

Design And Production Of A Desktop Organizer For Kwame Nkrumah University Of Science And Technology

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Abstract: In recent years, KNUST has been procuring a number of souvenirs such as pens and pen holders, cutlery sets. Aside the fact that some of these souvenirs are not durable, they are also not produced locally to encourage local initiatives. Aside the fact that the various desktop organizers available in some offices of KNUST, they seem to be limited in design and therefore lack creativity. The study therefore sought to design and fabricate a desktop organizer using scrap metal as a souvenir to support the KNUST's quest to rebrand its institution to achieve its mandate, vision, mission statement as well as core values. Designs and other production processes were employed. Results of the study shown that the fundamental processes such as idea development, forming processes, joining processes and finishing processes that characterized this study underpin the argument that such quality and professional metal desktop organizers could be produced using scrap metals here in Ghana to meet any standard. The researchers conclude that by merging creativity in design with the logo of an institution, any souvenir could be made in metals using scrap metals as the fabrication of the desktop organiser for KNUST has proven to be.

Keywords: Desktop organizer, chasing and repoussé, branded, craps, design, crest.

I. INTRODUCTION

Kwame Nkrumah University of Science and Technology as an academic institution that was established in 1962 with a mandate of essentially is to provide higher education, undertake research, disseminate knowledge and foster relationships with the outside persons and bodies. The university has a vision of building on its leadership as the premier science and technology university in Ghana and to be among the top ten Universities in Africa. Mission Statement KNUST exists to advance knowledge in science and technology through creating an environment for undertaking relevant research, quality teaching, entrepreneurship training and community engagement to improve the quality of life. To

fulfil its Vision and Mission, the University has set four core values that it tries to adhere to at any point in its existence. Among the core values are, Leadership in Innovation and Technology. Here KNUST endeavours to maintain and strengthen their position as the premier Science and Technology University in the country leading in generating and exchanging new knowledge in innovation and technology, and offering service to government, industry and society.

The second value is Culture of Excellence. As part of its workings, the university strives to be the best and maintain a commitment to continuously improve upon their status in all their undertakings - research, teaching, entrepreneurship and service - for the development of society. The third value of KNUST happens to be Diversity and Equal Opportunity for

All. They ensure that there is always an environment of understanding and respect for cultural diversity and equal opportunity among students and staff. The university uphold academic freedom in their quest to advance the frontiers of knowledge and in their attempt to attain self-development. Last but not the least of their value is Integrity and Stewardship of Resources. He school is dedicated to exhibiting the highest standards of professional ethics and integrity, efficient utilisation of resources and a culture of accountability and responsibility in all of its operations.

For over six decades of its existence, KNUST has more capacity of making its present felt in the community of academics and human development both local and international. One avenue for projecting KNUST to the world is rebranding. Zikmund and d'Amico (2002) posit that rebranding is an identifiable feature(s) that distinguishes one product from another, more specifically any name, term, symbol of design or a unified combination of these. Rebranding can be applied to new products, mature products, or even products still in development. The process can occur intentionally through a deliberate change in strategy or occur unintentionally from unplanned, emergent situations, such as in a corporate restructuring," "union busting," or "bankruptcy."

One best way of rebranding an organization such as KNUST is using symbols and logos of the institution concerned to produce souvenirs. According to the Gordon (1986) a souvenir is a keepsake or a remembrance. It refers to something tangible like a memento, gift or trophy. This is normally associated with a product or an institution that can easily be identified. Littrell et al. (1994) further states that souvenirs as objects include mass-produced merchandise such as clothing: T-shirts and hats; collectables: postcards, refrigerator magnets, miniature figures; household items: mugs, bowls, plates, ashtrays, egg timers, spoons, notepads, medal plus many others. Similarly, Gordon (1986) defined souvenirs as some specific objects that reminded certain incident or journey. The existence of souvenirs could help visitors explore definition and stay in contact with a travel experience not long ago, and tourists purchase souvenirs as a proof of the places they had visited. In support of the meaning given to some scholars, Swanson and Horridge (2006) thought souvenirs were specific objects that served as reminders of a special event or memory, and this included post cards, T-shirts, local crafts and desktop organizer. The cognitive difficulty of classifying information is a significant factor in explaining how people arrange their desks. A desktop organizer is a container in the form of a box having a rigid upper member on which office items are kept in. It is a very important function of reminding the user of things to do, being sending, receiving or pending in addition to helping the user to find desired information.

In recent years, KNUST has been procuring a number of souvenirs such as pens and pen holders, cutlery sets. Aside the fact that some of these souvenirs are not durable; they are also not produced locally to encourage local initiatives. Aside the fact that the various desktop organizers available in some offices of KNUST seem to be limited in design and therefore lack creativity. Meanwhile there are abundance of metal scraps which can be used to produce a lot of these souvenirs,

yet they are made to go waste. The study therefore sought to design and fabricate a desktop organizer using scrap metal as a souvenir to support the KNUST's quest to rebrand its institution to achieve it mandate, vision, mission statement as well as core values. To achieve the goal of the study, the researchers set out these research questions. How would a desktop organizer for KNUST be designed and how would a desktop organizer for KNUST be fabricated using scrap metals?

