

**THE ENVIRONMENT AS A RESOURCE FOR SCREEN DEVELOPMENT IN  
THE SECOND CYCLE INSTITUTIONS**

**BY**

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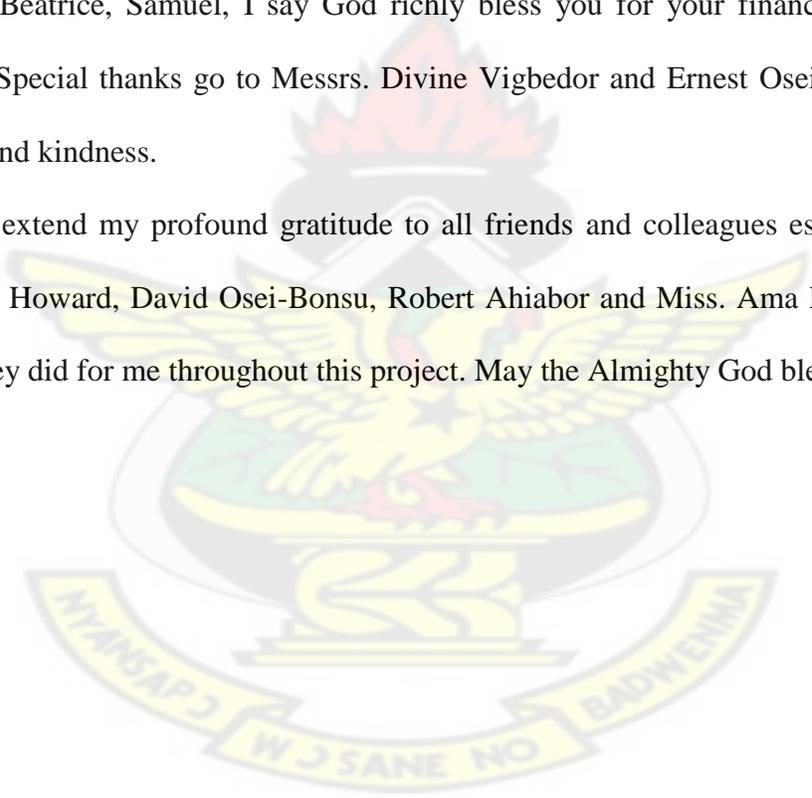
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## ABSTRACT

**RESEARCHER:** NYANTE Bennet BA. Art (Textiles)

**TITLE:** The Environment as a Resource for Screen Development in Second Cycle Institutions.

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**SUPERVISOR:** Mr.S Adu-Akwaboa BA. (Art), M.Phil

The development of screen printing has witnessed an enormous growth rate. From periods when simple hand operated machines were used and designs were solely made with hand drawing tools to the present day where computer software programmes have simplified and improved both designing and screen printing. It is therefore clear that, the upcoming designers who do not have access to computer and can not draw properly are left to their faith. It is for this reason that this project explores the possibility of selecting ideas (shapes) from the environment (natural and man-made) and manipulating them into suitable designs for screen printing.

It discusses the step-by-step procedure used in organizing the ideas, developing the screens and printing the sample fabrics; it also discusses the results and appreciation of the project. The study shows that ideas in the environment can be manipulated and carefully organized into interesting designs. The researcher adopted the experimental and descriptive research method based on the qualitative approach for the project. Experimentation with the selected objects revealed their suitability for using them for screen development and printing of sample fabrics.

The main findings are as follows;

1. Any type of objects can be used for developing screen regardless of their colours.
2. Wet objects can be used successfully in developing screens.
3. Objects can be manipulated into interesting patterns and designs within a short period.
4. The objects (ideas) obtained from the environment could be employed in printing any type of fabrics for a specific end-use.

5. This method of screen developing is good for designer who have good sense colour.

6. The method is limited to use of two dimensional objects.

It is therefore recommended this technique of using ideas (objects) from the environment for screen printing should be introduced into the Textiles curriculum especially in the second cycle institutions to foster creativity and interest in designing.

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# CHAPTER ONE

## INTRODUCTION

### 1.0 Background to the study

Screen printing is one of the oldest methods used in decorating textiles and printing of other suitable mediums for everyday use. Screen-printing is the most versatile of all printing processes. Since rudimentary screen-printing materials and equipment are so affordable and readily available, it is used in every part of the world. Screen printing has undergone the various stages of development to the present day computerization. There are different types of screen printing methods but the widely used in the educational institutions is the hand flat bed type; this is due to its low cost of production.

The uses of ideas derived from the environment in developing a screen and the subsequent printing is not popular, though, some authors have documented evidence about the process. The traditional way of preparing a design or pattern for developing a screen is by painting or coating them with black ink and it should be done with precision and care. The coated areas or the black ink prevent the penetration of light rays from developing those parts of the screen. It is therefore evident that, any object with interesting and suitable shape which is not transparent could be used in developing a screen.

This research is aimed at random selection of ideals from the environment (natural and man-made), then organise or compose the selected ideas into a suitable repeat pattern for screen development and printing of sample fabrics. The whole project was experimental and descriptive using observation as the main instrument for collecting

data. It was observed that, the ideas derived from the natural and man-made environment, if well organized, will produce good and interesting designs.

### **1.1 Statement of the Problem**

Idea or motif development for fabric printing is sometimes a problem for textile students at all levels of education. Students of the second cycle institutions spend a lot of time completing designs as a result of the series of processes involved in conventional methods of designing and this prevent them producing more design within a term. The environment is replete with shapes and patterns, both natural and man-made, which can be explored for fabric designs.

The use of shapes and patterns from the environment for fabric designing and printing will save time and reduce the cost involved in fabric designing. This method of fabric designing will also bring dynamism and interest to the field of fabric designing.

### **1.2 Hypothesis**

The environment abounds in natural and man-made shapes that can be a source of designs for screen printed textiles.

### **1.3 Objectives of the study**

1. To identify and describe natural and man-made shapes and patterns that exist in the environment
2. To experiment with the selected ideas to ascertain their suitability for design.
3. To produce sample fabrics using shapes and patterns derived from the environment.

### **1.4 Delimitation**

This project covers selection, manipulation and organization of interesting shapes or patterns derived from the environment into suitable repeat patterns, using the shapes or patterns in developing screens and printing of sample fabrics.

## 1.5 Limitation

The small size of the developing table restricted the size of the screens.

## 1.6 Definition of terms

- Printing** The art of transferring design from one surface onto another by means of rollers, screens, blocks, etc. with pressure.
- Screen** A sheet of silk or nylon bolting cloth or wire mesh coated in some areas to form a design for printing
- Squeegee** A tool used in screen printing to force thickened printing paste through the screen onto the fabric and it is made with a flexible material for example rubber with a rubber handle.
- Repeat** An entire, complete pattern that is repeated again and again in a printed fabric.
- Pattern** An ornamental design or decorative element in a fabric. A pattern may be produced either by the construction of the fabric or by applying designs with other means such as printing or embroidery.
- Fabric** A material produced with fibres or yarns through weaving, knitting, braiding, laminating or bonding.
- Dye** A colourant that becomes molecularly dispersed at some point during application to a substrate and also exhibits some degree of permanence.
- Mesh** Any fabric (woven, knitted, crocheted, laced, or knotted), which is characterized by open spaces between the yarns.
- Prints** A general term used for fabrics with printed patterns or designs
- Printing paste** A paste employed in printing that contains colourant and other materials.

**Design** An arrangement of form or colours, or both, to be implemented as ornamentation in or on various textile materials.

**Vat dye** An important commercial class of dyes marked by a high degree of fastness, especially to light and washing.

### **1.7 Abbreviations**

**KNUST**- Kwame Nkrumah University of Science and Technology

**CMYK** - cyan, magenta, yellow and black

**CD** - compact disc

**DVD** - digital versatile disc

**CE**- common era

### **1.8 Importance of the study**

This project is meant to introduce the use of ideas (shapes and forms) in the environment in developing screens to students especially at the second cycle level. The technique used in developing screens is unique and involves manipulative and creative skills. Adopting this technique of screen development as part of Visual Art curriculum in the second cycle institutions will help develop the interest and creative skills of the students and also broaden the scope of designing in textiles.

### **1.9 Arrangement of the rest of the text**

The rest of this report is arranged with chapter two centring on review of related literature supporting the study. Chapter three entails the methodology and developing of screens from the selected objects and printing of sample fabrics.

Chapter four embodies results and appreciation of the projects and chapter five deals with summary, conclusion and recommendations for the study. The reference is the last section of the study.

## CHAPTER TWO

### REVIEW OF RELATED LITERATURE

#### 2.0 Overview

This chapter deals with the review of the related literature of the topic. To undertake any successful project research in any field of study such as textiles, there is the need to review literature related to the topic and this helps to gather data to support or serve as foundation for the project. This is very important in the sense that it provides the researcher the necessary data to ascertain the areas other researchers have dealt with and the areas that still need to be tackled in order to know which direction to take. In this project the researcher found it necessary to review literature based on definition, history and types of printing and definition and types of environment.

#### 2.1 Printing

Hall (1980) states that, printing is a means of producing more colourful effects on fabrics and also on yarns. This implies that, printing can be done before and after weaving, depending on the desired effects. The emphasis therefore is that, the effects should be colourful. It is therefore clear that apart from constructed fabrics, fibres and yarns can be printed on.

Wynne (1997) is of the view that, printing is the localized application of dyes or pigments in a thickened form to a substrate, to generate a pattern or design. This however shows that, dyes or pigments used in printing should be in a paste form to resist it from spreading. Printing in this context can be done on any surface provided it is suitable for dyes or pigments.

Welford (1966) opines that, printing is the method of imposing coloured designs on the surface of cloths. This is an opposing view to Hall and Wynne in that, printing is

focused on imparting designs onto cloth surfaces only. Meanwhile, printing can be effected on other forms of textiles such as fibres, yarns and garments.

Tortora (1992) stated that, printing is the application of a pattern to fabric by the use of dyes, pigments or other coloured substances. Printing in this sense is based on application of coloured substance regardless of their fastness properties. Tortora and Wynne share the same view and consider printing as application of colourants to obtain patterns.

Gupta et al (1999) agree that, printing is application of colour in the form of a design. Printing is therefore not limited to fabric but any other suitable medium which will accept colour of any kinds in a form of design regardless of their fastness properties.

Storey (1992) opines that, the term printing is used to indicate the patterning of cloth by means of printing, dyeing or painting. Printing in this regard includes any form of patterning a fabric for a specific end use. This goes beyond the field of textiles and embraces any art form that produce patterns on fabric using any colourant.

Clarke (1977) describes printing as the means of transferring the creative talent of the designer to the cloth. The designer always has to create the design on a different medium and later transfer it onto a fabric.

Phyllis et al (2005) maintain that, printing is the application of colourants in definite, repeated patterns to fabrics, yarns or sliver by any one of a number of methods other than dyeing. Colourant is deposited in thick paste form and treated with steam or chemicals to cause it to migrate into and adhere to the textile material. The design is not woven or knitted into the cloth but applied after the cloth is made. Printing can therefore be done at any stage of textile manufacturing. The stage at which printing will be effected will depend largely on the effect desired in the final fabric.

