Exploring Vegetable-Tanned Leather as a Sustainable Alternative Material for Pottery Production. A Comparative Study of its Properties and Application

Seidu Abdulai Napodoo

National Identication Authority (Nia) Ghana

DOI: https://doi.org/10.51244/IJRSI.2024.1109081

Received: 22 September 2024; Revised: 02 October 2024; Accepted: 05 October 2024; Published: 14 October 2024

ABSTRACT

Vegetable tanned leather is a flexible material with numerous usages, this material is still unexplored by the pottery industry in Ghana with regards to the production of containers such as pots. It is clearly evident that local potters overly depend on materials as clay, cement and metals. This study is based on a qualitative research approach to evaluate the effectiveness of leather as an alternative material for the production of pots. The study aimed at manipulating indigenous tanned leather as an alternative material for the production of pots. The elements or individuals in the population are exogenous, so convenience and purposive sampling techniques were employed. From the Tamale Metropolis, a sample of 14 respondents were chosen, 5 of which were producers, 5 pot sellers, 2 pot users and 2 experts in the field of leather studies who all shared their ideas on the philosophies and concepts behind the production and use of pots. Interviews and observations were the main instruments used, based on the data collected, through experiments, leather was manipulated to produce pots. The Results showed that, indigenous leather is an effective substitute material for the production of pots in this contemporary era due to its qualities such as flexibility, durability and the beautiful nature of its surface after applying appropriate finishing/ decorative technique. In view of this, the researcher recommends that pot producers give a second thought to the use of leather as an equally viable material for production as this will pave way for improved human resource development as well as create alternative opportunities in the leatherwork industry in Ghana. This publication is deliberately designed as an additional motivation in expanding the effectiveness of vegetable tanned leather apart from its conservative convention for the production bags, sandals and footrests.

Keywords: vegetable-tanned Leather, Production, Alternative Material, Pots, sustainable, pottery, application.

INTRODUCTION

Vegetable tanned Leather, a common traditional product, is produced in indigenous tanneries in the northern and southern parts of Ghana for all kinds of leather work activities by craftsmen in Tamale, Wa and Kumasi. Historically, Leather is a common traditional product produced in indigenous tanneries in the Northern Ghana. Besides the abundance of leather and its conventional usage, the study is to experiment on using leather for the production of pots.

It is believed that the recognition of leather industry in Ghana is several years old, although its practice might have been introduced by trading settlers or indigenes that had existed already in areas such as Salaga and Yendi in the northern part of Ghana as a result of trans-Saharan trade. The tanner basically uses vegetable tanning which is the most traditional, classical and recognizable as compared to the rest of the tanning methods. The natural tannins bind with the proteins in the skin, convert it into the leather and give it unique characteristics used to create items such as sandals, bags, hats, belts and so on. The leather industry also provided employment for a great number of people in its countless specialized areas such as tanning, curing, beaming as well as processing it into different forms of leather articles, such as upholstery, clothing and containers. Besides the

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

numerous uses of leather, its engagement in pot production is unknown to Ghanaian craft industries.

In the African continent, traditional pots are thoroughly associated with the social past of the continent even to the present times; however, they are usually made from clay, metals and timber. There are also materials such as plastics that are used to create pots, some of these pots are brought mostly from "China". Consequently, the successful use of leather for production of pots would be a unique effort in the history of the art industry in Ghana. Through the adoption of Leather moulding (cuir bouilli) technique, which have been used in many countries across the globe in the production of variety of leather artefacts such as containers for storing special items and for ornamental purposes (beautification and decorative), it is envisaged that the use of leather in the making of pots will prove to be a very good alternative and supplementary approach. The choice of leather as alternative material is due to the usefulness and how it can be manipulated for varied usefulness. As stated by Asubonteng (2010), the properties of leather vary considerable depending upon the type and quality of both the raw material and the tanning processes employed. "The major properties of leather are in the fibre network layer, it consists of elongated way bundles of collagen fibrils, which has been arrange in network perpendicular to the direction". "These helps make leather pliable". Boahin (2003) stated that different artificial material is used to make items, leather is visible in usefulness because of its diver's features durability, workability and beauty which enhances with time. Lawson (1990), emphasis that "animal leather is gotten from local animals, which is limitless renewable natural properties and its renewal only needs proper husbandry practice''. Anini et al; (2012), constantly worry that different decorative practices including painting, dyeing, embossment, marbling and coating are done on leather. In the light of these quantizes, leather can be manipulated to produce pots that will go through a process known as cuir bouilli; according to waterier (1986.7), hardened leather is made by soaking leather in water till it is comprehensively soaked, then shape it to a form and dry it in a constant temperature of 50^{o}C (or 1224).