II. REVIEW OF RELATED STUDIES

DESIGN

Design is the creation of a plan or convention for the construction of an object or a system (as in architectural blueprints, engineering drawings, business processes, circuit diagrams and sewing patterns) states dictionary.com (2015). It is a specification of an object, manifested by an agent, intended to accomplish goals, in a particular environment, using a set of primitive components, satisfying a set of requirements, subject to constraints, to create a project, in an environment where the designer operates (Ralph 2009) . Again, design is a roadmap or a strategic approach for someone to achieve a unique expectation. It defines the specifications, plans, parameters, costs, activities, processes and how and what to do within legal, political, social, environmental, safety and economic constraints in achieving that objective states (Don Kumaragarage, 2011). Simon (1996) opined that design is a meta-discipline of all professions and not restricted to engineers but rather extend to other disciplines that seeks to convert an existing way of an art into a more modern way through a design work. It is obvious to know and appreciate the fact that, the best in every profession is achieved through a process of design which makes it more outstanding as compared with other sciences. Schools of engineering, as well as schools of architecture, business, education, law, and medicine, are all centrally concerned with the process of design (Simon).

The intellectual activity that produces material artefacts is no different fundamentally from the one that prescribes remedies for a sick patient or the one that devises a new sales plan for a company or a social welfare policy for a state. Design, so construed, is the core of all professional training. A principal mark that distinguishes the professions from the sciences. Designing a desktop for KNUST however has to come along with some underpinning philosophies is paramount to this research. There are countless philosophies for guiding design as the design values and its accompanying aspects within modern design vary, both between different schools of thought and among practicing designers describe (Holm, 2006). Design philosophies are usually for determining design goals. A design goal may range from solving the least significant individual problem of the smallest element, to the most holistic influential utopian goals. Design goals are usually for guiding design. However, conflicts over immediate and minor goals may lead to questioning the purpose of design, perhaps to set better long term or ultimate goals.

Design philosophies as defined by First Things First (2000) are fundamental guiding principles that tells how a designer approaches their practice. Reflections on material, culture and environmental concerns (Sustainable design) can guide a design philosophy. One example is the First Things First manifesto which was launched within the graphic design community and states "We propose a reversal of priorities in favour of more useful, lasting and democratic forms of communication which is a mind shift away from product marketing and toward the exploration and production of a new kind of meaning and understanding. The scope of debate of philosophies of design is shrinking. Consumerism is running uncontested which must be challenged by other perspectives expressed, in part, through the visual languages and resources of design" (Phipip, 2015). Gordon (1986) mentions that design approach could either include specified methods or not but are mostly to keep the general design goal in motion. There are others which are to ensure the proper trend to be followed by the designer and at times of no likely conflict, approaches can be combined. The term design is today related to applied arts which was not like that before but has been introduced through a teaching process at the Bauhaus and Ulm School of Design (HfG Ulm) in Germany during the 20th Century.

This happens within the design process relating to formation of concept and things relating to the development of a design. Many ideas are now unveiled and made available for easy accessibility in this information age. It decelerates and structures the critical early phases, recognize and draft of the conceived idea. Idea development makes ideas visible. Due to this an alternative concept are formed which drives and forms the basis of communication. Among one of the concepts which is very important for this research is idea development.

The idea development pushes one into a creative condition by using creative tools such sketches and rendering (The Industrial Designers Society of America, 2013).

In a design process, sketch cannot be left out. It mostly happens when the designers try to put a freehand drawing on a paper that will depict their idea. Sketch is a rapidly executed freehand drawing that is not usually intended as a finished work. A sketch may serve a number of purposes. Its idea will serve as guidance during the process of design. It is most often done during graphic with the help of pencils, silver point or even colour and paints during water colour paint. Rendering involves the procedures to make an image from a 2d or 3D model. This call for further development of theses souvenir sketches to rendering by adding colour or shade or by the use of the computer to give either a 2 or 3 dimensional view of the work.

KNUST Crest



Plate 1: KNUST Crest (KNUST, 2015).

The logo or crest (plate 1) of Kwame Nkrumah University of Science and Technology is made up of curved and straight lines of different length and thickness put together to achieve regular and irregular shapes. The colour used in the crest are red, green, black and yellow. On top of the logo is a black pot with a red burning flame. The pot made stationary with the aid of a pair of calipers fulcrum at its middle. The pair of calipers is white in colour and links the pot to the yellow "nyansapo" stool at the down part of the crest. The middle of the Crest has a yellow eagle bird with the black star around the neck as well as a red band which stand on the stool. Behind the eagle are two leaves which are green in colour. "Nyansapo wosane no badwenma" is written beneath the crest in semi circular form on a yellow background. The composition is symmetrically balanced with contrasting colours making each colour and form unique on the background. The feathers of the eagle show rhythmic lines giving it an impression of movement, dominance and repetition of forms in the design. The light olive green colour harmonizes with the emerald green colour used to depict the leaves behind the eagle. All the forms and colours have been outlined with black colours to create emphasis.