Pietro et al (2000) hold the view that, printing could be referred to as a sort of selective dyeing that makes an important contribution to fabric decoration. Selective in the sense that, printing paste is applied to the predetermined areas on the fabric.

Allen (1982) points out that, printing can be described as dyeing in a localized pattern or design. Allen holds the same view on printing as Pietro describing the process as dyeing. In the printing process, the dye molecules are resisted from spreading beyond the shape of the patterns to other parts of the fabric.

Deducing from the above literatures on printing, it is evident that printing is the application of colourants such as dyes or pigments in a paste form to substrates of various kinds to obtain desired patterns or designs. This is carried out at the various stages of manufacturing.

## **2.2 Screen Printing**

Screen printing is one of the methods used in transferring patterns or designs onto fabrics. Various authors have different views regarding its meaning. Hall (1980) is of the opinion that, screen printing is really a development of stencil printing, where the letters or numbers are cut out of a sheet, and colour dabbed through by means of a brush. He further stated that, in the modern form of screen printing, each ordinary stencil is replaced by silk or wire mesh fabric fastened across a square or rectangular wooden frame. This explanation of screen printing best describes the flat-bed screen printing technique, since square or rectangular wooden frames are used in screen preparation. Presently, there exist other forms of screen printing which do not need square or rectangular wooden frame for screen preparation and printing.

According to Wynne (1997), screen printing is basically a form of stencil printing. The screens consist of a synthetic fibre or metal gauze stretched taut over a frame. Parts of the gauze have the holes blocked off (non-printing areas); the printing paste is

forced through the open printing areas by a rubber or metal blade called squeegee, and on to the fabric beneath. Wynne is in support of Hall's view on screen printing as they consider it as a form of stencil printing. This is because during printing, printing paste is forced through an opening onto the fabric.

Tortora (1992) opines that, screen printing is a method of applying coloured design on to fabric that is done either by hand or by an automated process. This implies that any form of application of coloured design onto fabric regardless of the medium and device used can be termed as screen printing, but this is not always the case. Screen printing, silk screening or serigraphy is a printmaking technique that uses a woven mesh to support an ink blocking stencil. The attached stencil forms open areas of mesh that transfer ink as a sharp-edged image onto a substrate. A roller or squeegee is moved across the screen stencil forcing or pumping ink paste through the threads of the woven mesh in the open areas. A screen print or serigraph is an image created using this technique.

Screen printing is arguably the most versatile of all printing processes. It can be used to print on a wide variety of substrates, including paper, paperboard, plastics, glass, metals, fabrics, and many other materials. Some common products from the screen printing industry include posters, labels, decals, signage, and all types of textiles and electronic circuit boards. The advantage of screen printing over other print processes is that the process can print on substrates of any shape, thickness and size.

Tortara et al (2005) assert that, screen printing is the method of printing whereby the pattern is blocked out on a mesh fabric or screen so that when the colour is squeezed through it will penetrate the unblocked areas. The colour paste is forced through the screen by a squeegee. The various methods used in blocking out a pattern for screen preparation are photographic, lacquering and stencil method. Metal, rubber and

wooden squeegees are mostly used in screen printing process and uniform pressure should be applied on the squeegee during printing.

Allen (1982) agrees that screen printing is a method whereby a closely meshed screen is placed in contact with the fabric to be printed, and the print paste is forced through the screen. It is evident that mesh plays a vital role in field of screen printing be it industrial or small scale industries. Synthetic fibre meshes are used for small scale industry screens while metal mesh is for the industrial screens. The fact is that industrial screens need to be stronger than small scale industrial screens because they are use in printing a lot yardage.

### **2.3 History of Screen Printing**

According to Wikipedia (2008), first appearance of screen printing in its recognizable form was in China during the Song Dynasty years of 960–1279 CE. Asian countries such as Japan adopted this method of printing and advanced the craft using it in conjunction with block printing and had applied paints to the screen during printing.

Screen Printing was introduced to Western Europe from Asia sometime in the late 1700's, but do not gain large acceptance or use in Europe until silk mesh was more available for trade from the east and a profitable outlet for the medium discovered,(screen printing 2008).

Screen printing was first patented in England by Samuel Simon in 1907. Originally, screen printing was a popular method to print expensive wall paper. Higher grades of wall paper were actually printed on linen, silk, and other fine fabrics. Jealously guarded as a valuable trade secret, the western screen printers developed reclusive, defensive, and exclusionary business policies focused on secreting workshop knowledge and techniques.

Early in the 1910's, several printers experimenting with photo-reactive chemicals used the well known actinic light activated cross linking or hardening traits of potassium, sodium or ammonium bichromate chemicals with glues and gelatin compounds. Roy Beck, Charles Peter and Edward Owens studied and experimented with chromic acid salt sensitized emulsions for photo-reactive stencils. This trio of developers would prove to revolutionize the commercial screen printing industry by introducing photo-imaged stencils to the industry; the acceptance of this method would take many years. Commercial screen printing now uses sensitizers far safer and less toxic than bichromates; currently there are large selections of pre-sensitized and "user mixed" sensitized emulsion chemicals for creating photo-reactive stencils,(screen printing 2008).

Joseph Ulano founded the industry Chemical Supplier Ulano and in 1928 created a method of applying a lacquer soluble stencil material to a removable base. This stencil material was cut into shapes, the print areas removed and the remaining material adhered to mesh to create a sharp edged screen stencil.

Originally a profitable industrial technology, screen printing was eventually adopted by artists as an expressive and conveniently repeatable medium for duplication well before the 1900s. It is currently popular both in fine arts and in commercial printing, where it is commonly used to print images on T-shirts, hats, CDs, DVDs, ceramics, glass, polyethylene, polypropylene, paper, metals, and wood.

A group of artist who later formed the National Serigraphic Society coined the word Serigraphy in the 1930's to differentiate the artistic application of screen printing from the industrial use of the process. "Serigraphy" is a combination word from the Latin word "Seri" (silk) and the Greek word "graphein" (to write or draw).

The Printer's National Environmental Assistance Center says "Screen printing is arguably the most versatile of all printing processes." Since rudimentary screen printing materials are so affordable and readily available, it has been used frequently in underground settings and subcultures, and the non-professional look of such cultures of screen prints have become a significant cultural aesthetic seen on movie posters, record album covers, flyers, shirts, commercial fonts in advertising, and elsewhere.

Credit is generally given to the artist Andy Warhol for popularizing screen printing identified as serigraphy, in the United States. Warhol is particularly identified with his 1962 depiction of actress Marilyn Monroe screen printed in garish colours.

American entrepreneur, artist and inventor Michael Vasilantone had develop and patented a rotary multicolour garment screen printing machine in 1960. The original rotary machine was manufactured to print logos and team information on bowling garments but soon directed to the new fad of printing on t-shirts. The Vasilantone patent was soon licensed by multiple manufacturers, the resulting production and boom in printed T-shirts made the rotary garment screen printing machine the most popular device for screen printing in the industry. Screen printing on garments currently accounts for over half of the screen printing activity in the United States. Graphic screen printing is widely used today to create many mass or large batch produced graphics, such as posters or display stands. Full colour prints can be created by printing in CMYK (cyan, magenta, yellow and black). Screen printing is often preferred over other processes such as dye sublimation or inkjet printing because of its low cost and ability to print on many types of media, (screen printing, 2008)

## **2.4 Types of Screen Printing**

Basically, there are different types of screen printing techniques, mostly; the difference is evident in the production rate, shape of the screens and devices and equipment used. There are different types of prints, depending upon the printing method, the desired colour pattern and the results to be obtained. Another approach to the printing classification can be based upon the process and therefore upon the machine used (manual screen printing, conveyor belt, hand printing, hollow roller printing). Various types of screen printing were considered by different literatures.

Wynne (1997) describes two methods of screen printing namely;

- I. Hand screen printing.
- II. Automatic screen printing.

### **Hand screen printing**

In hand screen printing, each screen is placed on the fabric in turn; the paste applied to one end of the screen and the squeegee drawn by hand through the paste and across the screen forcing it through the open mesh area on to the fabric beneath. Although the highly skilled printer can produce good quality prints by a hand screen technique, the production rates are extremely slow, hence the introduction of automatic screen printing machines.

### **Automatic screen printing**

Automatic screen printing technique is the type of printing in which feeding of print paste, squeegee, screen and fabric movement is automated and there are two main types;

- I. Flat-bed screen printing.
- II. Rotary screen printing.

### **Flat-bed screen printing**

Flat-bed screen printing is an intermittent printing method which is made possible by an endless conveyor belt. The belt is automatically set to move forward by one or several pattern repeats at a time. When the belt is stationary the screens are lowered, the colours applied to the fabric and the screens are lifted for the belt to move the fabric on to the next repeat. Colour is pumped or hand fed on to each screen and the squeegee movement is mechanical.

### **Rotary screen printing**

Rotary screen printing has been developed as a fully continuous screen printing technique. Rotary screen printing uses seamless cylindrical screens which are composed of a nickel mesh with end-rings soldered or stuck on to tension the cylinder and prevent collapse. The screens are positioned across the fabric and are independently driven at one end. As the screen rotates, it is fed internally with print paste which is forced through the open mesh area by a stationary squeegee at the base of the screen and on to the fabric being carried by a conveyor. The production rate of rotary screen printing is very high and a high quality print is achieved.

Storey (1992) outlines and discusses three main methods of screen printing as follows;

- I. Hand screen printing.
- II. Flat screen printing.
- III. Rotary screen printing.

Hand screen printing, as the name suggest is the simplest form of screen printing techniques. All the processes are carried out by hand; it is difficult to print due to the problems associated with repeating the design across the fabric hence, its low production rate. It is mostly employed for printing of short runs therefore good for

school practical works. In flat screen printing, the fabric is gummed down to a backing. It is moved automatically the length of one repeat at a time. A battery of stationary screens, working in a line, drop down into the operative position, the squeegee presses the print paste through the mesh of the screen on to the fabric, which is then lifted. The cloth moves on one repeat and the process begins again.

Tortora (1992) dilates on hand and rotary screen printing techniques. According to the author, hand screen printing is a slow process. Automation has been achieved in the manufacture of flat-bed screen printing by making the frames stationary and moving the fabric along on a belt from screen to screen. The squeegee action is done automatically. Flat-bed screen printing machines can print from 10-15 meters per minute.

Rotary screen printing technique has been developed that makes possible an output of 25-100 meters per minute.

Tortora and Markel (2005) believe there are two main types of screen printing, which include;

1. Flat bed screen printing, in which colour is squeezed through one or more flat screens, the screens are lifted, the fabric is advanced the length of one pattern repeat, and the screens are lowered to print again. Manual flat screen printing allows production of very large patterns but is very slow. Automatic flat screen printing machines are used both to print woven and knitted fabrics.
2. Modern rotary screen printing machines allow for continuous movement of fabric. The squeegee is contained within the cylindrical metal screen, and colour paste is fed automatically. Rotary screens can be arranged horizontally, vertically or centrally.

