teachers concerned. The teachers in turn distributed the questionnaires to the senior students concerned. Due to lack of transport, some of the questionnaires were delivered by hand to the various schools.

The questionnaire were collected after they were filled out and brought back for compilation. Those questionnaires that were taken to far away place like Katsina and Zonkwa, took a maximum of about 27 days.before they were collected back from the teachers as the person who delivered them did not live in that area. Those that were delivered in a place like Kaduna took longer time. The researcher had to go back to some of the schools several times

before she was given back the completed questionnaires. The questionnaires given to some of the schools were misplaced as such new ones had to be issued. The data for the oral interview were also collected.

3.4 Collection and Analysis of Data

Upon receipt of the completed instrument, an analysis of the data were made based on the itemized issues which form the research questions. The data was obtained from responses to questionnaires based on response and respondents counting mode. Where it is possible to count the responses of the individual respondents and analyse, response counting was used. For example,on the questionnaire for the teachers, respondents were aksed to give their names. After the compilation, it was discovered that out of the 28 art teachers who responded 22 were male and 6 were female. To get the percentage, of the of the male teachers, 22 was divided by the total number of respondents which is 28, to get the average. This in turn was multiplied by 100 to get the percentage so, it becomes $\frac{22}{28} \times 100 =$ 78.57% to the nearest decimal fraction. The same applies with the women $\frac{6}{28} \times 100 = 21.43\%$.

Thus the table was tabulated like this:

Table I

No	Sex	Score	%
I	Male	22	78.57
2	Female	6	21.43
	Total	28	100.00

However, certain questions that require free responses and are not possible to categorise, the respondents who gave the same response but different answers were counted rather than categorising their responses and counting them. This also was tabulated the same way. The overall return rate for both the teachers and students is 79.70% and this is considered adequate for the analysis of data. Responses for the oral interview are not tabulated but are given as statements because of the low number of returns. The local craftsmen were unwilling to cooperate because they said, so many times, people have been comming to take pictures of them and to ask questions, promising to help them solve their problems, but up to date, nothing has been done.

3.5 Limitations

The followings are some of the unexpected difficulties encountered during the period of the research which were not foreseen initially;

(i) Due to the non-cooperation of most of the local craftsmen, some of them could not be interviewed, as such generalization can therefore not be made on their responses.

(ii) Due to lateness in submission of questionnaires some of the day secondary schools were included in the research, as some of the boarding schools refused to send their forms back. Consequently, some secondary schools and colleges not chosen before had to be included to have a representative sampling. Also some of the chosen schools were discovered not to be offering art, as such the researcher had to include other schools and colleges that offer art as substitutes, even though they have not got much experience in the subject matter, because most of them are newly opened schools.

Nevertheless, this research is a valid and useful document for the study done because there was a high percentage of the questionnaire returned.

CHAPTER FOUR

Discussion and Analysis of Data

In this chapter, the finding from the questionnaire is discussed and tabulated into tables. This reveals some data about the respondents demographic data, availability of materials, classroom utilization and factors that might influence the use of the materials. There are also discussions on the local craftsman craft. Information got as a result of the oral interview is related. This information is believed to be of help to the learning teacher and students. Information got from the personal interview with some of the teachers, principal and the staff inspector for art in Kaduna State is also related.

All in all, 24 schools were selected for this study. The breakdown of respondents from each school indicating the number of questionnaires sent to both teachers and students and number returned are shown on table 2. A total of 936 questionnaires were sent and a total of 746 were completed and returned. This represents a 79.70% returns. Table 2 shows the number of questionnaires sent to each participating school and the number returned.

Table 2

No	Schools	Number Sent	Number Returned	% Returns
I.	K.T.C. Kafanchan	30	30	76.92
2.	Q.A.C. Kaduna	39	3I	79.48
3.	A.T.C. Katsina	39	33	84.6I
4.	G.D.S.S. K/Mash	39	36	92.30
5.	G.G.S.S. T/Balewa	39	31	79.48
6.	G.G.S.S. Kawo	39	30	76.92
7.	W.T.C. Kaduna	39	30	74.35
8.	G.G.S. Zonkwa	39	39	82.05
9.	W.T.C. Zonkwa	39	30	76.92
IO.	G.D.T.C. Malumfashi	39	25	64.10
11.	K.T.C. Kawo	39	33	84.61
12.	G.C. Kaduna	39	31	79.48
13.	G.S.S. Funtua	39	27	69.23
14.	W.T.C. Kabomo	39	31	79.48
15.	G.G.S.S. Kwoi	39	31	79.48
16.	G.S.S. Kafanchan	39	33	84.61
17.	K.T.C. Katsina	39	33	84.61
18.	W.T.C. Katsina	39	31	79.48
19.	W.T.C. Zaria	39	26	66.66
20.	T.C. Basawa	39	34	87.I7
2I.	Alhuddahuda College Zaria	39	36	92.30
22.	G.S.S. Kachia	39	31	79.48
23.	G.S.S. Malumfashi	39	30	76.92
24.	G.C. Katsina	39	32	82.05

Questionnaire for the Teachers

A total of 28 questionnaires were returned out of the total of 96 administered to the respondents. This gives the percentage of 29.16% of the actual returns. Some selected data will be tabulated for the purpose of the study.

Educational Background

Table 3 reveal the respondents' educational background. These were broken down into 3 educational levels B.A. /B.Sc. / B.Ed., HND/ATC, and N.C.E./G.C.E.

Table 3 Highest Qualification Held

No	Qualifications	No	%
a.	B.A./B.Sc/B.Ed	14	50.00
b.	HND/ATC	9	32.14
c.	N.C.E./G.C.E	5	17.86
	Total	28	100.00

The data reveals that 50% of the respondents have degrees, followed by those having A.T.C./H.N.D qualifications with 32.14%. Those with NCE/GCE were only 17.86%.

Table 4

No.	Types of Training Experiences	No	%
a.	Non-formal education	9	32.I4
b.	T.C./University degree	I7	60.7I
c.	Apprenticeship	2	7.I4
	Total	28	99.99

Types of Training

Table 4 reveals the types of training experiences undergone by the respondents. The data revealed that 32.I4% had no formal education, followed by 60.7I% who had undergone either University Degree or equivalent. The remaining 7.I4% started their training as apprentices. Those that chose (b) had the highest vote.

Table 5

No	Years of Training	No	%
a.	I - 3 years	I2	42.86
b.	4 - 5 years	3	I0.7I
c.	5 and over	I3	46.43
	Total	28	I00.00

In the B part of this question, the respondents who had undergone formal training were asked to state the duration it took them as shown in Table 7. Table 7 shows that 46.43% of the respondents have undergone training for about 5 or more years, followed by 42.86% which ranges between I - 3 years and lastly I0.7I% did 4 - 5 years of training (one year) only.