METHODOLOGY

The aim of the publication is to manipulate leather as the substitute material for the making of aesthetic pots in order to reduce the high dependency on clay and metals as raw materials. The research espoused a studio based Experimental Research Method, the efficiency and accuracy of tools and equipment were checked with strict cognizance for reliability during the experimentation of the physical properties of the leather (Leedy and Ormrod 2005; Asubonteng, 2011). The study further adopted this method specifically to examine and assess the effectiveness of leather in the production of leather pots.

The leathers measured 3.5 square feet each, and their thicknesses were 4mm, 5mm and 8mm. Two main events were carried out in steps; preparing the rawhides into leather possessing the right properties and processing the leather into pots. Meanwhile leather is a flexible material known for use in producing flat surface artifacts, three dimensional moulded pots were used to serve as support for the making of the pots. clay pots were selected for making moulds for the three experimentations.

Population for the Study

Fraenkel and Wallen (1996), defined population as the collection to which the research findings are anticipated to apply, it comprises of the entire subjects one needs for the study. To this point, the population selected for the study was Producers, Sellers and Users of pots as well as Experts who have the knowhow in the field of leather artifact production in the Northern Ghana. A populace is a group to which the result of the study is anticipated to affect (Tryfos, 1996; Twumasi 2001; Leedy and Ormond, 2005). Holme and Solvang, (1997) as quoted in Ofori (2008) stress that it is of great importance to find the right respondents to get the right information for the attainment of research objectives. In this study the populations have been found to be heterogeneous in nature, due to the multi-sectorial uniqueness of the study. The target population involves all stakeholders of the local leather and clay and earthenware industry.

However, due to the various nature of the population for the study, that is, the varied characteristics and geographical differences in their locations as well as the wide-ranging environment being studied, the population is reduced to make control and accessibility easy for the researcher to widely assess the activities of the various target core sectors of the indigenous leather aesthetic products and correlate their impact on the producing leather

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

with qualities prerequisite for specific industrial needs (Tryfos, 1996; Twumasi, 2001; Cohen et al. 2007).

Table 1.1: Summary of the Population of Study

Locations	IRAI	Tamale culture center	Sirigu Pottery Village Upper East	Total
Target Groups	Leather expects	Leather and ceramic artisans	Ceramic expects	
Numbers	10	20	15	**45**

Source: Researcher's population results 2024

Target Population

Castillo (2009) ''postulated that target population refers to the whole group of persons or objects that the researcher is interested in to facilitate in the generalization of conclusions''. The target population is made up of all producers, sellers, users and experts in the field of the production of clay, sales and usage of pots in the Tamale Metropolis of Ghana. The researcher target were leather experts, ceramic and leather artisans.

Table 1.2: The Summary of the Target Population

LOCATIONS	IRAI (KNUST)	Tamale Cultural Centre	Sirigu Pottery Villages Bolgatanga	**Total**
Target Groups	Leather Experts	Leather And Ceramic Artisans	Ceramic Experts	
NUMBERS	5	15	10	**30**

Source: research's population results 2024

Accessible Population

According to Hungler (1999) accessible population comprise all the cases that kowtow to the selected criteria that are readily accessible to the researcher as a collection of subjects for a study. It is from this accessible population that researcher forms a sample from which primary data is gathered for the study (Castillo, 2009).

Table 1.3: Summary of the Accessible Population

	IRAI (KNUST)	Tamale Culture Centre	Sirigu Pottery Villages Bolgatanga	**Total**
Target Groups	Leather Experts	Leather And Ceramic Artisans	Ceramic Experts	
NUMBERS	3	7	4	**14**

Source researcher accessible population 2024

Sampling and Sample

Fraenkel and Wallen (2000) stated that ''sampling is the procedure of selecting a segment of the population to symbolize the whole population which enables the researcher to study and obtain data that represent whole target population''.