## 2.5 Screen Development

The success of screen printing depends absolutely on the development of the screen. A good and well developed screen will aid a smooth printing process; likewise, improperly developed screen will make printing difficult or impossible especially if the fabric will be printed with two or more colours. The pattern or design to be developed should be coated or painted carefully and evenly with opaque ink - black is commonly used – and the edges of the designs should be sharp. The mesh should be stretched evenly and taut onto the wooden frame; the mesh should be washed properly; even coat of photo emulsion should be applied to the screen and dried properly in the dark room. The design and screen should be in firm contact at the time of transferring the design onto the screen; during screen development, it should be washed gently.

Storey (1992) argues that since the patterns are painted by hand on to a plastic film or kodatrace and the screen developed directly from this, it follows that there is virtually nothing that can be painted on paper that cannot be screen printed on cloth. She further stated that screen printing affords the creative and imaginative designer the means of putting or printing on cloth extremely varied ideas and effects. It is therefore clear that screens were used in printing intricate designs than other methods of printing. Educational Institutions and small scale industries which depend heavily on screen printing use white papers such as bond or A4 sheet in designing and developing their screens. The papers are treated with oil to render them transparent and this is considered cheap and convenient.

Adu-Akwaboa (1994) agrees that, after the tracing, the positive parts of the design are painted very well with opaque ink or black ink avoiding translucent areas and light penetration. The painting of the pattern or the design depends on the part which should appear in colour. The positive part of the design is painted black when that part

is to appear in colour, the negative part of the design is painted black when the background is to appear in colour.

Clarke (1977) states that the pattern to be produced is painted on transparent paper with a dense opaque ink. The painting of the pattern with the opaque ink is to prevent light penetration through those areas. Since the coated screen is sensitive to light, the painted parts of the design will block the light rays from touching the screen during screen development. This is a common method for transferring a design onto a screen whether flat or rotary. With the advent of computer, designs are printed rather than hand painted with opaque ink. Black ink works better on bond paper than on tracing paper. The industries have a special film which is used for the preparation for screens hence there is no need for painting of patterns or designs.

## **2.6 Definition of Environment**

The environment is considered as the circumstances or conditions that surround organism; or the totality of circumstances surrounding an organism or group of organisms, especially the combination of external physical conditions that affect and influence the growth, development, and survival of organisms. The growth and development of an organism will vary from one environment to the other as the environment will dictate the mode of life to be adopted by the organisms in a given environment. The emphasis of environment in this case is centred on living organism than non-living. (environment,2008)

Sci-Tech Encyclopedia (2008) describe environment as the sum of all external factors, both biotic (living) and a biotic (nonliving), to which an organism is exposed. Biotic factors include influences by members of the same and other species on the development and survival of the individual. Primary biotic factors are light,

temperature, water, atmospheric gases, and ionizing radiation, influencing the form and function of the individual.

For each environmental factor, an organism has a tolerance range, in which it is able to survive. The intercept of these ranges constitutes the ecological niche of the organism. Different individuals or species have different tolerance ranges for particular environmental factors-this variation represents the adaptation of the organism to its environment. The ability of an organism to modify its tolerance of certain environmental factors in response to a change in them represents the plasticity of that organism. Alterations in environmental tolerance are termed acclimation. Exposure to environmental conditions at the limit of an individual's tolerance range represents environmental stress, (Sci-Tech 2008)

Geography Dictionary (2008) considers the environment as the surroundings. The natural environment includes the nature of the living space (sea or land, soil or water), the chemical constituents and physical properties of the living space, the climate, and the assortment of other organisms present. The phenomenal environment includes changes and modifications of the natural environment made by man. The effect of the environment on man is modified, in part, by the way the environment is perceived, and human geographers distinguish this-the subjective environment-from the objective environment-the real world as it is. The objective environment is of less importance to the individual than his or her perceived image of it. A division may also be made between the built environment and the social environment which is made up of the various fields of economic, social, and political interactions. In the surroundings there abound objects- natural and man-made- which are of great importance to mankind for various uses. The quest for human survival and adaptation to the surroundings calls for technology and the subsequent creation of various man-

made items into the environment. The interesting aspect of life is what is considered useless in one field and is found useful in another.

Archaeology Dictionary (2008) said that, environment is the total surroundings in which a human society finds itself and all the factors that in any way affect its mode of life. This definition shares the same view as Geography Dictionary (2008) as they consider the environment as the surroundings. The effect of the environment will either be positive or negative. Positive in the sense that some of the environments will create conducive atmosphere for creativity, hence development, and negative in that certain environment will hamper creativity and development. When life in a given environment is comfortable, then there is no need for creativity because all is well.

According to Environment (2008), environment may be described as follows:

- The total of all the surroundings, air, water, vegetation, human element, wildlife, that have influence on you and your existence, including physical, biological, and all other factors.
- Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans and their interrelation.
- Physical surroundings that establish place, time, and atmosphere/mood; the physical conditions that reflect and affect the emotions, thoughts, and actions of characters.
- External conditions and surroundings, especially those that affect the quality of life of plants, animals, and human beings. In agriculture the environment includes the air, soil and water conditions.
- The existing condition of the surroundings that results from a combination of climate, soil, topography, and other plants and animals. An organism's environment influences its form and survival

## 2.7 Types of Environment

The natural environment, commonly referred to as the environment, is a term that comprises all living and non-living things that occur naturally on earth or some part of it (e.g. the natural environment in a country). This term includes a few key components:

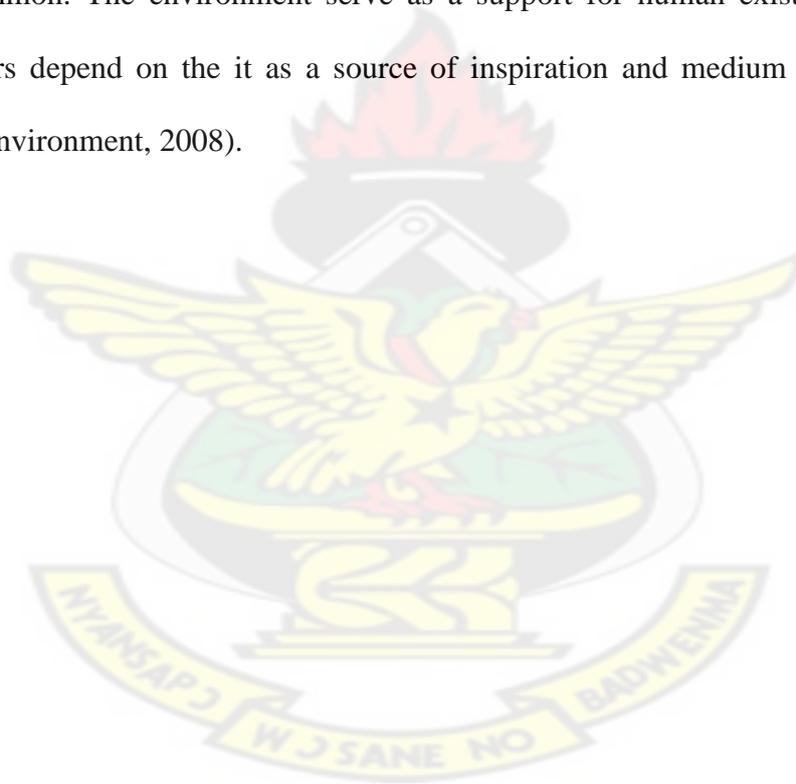
1. Complete landscape units that function as natural systems without massive human intervention, including all plants, animals, rocks, etc. and natural phenomena that occur within their boundaries.
2. Universal natural resources and physical phenomena that lack clear-cut boundaries, such as air, water, and climate, as well as energy, radiation, electric charge, and magnetism, not originating from human activity.

The natural environment is contrasted with the built environment, which comprises the areas and components that are heavily influenced by man. A geographical area is regarded as a natural environment, if the human impact on it is kept under a certain limited level. This level depends on the specific context, and changes in different areas and contexts. The term wilderness, on the other hand, refers to areas without any human intervention whatsoever or almost so which may be dangerous to human life.

The social environment, also known as the milieu, is the identical or similar social positions and social roles as a whole that influence the individuals or a group. The social environment of an individual is the culture that he or she was educated and/or lives in, and the people and institutions with whom the person interacts. A given social environment is likely to create a feeling of solidarity amongst its members, who are more likely to keep together, trust and help one another. Members of the same social environment will often think in similar styles and patterns even when their conclusions differ, (Environment,2008)

Built environment is the aggregate of the physical surroundings and conditions constructed by human beings, in contrast to those surroundings and conditions resulting from the natural environment.

Printing is one of the methods used for decorating textiles and other art forms. There are different types of printing methods which are employed at different sectors, but the commonly used method for practicals lessons in educational institutions is the screen method of printing. This method is adopted for this project. Generally, paper designs are used in developing a screen, the use of objects for screen development is not common. The environment serve as a support for human existence, generally, designers depend on the it as a source of inspiration and medium for art products (Built-environment, 2008).



## CHAPTER THREE

### METHODOLOGY

#### 3.0 Overview

This chapter comprises two parts; the first part is made up of the research methodology used in conducting this research. It is organized as follows; the research design which comprises the descriptive research method, experimental research method, population for the study, sampling, data collecting instrument used, libraries visited, study areas, primary and secondary sources of data. The second part consists of the manipulation of the selected objects, using them to develop screens and printing of sample fabrics.

Methodology refers to the analysis of principles or procedures of inquiry in a particular field of study. A body of methods, rules, and postulates that are employed by a discipline or a particular procedure or set of procedures. It emphasizes on collection of data, comparative study, and critique of the individual methods that are used in a given discipline or field of inquiry. Methodology is more than a simple set of methods. It also refers to the rationale and the philosophical assumptions that underlie a particular study. This is why scholarly literature often includes a section on the methodology of the researchers. Another key usage of methodology does not refer to research or to the specific analysis techniques. This usage is more common and it refers to anything and everything that can be encapsulated for a discipline or a series of processes, activities and tasks. Examples of this are software development methodologies, project management methodologies, business process methodologies and many others. Methodology could be historical, descriptive, experimental, survey, case study, assessment and evaluation researches (Descriptive, 2008)

### **3.1.1 Research Design**

The aim of the study is to select suitable ideas from the environment, develop screens from them and print sample fabrics. The researcher adopted the experimental and descriptive research methods based on the qualitative research approach for the project. Best (1981) opines that the qualitative research studies is the type in which the description of observations is not ordinarily expressed in quantitative terms. This is not to suggest that numerical measures are never used in qualitative research, but it is not largely dependent on numbers. This implies that the qualitative research approach is usually based on quality rather than quantity as used in this project. Ary et al (2002) are of the view that qualitative research method investigates the qualities of relationships, activities, situations or methods within a given context.

In this project, data were gathered through interview and observation. The processes involved in selection of suitable ideas (objects) and using them to develop screens were described in qualitative terms. The variables were carefully controlled and manipulated to achieve the desired results. The results were analyzed and interpreted to draw conclusions and recommendations based on the findings.

### **3.1.2 Descriptive Research Method**

Descriptive research method describes “what is”. It involves the description, recording, analysis and interpretation of conditions that exist. It deals with comparing and contrasting and attempts to discover relationship between existing variables.

The descriptive research method according to Leedy (1981) deals with a situation that demands the technique of observation as the principal means of collecting the data. The population for the research must be carefully chosen and clearly defined. Data in descriptive research are particularly susceptible to distortion through introduction of bias judgement into the research design. Although descriptive research relies upon

observation for the acquisition of data, the data must be organized and well presented systematically so that valid and accurate conclusions can be drawn. It is a type of research that simply looks with intense accuracy at the phenomena of the moment and describes precisely what the researcher sees.