With regard to the interpretation of the design, it symbolizes wisdom which is very educative and meant to train its members thus KNUST to acquire high academic laurels. The dominant yellow colour in the picture signifies high office, first class or high excellence in academics. The red colour too stands for aggression and determination which happen to be the hallmark of every higher learning institution. It urges the members of the University to be aggressive and determined in the acquisition of knowledge in life. The green colour too symbolizes growth, fertility and productivity. It reminds both the staff and students of the University to strive hard for more knowledge and help to bring development to the nation at large. The black colour depicts strength and the black identity of the institution. The wisdom knot in the crest shows that one has to acquire a great knowledge before he or she can pass through the University successfully (Kofi Adu, personal communication, 20th June, 2019). The spherical pot in the crest also depict religious aspect of the the Institution thus its relationship with God Almighty. The burning flame in the pot also represents knowledge. The calipers also represent the technological disciplines available at the institution whereas the leaves specifically represents the agricultural oriented courses of the institution.

The crest is used as a source of inspiration for its staff and students to constantly remind them of the goal and aspirations of the University. It serves as the logo of the University which identifies them and makes them unique as far as institutions of higher learning in Ghana is concerned. It is that which put the University on its toes.

PRODUCTION

The disparity is actually unclear as result of the application involve in the two fields. An applied art is mostly where the concentration is based which makes it to be considered as gaining universal attention in the art works. In this regard, there has been a common term including decorative arts which is a totality of craft objects. Distinction

is mostly drawn by considering the context guiding the production process and its trading mechanism. Attention is mostly paid towards criteria to enable creation of work and intuition behind such work in both applied and fine arts (Getlein, 2008).

The link regarding design and production is one of planning and executing. In theory, planning must consider and compensate for potential problems in the execution process. Unlike design, production however follows defined processes. In contrast, a design can capture how a particular process will be followed to derive and attain a successful finishing without necessarily going through the production process. Instances have it that, production processes are captured in a design but may not be as broad to extend to knowledge of the whole process.

Careers that require creativity to large extent consider design and production to be intertwined meaning problem-solving is part of execution and the reverse. There is a need to separate design from disciplines involving production as for example skyscraper need to have its design different from production. Designs are infrequently perfect and are occasionally repetitive. Defectiveness relating to design may impact on the production processes and as such each process would have to follow some level of discipline as may be outlined by the designer as well as creativity or problem-solving skills from the designer (Getlein, 2008).

III. MATERIALS AND METHOD

In any activity, that requires investigation techniques into design and production concepts to reach at concrete results. As in the case of this study, where the researchers sought to design and fabricate a desktop organizer using scrap metal as a souvenir to support the KNUST's quest to rebrand its institution to achieve its mandate, vision, mission statement as well as its core values. This requires a well-defined and systematic methodology that is paramount for achieving authentic results.

The researchers adopted both Aesthetic and Studio-Based research methods under the Qualitative research approach to find answers to the research questions. Kaplan and Maxwell (2006) define qualitative research approach as one that aims at relating to how social life is better understood as well as getting words instead of numbers from its methods. This was employed to ascertain the need for metal desktop organizer to compliment any means of organizing materials at the offices of KNUST. Best (2003) opines that qualitative research is usually concerned on quality instead of quantity. Given (2008) has it that aesthetic-based research refers to qualitative inquiry that focuses on philosophical concepts and considerations of the arts and of aesthetic experiences of the subject. Expressing his view, Stecker (2010) articulates aesthetic-based research as a study of new ways of seeing, appreciating and perceiving the world. Notwithstanding, Danto's (2004) explains that aesthetic-based research expresses a process of research concerned with the principle, perception and insight of beauty and ugliness whether as they appear or exists in an individual's mind. Aesthetic based research was relevant the design and fabrication desktop

organizer because it as meant for to project and brand the image of KNUST and therefore had to be carefully designed and produced for it to be aesthetically pleasing to users.

The other research method which was used was Studio-Based. It involves the production of artworks. According to Marshal (2010), the imaginative and intellectual undertaken by artists are considered to be forms of research and they are evaluated on these five factors.

- ✓ Description of the subject matter of the artefact produced
- ✓ Identification of iconography
- ✓ Notation on impact of selected media and methods of production.
- ✓ Principles of art and organization of visual elements, such as line, colour, space, movement, time and composition.
- ✓ Description of styles or processes

In line with the studio-Based research, the researchers used the fourth Year production studio of Department of Industrial Art of KNUST where all the piercing vices, drilling machines, stakes and soldering turn table are made available and finally the forging studio where brass scraps were melted into ingot for the production of the desktop organizer.