Section B:

Table 6: Provision of Art Studio

No	Yes/No/ Don't know	No	%
a.	Yes	4	I4.2I
b.	No	24	85.79
c.	Don't know	-	-
	Total	28	I00.00

The above table shows that majority of the respondents 85.79% do not have a standard art studio. I4.2I% of the respondents agreed that they have. The respondents that were negative in their answer were then asked to state where they hold their classes.

Table 7

No.	Place of Instruction	Score	%
a.	Art Studio or Regular Class-room	24	85.71
b.	Outside	2	7.14
c.	Others	2	7.14
	Total	28	99.99

From the above table, it can be deduced that 85.71% of the respondents use either their classroom or art studio for teaching art while the remaining 7.14% of (b) and (c) have their outside and some in laboratories e.g. biology lab. The researcher then went on to ask the respondents if they had any difficulty with the supply of materials. Their responses are shown in table 8.

Table 8 : Difficulties Encountered with Supply of Materials

No.	Yes/No/ Don't remember	Score	%
a.	Yes	25	89.29
b.	No	2	7.14
c.	Don't remember	1	3.57
	Total	28	100.00

From the above table, we can see that 89.29% of the respondents have difficulties with the supply of their materials, 7.14% have no difficulties concerning the supply of materials and the other 3.57% don't remember or do not know whether they have any difficulties or not.

Those who had difficulties with the supply of their materials were then asked to state the nature of difficulties encountered.

Difficulties Encountered:

Analysis of responses shows the following as difficulties encountered with the supply of materials:

a) Unavailability of materials;

b) No fund allocated to the Arts Department

c) Students not willing to buy necessary pottery materials;

d) Ceramics materials are too costly as the schools and the Ministry of Education are reluctant to purchase;

e) Financial problems in schools, therefore, the school cannot buy the materials needed;

f) A particular respondent mentioned that there is no studio for effective teaching of the subject.

Time Allocation:

The respondents were asked to state if the time given for the teaching of art is adequate or not. Their responses were shown as followed in Table 9.

Table 9:

No.	Degree of satisfaction	Score	%
a.	Adequate	7	25.00
b.	Don't Know	6	21.43
c.	Not enough	15	53.57
	Total	28	100.00

From the above data, it can be deduced that the respondents who chose (c) had the highest percentage of 53.57%, meaning the time allocated for the teaching of art is not enough. This is followed by (a) with 25% who said that the time allocated is adequate. The remaining 21.43% of the respondents say that the time was too much.

Kind of Assessment Adopted:

The researcher went on to ask the respondents to indicate the type of assessment adopted. Their responses were as indicated below:

Table 10:

No.	Assessment Adopted	Score	%
a.	Continuous	25	89.29
b.	Examination	2	7.14
c.	None	1	3.57
	Total	28	100.00

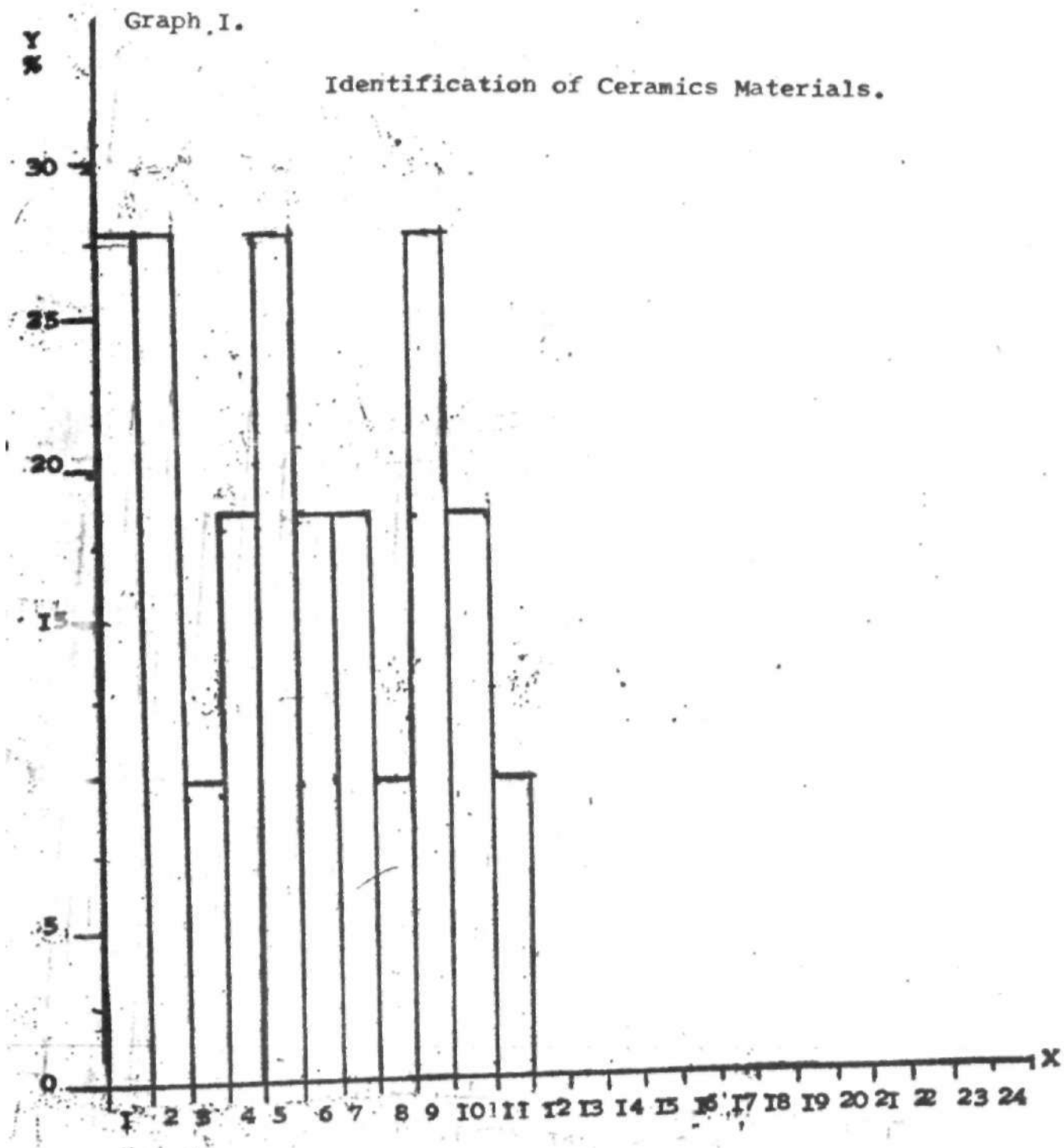
Out of the responses received, the respondents who answered (a) have the highest percentage of 89.29%. This is then followed by 7.14% respondents who said that they only assess their students work during examination. 3.5% said that they do not assess their student work.