Descriptive research method was used to describe the various tools, materials and equipment used in the project. It was also used to describe the production processes, designs and in appreciation of the results of the project.

### **3.1.3 Experimental Research method**

Experimental research provides a systematic and logical method for answering questions. It deliberately and systematically manipulates certain stimuli, treatments or environmental conditions and observes how the condition or behaviour of the subject is affected or changed. Experimental research makes it possible for the research to be replicated. (Ary et al, 2002).

Best (1981) adds that experimental research method describes what will be when certain variables are carefully controlled or manipulated. Experimental research manipulates one or more independent variables in controlled settings. It focuses on relationships between variables and draws conclusions.

An experiment is a study of cause and effect. It differs from non-experimental methods in that it involves the deliberate manipulation of one variable, while trying to keep all other variables constant. This project is an experimental study that manipulates and explores different kinds of variables in the form of objects, and techniques to develop exceptionally unique screens. Experiments were conducted on the various identified objects and techniques prior to the beginning of the actual project to ascertain their suitability and effectiveness. This was necessary in that it

provided the researcher with concrete and in-depth knowledge on which techniques to adopt to achieve the objectives of the research.

#### **3.1.4 Population for the study**

Sidhu (1984) defines population as the complete set of individuals, objects or events having common observable characteristics in which the researcher is interested. It may also refer to as the aggregate of totality of objects or individuals regarding which inferences are made in a sampling study. Population does not necessarily refer to people but may also refer to objects. It may be finite if its members can presumably be counted or infinite if its members cannot be definitely known.

Population of a study may be seen as target or accessible. According to Fraenkel and Wallan (1993), target population is the type which the researcher would really like to generalize and is rarely available whereas the accessible population is the type which the researcher is able to generalize. This implies that target population is large and difficult to access by the researcher. For this reason, researchers usually take a sample size from the target population for their study. In this sense, the members of the parent population that the researcher is able to access is what is termed as the accessible population. The population for this study consisted of natural and man-made objects of all kinds collected. The study area is restricted to Kumasi central market and Agona township all in Ashanti region. These towns were chosen because most of the natural and man-made objects needed for the study were found there.

#### **3.1.5 Sampling**

The probability to study a whole population in order to arrive at generalizations and conclusions is less and impracticable. Population for a particular study may be so large that its characteristics will be difficult to measure or can not be measured. In such cases, before the measurement is completed, the population might have changed.

This is where sampling comes in to select sizeable members from the parent population to be studied. Quartey and Awoyemi (2002) postulate that sampling is a subset of the population and consists of individuals, objects or events that form the population. It is a selected group which is fair and an adequate representation of the entire population of interest.

The use of sampling technique in research is very important in that when the population is very large, it can not be satisfactorily covered. Also when the data is unlimited, the use of sampling technique is very helpful. Moreover, when the number of individuals to be studied is manageable, intensive studies become possible. Sampling can be random or stratified depending on the type of research being undertaken. This study employs the simple random sampling method where members from the parent population were randomly selected and studied. This method of sampling eliminates biases and helps the researcher to obtain reliable or authentic data.

Sampling had to do with gathering information from only a fraction of the population or phenomenon under study. Ary et al, (2002), explain that qualitative researchers cannot observe everything about a group or site that might be relevant to the problem, but they try to obtain a sample of observations believed to be representative of the entire population under study. This shows the importance of sampling in this study which seeks to ensure equitable representation of the various kinds of objects.

Owing to the heterogeneous nature of the population, the researcher used simple random sampling to select the population for the study. This sampling technique is used when the case in the population falls into distinctly different categories. The fact that objects fall into different categories, the random sampling gave the researcher the opportunity to randomly select samples from flora, vegetables, cereals, fishes and

inanimate objects. The criterion for selecting the population is that the object (natural and man-made) should possess interesting shapes and features.

- Category A – Flora (leaves, flowers and leafstalks).
- Category B – Vegetables (onion and melon seeds).
- Category C – Cereals (rice).
- Category D – Fish (fishtails).
- Category E – Inanimate objects (plastic pegs, razor blades, cotton swabs and wire-mesh).

### **3.1.6 Data Collection Instruments**

Data collection instrument, also known as research tools or devices are means through which a researcher gathers his or her data. There are three main types namely; interview, observation and questionnaire. In this study, the researcher employed observation for data collection.

### **3.1.7 Observation**

Observation is regarded as the most direct means of studying people when one is interested in the overt behaviour. Observation is a natural way of gathering data for research. Data collected through observation may be often more real and true than data collected by any other method. Actual characteristics of subjects observed give true and accurate answers to questions that may be asked. As a scientific tool, it may range from the most casual and uncontrolled to the most scientific and precise, involving modern mechanical and electronic means (Sidhu, 1984)

Observation comes in two main forms. These are the participant and non-participant observation. Participant observation is the observation of the behaviour of a person or a group by a researcher who plays an active role in the situation or context in which the behaviour is recorded. This researcher actually participates or gets involved in the

activities or event which he or she is investigating into. In other words, in participant observation the observer can be a complete participant where he takes on a role in a group and his identity is known by the people being observed. He can also be a participant as observer where he participates fully in the activities of the group being studied but also makes it clear that he is making a research. The researcher can also be an observer as a participant, where he identifies himself right away as a researcher but makes no pretense of actually being a member of the group he is observing. He can assume the position of a complete observer, where he observes the activities of the group without in anyway becoming a participant in the activities. The subjects may or may not realize they are being observed.

Non-participant observation is the type of observation in which the investigator is not directly involved in the activities or situation being observed but sits directly on the sidelines and watches what is going on. In this research the researcher employed the non-participant observation to get the needed information. This type of observation helps to gather realistic and true data since the subjects being studied are not aware that they are being observed and for that matter will be in their natural selves. The researcher during the study employed non-participant observation to observe various kinds of suitable ideas (shapes) that are available in the environment.

### **3.2 Development of the screens**

This section deals with the sequence through which the screens were produced. Suitable and interesting ideas (objects) both natural and man-made were carefully selected and manipulated at the various stages to achieve the desired and best results.

The main processes which were adopted for production of the screens are listed as follows;

- Selection of object.
- Preparation of wooden frame.
- Stretching of mesh onto wooden frame.
- Coating and drying of screen.
- Manipulation of objects.
- Development of screen.

Photographical (electricity) screen development technique was used for the project and ten (10) minutes was used as exposure time for all the screens.

### **Development of screens from flora**

Flora is a general term assigned to a systematic set of descriptive of all the plants of a particular place or region. The categories under this include leaves, flowers, fruits and seeds.

**3.2.1 Leaves:** Leaves are described as the foliage part of a plant.

#### **Screen 1: Fern Leaf**

##### **Procedure:**

**Step 1:** Different sizes of fern leaves were plucked and flattened using heavy books on a metal plate to make them stable; since the leaves have interesting shapes and features, there was no need for manipulation (see Plate 3.1a)

**Step 2:** Lines (vertical and horizontal) were ruled on a sheet of white manila card using a ruler and black pen and this was used as a guide in organizing the leaves into a circular pattern. It also helped in arranging the leaves to fit within the screen.

**Step 3:** The screen was coated with sensitizing solution using the coating trough and dried with electric fan in the darkroom.

**Step 4:** The ruled manila card was placed under a transparent glass and the fern leaves were arranged on the transparent glass into a suitable repeat pattern (converging) based on the size of the screen (see Plate 3.1b).

**Step 5:** The glass together with the arranged leaves was placed on the developing table in the darkroom. The screen was carefully and properly placed on the leaves with help of the orange safe light and the screen was loaded with a sand-bag. This is to ensure that the screen is in firm contact with the design. The white bulbs were switched on for ten (10) minutes to develop the screen.



Plate 3.1a: Fern leaves



Plate 3.1b: The arranged leaves

**Step 6:** The screen was taken off the developing table and gently washed with foam in water to remove photo emulsion from the positive areas of the screen. The screen was dried and retouched ready for printing (see Plate 3.1c).



Plate 3.1c: The developed screen.

## Screen 2: Fern Leaf

The second screen is a different arrangement or composition of the fern leaves.

### Procedure:

**Step 1:** Six vertical and horizontal lines were ruled on a white manila card and these served as a guide for organizing the objects into a suitable repeat pattern.

**Step 2:** Both sides of the screen were coated with sensitizing solution and dried in the darkroom for three hours.

**Step 3:** The transparent glass was placed on the manila card and the leaves were organized into half drop repeat pattern (see Plate 3.2a). The leaves were arranged by placing the big ones at the foreground followed by medium and the small ones at the background. This is to convey the idea of recession.



Plate 3.2a: Organized fern leaves

**Step 4:** The glass together with the leaves was placed on the developing table in the darkroom. The screen was carefully and properly registered on the leaves. The white bulbs were switched on for ten (10) minutes to develop the screen.

**Step 5:** The light was switched off and the screen was taken off the developing table and gently washed with a piece of foam using cool water. The screen was then ready for printing (see Plate 3.2b).



Plate 3.2b: The developed screen.

### Screen 3: Pawpaw Leaf.

#### Procedure:

**Step 1:** Small sizes of pawpaw leaves were plucked on the day of developing the screen and this is to prevent them from withering (see Plate 3.3a)



Plate 3.3a: Pawpaw leaves

**Step 2:** Three horizontal lines were ruled on a transparent glass with black felt pen. This served as a guide for organizing the leaves into a preferred repeat pattern, in this case, full drop pattern.

**Step 3:** The screen was coated twice with the sensitizing solution and dried in the dark-room to prevent pre-mature development.

**Step 4:** The pawpaw leaves were carefully organized on the transparent glass using horizontal lines as a guide. The leaves were placed in opposing direction to each other (see Plate 3.3b).



Plate 3.3b: Pawpaw leaves arranged on glass

**Step 6:** The glass together with the leaves was carefully positioned on the developing table in the darkroom. The screen was carefully and properly placed on the leaves using the orange safe light. The white bulbs were switched on and timed for ten (10) minutes to develop the screen.

**Step 7:** The screen was taken off and washed gently to remove photo emulsion from the positive areas of the screen. The screen was dried and retouched ready for printing (see Plate 3.3c).

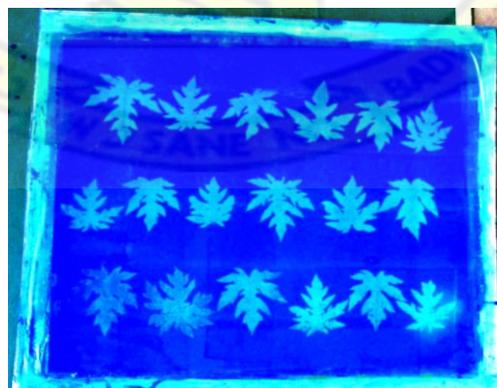


Plate 3.3c: Developed screen.