Sampling Design

There are various types of sampling designs in research. These include random, systematic and stratified

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

sampling techniques. However, the convenience and purposive sampling techniques were used in this research.

Convenience Sampling

Castillo (2009) described Convenience Sampling as the type of sampling which is not based on probability but a sampling technique where cases of study are chosen with the view that the research would be much easier and comfortable that way. The convenience sampling technique was used to select leather products and sales units that were not too far from the research base for easy access. This helped to save a lot of travel time and income to and from the places during the collecting of data for the study.

Purposive Sampling

Purposive Sampling on the other hand refers to a sampling technique that is not based on probability. Here, the researcher intentionally chooses people to include in a study based on the fact that such people have expert information that would be of immense benefit to the research and also would not mind to be involved in the research (Oliver, 2006). The researcher adopted the purposive sampling technique to select different groups of pot producers, sellers, users and experts in the field of the study and production of pot and leather artefacts. Further, it afforded the opportunity to compare and contrast how the various groups of producers chose and manipulated their materials in other to arrive at their final products. Since the researcher was able to get in touch with all the people under the accessible population, the same number was maintained as the sample size for the study. Thus, the sample size for this research is 14 individuals who deal with the production, sale and use of pots as well as experts who have in depth knowledge in the study of leather properties and production in the Tamale Metropolis in the Northern Region of Ghana.

Data Collection Instruments

‘‘According to Seaman (1991), data collection instruments refer to devices used to collect data such as questionnaires, tests and interviews’’. Data collection techniques that are commonly employed in qualitative research are interview and observation. Observation and interview were the research instruments employed for this study because most of the producers, sellers and some users of pots were not very good enough to express themselves in writing.

Interview as a Tool for Data Collection

Gray (2004) postulated that; interview is a talk that two people have with the help of an interview guide where one of them needs the information for a study. Interview allows the interviewee to give out the best of what he or she knows since special rapport is built between the interviewer and the interviewee before the interview commences. The researcher utilized both the “open ended” and “semi structured” type of interview. Some questions required just “yes or no” answers. The interview provided the investigator the opportunity to draw nearer to these people at their various work places and homes as well as to the leather Experts at their convenient offices during work hours.

The reasons for choosing the interview as a tool for collecting data were that, it allowed the researcher to accurately describe the first-hand narrations of the teachers of the personnel mentioned in the respective work places. In all, four (4) sets of Interview Guide were designed for the study. The interview guides took into consideration the central issue of the existing types and concepts of leather pots.

Observation as a Tool for Data Collection

Observation is a way of gathering information by examining the behavior or actions of a natural thing. Leedy and Ormrod (2005) asserted that it ‘‘observation involves retrieving information, data or impressions on the field of research with the use of the researcher’s senses’’. These senses include listening, smelling, looking, feeling and any other in the quest to examine an event. Observation occurs at two levels: participant and non-participant. The non-participant observation was adopted for the study and was used to closely to observe the production processes of clay pots as well as how sellers and users of these products interacted while conducting their daily business.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

Permission for the observation was also sought by the people involved and copies of the observation checklist were given to them for study. On the appointed dates, critical observation of the production processes and the buying and selling of pots were done to collect appropriate data from the places selected for the study. Certain pertinent questions were asked and discussed with respondents where necessary. Photographs were also taken at certain places to support the study.

Validation and Reliability of Findings

The methodology used in this study characterized publication of research and lays out the sound reasoning of research in a way that could be drawn on to justify claims and procedures leading to the findings made. The findings therefore, are the empirical facts justifiable by the logical nature of the investigations carried out; the appropriate use of both specific and general criteria of data collection procedures, presentation, analysis, interpretation and the exhibition of theoretical and practical reason in connecting the diverse sensation in the composite nature of the research problem.