MATERIALS USED FOR THE FABRICATION

Some of the materials used were Brass and copper sheets, silver solder and Borax. Copper sheet was the main material used for the production of the desktop organizer. Silver Solder of various degrees such Soft, medium and hard were used to join the pieces of metals together to produce the various souvenirs whereas borax served as a flowing agent that facilitated soldering and melting by removing oxidation from the metals to be joined for the production of the desktop organizer.

TOOLS AND EQUIPMENT USED FOR THE FABRICATION

Some of the relevant tools used for the production were soldering board, chasing tools, anvil, tweezers, saw frame and blades, pitch, torch, polishing buff and polishing compounds.

Soldering Board which is a heat and crack resistant board was effectively used for soldering metal pieces together for the production activity. Chasing tools are steel tools with varying shapes used to create a relief effect on metals. The chasing tools were used in the production of the desktop organizer with chased reliefs on their surfaces. The anvil was also used to flatten the surface of the copper sheet. Tweezers was a picking tool which was used to pick small pieces of solders and placed at the joints of two or more metal pieces for soldering. Saw frame and blades were used to pierce parts of the sheets before and after soldering activity. Pitch was used to hold and support metals for chasing and repousse activity during the production of the desktop organizer. Torch was the main tool used as a channel to producing of flame for all soldering and annealing activities. Polishing buff and compounds such as rouge and Tripoli were applied for the final finishing of the work.

IV. DESIGNING THE DESKTOP ORGANIZER

A desktop organizer which is metal container with different compartments where office table materials are packed were designed accordingly, based upon the philosophy and the interpretation of the crest of KNUST. Different designs were made.