### 3.2.2 Leaf stalk

#### Screen 4: Cocoyam Leaf stalk.

##### Procedure:

**Step 1:** Three cocoyam leafstalks were cut off from the stem using a knife (see Plate 3.4a)



Plate3.4a: Cocoyam leafstalks

**Step 2:** The cocoyam leafstalks were marked into one (1) centimeter intervals using a thirty (30) centimeter rule. It was then slashed into pieces using a knife, each measuring one (1) centimeter (see Plate 3.4b)

**Step 3:** To ensure effective organization of the motifs, vertical and horizontal lines were ruled on white manila card to serve as a guide in organizing the objects into a suitable repeat pattern.

**Step 4:** Both front and back of the screen were coated with sensitizing solution and dried in the darkroom for three hours.



Plate 3.4b: Pieces of cocoyam leafstalk.

**Step 5:** The pieces of cocoyam leafstalks were organized on the transparent glass using the guide lines on the manila card into a diagonal pattern (see Plate 3.4c).



Plate 3.4c: Organized pieces of the leafstalk

**Step 6:** The glass together with the organized objects was carefully placed on the developing table in the darkroom. The screen was carefully and properly placed on the objects. The copying lights were switched on for ten (10) minutes to develop the screen.

**Step 7:** The screen was taken off the developing table and washed gently in water with a piece of foam to remove photo emulsion from the positive areas of the screen. The screen was ready for printing (see Plate 3.4d).



Plate 3.4d: Developed Screen.

### Screen 5: Cocoyam Leaf stalk.

Screen 5 is another arrangement of the cocoyam leaf stalk.

#### Procedure:

**Step 1:** Two diagonal lines were drawn on a white manila card, one from the left top corner to the bottom right corner and the other from the right top corner to the bottom left corner crossing at the centre.



Plate 3.5a: Organized pieces of the leaf stalk

**Step 2:** The screen was coated with sensitizing solution and dried in the darkroom.

**Step 3:** The ruled white manila card was placed under the glass. The pieces of cocoyam leafstalks were organized on the transparent glass using the guide lines on the manila card into a circular pattern (see Plate 3.5a).



Plate 3.5b: Developed screen.

**Step 6:** The glass together with the organized objects was carefully placed on the developing table in the darkroom. The screen was carefully and properly registered on the objects with the help of the orange safe light. The lights were switched on and timed for ten (10) minutes to develop the screen.

**Step 7:** The screen was taken off the developing table and washed gently using a piece of foam with cool water. The screen was dried and prepared ready for printing (see Plate 3.5b).

### 3.2.3 Flowers

#### Screen 6: Flamboyant Flower.

##### Procedure:

**Step 1:** Ten (10) flamboyant flowers were plucked.



Plate 3.6a: Flamboyant flower

**Step 2:** The petals and sepals were dismantled.

**Step 3:** Both vertical and horizontal lines were ruled on a piece of white manila card to serve as a guide for organizing the objects.

**Step 4:** The screen was coated with sensitizing solution and dried in a darkroom.

**Step 5:** The ruled manila card was placed under the transparent glass and using the lines as a guide, the petals and sepals of the flower were carefully organized into a half drop pattern (see Plate 3.6b).

**Step 6:** The glass together with the organized objects was carefully placed on the developing table in the darkroom. The screen was carefully and properly placed on the objects. The lights were switched on for ten (10) minutes to develop the screen.



Plate 3.6b: Organized petals and sepals

**Step 7:** The screen was taken off the developing table and washed gently to remove photo emulsion from the positive areas of the screen. The screen was dried and prepared for printing (see Plate 3.6c).



Plate 3.6c: Developed screen.

### **Screen 7: Plantain flower.**

#### **Procedure:**

**Step 1:** The plantain flower was plucked and dismantled into pieces (see Plate 3.7a & 3.7b).

**Step 2:** Two diagonal lines were drawn on a white manila card; one from the left top corner to the bottom right corner and the other from the right top corner to the bottom left corner crossing at the centre.

**Step 3:** The screen was coated with sensitizing solution using the coating trough and dried in a darkroom.



Plate 3.7a: Plantain flower.



Plate 3.7b: Pieces of the flower.

**Step 4:** The ruled manila card was placed under the transparent glass and using the lines as a guide the dismantled pieces of the flower were carefully organized into an ogee repeat pattern (see Plate 3.7c).



Plate 3.7c: Organized pieces of the flower

**Step 5:** The glass together with the organized objects was carefully taken and placed on the developing table in the darkroom. The screen was carefully and properly

placed on the objects. The copying lights were switched on for ten (10) minutes to develop the screen.

**Step 6:** The screen was taken off the developing table and washed gently with a piece of foam in water to remove photo emulsion from the areas of the screen which to allow penetration of printing. The screen was dried and retouched ready for printing (see Plate 3.7d).



Plate 3.7d: Developed screen.

**Screen 8:** Another arrangement of the plantain flower.

**Procedure:**

**Step 1:** Two diagonal lines were drawn on a white manila card, one from the left top corner to the bottom right corner and the other from the right top corner to the bottom left corner crossing at the centre.

**Step 2:** The screen was coated with sensitizing solution using the coating trough and dried in a darkroom.

**Step 3:** The ruled manila card was placed under the transparent glass and using the lines as a guide. The dismantled pieces of the flower were carefully organized into a circular shape based on full drop repeat pattern (see Plate 3.8a).

**Step 4:** The glass together with the organized objects were carefully taken and placed on the developing table in the darkroom. The screen was carefully and properly placed on the objects. The lights were switched on for ten (10) minutes to develop the screen.



Plate 3.8a: Arranged pieces of the flower

**Step 5:** The screen was taken off the developing table and washed gently to remove photo emulsion from the positive areas of the screen. The screen was dried and made ready for printing (see Plate 3.8b).



Plate 3.8b: Developed screen.

### 3.3.0 Development of screen from vegetables

Vegetable is considered as any of various plants, especially a herbaceous plant used for food.

### 3.3.1 Screen 9: Onion.

#### Procedure:

**Step 1:** Half bulb of onion was carefully slashed into pieces of about quarter of a centimeter using a knife (see Plate 3.9a & 3.9b).

**Step 2:** Vertical and horizontal lines were ruled on white manila card using a rule and black pen and this was to serve as a guide in organizing the objects.

**Step 3:** The screen was carefully coated with the sensitizing solution using the coating trough and dried in the darkroom.



Plate 3.9a: Half bulb onion



Plate 3.9b: Slashed pieces of onion

**Step 4:** The ruled manila card was placed under the transparent glass. The slashed pieces of the onion were carefully organized on the glass using the card as a guide into half drop pattern (see Plate 3.9c).



Plate 3.9c: Organized pieces of onion

**Step 5:** The glass together with the organized objects were carefully taken and placed on the developing table in the darkroom. The screen was carefully and properly placed on the objects. The white bulbs were switched on for ten (10) minutes to develop the screen.

**Step 6:** The screen was taken off the developing table and washed gently in water with a piece of foam. The screen was ready for printing (see Plate 3.9d).



Plate 3.9d: The developed screen

### 3.3.2 Melon seeds

#### Screen 10: Melon seeds

#### Procedure:

**Step 1:** A quantity (handful) of melon seeds was collected (see plate 3.10a).



Plate 3.10a: The melon seeds

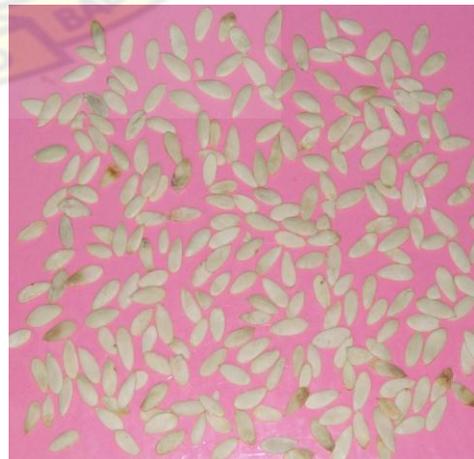


Plate 3.10b: The arranged Melon seed

**Step 2:** The melon seeds were spread randomly into all-over repeat pattern on a plain glass using the pink card with the measurement of 35cm × 35cm as a guide (see Plate 3.10b).

**Step 3:** The front and back of the screen were carefully coated with the sensitizing solution using the coating trough and dried in the darkroom.

**Step 4:** The glass together with the melon seeds was carefully taken and placed on the developing table in the darkroom. The coated screen was carefully registered on the melon seeds. The lights were switched on for the screen to develop for 10 minutes.

**Step 5:** The screen was taken off and washed gently to remove photo emulsion from the positive areas of the screen. The screen was dried and retouched ready for printing (see Plate 3.10c).



Plate 3.10c: The developed screen

### **3.4 Development of screen from cereals**

Cereal is any kind of grain used for food.

#### **3.4.1 Rice**

##### **Screen 11: Polished rice**

##### **Procedure:**

**Step 1:** A handful of milled rice was collected (see Plate 3.11a).

**Step 2:** The screen was carefully coated with the sensitizing solution using the coating trough and dried in the darkroom to prevent pre-mature development.



Plate 3.11a: A handful of milled rice

**Step 3:** The glass was placed on a pink manila card (35cm×35cm). The milled rice seeds were carefully scattered on the glass using the pink card as a guide into all-over repeat pattern (see Plate 3.11b).

**Step 4:** The glass together with the scattered rice was carefully taken and placed on the developing table in the darkroom. The screen was carefully and properly placed on the rice. The lights were switched on for ten (10) minutes to develop the screen.



Plate 3.11b: Scattered rice on glass

**Step 5:** The screen was taken off the developing table and washed gently to remove photo emulsion from the areas of the screen to be printed. The screen was dried and prepared for printing (see Plate 3.11c).

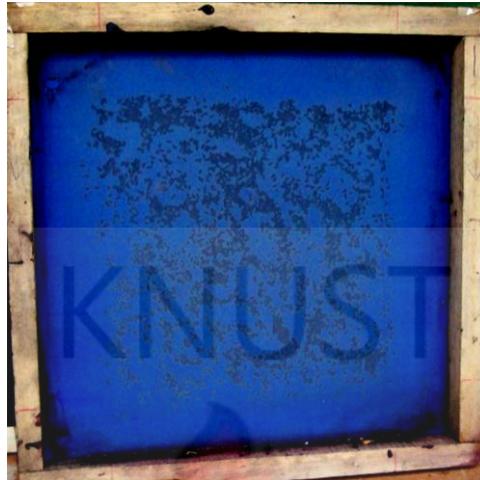


Plate 3.11c: Developed screen.

#### **Screen 12: Panicle of rice.**

##### **Procedure:**

**Step 1:** Several panicles of rice were collected (see Plate 3.12a).

**Step 2:** Vertical and horizontal lines were ruled on a transparent glass using a rule and black pen and this served as a guide in organizing the objects.



Plate 3.12a: Panicle of rice

**Step 3:** The screen was carefully coated with the sensitizing solution using the coating trough and dried with electric fan in the darkroom for three hours.

**Step 4:** The panicles of the rice were carefully organized on the glass using the vertical and the horizontal lines as a guide into an all-over repeat pattern (see Plate 3.12b).

**Step 5:** The glass together with the organized panicle of rice was carefully placed on the centre of the developing table in the darkroom. The screen was carefully and properly placed on the rice. The lights were switched on for ten (10) minutes to develop the screen.