Section C: Identification and Usage of Materials:

In this section, the respondents were asked to identify certain ceramics materials and equipments used in the studio and to indicate their usage during the year. Their responses were as follows:

Graph I.

Identification of Ceramics Materials.



Scale:

X - axis 1cm:2 Schools. This represent the number of **participating schools**

Y - axis 2cm:5% represents **the number of percentage score** of teachers' awareness to materials.

Looking at the preceding graph, it can be noticed that only 27.27% of the respondents in schools I, 2, 5, and 9 know the materials and use them sometime during the year in their classes, studio or departments. I8.I8% of the respondents in schools 4, 6, 7 and I0 are familiar with the materials and use them sometime during the year, 9.09% respondents of schools 3, 8 and II are also familiar with the materials, the other remaining respondents from the 13 schools do not know the materials.

Section D: Influence:

Here, the respondents were asked in their opinion to choose the statement that best describes the reason for not teaching ceramics as one of the art subjects.

Table 11:

No.	Reasons	Score	%
a.	None of the materials are available in my department	21	75.00
b.	I have no basic training in their usage	2	7.14
c.	I have too many lessons, no time allocated for clay classes	5	17.86
	Total	28	100.00

Looking at the above, one can see that 75% of the respondents were of the opinion that if clay was made available in their departments, they would teach it. 17.86 said they were willing to use clay in their departments, but due to too many lessons allocated to them, there was no time to teach clay. The remaining 7.14% said that they do no have any basic training as regards the use of clay.

Influence 2:

They were then asked to indicate what would make the teaching of clay work easier for them.

Table 12:

No.	Response	Score	%
a.	I would use clay if I know how to use it	2	7.14
b.	I would use clay if it is made available in the classroom/ department	25	89.29
c.	I would use clay if my work-load is reduced so that I have more time for planning	I	3.57
	Total	28	100.00

From the above table, 89.29% of the respondents said that they would use clay if it was made available in the class-rooms. 7.14% said that they would use clay if they had any training as regards its usage. The remaining 3.57% said that they would use clay if their workload was reduced.

Students Response:

As said earlier, the data collected from both the students and teachers form the basis of the analysis. The analysis of the students would also follow the order of the itemized issues which form the research questions. The analysis of the students is tabulated the sameway as that of the teachers. All in all, 840 students were served with the questionnaires and 718 were returned giving the

return rate rate of 85.47%. Here again some selected data will be tabulated for the purpose of the study.

Questions 1, Students Background Knowledge to Arts)

In the first question, students were asked to state where they have done any art activity before either formally or informally. Their responses were analysed as follows:

Table13 :

No.	Areas of Art Activity	Score	%
a.	At school	496	69.08
b.	At home	212	29.53
c.	Others	10	1.39
	Total	718	100.00

From the above table, out of the total of 718 respondents for this question, 69.08% have some form of formal art instruction at school, 29.53% have some form of art training at home and 1.39% attributed their training to other sources like playing ground, clubs, etc.

4. The respondents were asked whether they enjoy doing art. Their responses are as shown below:

Table 14 : Degree of Satisfaction

No.	Responses	Score	%
a.	Very much	523	72.84
b.	Little	142	19.78
c.	Not at all	53	7.38
	Total	718	100.00

The above table and the total number of responses (718) on question 4, 72.84% of the respondents said that they enjoy doing art very much, and 19.78% stated that they enjoy art a little, while the remaining 7.38% said that they do not like doing art activities at all.

5. The respondents were asked whether art was a compulsory subject in their school. Their responses are as follows:

Table 15: Art- Compulsory or Optional

No.	Responses	Score	%
a.	Yes Compulsory	288	40.11
b.	Not compulsory	420	58.50
c.	Others	10	1.39
	Total	718	100.00

Looking at the table above, it can be deduced that out of the total of 718 respondents, 40.11% respondents stated that art is compulsory in their school. 58.50% stated that even though they do art in their school, it is not compulsory, and the remaining 1.39% said that they do not know art or even what it means.

6. The respondents were asked to say where they normally hold their classes. Their responses can be seen as shown in Table 16.

Table 16: Area of Learning

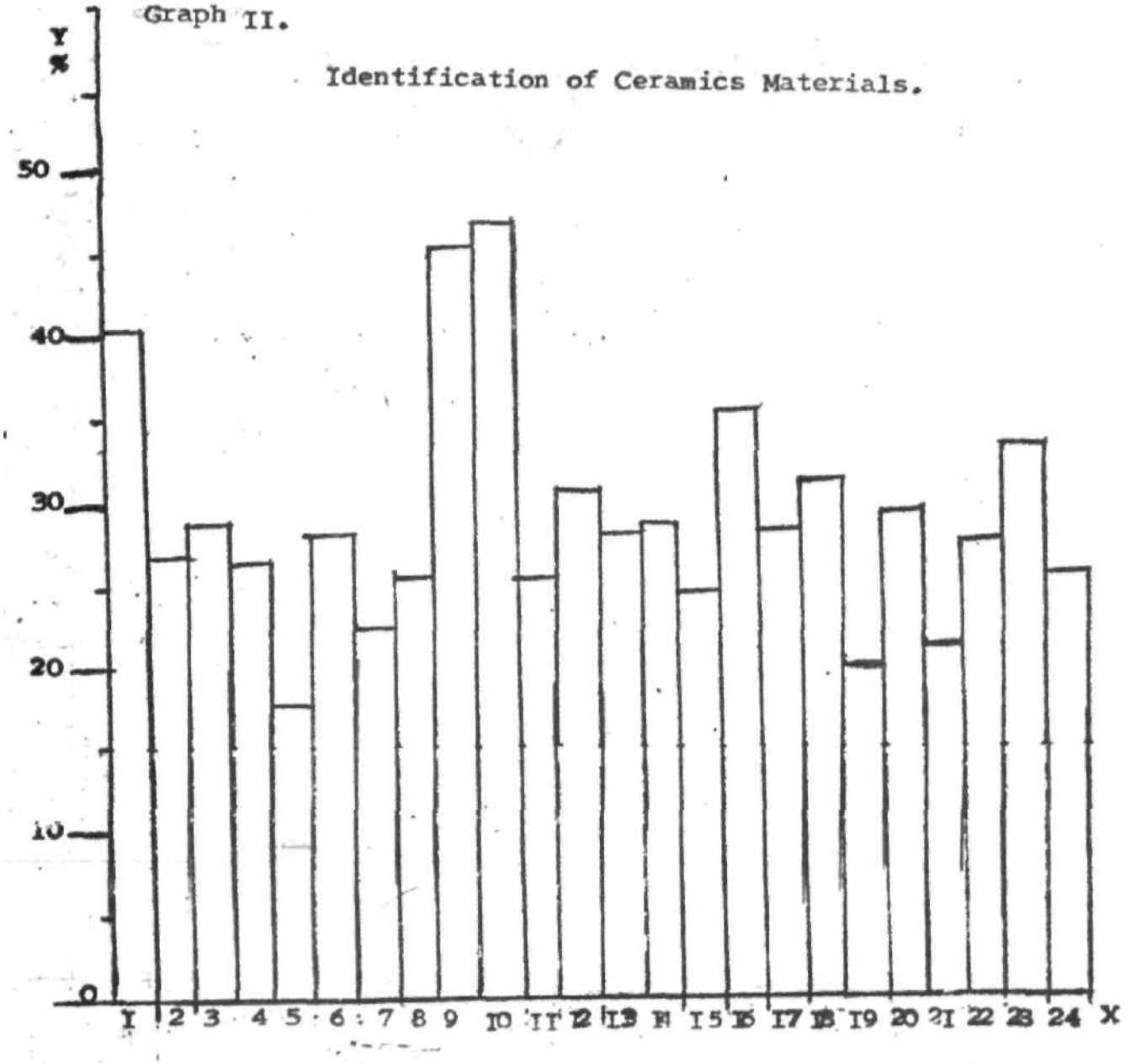
No.	Responses	Score	%
a.	In an art studio	387	53.90
b.	In a regular classroom	305	42.48
c.	Outside	26	3.62
	Total	718	100.00