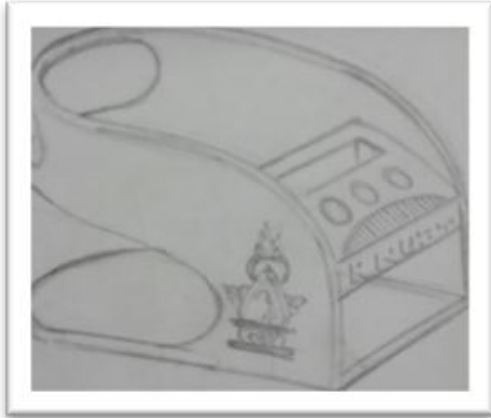


Figure 1



Figure Design 2



Figure Design 3

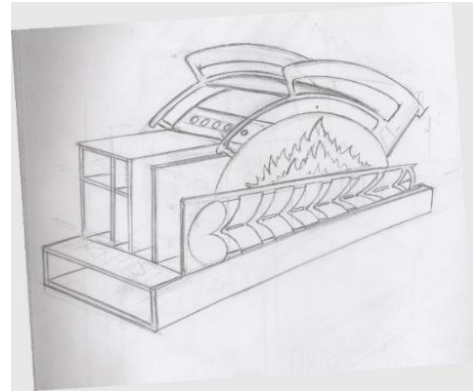


Figure 4

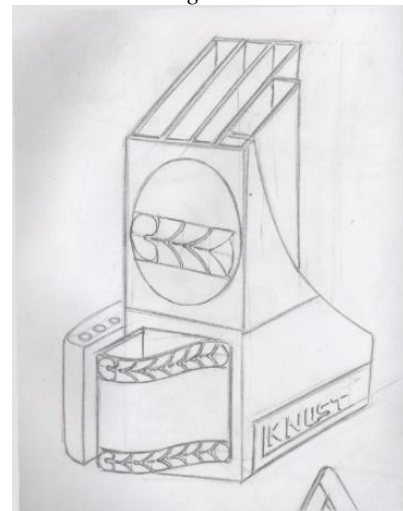


Figure 5

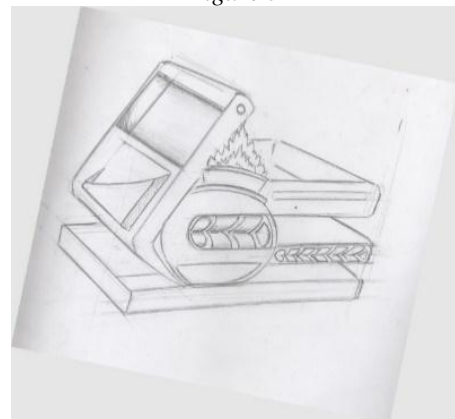


Figure 6

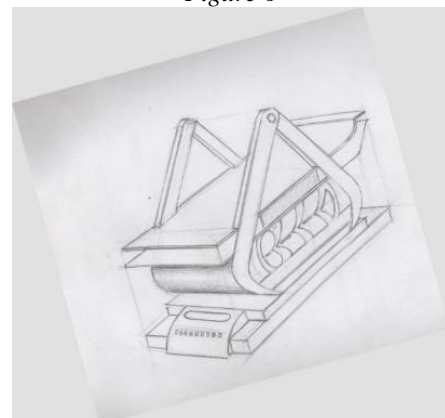


Figure 7

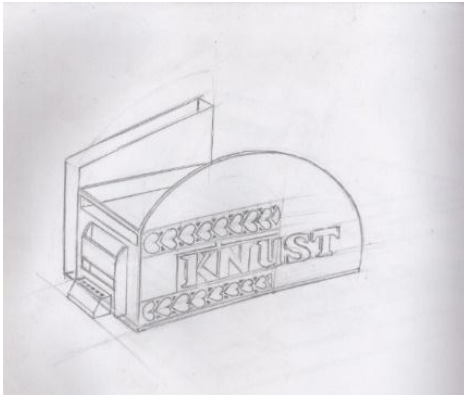


Figure 8

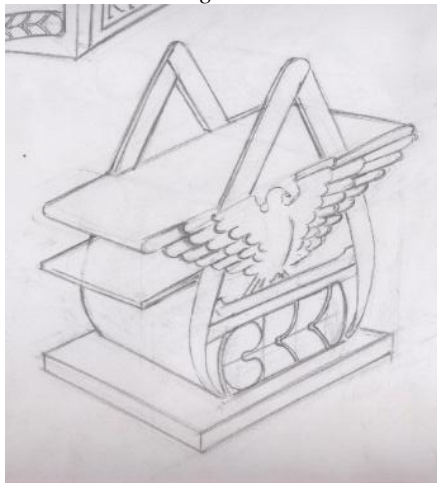


Figure 9

Figure 1 to 9 shows the various designs that the researchers made for the desktop organizer for Kwame Nkrumah University of Science and Technology. The basics for all the designs is to use parts of the University's crest and the acronym of the institution to design. This was done so that the designs could be well associated and identified with the University.

This first design (Figure 1) was developed from a perforator. It has 5 pens and marker and a note pad patch at the top. It also has the KNUST emblems placed on both side and an inscription KNUST written right below the compartments. The second desktop organizer (Figure 2) was developed from an award therefore making the organizer resemble a KNUST award. It has an arrangement of pen and marker compartments at the top and a note pad/sticky paper slot parallel to it, and at the front side is a KNUST inscription. The last design (Figure 3) resembles a tear drop, and at the front side is an image of the fire and the space for the pot being empty, to serve the purpose of a holder for a variety of office items and a marker compartment right by the flame. Right below the holder is the KNUST inscription.

Figures 4 to 7 have similar designs of desktop organizer with pen holders, call card apartments, portion for placing erasers, pins and clips small tapes. Some of the designs have stretched "nyasapo" on the sides of each, others have the full University's crest or logo on the side whereas others have parts of the design of the logo selected and made on the sides of the desktop organizers. All the designs are done such that they can easily be identified with Kwame Nkrumah University of Science and Technology.

COMPUTER RENDERING

Prior to the production of the selected designs out of the lot (Figure 1 to 9), figures 1 and 5 were carefully selected and rendered to have a fair view of how the actual works would look like when produced.



Figure 10: Rendered version of figures 1

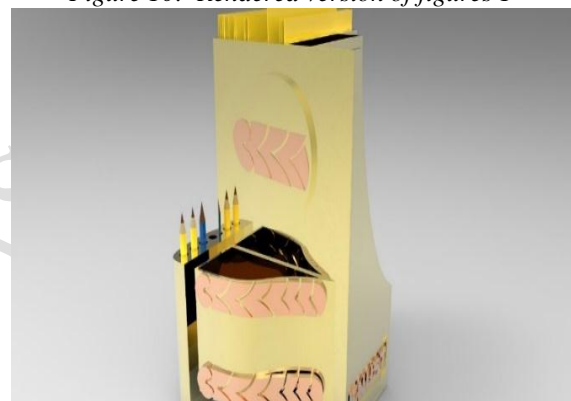


Figure 11: Rendered version of figures 3

FABRICATION OF THE DESKTOP ORGANIZER

The desktop organizer (figure 10) which is meant to solve most of office users having problems with organizing their items such as call cards, pens, pencils, eraser etc. were produced accordingly. This KNUST branded desktop organizer was fabricated using copper and brass with piercing as the main method of production.