Prepar the leather for Modeling

The hides were tanned by following the leather tanning method using astringents from Acacia nilotica pods gotten from northern Ghana. Analytically, the processes used in the tanning were soaking, liming, defleshing, dehairing, deliming, bating, pickling, tanning, fatliquoring, tumbling, dyeing and drying. This is emphasized by scort (2011), leather is not only a quality material but also very strong and therefore very durable. It can be manipulated to meet the characteristics needed for pottery production". The whole tanning procedure took five days. Thickness gauge was used to measure the thickness of the leather after tanning, and it had reduced by an average of 2mm each compared to the hides. It was measured about 2.23mm, 3.14mm and 6.00mm.

Secondary preparation of leather was followed to reduced the bad oduor of the leather

PLATE 1.0: Sanding of the Leather soaking

PLATE 1.1: leather with lime to reduced the bad **oduor**

PLATE 1.2: Washing the soaked leather

PLATE 1.3: Stretching and Drying

Procedures

To improve this hampering status quo where the making of leather goods is restricted to only outmoded objects as specified previously, the research have taken on studio exploration to test on indigenous leather for the making of pots. This needs the use of materials such as: synthetic-glue, clay pots and leather. Leather's mouldability, malleable forte and attractive skills as showed by Harader (2008), and Muirhead (2015), were depended and

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

verified towards regulating the ability of the local leather as a substitute material for the making of pots for ornamental purposes; howbeit, the iterative design process was used to produce models preceding to the final making. Here, the research deliberately chooses people to include in a study based on the fact that such people have expert information that would be of immense benefit to the research and also would not mind to be involved in the research (Oliver, 2006). The research employed the purposive sampling technique in finding and choosing quality leathers and other materials for the research. At the side of that, the research used the secondary data collection method to identify the over-all features and properties of leather that make it practicable for use in the production; observational and descriptive approaches were used to evaluate and record the numerous steps of the research conclusion. In achievement of the results, preliminary sketches were made as follows.

The researcher followed after the procedure for secondary preparation of leather as in the production. The following are the steps for the production of pots.

1. Preliminary or initial sketches of the pot were made for the production. Among these sketches the best one was selected. See plate 1.6

2. The selected sketch was perfected with rhinoceros and rendered in key shot. See plate 1.7

3. Template (i.e., the shape of the pot) was cut out from leather see plate 1.8

4. The leather was traced and cut out from the leather which will serve as reinforcement. Five were cut out.

5. One layer of the cut-out parts of the pot from the pot is a fabric which was lined with vegetable tanned leather. These lined surfaces served as a support for the pot. See plate 1.12

6. The shape was marked and moulded out from leather after treating or processing the leather to meet it intended purpose. The piece of leather-skin went through the following basic processes; sanding, soaking and stretching. See plate 1.11

7. After, the decorated pieces of leathers were coated to the back of the pot.

8. Measurements were taken out at the back (decorated part) for each of the surfaces. On the margin marked lines were created for painting.

9. The marked-out lines of leather were skillfully decorated with Sirigu symbols as decorative technique.

10. The painting was lacquered for protection from moisture and decay.

11. The base for the leather pot was designed of plastic and was ornamented with pieces of leather. see plate 1.12

12. The final piece (leather pot) was neatly presented. See plate 1.13

PLATE 1.4: Preliminary or initial sketches of the pot were made for the production. Among these sketches the best one was selected.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

PLATE 1. 5: The selected sketch was perfected with rhinoceros and rendered in key shot.

PLATE 1. 6: The template was traced and cut out from the dry leather which will serve as reinforcement. Three layers were cut out.

PLATE 1.7: white glue was applied to the grain side of the cut-out templates for moulding.

PLATE 1.8: One layer of the cut-out parts of the pot from the pot is a fabric which was lined with vegetable tanned leather. These lined surfaces served as a support for the pot.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

PLATE 1.9: The cut-out pieces of leathers were spread with the grain side up to cover the entire surface of the pot by overlapping them to pick its shape.

PLATE 1.10: White glue was spread over the first layer and the same procedure repeated by securing and spreading five layers of the cut-out templates of the leathers by over lapping each other

PLATE 1.11: After the white glue is spread over the overturned leathers pattern, final leather is pasted for a complete yore pot. These would be the back of the pot

PLATE 1.12: Clay pot is the broken and clay is pour away leaving the moulded leather.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

PLATE 1.13: The shape was marked and moulded out from leather after treating or processing the leather to meet it intended purpose. The piece of leather-skin went through the following basic processes; sanding, soaking and stretching.