In this question, the researcher wishes to find out whether the respondents have art studio or not and to know the condition which they are subjected to. The above table shows that out of the 718 respondents, 53.90% have art studio, 42.48% take their art classes outside since there is no room available for them.

In question 10, the respondents were asked to identify some ceramic materials they use either in the studio or the classroom.

Graph II.

Identification of Ceramics Materials.



Scale:

X - axis 1cm;2 Schools. This represent the number of **participating schools**

Y - axis 1cm : 5% represent the percentage score of students' **awareness to materials.**

Looking at the preceding graph ,the percentage of the responses for each participating school can be seen. With the highest school of 47.14%, it can then be said that the overall awareness of ceramic materials is very low.

11. Here, the respondents were asked to indicate the number of years they have been using the chosen materials. Probably due to lack of understanding of what the question is requiring from them or lack of explanation from the art teachers, the respondents did not answer this question as they were supposed to. Some of them identified all the materials and said they have been using the materials since the day they were born and some wrote and said they have been using the materials for over 10 years.

The basic materials like pencils, clay, ruler, knife and paper were known to have existed. This constitute to about 50%. As for the other materials, they do not use them. Some of them don't even know what they mean. We can deduce for certain that the vote for ceramic is very low.

12. Question 12 asked the respondents to state the classroom usage of the identified materials as shown in Table 17.

Table 17.

Classroom Usage

No.	Classroom usage	Score	%
a.	Every lesson	313	43.59
b.	Twice a week	369	51.39
c.	Monthly	36	5.01
	Total	718	99.99

From the above table, it can be noticed that the respondents that chose (b) have the highest vote of 51.39% meaning that they use the materials twice a week. 43.59 said they use the materials in every lesson and the remaining 5.01% said that they use the materials monthly.

13. In question 13, the respondents were asked to state whether they have an art and craft club in their school. Their responses were as follows:

Table I8: Existence of Arts and Craft Club

No.	Responses	Score	%
a.	Yes	313	43.59
b.	No	361	50.28
c.	Don't remember	44	6.13
	Total	718	100.00

Looking at the above table, it can be deduced that 50.28% of the respondents are of the opinion that there is no art club existing in their school. 43.59% said that such club exists and the remaining 6.13% said that they don't know whether such a club exists or not.

Personal Interview Responses

Their responses from the personal interview questions for the local craftsmen were not tabulated into tables as the other two. This was because the responses received were to assist in both teachers and students in furthering their knowledge in pottery making and helping to make tools locally.

To begin with, most of the potters were unwilling to co-operate because they complained that

many staff from the Television Station came to take pictures of them and to ask them certain questions, promising them that they would be given help from the Government, but up till now nothing has been done. From the few who co-operated the researcher discovered that they have a common problem in their craft. They also have similar tools for pottery making and have the same technique for making pots. They all do open-firing.

A. Demographic Data

From the first set of questions which deals with the Demographic data, the researcher discovered that the potters were of mixed religion. Those in Zonkwa, Kafanchan areas are mostly of Christian faith while those in Katsina, Kaduna, Zaria, Malumfashi are mostly Moslems. These men are mostly married young and old men with little or no education. Those in Katsina and Malumfashi area only have Islamic education.

B. Production

When the craftsmen were asked about production, the researcher discovered that the craft was done on a part-time basis. This was due to the fact that the pots produced, do not fetch much and

the craftsmen have families to maintain. As a result, the money from the sales of pots would not be enough to sustain them. Most of them work in offices as clerks and messengers during the day. The craftsmen said that the craft was mostly hereditary. The potters usually assemble in groups in a compound and have weekends and most of the afternoons to make pots. Since this craft is hereditary, they started as apprentices to the masters at an early age of about six years old. They in turn teach their children and the trend continues. The local craftsmen produce different types of pots; like tulu (water carrier) used for carrying water collected from streams and rivers. Kwatanniya (for water storage or for bathing, Randa - used for storing drinking water, Kasko - for frying with or for use as a warmer, hot charcoal is put in to warm oneself or use with essence in giving a nice fragrant to a room, tukunyar miya (cooking pot) etc. Their raw materials are obtained from rivers or anywhere there is running water or where the ground is broken by cracks. For tools, they use Mayankiya (a knife used for the trimming of rims of pots), dindinge (for tapping the pots body after building, Madadi (for smoothening), yarzame (for decoration), hoe and shovels for digging and preparing of clay.

All these tools are hand made or can be bought cheaply e.g. the hoe. When asked how long it will take them to make big and small pots, most of them said they can finish as many as four big pots and four small ones in a day. But since they either go to work as clerks or messengers in the offices or work on their farms in the morning, they do not have the time to produce the stipulated number of pots as such the number can be said to be less. They only make pottery in the afternoons. They said that it takes about an hour to finish a large pot and less for a smaller one.