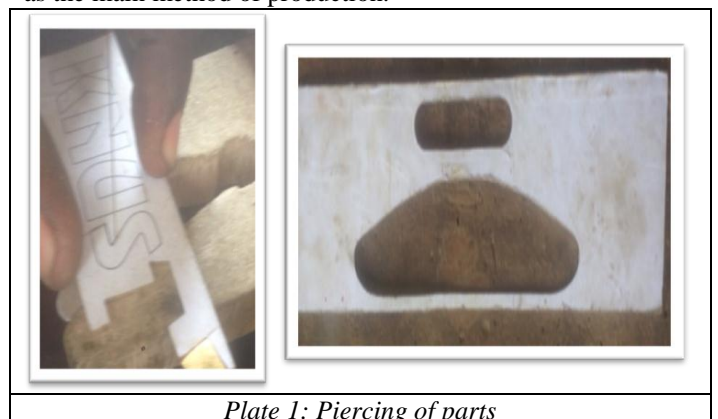


Plate 1: Piercing of parts



Plate 2: Rounding work



Plate 3: Shaping to form



Plate 4: Levelling the base



Plate 5: Marking sheet for base

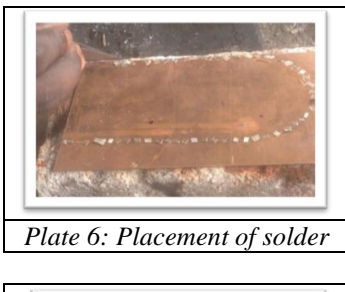


Plate 6: Placement of solder

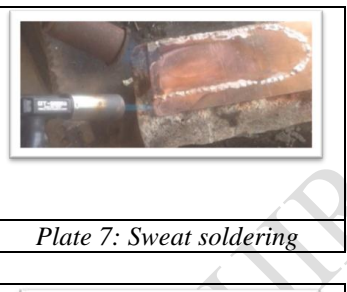


Plate 7: Sweat soldering



Plate 8: Soldering



Plate 9: Piercing of the base



Plate 10: Filing



Plate 11: Soldering KNUST Logo to the Organizer



Plate 12: Soldering the cylinders



Plate 13: Complete filing



Plate 14: Texturing



Plate 15: Polishing



Plate 16: Washing



Plate 17: Lacquering

The procedure for fabricating the desktop organizer started with preparing and milling brass and copper into sheets. Designs on the work were printed on a sheet of paper and placed onto the sheet and pierced out (Plate 1). The unwanted parts were pierced out to clearly bring out the spaces to conform to the designs.

After piercing, the next procedure was to form the parts of the organizer by using rubber mallet as also shown in Plate 2 and 3. Plate 4 shows the next procedure of levelling the base of the organizer to make sure it levelled well to be able to solder onto another sheet without difficulty. A clean and well-prepared sheet was put under the organizer and marked out for easy placement of solder and sweat soldering activity (Plates 6 to 8)

Sweat soldering (Plate 7) was done by placing one sheet of metal onto another to join them together (Plate 8). After soldering, the excess sheet base was pierced off to get the shape conformed to the design of the top part of the work which is the organizer itself (Plate 9). After piercing off the excess piece of sheet at the base the work was filed such that the pierced areas would look smooth and flash with the edge of the organizer as exhibited (Plate 10). As pertain in Plate 11, already pierced logo of KNUST was soldered unto the side of the organizer for proper branding. Plate 12 also shows

soldering of cylinders which were fixed to the organizer to serve as compartments for pens, pencils and utility knives. These cylinders were filed, polished and soldered to the main organizer. After fixing and soldering the cylinders to their right positions, complete filling was done to remove all other excesses of sheets on all soldered joints to make the work look smooth and less superimposed as in Plate 13. Plate 14 shows another procedure known as texturing. Texturing was done to areas where polishing were very difficult or inaccessible aside for aesthetic purposes. The work was then ready for polishing as seen in Plate 2.15 to mirror finish. The work after polishing was washed under running water with a toothbrush to remove all polishing compounds which might have been trapped in areas of the work (Plate 16). To avoid tarnishing of the surface of the Desktop organizer, the work was lacquered (plate 17) to help maintain the shining appearance of the work by preventing atmospheric exposures which cause tarnishing of metals. The same processes was used in the fabrication of figure 5. .

V. RESULTS AND DISCUSSION OF FINDINGS

The study sought to design and fabricate a desktop organizer using scrap metal as a souvenir to support the KNUST's quest to rebrand its institution to achieve its mandate, vision, mission statement as well as its core values. The result of the study has been presented based on Mashall's (2010) five steps of evaluation of studio-based research.

DESCRIPTION OF THE SUBJECT MATTER OF THE ARTEFACT PRODUCED

The artefact is a desktop organizer designed and produced for the offices of Kwame Nkrumah University of Science and Technology, Kumasi, Ghana. The work has different compartments where pencils and pens can be kept, card holders, pins and erasers and other small office materials. The work which is solely identified by the University has its logo on the two sides of the work. The base of the work is flat to enable it sit properly on an office table for efficiency. The size of the work is not big so as to occupy a small portion on the office table thereby not taking a big space on the table.

The work is to help promote and sell the image of the University. This can be achieved where the work is used as metal souvenir where visitors can buy and send to their various countries.