Plate 1.14: Samples of Finished Leather Pots

(Source: Researcher's Experimental Activity 2024)

DISCUSSION OF RESULTS

Tanning process used transformed the rawhide into leather which was well hardened for modeling leather pot. The main properties required in the leather to make it more advantageous for modeling such as softness, suppleness and mouldability were attained. On the off chance that the soaked leather is then established in a pot of water which has been pre-warmed to 180 ℃, it will start to change fit as a swindle (shape) and structure (texture) (Turner, 2009). After give or take 60 secs, the hide obfuscates, goes limp and starts to twist up. In the event that it removed at that stage, it will have contracted somewhat, thickened slightly, and still have the dimensions to be extended or stretched, for example, a sheet of elastic (rubber). The Soaking in tap water and air-drying method made use of 3 lit of water were transferred into a container and the samples of the segmented parts of the leather was located in it for a day and air dehydrated overnight. The time of soaking in tap water was intended to attain the total absorption of water by the sample, whiles the overnight drying was intended to render the sample completely dry devoid of moisture.

Throughout the orderly dispensation of the hides, the research measured all restrictions, such as the collection of elements, amount of chemicals used, techniques and level of chemical appointment at the generic steps together with soaking, liming, de-fleshing, dehairing, de-liming, bating, pickling, tanning, fat liquoring, tumbling, dyeing and drying. The average decrease of 2mm thickness institute with the leather after tanning was

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

due to the elimination of undesirable materials from the dispose layer of the skin. The flesh contained fluctuating quantities of fatty dispose tissue, blood vessels, nerves and voluntary muscles which could serve as blockades to the saturation of substances that impede the tanning method. The upper back part of the hide has medium soft structures and this was used for the base of the pots and the lower part of the back is fairly hard and this was used for the handle of the leather pot. The back parts of the hide lean towards to wrinkle easily as this part of the hide is affected by activities of the hand. The belly part of the leather is fairly thin and has a much portable fiber construction than the back and often stretches underneath pressure. This part was also used for the base due to its appearances. The butt's portion of the hide is firmly crammed and has the strongest and the thickest part of the skin. This portion was consequently used for the frame of the pots (front and back) and also the portion where most designs were affected.

Demographics of Respondents

Table 2.1 shows the details of respondent demographics on the study. Simulated names were used in capturing respondent's details in order to shield their identity. This was made clear to respondents in the moral consideration of the research.

Table 2.1 Demographic Respondents

Respondent	Simulated name	Gender	Educational level	Working experience
Leather experts	Yussif	Male	Master's degree	5years
	Godwin	Male	First degree	3 years
Ceramic experts	Yahaya	Male	Master's degree	6 Years
	Azure	Female	First degree	3 Years
Ceramic artesian	Atinpoaga	Female	Uneducated	10 years
	Fati	Female	O' Level	6 Years
	Ayimbele	Male	SHS	4 years

(Source: Researcher's Experimental Results 2024)

Table 2.2: respondent's knowledge of leather pots

Opinion of respondent on whether leather can be used for pots		
Responses	Yes	No
Leather experts and artisans	2	5
Ceramics experts and artisans	1	6
Percentage	21%	79%

(Source: Researcher's Experimental Results 2024)

A significant number of respondents, 21% responded yes based on a number of reasons: previously skins were used to store water whiles hunting or going to farm as a container for storing water in the northern part of Ghana. Also, leather can be used to cover already existing pots as decorative or productive covers. The remaining 79% of respondents were ignorant of the fact that the Ghanaian indigenous leather can be used for pots. Therefore,

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

based on the response from experts and artisans the knowledge on leather pots production is limited. This corroborates the study of waterer (1950), who claims that leather pots have received relatively little attention, scholarly or otherwise.

Properties and Characteristics of Ghanaian Indigenous Vegetable Tanned Leather That Makes It Suitable for Production of Pots?