The researcher went on to find out about the general problem encountered in production, some of the potters stated that transportation was their main problem. They said that they usually have to charter a lorry or pick-up van to collect grass and firewood for them. Some use donkeys for the same purpose. Usually, this firewood and grass are obtained from nearby villages, which the potters cut down and gather together. The craftsmen complained of paying much for transportation. They said that during rainy season, it is difficult to make

pots because of the weather and firing can only be done on a bright and sunny day. Sometimes, they had to walk long distances in order to get their clay and sand. They also complain of not having storage facilities. During the rainy season, they have to look for rooms where they can store their firewood and grasses, which are available in abundance during dry season. Most of the pots produced are usually already occupying empty rooms.

Marketing

Under marketing, the general information got was that they load some of their wares in lorries and carry them to neighbouring villages on their market days. Some were also taken to the central markets of that area. Their largest pots are being sold between ₦4.00 to ₦10.00 and the smallest from 50 kobo to ₦3.00. The potters said that, Randa, Kwartarmiya, flower pots and cooking pots sell more because they are mostly used the year round.

Most of the local craftsmen said that they have considered having a co-operative organization and that they had previously appealed to the government to help them in setting it up, but nothing has been done and they do not have enough

money to set it up themselves. They complained that after firing, normally there would be some broken pots and during transportation to markets, more pots get broken due to bad roads and so this is considered as a set back. So they are appealing to the government to help them by repairing some of the bad roads so that paths that could only be used by foot or bicycles can also be used by cars and lorries respectively. This they said would make transportation a lot easier. They are also appealing to the government or any abled body to help them form a co-operative shop, where they can deposit their wares for sale and to use the media in informing people of these shops.

General

When the potters were asked about the future of traditional pottery in the 20th century, they replied by saying that they feel the craft is in danger of extinction, because most people now prefer to live in the cities and work in offices. As there are new inventions, for example the plastic aluminium pots now produced and sold, people tend to buy these. This could be due to the fact that these new products are more durable

and lighter. So they are appealing to the Government to inform the people that no matter the new discoveries, traditional pots still have their uses, even though as of now they are mostly used by local men and women from the villages.

Some of the young potters said that they do not mind teaching in a government establishment in order to teach the students how to make this craft and to also keep it alive. They believe that introducing this craft in schools will broaden the students knowledge of how to appreciate clay and how to turn it into something useful, beautiful and profitable.

Report on Interview with Members of Staff and Art Inspector for Kaduna State

Personal interview with some of the school authorities in the selected schools

were conducted. The interview was done in order to have more insight as regards to the problem encountered with the teaching of Ceramics. The following are major reports on some of the major problems encountered.

Availability of Materials

How materials are got is uniform. There is no special fund for the purchase of art materials like in other subjects areas e.g. Chemistry, Physics etc. Art materials are usually purchased from stationery fund and this runs out too quickly. Accordingly, this imposes limitations of what the teachers are capable or willing to

teach. It can therefore be said that lack of funds affects the purchase of art materials and this contributes to lack of success in teaching art. Nevertheless, with regards to Ceramics we know that Nigeria is fortunate to be endowed with enormous natural resources (clay inclusive). All the teacher has to do is to improvise his tools and other simple implements with scraps obtained locally. This exercise could be done with the children and would enable them to rethink and reshape tools to suit their own individual needs. Irase (1982) agreed that for a teacher to impact knowledge to the pupils, he must have assess to tools of his trade with adequate teaching gadgets.

Staffing

The Principals said that the art teachers are posted to them from the Min. of Education to teach art But their line of argument here is that in most cases, the teachers are posted without the necessary facilities for teaching the subject. This is coupled with the fact that as a result of staff shortage, particularly in subject areas where students are expected to pass e.g. English, art teachers are requested to stand-in. It can

therefore be inferred that crowding art teachers with other subjects will prevent the teaching of art from being successful. However, when the researcher had a discussion with the Kaduna State Staff Inspector for Art, Mr Agani, he said that the teachers are recruited to teach art. That some are asked to teach other subject is a local arrangement between art teachers and their Principals.

Shortage of Art Teachers

With the rapid expansion of schools and students there is the need for qualified art teachers. In some schools visited there are no art teachers and some have only one. Through discussion the Art Inspector stated that the shortage of art teachers is not peculiar to Ceramics alone but to art and other subjects in general. The shortage of art teachers is confirmed in the analysis, out of the 96 questionnaires sent for the teachers, only 28 were returned and out of the 28 teachers only 14 of them had a degree qualification. This also is supported as shown in table 3. Students complained that art teachers are tranfered too often. So there is lack of continuity

in the subject. Student who have been having art lessons will suddenly find themselves without teachers. The Art Inspector confirms that frequent changes result in disruption of the art programme. He stated that these changes are brought about by those short-term contract officers who are mainly non-indigenes who move from State to State where-ever the pay is attractive. He stated that the only lasting solution is training more art teachers or inviting the local Craftsmen to demonstrate their skill to the students.

Art Period

Almost fifty-four percent of the art teachers claimed that the time given is not enough. In a pratical and theoretical situation, more time is required to settle down, execute and tidy up. On the possibility of including additional art periods on the time table to make for enough time for art theory and practice, most principals are not in favour of the idea. They complained that school time tabling were already overcrowded so much so that normal classes now extend into late afternoons and in certain cases continue in the evenings. Thus it can be infered that having two to three periods a week for art lessons is not enough if the execution of the art programme

is to be successful.

Assessment

To be able to assess the art programme effectively occasional qualification of assignment will not do. There should be continuous assessment by the art teachers, and marks can be recorded down so as to know the progress of the individual pupils.

For all these reasons, there is undoubtedly a need for pottery to be taught within the educational system. At present, except for the Universities, the craft skills are not taught comprehensively at any level. To effect a significant change, education has this responsibility to develop this aspect of man.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter gives the summary from discussion based on previous chapters. It then gives the conclusion and recommendations.

5.1 Summary

From the data collected, it was discovered that the teachers comprise of more male than female and that most of them have either B.A., B.Ed or B.Sc. qualification and have taught in their individual schools for not more than one to five years. It was discovered that almost all the teachers who filled the question indicated that they not only teach art subjects but other subjects as well. They complained that the time given for art periods is always not enough especially when doing practical work. Responses show that they have their art lessons in their classrooms. They complained that they have difficulty with supply of materials. They said that art materials in general are expensive and that there is no fund allocated to that department. Most of the teachers only identified the basic materials like clay and knife but they did not know the ceramic equipment and their usage. Some of them said they have never heard of them. Majority however said that they could use clay if it was made available to them.

Those that do not know anything about ceramics said that they would teach it if they know how to use the materials. Most of the teachers said that the type of assessment adopted is continuous and that they assess their students work weekly.