IDENTIFICATION OF ICONOGRAPHY

The idea development and the concept behind the design of the desktop organizer, the visual images and the symbols associated with it as well as the interpretations to the design of the symbols cannot be overemphasized. The unique aspect of this artefact is the use of the logo of KNUST with its interpretation brought to bear in the work. The whole logo with the eagle shows the extent with which a person can attain high laurels in the society. Eagle is known as the king of all birds which reminds every academician in KNUST that the sky is always the limit when it comes to education. The Stool

when is the seat to accommodate most of the parts of the logo is means to communicate the fact that, as a desktop it carries almost all the things one will need in his career to becoming an academician. The two callipers tell the science and technology aspect of Kwame Nkrumah University of Science and Technology where courses such as human biology, engineering, architecture, art, agriculture are thought. These are the things that go into making this particular desktop organizer for KNUST a unique one.

PRINCIPLES OF ART AND ORGANIZATION OF VISUAL ELEMENTS, SUCH AS LINE, COLOUR, SPACE, MOVEMENT, TIME AND COMPOSITION

The fundamental processes such as idea development, forming processes, joining processes and finishing processes that characterized this study underpin the argument that such quality and professional metal desktop organizers can be produced here in Ghana to meet any standard elsewhere. It is for a fact that learning starts from the known to the unknown (Wah, 2013), the already existing crest or logo of the university has helped in the design bank and the production of these unique metal souvenirs for KNUST.

Aesthetic qualities were philosophically exhibited through the use of principles of design and elements of art in this study. Dynamically, the researchers did their own designs before production and in these drawings used lines, dots, shapes, colours and textures to explore the collective identity of KNUST as imbedded in the logo. This trend gave insight into the unique aesthetic values and expressions of the philosophies of KNUST. Adu-Agyem (1990) agrees to confirm this position that composition of every art work philosophically is embedded with aesthetic elements. It is not therefore far-fetched that the researcher employed the use of philosophies of design and elements of art in the production of the metal souvenirs for KNUST.

NOTATION ON IMPACT OF SELECTED MEDIA AND METHODS OF PRODUCTION

The main materials used for the production of the desktop organizer for KNUST was Copper, Brass, Silver, alsphatum and pickle solution. Copper is a chemical element with the symbol Cu (from Latin: cuprum) and atomic number 29. It is a soft, malleable, and ductile metal with very high thermal and electrical conductivity. A freshly exposed surface of pure copper has a pinkish-orange colour. The researchers' findings reviewed a lot of advantages and disadvantages in the usage of the material for the production of the desktop organizer for KNUST.

Copper is very soft and can easily be manipulated to make any shape of a choice. Pure copper is orange-red and acquires a reddish tarnish when exposed to air. It highly conducts electricity. The characteristic colour of copper results from the electronic transitions between the filled 3d and half-empty 4s atomic shells – the energy difference between these shells corresponds to orange light. Its malleability proper was prevalent in the choice of the material for the production of these metal souvenirs. This feature helped file, twist, turn and milled the sheet to any favourable choice to aid in the

production of the work. Breakages were not seen using copper to produce the work. Another observation is the fact that it was also ductile in nature. Because copper melts at a very high temperature, the possibility of melting the works in the process of soldering was minimal. Again, copper gives a very strong bond when soldered together because of its high melting temperature feature. Some findings on the disadvantages is that, there was skin itching and irritation when the skin came into contact with the copper filings. It made finishing on time very difficult. Another observable factor too was that after polishing and when the work was exposed to atmospheric temperature, the work began tarnishing. This necessitated the need to lacquer and oxidize the work to avoid that. This also called for an extra cost on the production of the work. Some of the copper used were scraps. Melting copper scraps became very difficult because of its high melting temperatures.

Brass is another material which was also used in combination with copper for the production of the desktop organizer for KNUST. Brass is an alloy (Atom of the same kind) of copper and zinc which enables attainment of different mechanical and electrical properties. Some of the observable feature in the use of brass is its workability in the production of the work for KNUST. its toughness or hardness especially corrosive resistant after polishing unlike the copper which needed oxidation to solve that problem and finally its attractive appearance which is similar to yellow gold colour. In order to reduce cost of production there was the need to make use of brass scraps. Melting brass scraps also became difficult because of other unwanted metals that come along with it such as iron and steel. The combination of brass together with copper in the making of the metal desktop organizer gave a very interesting and different look to the works. The blend of these two-colour added to the aesthetic beauty of the work.

Another material used in the production is called alspatum which is a black substance used in chasing and repousse. This was used in place of bee wax as a platform for chasing so that the metal will not dent and bend haphazardly. The mixture of the alspatum with turpentine makes it take a little longer before drying for the chasing to be done on the works that needed chasing. Dirt was prevalent in the chased works and needed a lot of time to clean them.