Plate 3.12b: Arranged panicles of rice

**Step 6:** The screen was taken off the developing table and washed gently to remove photo emulsion from the positive areas of the screen. The screen was ready for printing (see Plate 3.12c).

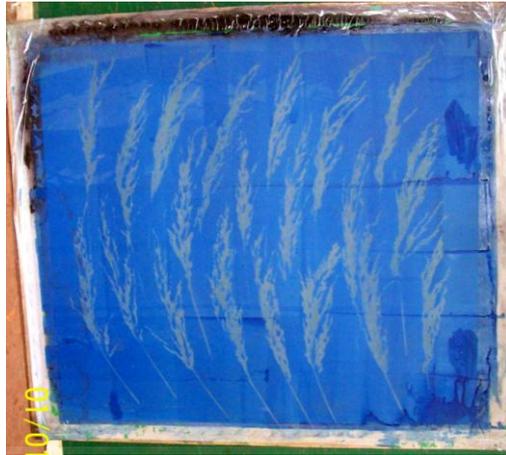


Plate 3.12c: Developed screen.

### Screen 13: Panicle of rice

#### Procedure:

**Step 1:** The panicles of the rice were dismantled (see plate 3.13a)



Plate 3.13a: Dismantled panicles of rice

**Step 2:** The screen was carefully coated with the sensitizing solution using the coating trough and dried in the darkroom.

**Step 3:** A plain white manila card cut to the size of the screen was placed under the transparent glass. The dismantled panicles of rice were carefully arranged on the glass using the card as a guide into all over repeat pattern (see Plate 3.13b).

**Step 4:** The glass together with the organized pieces of panicle of rice were carefully taken and placed on the developing table in the darkroom. The screen was carefully and properly registered on the rice. The copying lights were switched on for ten (10) minutes to enable the screen to develop.



Plate 3.13b: Organized panicles of rice

**Step 5:** The screen was taken off the developing table and washed gently to remove photo emulsion from the undeveloped areas of the screen. The screen was dried and retouched ready for printing (see Plate 3.13c).



Plate 3.13c: Developed screen.

### **3.5.0 Development of screens from fishes**

#### **3.5.1 Screen 14: Fishtail**

##### **Procedure:**

**Step 1:** Several fresh fish' tails were cut off and dried (see Plate 3.14a).

**Step 2:** Both vertical and horizontal lines were ruled on white manila card using a rule and black pen and this served as a guide in organizing the objects.

**Step 3:** Both sides of the screen were carefully coated with the sensitizing solution using the coating trough and dried in the darkroom.



Plate 3.14a: Fishtails

**Step 4:** The ruled manila card was placed under the transparent glass. The fishtails were carefully organized on the glass using the card as a guide into an all over repeat pattern (see Plate 3.14b).

**Step 5:** The glass together with the organized fishtails were carefully taken and placed on the developing table in the darkroom. The screen was carefully and properly placed on the fishtails. The white bulbs were switched on for ten (10) minutes to develop the screen.



Plate 3.14b: Organized fishtails

**Step 6:** The screen was taken off the developing table and washed gently with cool water to remove photo emulsion from the positive areas of the screen. The screen was dried and made ready for printing (see Plate 3.14c).



Plate 3.14c: Developed screen

### **3.6.0 Development of screens from inanimate objects**

#### **3.6.1 Screen 15: Plastic pegs.**

##### **Procedure:**

**Step 1:** Thirty plastic pegs were used for the project (see Plate3.15a).



Plate 3.15a: Plastic pegs.

**Step 2:** Two diagonal lines were drawn on a white manila card, one from the left top corner to the bottom right corner and the other from the right top corner to the bottom left corner crossing at the centre.

**Step 3:** The screen was carefully coated with the sensitizing solution and dried with electric fan in the darkroom.

**Step 4:** The ruled manila card was placed under the transparent glass. The plastic pegs were carefully organized on the glass using the card as a guide into half drop repeat pattern (see Plate 3.15b).



Plate 3.15b: Arranged plastic pegs.

**Step 5:** The glass together with the organized plastic pegs were carefully placed on the developing table in the darkroom with help of the orange safe light. The screen was carefully and properly positioned on the plastic pegs. The copying lights were switched on for ten (10) minutes for the screen to develop.

**Step 6:** The screen was taken off the developing table and washed gently with water to remove photo emulsion from the positive areas of the screen. The screen was dried and retouched, ready for printing (see Plate 3.15c).



Plate 3.15c: The developed screen.

### 3.6.2 Razor blades

#### Screen 16: Razor blade.

##### Procedure:

**Step 1:** Fifty (50) razor blades were obtained and used for the project (see Plate 3.16a).



Plate 3.16a: Used razor blades.

**Step 2:** Both vertical and horizontal lines were ruled on white manila card using a rule and black pen and this served as a guide in organizing the objects.

**Step 3:** The screen was carefully coated with the sensitizing solution using the coating trough and dried in the darkroom.

**Step 4:** The transparent glass was placed on the ruled manila card (the size of the screen). The razor blades were carefully organized on the glass using the card as a guide into half drop repeat pattern (see Plate 3.16b).

**Step 5:** The glass together with the organized razor blades was carefully placed on the developing table in the darkroom. The screen was carefully and properly registered on the razor blades. The white bulbs were switched on for ten (10) minutes to develop the screen.



Plate 3.16b: Organized razor blades

**Step 6:** The screen was taken off the developing table and washed gently using water and foam to remove photo emulsion from the positive areas of the screen. The screen was ready for printing (see Plate 3.16c).

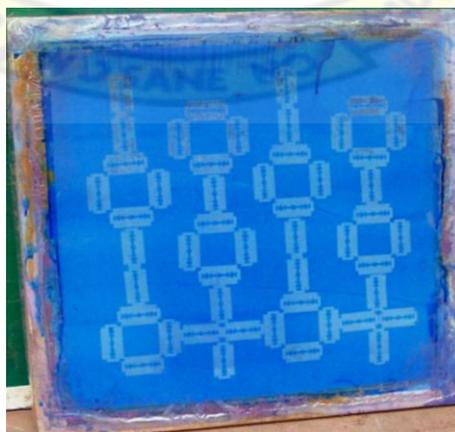


Plate 3.16c: The developed screen

### 3.6.3 Cotton swabs

#### Screen 17: Cotton swabs

##### Procedure:

**Step 1:** One packet of cotton swabs was bought (see Plate 3.17a).

**Step 2:** Both vertical and horizontal lines were ruled on white manila card using a rule and black pen and this served as a guide in organizing the objects.

**Step 3:** The screen was carefully coated twice with the sensitizing solution using the coating trough and dried in the darkroom for three hours.



Plate 3.17a: Packet of cotton swabs.

**Step 4:** The ruled manila card was placed under the transparent glass. The cotton swabs were carefully organized on the glass using the card as a guide into half drop repeat pattern (see Plate 3.17b).



Plate 3.17b: Organized cotton swabs

**Step 5:** The glass together with the organized cotton swabs was carefully taken and placed on the developing table in the darkroom. The screen was carefully and properly placed on the organized cotton swabs. The copying lights were switched on for ten (10) minutes to develop the screen.

**Step 6:** The screen was taken off the developing table and washed gently to remove photo emulsion from areas of the screen that will be printed. The screen was dried and it was ready for printing (see Plate 3.17c).

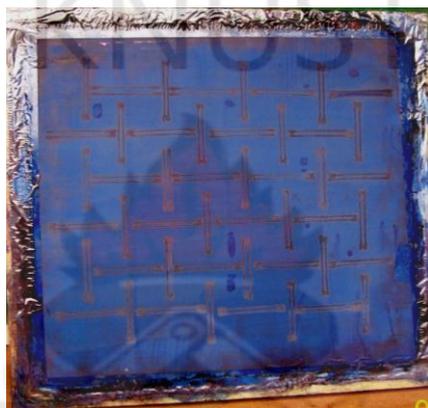


Plate 3.17c: The developed screen.

### 3.6.4 Wire mesh

#### Screen 18: Wire mesh.

#### Procedure:

**Step 1:** A wire mesh was picked from a mechanical workshop (see Plate 3.18a).



Plate 3.18a: Wire mesh.

**Step 2:** The screen was properly coated with the sensitizing solution using the coating trough and dried in the darkroom.

**Step 3:** The wire mesh was placed on the developing table in the darkroom. The screen was carefully placed and position on the wire mesh. The lights were switched on for ten (10) minutes to develop the screen.

**Step 4:** The screen was taken off the developing table and washed gently to remove undeveloped photo emulsion from the screen. The screen was dried and retouched it was ready for printing (see Plate 3.18b).



Plate 3.18b: The developed screen.

### **3.7 Printing of the sample fabrics**

The screens were first sorted; some were selected for the main motifs and others for textures. They were then printed individually using one colour and later, two or three screens were printed together on the same fabric with different colours.

**3.7.1 Sample fabric 1:** The first sample fabric was printed using the screen one (ferns).

#### **Procedure:**

**Step 1:** The calico was dyed cream using vat dye to serve as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were done.

**Step 3:** The screen was registered on the fabric and black printing paste was poured into the dye-well of the screen. The printing paste was pulled across the screen twice with a uniform pressure using the squeegee. The printing was done in an alternative order. The fabric was then dried and ironed at the back to fix the dye molecules (see Plate 3.19).



Plate 3.19: Sample fabric one

### 3.7.2 Sample fabric 2:

The second sample fabric was printed with second screen (ferns).

#### Procedure:

**Step 1:** The calico was dyed into light pink to serve as the background colour.

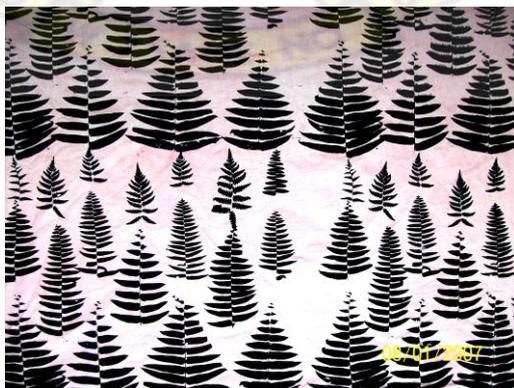


Plate 3.20: Sample fabric two

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats onto the fabric were carried out.

**Step 3:** The screen was registered on the fabric and printing paste (dark green) was poured into the reservoir of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was dried in the sun and then ironed to fix the dye molecules (see Plate 3.20).

### 3.7.3 Sample fabric 3:

The third sample fabric was printed with the third screen (pawpaw leaves).

#### Procedure:

**Step 1:** The calico was dyed with orange vat dye to serve as the background colour.

**Step 2:** The fabric was stretched on the printing table with pins and the repeats were marked out on the fabric.

**Step 3:** The screen was registered on the fabric and printing paste (green) was poured into the dye-well of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was dried and then ironed at the back with electric iron (see Plate 3.21).



Plate 3.21: Sample fabric three

### 3.7.4 Sample fabric 4:

The fourth sample fabric was printed with screen four (cocoyam leafstalk).

#### Procedure:

**Step 1:** The calico was dyed into lemon green which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were out.



Plate 22: Sample fabric four

**Step 3:** The screen was registered onto the fabric and black printing paste was poured into the reservoir of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was then dried and ironed at the back (see Plate 3.22).