With the students, majority indicated having done art activity in their schools between 1 - 3 years and that they enjoy it very much. Even though some indicated having art studios in their schools, those that do not have, do theim either in their classrooms or outside. Fifty-eight per cent of the students indicated that even though they do art in their schools, it is not compulsory but optional. When asked to identify some ceramics materials and equipment Fourty-seven point fourteen per cent indicated knowledge of the materials. Majority knew only the basic materials like pencils, ruler clay, knife and paper. Those who identified the named material said that they use the material twice in a week. Majority said that their works are assessed weekly. Fifty one point eleven per cent agreed that their works are mounted for exhibition but they do not have art and craft club existing in their school.

The interview with the local craftsmen was conducted orally. It was discovered that the potters were of mixed religion. Those from the

Northern part of Kaduna State are mostly Moselms while those from the Southern part are mostly christians. Their craft is done on a part-time basis as most of them go to work. They assemble in groups in a compound and have weekends and most of the afternoons to make pots. This craft is however heridatory. They make many types of pots for varying purposes and the same applies to the tools they use. They can finish as many as four big and four small pots in a day. They said that transportation was their man problem in production. They usually have to chatter a lorry or a pick-up van to collect grass and fire wood. They complained that during the rainy season it is difficult to make pots because of the weather as firing can only be done on bright and sunny days. Their wares are taken to neighbouring villages on their market days and that their pots are sold from fifty kobo to ten naira. They said that they have considered a co-operative organizations and have appealed to the Government to help them since they cannot finance it themselves but nothing has been done. They are also appealing to the Government to help in reparing some of the bad roads in the villages and make new ones so that paths that could only be used by foot or bicycles can be used by cars and lorries respectively.

This they said will help transportation a lot easier.

They do not mind teaching in government establishments in order to teach the students how to make their crafts. They believe that introducing the craft in schools will broaden the students knowledge of how to appreciate clay and how to turn it into something useful, beautiful and profitable.

With the discussion with educational staff which was conducted in order to have more insight as regards the problems encountered with the teaching of ceramics, the staff interviewed, said that their was no fund allocated to the subject. They said that the materials are usually purchased from stationery fund which runs out too quickly. Thus this imposes limitation on what the teaches are willing to teach. Shortage of art teachers is another problem encountered. Through discussion the art inspector for Kaduna State stated that the shortage of qualified art teacher was not peculiar to art alone but to other subjects also. The few that are there are crowded with teaching other subjects so that they are not able to teach the art subject as it should be. The art inspector however said that teacher teaching other subjects is an internal arrangement that has nothing to do with the Ministry of Education.

The students also complain of the transfer of teachers. Students who have been having art lessons before will suddenly find themselves without teachers. Mr. Ajani however said that this deficiency can be corrected by inviting local craftsmen to demonstrate their skill to the students. Another hindrance is the time allocated to art on the time-table. The teachers The teachers said that the time given is not enough to settle down, execute and tidy up. Most principals are not in favour of increasing the time or the period for art. They complained that school three time-tabling were already overcrowded so much that the noraml classes now extend into late afternoons. Continuous assessment by the art teachers is agreed to be important in order to know the progress of the individual students.

5.2 Conclusions

Based on the findings of the study, the following conclusions could be drawn:

1. That there are more male art teachers than female and that the number of art teachers that responded are very few.

2. Most of the schools do not have a standard art studio. They do their art lessons in their classrooms.

3. The time allocated for the teaching of art is not enough, especially when teaching the three dimensional art.

4. That the students are generally interested in art but the teachers do not use their initiative and skills to motivate their interest.

5. There is no art and craft club existing in most of the schools and colleges.

6. That there are not enough ceramic tools and equipments available in the schools and colleges. Most of the art teachers and students are not familiar or have never heard of the materials equipments and tools.

7. Most of the art teachers only teach the students to draw and paint and ignore the three dimensional art so that they are not up to date with simple methods and ideas as regards to the teaching of ceramic art.

8. That the art teachers have difficulty in the purchase of materials. There is no fund allocated for art materials. Some said that they had no basic knowledge on the usage of ceramic materials but they are ready and willing to learn if the

materials are made available, and if their workload is reduced so that they have more time for planning and executing of the craft.

9. Continuous assessment is adopted and students work are assessed weekly. Continuous assessment of students work is important. If the teacher cannot evaluate their students works, he or she cannot know if a particular student is making progress or not, or whether the teachers objective planned have been effective or not.

10. The local craftsmen are willing to help in the teaching of pottery whenever they are invited provided they would be paid accordingly.

11. Since the prices of the pots sold by the local craftsmen potter were fairly cheap, the students can try their hands by making some of these pots. After firing, they can either decorate their classrooms with these pots or sell some in order to get money in purchasing more expensive equipments and by so doing increasing the quality of future pots produced.

Judging from the responses of the students and teachers to the questionnaires, it can be said that there is adequate justification in the teaching of ceramics in our schools and colleges. Teachers should therefore be flexible in their teaching giving the students freedom for personal initiative and creativity. They should realise that their profession is not only for money but rearing of future leaders, They should join the fun, guide, suggest, help, encourage, praise the students individually or collectively and point out their mistakes sympathetically. We must wake up and tackle the inadequacies in the country's educational system, if our dream to equip future Nigerians with functional education is to be realised.

5.3 Recommendation

Realizing the importance of education, as catalyst for national development, the Government, in its implementation of 6334 system gives recognition to technical education. This shows the Government concern for the students practical interest and skill. The introduction of subjects like pottery would give the student a wider range of subjects which develop practical abilities. Tomologun (1985), said that most African countries suffer from avoidable horrifying reversels due to improper understanding of culture as the totality of societal values

which when placed in the right perspective and fed with ideas stimulates growth in all areas of the peoples lives. Ajuwon's (1985) commentary on oral and written literature in Nigeria said "he believes that oral tradition can inspire creativity." With this in mind, and taking ceramic art teaching in our post-primary institutions as one of the pillar of progress, the researcher would therefore like to make the following recommendations.

I. Individuals, Government or Higher Institutions (through donations or fund raising) should show their support by giving enough financial aid to researchers to aid discoveries possible in the use of local materials and equipment in promoting the teaching of crafts in our post-primary institutions.

By so doing, the researchers will be encouraged to conduct meaningful researches. It will also go a long way in providing variety of new techniques and processes in the production of Ceramics wares suitable to our society.

2. Government should collaborate more with the Education Resource Centre and WAEC to familiarise the teachers with the syllabus so that they can go straight to the demands of every topic. They should also reduce the number of school subjects of the art teachers to absolute essentials in order that both teachers and students shall have enough time to do effective and relevant teaching and learning. Teachers should be made to be aware of what they have in their Department so as to utilize them in the best possible way. Those who do not know how to use the equipment should be encouraged to learn how to use them by exposing them to places where they can learn how to operate them e.g. Seminars, Public Lectures, Workshops or short courses in Higher Institutions. The State or School should ensure that the equipment available be properly maintained in order to provide good service to the teachers.