Findings of the study

Locally Tanned Leathers have Proficient Strength to Disintegration and Decrease Warmth

The enzymatic and boilie tests conducted have cooperatively discovered that the local leather possesses adequate resistance to disintegration and temperature; that is, the two most important properties basic to pelts successfully converted into leather by Crosslinking of collagen fibres and tanning chemicals generically called tannins. This brings to light that by virtue of the potency of the astringency (tannic acid) inherent the vegetable Tannage sourced from the acacia plant (*Acacia nilotica*), known locally in Hausa as 'Bagaruwa', the local leathers are rendered with adequate stability to decomposition by microbial attacks, and shrinkage resistance resulting from heat or maximum temperature of ≤ 75.3.

The Local Leather is Deficient in Grain and Flesh Surface Quality for Direct Industrial Utility and Applications

The results of the grain surface and flesh surface assessment, as found in tables 4.3 and 4.4 respectively, bring to light the unpardonable rampant grain surface defects and excess flesh on the flesh side of the leathers. Defects found range from cuts, holes, scratches, wrinkles or creases, surface peelings, and stains of black and dark brown spots, as well as uneven coloration. These grain surface damages render devoid the local leather the 'true pride' of leather since the grain surface appeal remains as the basic determinant of the aesthetic appeal of leather. In addition, the leather with such high quantum of excess flesh and grain blemishes automatically defines its grade as low; less utility and poor economic value (De Haas, 1956; Sharphouse, 1995; Gerhard 1996). It has also become evident that leathers possess in high quantities of excess flesh also emit stronger unpleasant odour.

Poor Flexing and Flex Endurance

Flex is an indispensable property prerequisite in leathers essential for such end uses such as footwear (especially the vamp area), garment and clothing accessories including gloves. It has been identified that the local leathers possess varied cross-sectional properties according to the movement of the fibre weave and fibre bundle. Although the butt sections exhibit encouraging flex resistance, a further enhancement on the materials' flex endurance through sufficient tanning is necessary to guarantee adequate utility in footwear production. Ward (1997) equally asserts that, perhaps the most striking common feature of many types of leather is the ability to withstand repeated flexing without failures. Shoe upper in the vamp region provides an appropriate illustration of this point (Bordeli, Vol.3 1936; Lyon 2004).

Improving the Quality of the Leather Pots Making use of the Butt, Belly and Back parts of the Leather

The various part of the local leather (belly, butt and back) due to their visual appreciation and features tends to affect the end product of the leather pot when used solely for the pots. Using the parts for different purposes as shown in Plate 4.2 helped to improve the durability and the quality of the leather pots.

Improving the quality of the leather pots by integrating the back, belly or butt parts

The upper back part of the hide has medium soft features and this was used for the base of the pots and the lower part of the back is fairly hard and this was used for the handle of the leather pot. The back parts of the hide have a tendency to wrinkle easily as this part of the hide is affected by movements of the hand. The belly part of the leather is quite thin and has a much moveable fibre structure than the back and often stretches under stress. This part was also used for the base due to its characteristics. The butt's portion of the hide is tightly packed and has

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

the strongest and the thickest part of the skin. This portion was therefore used for the body of the pots (front and back) and also the portion where most designs were affected.

CONCLUSIONS

The concepts, ideas and thoughts behind the production of the pots with indigenous tanned leather were mainly influenced by both natural and manmade objects that dominate the immediate surroundings of the researcher. The preferred materials for the production of these pots are sometimes used due to its affordability and availability in the market and most pot producers do not accept the use of leather as a material for the production of pots.

The indigenous tanned leathers are utilized in the production of several items including the traditional pots across the country. These leathers have same common attributes with the imported chrome tanned leather and are also available for the production of aesthetic pots. However, the pot producers complained of limitations in thickness, flexibility and offensive oduor it gives, Boahin (2008, Boahin, Asubonteng and Adu-Gyamfi 2013).

The researcher was able to improve the thickness of skins by reinforcing them, the flexibility of the hides was also improved using Acacia nilotica and potassium and the offensive oduor removed through the secondary treatment.

The different sizes, shapes and surface designs employed during the production processes were all creatively combined to appeal aesthetically to viewers, unlike materials like clay and cement which poses difficulties to artist when it comes to surface treatment, decoration and finishing. The produced leather pots from the indigenous tanned leather can serve the purpose of storing, decorations as well as holding cut flowers because reaction of the leather with liquid (water) makes it difficult for them to be used as planters. Again, the length of the pots means that objects or flowers with short or trimmed stalks cannot fit well in them.