**3.7.5 Sample fabric 5:** The fifth sample fabric was printed with screen five (cocoyam leafstalk).

#### Procedure:

**Step 1:** The calico was dyed with vat dye into light brown which served as the background colour.

**Step 2:** The fabric was stretched on the printing table with pins and marking out of the repeats on the fabric were done.

**Step 3:** The screen was registered on the fabric and dark violet printing paste was poured into the reservoir of the screen. The printing paste was pulled across the screen

with a uniform pressure thrice for (plate 3.23a) and twice for plate (3.23b) using the squeegee this made the motifs in (a) appeared better than (b). The printing was done in an alternative order. The fabric was then dried and ironed to fix the dye molecules (see Plate 3.23).



Plate 3.23a: Sample fabric five(a)

Plate 3.23b: Sample fabric five(b)

**3.7.6 Sample fabric 6:** The sixth sample fabric was printed with screen six (flower petals and sepals).

**Procedure:**

**Step 1:** The background of the sample fabric was dyed light blue.

**Step 2:** Stretching of the fabric on the printing table with pins and marking out of the repeats on the fabric with a chalk were done.

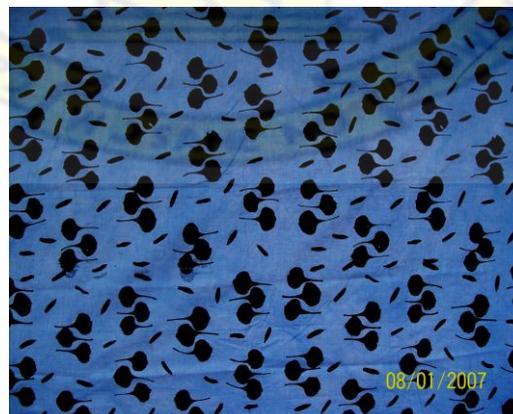


Plate 3.24 Sample fabric six

**Step 3:** The screen was registered on the fabric and printing paste (black) was poured into the reservoir of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was then dried and ironed at the back (see plate 3.24).

**3.7.7 Sample fabric 7:** The seventh sample fabric was printed with screen seven (plantain flower).

**Procedure:**

**Step 1:** The calico was dyed into light brown which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were carried out.

**Step 3:** The screen was registered on the fabric and green printing paste was poured into the reservoir of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was then dried and ironed at the back (see Plate 3.25).



Plate 3.25: Sample fabric seven

**3.7.8 Sample fabric 8:** The eighth sample fabric was printed with screen eight (plantain flower).

**Procedure:**

**Step 1:** The calico was dyed into brown which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were done.

**Step 3:** The screen was registered on the fabric and dark brown printing paste was poured into the dye well of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was then dried and ironed at the back to fix the dyes (see Plate 3.26).



Plate 3.26: Sample fabric eight

**3.7.9 Sample fabric 9:** The ninth sample fabric was printed with screen nine (onion).

**Procedure:**

**Step 1:** The calico was dyed into brown which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were carried out.

**Step 3:** The screen was registered on the fabric and dark violet printing paste was poured into the reservoir of the screen. The printing paste was pulled across the screen

with a uniform pressure twice using the squeegee this to ensure better penetration of the printing paste into the fabric. The printing was done in an alternative order. The fabric was dried and ironed at the back to fix the dye molecules (see Plate 3.27).



Plate 3.27: Sample fabric nine

**3.7.10 Sample fabric 10:** The tenth sample fabric was printed with screen ten (melon seed).

**Procedure:**

**Step 1:** The calico was dyed into brown which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were done.

**Step 3:** The screen was registered on the fabric and green printing paste was poured into the dye well of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was then dried and ironed at the back (see Plate 3.28).



Plate 3.28: Sample fabric ten

**3.7.11 Sample fabric 11:** The eleventh sample fabric was printed with screen eleven (milled rice).

**Procedure:**

**Step 1:** The calico was dyed into brown which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were carried out.

**Step 3:** The screen was registered on the fabric and black printing paste was poured into the reservoir of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was dried and then ironed at the back to fix the dyes (see Plate 3.29).



Plate 3.29: Sample fabric eleven

**3.7.12 Sample fabric 12:** The twelfth sample fabric was printed with screen twelve (panicle rice).

**Procedure:**

**Step 1:** The calico was dyed into orange which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were done.

**Step 3:** The screen was registered on the fabric and coffee brown printing paste was poured into the dye well of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was then dried and ironed at the back (see Plate 3.30).



Plate 3.30: Sample fabric twelve

**3.7.13 Sample fabric 13:** The thirteenth sample fabric was printed with screen thirteen (panicle rice).

**Procedure:**

**Step 1:** The calico was dyed into yellow which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were carried out.



Plate 3.31: Sample fabric thirteen

**Step 3:** The screen was registered on the fabric and printing paste was poured into the reservoir of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was then dried and ironed at the back to fix the dye molecules (see Plate 3.31).

**3.7.14 Sample fabric 14:** The fourteenth sample fabric was printed with screen fourteen (fishtail).

**Procedure:**

**Step 1:** The calico was dyed into golden yellow which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were done.

**Step 3:** The screen was registered on the fabric and printing paste was poured into the reservoir of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was then dried and ironed at the back (see Plate 3.32).



Plate 3.32: Sample fabric fourteen

**3.7.15 Sample fabric 15:** The fifteenth sample fabric was printed with screen fifteen (plastic pegs).

**Procedure:**

**Step 1:** The calico was dyed into blue which served as the background colour.

**Step 2:** The fabric was stretched on the printing table and the repeats were marked out on the fabric .

**Step 3:** The screen was registered on the fabric and printing paste was poured into the dye well of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was dried and then ironed (see Plate 3.33).



Plate 3.33: Sample fabric fifteen

**3.7.16 Sample fabric 16:** The sixteenth sample fabric was printed with screen sixteen (razor blades).

**Procedure:**

**Step 1:** The calico was dyed into blue which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were carried out.

**Step 3:** The screen was registered on the fabric and enough printing paste was poured into the dye well of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order. The fabric was then dried and ironed at the back (see Plate 3.34).



Plate 3.34: Sample fabric sixteen

**3.7.17 Sample fabric 17:** The seventeenth sample fabric was printed with screen seventeen (cotton swabs)

**Procedure:**

**Step 1:** The calico was dyed into blue which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were done.

**Step 3:** The screen was registered on the fabric and printing paste was poured into the dye well of the screen. The printing paste was pulled across the screen with a uniform

pressure twice using the squeegee. The printing was done in an alternative order. The fabric was then dried and ironed at the back to fix the dyes (see Plate 3.35).

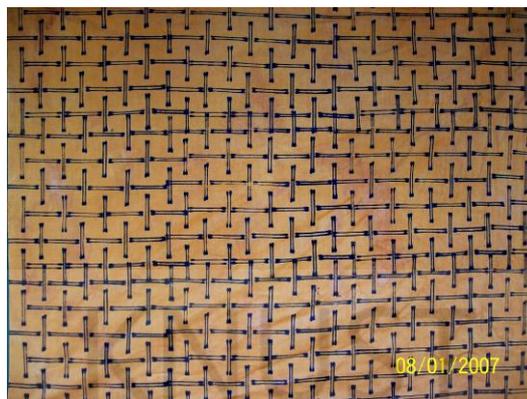


Plate 3.35: Sample fabric seventeen

**3.7.18 Sample fabric 18:** The eighteenth sample fabric was printed with screen eighteen (wire mesh).

**Procedure:**

**Step 1:** The calico was dyed into brown which served as the background colour.

**Step 2:** Stretching of the fabric on the printing table and marking out of the repeats on the fabric were carried out.

**Step 3:** The screen was registered on the fabric and printing paste was poured into the dye well of the screen. The printing paste was pulled across the screen with a uniform pressure twice using the squeegee. The printing was done in an alternative order, the fabric was removed, dried and ironed (see Plate 3.36).



Plate 3.36: Sample fabric eighteen

**3.7.19 Sample fabric 19:** The sample fabric was printed with screen number nineteen (wire mesh) which was printed first as texture for the background and screen number one (fern) as the main motif after printing. The fabric was dried and ironed to fix the dyes (see Plate 3.37).



Plate 3.37: Sample fabric nineteen

**3.7.20 Sample fabric 20:** The sample fabric was printed with two screens that is screen eighteen (wire mesh) and screen five (cocoyam leafstalk). The wire mesh screen was printed as the texture and the cocoyam leafstalk screen was printed as the main motif. The fabric was dried and ironed to fix the dyes (see Plate 3.38).



Plate 3.38: Sample fabric twenty

**3.7.21 Sample fabric 21:** This was printed with three screens; screen ten (melon seed), screen thirteen (panicle of rice) and screen fourteen (fishtail). The panicles of rice and melon seed screens were printed as the background texture and the fishtail screen as the main motif. The fabric was dried and ironed at the back to fix the dyes (see Plate 3.39).

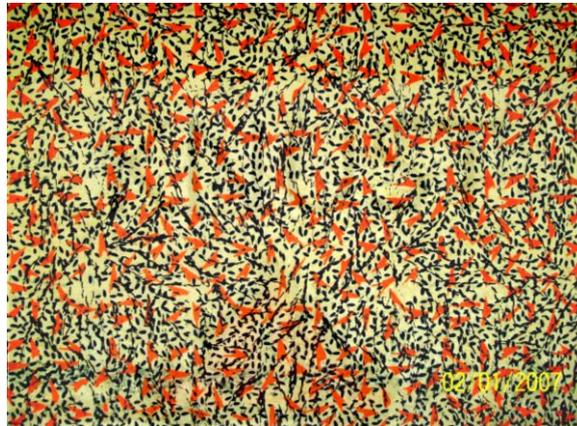


Plate 3.39: Sample fabric twenty one

**3.7.22 Sample fabric 22:** Two screens were used in printing the sample fabric. Screen nine (onion) was printed first; this print served as the background texture for the main motif screen eight (plantain flower). The fabric was dried and ironed to fix the dyes molecules to the fibres (see Plate 3.40).

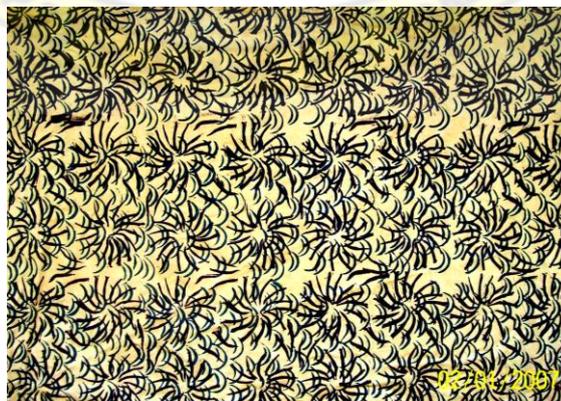


Plate 3.40: Sample fabric twenty two

**3.7.23 Sample fabric 23:** The fabric was printed with two screens; screen eleven (milled rice) and screen sixteen (razor blades). Screen eleven was printed first as the background texture for the main motif razor blade that is screen sixteen (see Plate 3.41).