3. To alleviate the immediate problem of serious shortage of art teachers in Post-primary institutions, crafts should be continually taught in these schools by some carefully selected professional craftsmen from outside who may be under the direction and supervision of interested class teachers. The handling of art by every class teacher not having adequate training or qualification. (or even interested in art, other than the obligation to teach art) is hardly a satisfactory arrangement.

In this study, Nigeria has been identified as a developing country trying to modernize, cultivate her cultural growth and heritage, we therefore have to relate more positively to the needs and aspirations of both individual and the society. Craft therefore becomes part of the cultural heritage of people and its manifestation in national life is vital to the cause of national identify which Nigeria seeks as a nation.

5.4 Recommendation for Future Researchers

1. There is need for analysing various clays for the production of Terra Sigillata so as to get different finishing effects of the produced wares.

2. There is the need to investigate further on local scraps and metals that can be used in the making of ceramics tools and equipment. This will enable the students to improvise with the materials available in their different environment or surroundings.

3. There is need in furthering highly technical and standardized methods of Ceramic art teaching in Post-primary Institutions. This will correct the deficiency in current methodology.

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QUESTIONAIRE FOR TEACHERS

This is intended with the view of improving ceramics art in post-primary institutions within Kaduna State.

Section A:- Background information

a. Please supply the following information by marking ✓ against the correct options and fill in the blank spaces where necessary.

1. Name _____
2. School _____
3. Highest qualification held _____
4. Subject (s) taught _____
5. For how long have you been teaching ?

a. _____ 1 - 5 years

b. _____ 6 - 10 years

c. _____ 10 - years and over

6. Tick ✓ against the appropriate colum.

a. _____ No. formal education

b. Teacher college/University degree or equivalent

c. _____ Apprenticeship

ii. How long did your formal education training take ?

a. _____ 1 - 3 years

b. _____ 4 - 5 years

c. _____ 5 - and more

Section B. Please read carefully and answer the questionsthat follow

7. Are you provided with a standard art studio ?

a. _____ Yes

b. _____ No

c. _____ Don't know.

8. If no, please state where you normally hold your classes.

a. _____ Regular classroom or art studio

b. _____ Outside

c. _____ Others (Please specify) _____

---

9. Do you have difficulties with the supply of materials ?

a. _____ Yes

b. _____ No

c. _____ Don't know

10. If yes would you please state precisely the nature of difficulties you encounter

---

---

11. Would you say that the time given for the teaching of art is

a. _____adequate

b. _____ to much

c. _____not enough

12. Do and Craft clubs exist in your school?

a. _____Yes

b. _____No

c. _____I don't know

B. Would you say that your student are generally interested in art subject

a. _____les

b. _____No

c. _____I don't know

13. How often do you asses your student wourk

a. _____Weekly

b. _____Monthly

c. _____Termly

15 Kindly indicate the type of assessment adopted.

a: _____Continous

b: _____Examination

c. _____None

Section C:- Please read the fodlowing instructions carefully and respond to the questions that follow. For colums A.B.C.Please tick ✓ under the appropriate colun that best describes your situation of each iten in the list. For column D, circle the numver which best describes how often you use each iten for teaching in your classes during the year. For example.

ITEM	A	B	C	D						
	Available	Not available	Not familiar	CLASSROOM USE DURING THE YEAR						
				Never	Less than 4 times	4 - 6 times	7 - 10 times	Weekly through year	Daily through the year.
Poncil	(✓)	( )	( )	0	1	(2)	3	4	5
Ruler	( )	( )	(✓)	0	1	2	3	4	5

This means that pencils are available in your department and you use them less than 4 - 6 times in a year, but you are not familiar with that the ruler is all about. Use the above example to answer the following :-

16

ITEM	A Available	B Not available	C NOT FAMILIAR	D Classroom use during the year: Never	Less than 4 times	4 - 6	7 - 10	Weekly through the year	Daily through the year
Clay	( )	( )	( )	0	1	2	3	4	5
Throwing-wheel	( )	( )	( )	0	1	2	3	4	5
Knife	( )	( )	( )	0	1	2	3	4	5
Glazes	( )	( )	( )	0	1	2	3	4	5
Spatula	( )	( )	( )	0	1	2	3	4	5
Oxides	( )	( )	( )	0	1	2	3	4	5
Cutting-wire	( )	( )	( )	0	1	2	3	4	5
Rubber-kidney	( )	( )	( )	0	1	2	3	4	5
Pugmill	( )	( )	( )	0	1	2	3	4	5
Blunger	( )	( )	( )	0	1	2	3	4	5
Kiln	( )	( )	( )	0	1	2	3	4	5

Section D. Influence

In your opinion, what do you think discourages you from using clay in teaching one of the arts subject? Tick against the statement that best describes your opinion.

17. a_____None of the material is available in my department.

b._____I have no basic training in their usage.

c._____I have too many lessons no time alloxated for clay classes

18. Indicate which of the fodlowing would make it easier for you.

a. _____I would use clay if I know how to use it

b. _____I would used clay if it is made available in the classrooms/department.

c._____I would use clay, ff my work load is reduced so that have more time for planning.

Name of School _____

These research questions are intended for the improvement of ceramics art in post-primary institutions within Kaduna State.

The researcher is therefore appealing to you to please answer the following questions. Tick ✓ where appropriate.

1. It is commonly known that students like to draw and paint or make handwork either at home or in school. Please say where you have done some art activities before.

a. _____ at school

b. _____ at home

c. _____ others (please state where) _____

---

2. If you have been involved in some art art activities at home, please state the duration as it applies per day.

a. _____ 1-3 hours

b. _____ 4-5 hours

c. _____ others (please State) _____

---

3. If you have been involved in some art activities in school, please kindly state for how long.

a. _____ 1 - 3 years

b. _____ 4 - 5 years

c. _____ Don't remember

4. Would you say that you enjoy taking part in this activity?

a. _____ very much

b. _____ little

c. _____ not at all.

5. Is art a compulsory subject in your present school?

a. _____ Yes

b. _____ No

c. _____ Others (please specify) _____

6. Where do you normally hold your classes?

a. _____ In an art studio

b. _____ In a regular classroom

c. _____ Outside.

7. Can you state whether you are sometimes given homework.

a. _____ Yes

b. _____ No

c. _____ Don't remember.

8. If your answer to No 7 is yes will you kindly indicate whether you are aware of the fact that each time your home work are returned, you ever noticed any marks or comments?

a. _____ Yes

b. _____ NO

c. _____ Don't remember.