Pickle solution which is made up of one part of hydrochloric acid plus 8 parts of water was very efficient in the removal of oxidation and dirt after annealing and soldering processes. This practically helped in seeing all parts of the work to know areas which need more attention. It also helped the work to be clean and neat. The only disadvantage observed is that the solution gets dirty easily and more pickle solution had to be prepared therefore calling for extra cost to buy more acid to prepare a pickle solution.

TOOLS

The most predominant tool used was the jewellers saw frame. The jewellers saw frame was very instrumental because of the use of metal working technique called piercing. The jewellers saw frame used was big and quite cumbersome to use. It was short and could not especially be used on long

sheets. Jewellers' blades easily got broken and had to be replaced more often than usual. It was also found out that the jeweller's blades in the market were of inferior quality as compared to British and German made.

Milling machine was also prevalent as all metals had to be milled to a sheet to produce the metal desktop organizer for KNUST. The milling machine used had some problems on the rollers and it was also only the milling machine at the researchers' disposal. This created a lot of dents on the copper sheets which used a lot of hours to remove them by filing and using emery papers of different grades. Some parts of the rollers were corroded as a result of an exposure of nitric acid. As a result, the rollers could not help get even surfaces of the milled metals.

Gas torch which was the main flame used for annealing, heating and soldering processes was very efficient and effective. This was so especially in the soldering of parts of metal together.

The polishing machine also used had a very big motor making it very difficult in polishing small souvenirs like the pendant and the ring. This was very instrumental in polishing the souvenirs prior to lacquering and oxidation to prevent surface tarnishing.

VI. DESCRIPTION OF STYLES OR PROCESSES

Observations and findings on the metal working techniques used were very successful with little surmountable challenges. The predominant metal working technique used was piercing. This technique was used in the productions of the metal desktop organizer for KNUST. All parts needed to be cut were cut accordingly. Since cutting needed saw frame and blades, the advantages and the disadvantages earlier discussed is applicable. Without this technique, the work would not have been produced.

Another technique is soldering which is joining of metal parts together by silver solder. The silver solder used were prepared in three different forms such as easy, medium and hard solders. More of hard solder was prepared and used since it brought about strong bonding and helped in subsequent soldering with medium solder.

The technique of lacquering and oxidizing was very efficient in preventing corrosion as a result of atmospheric temperature exposures.



A desktop organizer is basically a small office accessory usually placed on a desk having various compartments in which office supplies such as pens, papers and note pads can be placed. This desktop organiser Plate 3.1A was mainly

fabricated with copper with 5 pen and marker compartments and a note pad slot with the shape of the body resembling that of a perforator. The chased KNUST emblem on the sides of the organizer and the KNUST inscription at the edge are all in brass. The design itself is small and simple, fabricated by piercing and soldering as was the case of the tie-pin and key holder. The finishing was first done by hand polishing with a range of emery, texturing the body and oxidizing to give it a lasting finish. Desktop organizer A has the University crest etched and soldered onto the size of the organizer which is the embodiment of all the philosophy of KNUST as regards the stool, 'nyasapo', pot and the burning flame, calipers and its interpretation. 'Nyansapo' stretch on the side of desktop organizer Plate 3.2B tells the knowledge needed to acquire at the University. The various compartments which is suppose to take pens, pencils, erasers show the materials one needs to help acquire the requisite knowledge. These two desktops are meant to serve as a wheel of academic laurels.

VII. CONCLUSION

The study sought to design and fabricate a desktop organizer using scrap metal as a souvenir to support the KNUST's quest to rebrand its institution to achieve its mandate, vision, mission statement as well as its core values. The researchers conclude that by merging creativity in design with the Crest of KNUST to produce quality metal desktop organizers for the University. This is a grey area as far as internal design and production of Metal desktop organizer for KNUST is concerned as such few works are imported to campus for use at offices of the institution. The philosophical underpinnings of the crest of KNUST were brought to bear in the designs and production of the Metal desktop organizer for KNUST. The main source of inspiration for the designs was the university logo and the philosophical interpretations to all the parts of the design. The designs were made to serve as a design bank for KNUST. Some argument surrounding the sceptics of the professionalism and capabilities of local metal artists to design and produce high quality metal works cannot hold. More to this fact is the ability and techniques which the researchers were able to bring out in design and fabrication of metal desktop organizers.

For decades now, metal artists and jewellers have produced so many metal artefacts relegating the production of unique metal desktop organizers to the background, especially producing for institutions such as KNUST. This study has broken that long-standing genes. Since the researchers employed local metal scraps and some metal working techniques to produce unique metal desktop organizers for KNUST, is a means to promoting local initiatives since almost all the few ones of desktop organizers are all imported but not manufactured or produced locally.

The study has also shown that is possible to use the crest of an institution for identification purposes to design and produce works which can help market the institution far aside any means of marketing the universities.

Researchers and students of KNUST should be able to come up with a lot of designs which have its bearing on

KNUST which in the long run will help promote the image of the university as Science and Technology University.

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