This research supports the theory that, “leather is still the material of choice for its durability and adaptability.” Hall (2015), which includes the indigenous tanned leathers. The study establishes the theory that, the secondary treatment of leather helps to emit the bad odour from the indigenous tanned leathers Boahin (2008, Boahin, Asubonteng and Adu-Gyamfi 2013).

The study establishes the theory that, the secondary treatment of leather helps to emit the bad odour from the indigenous tanned leathers. The produced leather pots from the indigenous tanned leather can serve the purpose of storing, decorations as well as holding cut flowers. The experimentations have revealed that the thickness of leather can influence the modeling procedure of leather pot.

RECOMMENDATIONS

Pot producers in Ghana must appreciate and accept leather as an alternative material because the flexibility associated with its use will ensure the development of effective skills using both local and existing tools and materials. It will further ensure the acquisition of conceptual and analytical skills through the processes of creativity during designing and production.

Leatherwork teachers in schools and colleges must employ the proven teaching strategies appropriate for the production of leather pots to help develop students’ cognitive thinking and practical skills for producing high quality leather pots. This will make them aware of variety of vocations existing in the field of leatherwork and decide to choose a career in the field of art.

The indigenous leather tanners should increase the quantity of the of the chemical (Acacia nilotica) used in the production of hides to improve its flexibility so that the pot producers can use them in the production of pots. Tanners can also be supported financially by the government to produce more sheets of leathers for pots production.

further research on similar project should focus on the functional usage of the leather pots.

ISSN No. 2321-2705 | DOI: 10.51244/IJRSI |Volume XI Issue IX September 2024

REFERENCES

1. Anini, F., Asubonteng K. and Boahin, J. O. B. (2012). Exploring Leather as Alternative Material for the Production of Instructional Media for Preschool Education. International Journal of Innovative Research and Development, 1(5): 39-50.
2. Asubonteng, K., (2010). Improving the Quality of Ghanaian Indigenous Leatherwork; Alternative strategies (Doctoral dissertation).
3. Asubonteng, K, (2011). The Art and Craft of Leather: Leatherworking tools and techniques explained in detail. 250 Wireless Boulevard Hauppauge, New York 11788.
4. Boahin, O.B., (2005). Leatherwork Techniques and Principles for Senior Secondary Schools and Colleges. Kumasi: University Printing Press, KNUST.
5. Boahin, J.O.B., (2008). Technical Problems and Solutions in the Indigenous Leather Industry: Implications for Art Education in Ghana.
6. Boahin, J.O.B., Asubonteng, K. and Adu-Gyamfi, V., Exploring Leather as Alternative Material for Sustaining the Economic Significance of Mask Production in Ghana. In Arca Conference (p. 277).
7. Castillo, J. (2009) target population Available from: http://www.experimentresources.com/research-population.html. [Accessed on 15 October 1011] [date of retrieval]
8. Fraenkel, J.R., Wallen, N.E. and Hyun, H.H., (2011). How to design and evaluate research in education. New York: McGraw-Hill Humanities/Social Sciences/Languages
9. Gyamfi (2015) Introduction of Indigenous Tanned Leather in the Production of School Sandals. Thesis dissertation.
10. Lawson, A. (1990). Skins and Hides for Leather, 3rd Edition; AAK Publishers Alba.
11. Leedy, P.D. and Ormrod, J.E., 2005. Practical research. Pearson Custom
12. Oliver, (2006). Built to meet needs: Cultural issues in vernacular architecture. Burlington: Elsevier Ltd. Pp. 4
13. Seaman. (19919). How to Design and Evaluate Research in Education. The McGraw -Hill Companies, Inc. Avenue of the Americas, New York.
14. Twumasi, P. A. (2001). Social Research in Rural Communities, Second Edition. Accra: Ghana Univerties Press.
15. Turner. (2009), Ghanaian indigenous vegetable tanning, Asawasi, Kumasi, (Oral interview), June 23, 2009
16. Waterer, John William Leather and Craftmanship. London: ???, 1950.