19. Has there been any occasion when your works were mounted for exhibition say at speech or open day?

a. _____ Yes

b. _____ No

C. _____ Don't remember.

10. The following are some list of art materials and equipments used in the classroom or studio. Tick ✓ the ones you use or are familiar with. You can tick more than one

a. _____ Clay

b. _____ Throuwing Wheel

c. _____ Knife

d. _____ glazes

e. _____ oxides

f. _____ Spatula

g. _____ Cutting wire

h. _____ rubber Kidney

i. _____ pugmill

j. _____ blunger

k. _____ poncils

l _____ Ruler

m. _____ paper

n. _____ Kiln

11. If you are familiar with any of the above, state how long you have been using it.

NAME	HOW LONG
a. _____	_____
b. _____	_____
c. _____	_____
d. _____	_____
e. _____	_____
f. _____	_____
g. _____	_____
h. _____	_____

12. Do you use the material or equipment in _____

a. _____ every lesson

b. _____ twice a week

c. _____ once a month

13. Do you have an art and craft club in your school ?

a. _____Yes

b. _____No

c. _____Don't know.

PERSONAL INTERVIEW QUESTIONS FOR THE
LOCAL CRAFTSMAN POTTER

A. Demographic Data

1. Religion _____
2. Sex Male _____ Female _____
3. Tribe _____
4. Marital Status _____ Married _____ Divorce _____ Youngster
5. Educational Status: _____ Islamic School
   _____ Primary School.
   Any other (please specify)

B. Production

6. Occupation: _____ Part time _____ full time. If full, is it year round?
   _____ Yes _____ No
   If No, explain _____

7. How long have you been practicing?

8. Nature of operation: _____ Single _____ group.
9. If alone, why ? _____

10. How did you learn the craft?
    Apprenticeship _____
    Self taught _____
    Any other explain _____

11. If by apprenticeship, is the person that taught you still practicing the craft?

12. What kinds of wares do you produce?
    i _____ ii _____ iii _____ iv _____ etc
13. Where do you obtain your raw materials? _____

14. a. What are your tools and materials?
    i _____ ii _____ iii _____ iv _____ v _____
    vi _____ vii _____ viii _____ ix _____ x _____
    b. Which of these tools and equipment do you make Yourself ?

c. Do you buy any ? _____Yes_____No

If yes, name them. i_____ii_____iii_____

IV_____v_____vi_____vii_____

15. Explain how you prepare your day?

_____

_____

_____

16 How long does it take you to make the largest were?

_____

And how long for the smallest?_____

_____

How many of the largest ones can you produce in a day?_____

_____

_____

18. What problems do you encounter generally in production?_____

_____

C. Marketing

19. Where do you sell your wares?_____

_____

20. a. How much does your large pot cost?_____

_____

b. How much does the smallest one cost?_____

_____

21. What kind of wares sell best?_____

_____Why?_____

_____

22. Have you ever considered a cooperative organization?

_____

If yes, What progress have you made so far?_____

_____

23. What problems (if any) do you face in marketing your wares?_____

_____

_____

D. General Questions

24.n Do you need any assistance either from individuals or government?

_____ Yes_____No. If yes, What kind of help would you need_____

_____

25. In Your opinion, What is the future of traditional pottery in the 20th Century?

_____

_____

26. Would you like to teach in a government establishment?

a _____Yes b._____No. If No, Why_____

_____

_____

F.ID/85/35 30th October, 1985

The Permanent Secretary,
Ministry of Education,
Kaduna State,
Kaduna.

Dear Sir,

RETIA PETE

The above named is a Post Graduate student of our Department. She is conducting a research relating to the Kaduna State Post Primary Schools. The topic of the Research is:

How to Improve the Teaching of Arts in Post Primary Institutions in Kaduna State.

I shall be very pleased if you could kindly grant her the permission to use your school in administering her questionaires. She promised to send you a copy of the research paper on completion.

Thank you for your help.

Yours faithfully,

Y.D. Hassan
Head of Department

Ref: No MOE/CIE/C/3/1/214

Ministry of Education,
P.M.B. 2017
Kaduna State,
Kaduna.

Date 1st Nov. ...19.85...

The,
Zonal Director,
Zonal Office
Kafanchan

PERMISSION TO CONDUCT A RESEARCH

The bearer Mal/Mr/Miss/~~Mrs~~/Messers Fatima B. Belto
is a student from Ahmadu Bello University Zaria is conducting a research on how to improve the teaching of Ceramics Art in post-primary institutions for the award of M.A. Degree

I am directed to convey the Ministry of Education approval to you for the above mentioned program.

~~Give him~~/Her maximum cooperation.

Signed .....
Officer's Name HABILA D. KYONG
Designation Ag. Chief Educ. Officer, Planning
Date 1-11- 19.85

For: Permanent Secretary,
Ministry of Education.

Ref:No.....

Ministry of Education,
Kaduna State,
P.M.B. 2017,
Kaduna.

Date.....

RESEARCH AGREEMENT FORM

I/We....Fatimah...B....Bello.....
OF THE NAMED Institution..Ahmadu....Bello...University
FACULTY OF .Environmental..Design.....
DEPARTMENT OF Industrial..Design.....
WISH TO UNDERTAKE A RESEARCH ON THE FOLLOWING TOPIC (S)...How...
.to..improve...the...teaching...of..Ceramics..Art
.in..post-Primary..Inst..within...Kaduna State
THE RESEARCH WILL COVER A PERIOD OF.....
WEEKS/MONTH(S)
THE RESEARCH WILL COVER THE FOLLOWING INSTITUTION(S).....
..G.G.Kat.,..J.C.Kat.,..W.C.Kat.,..A.T.C.Kat.,..C.D.S.S.Ka
..Gaf.S.S.Kat.....
.....
.....

I, PROMISE TO ABIDE BY THE LAID DOWN REGULATIONS BELOW.

1. That you must submit to the Planning Research and Development Division an INTRODUCTORY LETTER from the University Authority and dully signed :e
   i) Dean of the Faculty
   ii) Head of Department.

2. That on completing the research I will submit ONE COPY OF THE PROJECT to the Planning Research and Development Division; Ministry of Education Kaduna State.

3. That the DATA/INFORMATION Callected will be EXCLUSIVELY USED for academic purposes only.

4. That any information tapped will not in any condition be DISCLOSED TO UNAUTHORISED PERSON.

5. That this Ministry shall HOLD YOU RESPONSIBLE for any information SPREAD without its expressed permission and that you will be LIABLE to PROSECUTION IN AN LAW COURT IN THE COUNTRY.

SIGN..Bello.....
NAME(S).Fatimah B. Bello..
.....
HOME ADDRESS..W.W.12 Gusau

COUNTER SIGN BY THE MINISTRY'S OFFICIAL

SIGN.....

NAME.....

RANK.....

DIVISION.....

For: Permanent Secretary,
Ministry of Education,
Kaduna State,
Kaduna.