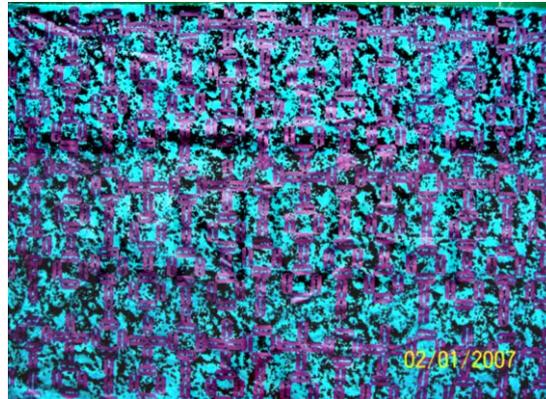


Plate 3.41: Sample fabric twenty three

**3.7.24 Sample fabric 24:** This sample fabric was printed with three screens. Screen twelve (panicle of rice) was printed as the background texture and screens five (cocoyam leafstalk) and seven (plantain flower) were printed alternatively as the main motifs. The fabric was dried and ironed at the back (see Plate 3.42).



Plate 3.42: Sample fabric twenty four

**3.7.25 Sample fabric 25:** The fabric was printed with screen eighteen (wire mesh) as the background texture and screen twelve (panicle rice) as the main motif which was

superimposed on the background. The fabric was dried and ironed to fix the dyes (see Plate 3.43).

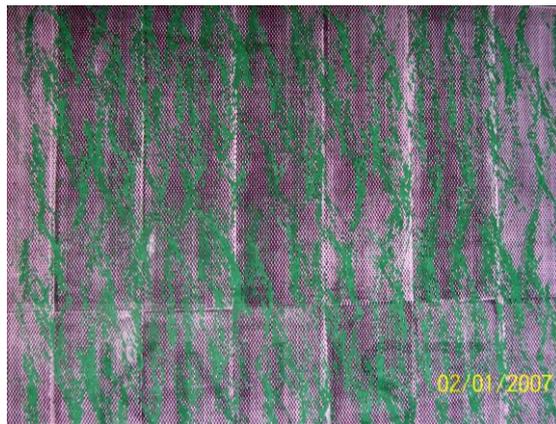


Plate 3.43: Sample fabric twenty five

**3.7.26 Sample fabric 26:** Sample fabric twenty six was printed with screens fifteen (plastic peg) and screen seventeen (cotton swabs). The cotton swab screen was printed first as the background texture and the plastic peg screen was printed as the main motif. The fabric was then dried and ironed at the back to fix the dyes (see Plate 3.44).

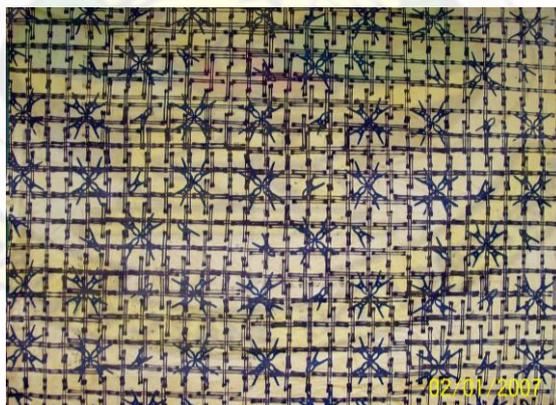


Plate 3.44: Sample fabric twenty six

**3.7.27 Sample fabric 27:** The fabric was printed with two screens. The first screen to be printed was screen seventeen (cotton swab) as the background texture. Screen six (flamboyant flower) was later printed as the main motif. The fabric was dried and ironed at the back (see Plate 3.45).

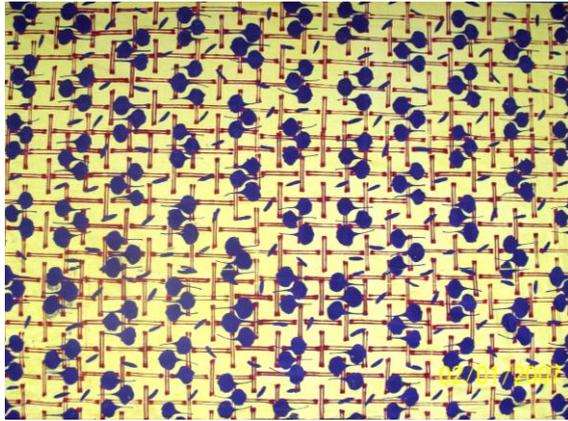


Plate 3.45: Sample fabric twenty seven

**3.7.28 Sample fabric 28:** This fabric was printed with screen seventeen (cotton swab) as the background texture and screen four (cocoyam leafstalk) as the main motif. The fabric was dried and ironed to fix the dyes molecules (see Plate 3.46).



Plate 3.46: Sample fabric twenty eight

**3.7.29 Sample fabric 29:** The fabric was printed with three screens. Screen eleven (milled rice) was printed as the background texture and screens three (pawpaw leaf) and screen seventeen (cotton swabs) were printed as the main motives. The fabric was then dried and ironed to fix the dyes molecules (see Plate 3.47).



Plate 3.47: Sample fabric twenty nine

**3.7.30 Sample fabric 30:** This fabric was printed with two screens namely screen eight (plantain flower) and screen fourteen (fishtail). The two screens were printed as the main motifs without a background texture. The fabric was dried and ironed (see Plate 3.48).



Plate 3.48: Sample fabric thirty

**3.7.31 Sample fabric 31:** The fabric was printed with screen ten (melon seed) as the background texture and screen sixteen (razor blade) as the main motif. The fabric was dried and then ironed at back to fix the dyes molecules (see Plate 3.49).

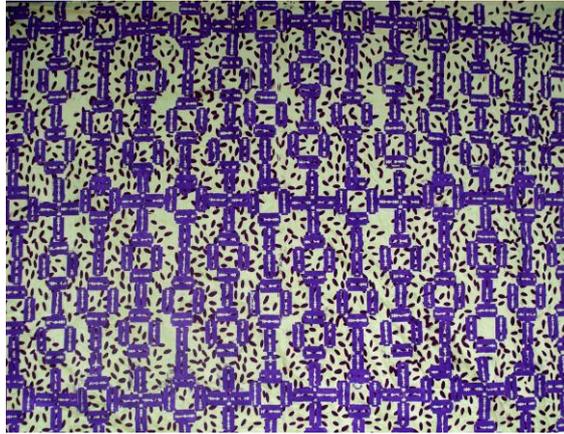


Plate 3.49: Sample fabric thirty one

**3.7.32 Sample fabric 32:** The sample fabric was printed using screens thirteen (panicle rice) as a background texture and screen two (fern) as the main motif. The fabric was then dried and ironed at the back to fix the dyes (see Plate 3.50).



Plate 3.50: Sample fabric thirty two

**3.7.33 Sample fabric 33:** This sample fabric was printed using screen eleven (milled rice) as the background texture and screen one (fern) as the main motif in a full drop repeat pattern. The fabric was dried and ironed to fix the dyes molecules (see Plate 3.51).



Plate 3.51: Sample fabric thirty three

**3.7.34 Sample fabric 34:** Two screens were used in printing the sample fabric. Screen ten (melon seed) was printed as the background texture and screen four (cocoyam leafstalk) was printed as the main motif. The fabric was dried and then ironed at the back to fix the dyes (see Plate 3.52).



Plate 3.52: Sample fabric thirty four

Textile designing demands a sense of creativity to organise or compose the elements of design to produce interesting designs. It is therefore evident that objects sourced from the environment have the potential of creating interesting designs or patterns if properly organized. The same or different objects can be used in creating a design if only their thickness is the same, since the objects are to have a firm contact with screen

during screen development. The scope designing is not limited, but it depends on the creative skills of the designer.

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## CHAPTER FOUR

### RESULTS AND APPRECIATION

#### Overview

This chapter discusses the results of the project. It also considers the aesthetics and social significance of the finished works. The project reveals the potential of ideas (shapes and patterns) that exist in the environment for generating interesting textile designs, if properly manipulated by the textile designers especially those in the second cycle institutions.

The dimensions 90cm×122cm is applicable to the sample fabrics printed.

#### 4.1 Appreciation of Project 1

The design in plate 4.1 is produced by using fresh ferns in developing a screen and the dimension is 90cm×122cm. The motifs are arranged in circular pattern with the tips of the ferns pointing to the centre which conveyed the idea of convergence. Eight of the ferns form a unit repeat, four big and four small ones.



**Plate 4.1: Finished fabric one**

The motifs are printed in black onto light brown background without textures in a full drop repeat pattern. The unit repeat of the design was printed with no repeat problem. The combination of the colours (light brown and black) produces a good harmony.

The fabric is suitable for mummy cloth and curtain fabric because of its elaborate motifs and full drop pattern layout.

#### **4.2 Appreciation of Projects 2 and 3**

##### **Project 2**

The sample fabric in plate 4.2 is another version of the fern. and The motifs are arranged by placing the bigger motifs at the foreground followed by the medium sizes at the middle and the small ones at the background. The tips of all the motifs are pointing to the same direction; this created an idea of depth or perspective in the fabric. The motifs are printed in dark green on light pink background without textures in a half drop pattern. The unit repeats of the design repeated perfectly and the colours (light pink and dark green) are in harmony with each other. The fabric is suitable for dresses and curtains.



**Plate 4.2: Finished fabric two**

##### **Project 3**

The fabric in plate 4.3 is produced by using pawpaw leaves. The motifs are arranged in an alternating upside-down pattern in horizontal lines. The fabric was printed with green on an orange background without textures in full drop pattern and there was no difficulty in repeating the units of the design. Though there are no textures on the

background, the colour harmony is good. The fabric is suitable for shirting, dresses and curtains.

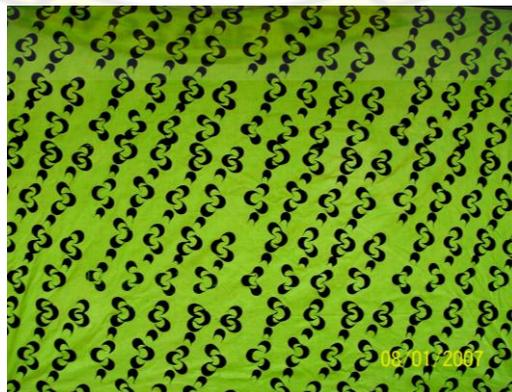


**Plate 4.3: Finished fabric three**

### **4.3 Appreciation of Projects 4 and 5**

#### **Project 4**

The motifs in the sample fabric (plate 4.4) are arranged in a diagonal pattern but the motif arrangement in the printed fabric depicts all over pattern. The fabric is printed with black on a plain lemon green background resulting in a good colour harmony. The unit repeats of the design did not join properly but since it occurred on a regular pattern, it does not affect the outcome of the final print. The fabric is suitable for shirting (African wear) and dresses. It can also be used as a cloth for young ladies because of the bright lemon-green background colour, as green means growth.



**Plate 4.4: Finished fabric four**

## Project 5

The sample fabrics (plate 4.5a and 4.5b) are another composition of the cocoyam leaf stalk. The motifs are organized into a semi-circle which served as a unit repeat of the design. The motifs are printed in dark violet onto a light brown background in half drop repeat pattern for plate 4.5a and the motifs are arranged in an alternating upside-down pattern in horizontal line for plate 4.5b



**Plate 4.5a: Finished fabric five**



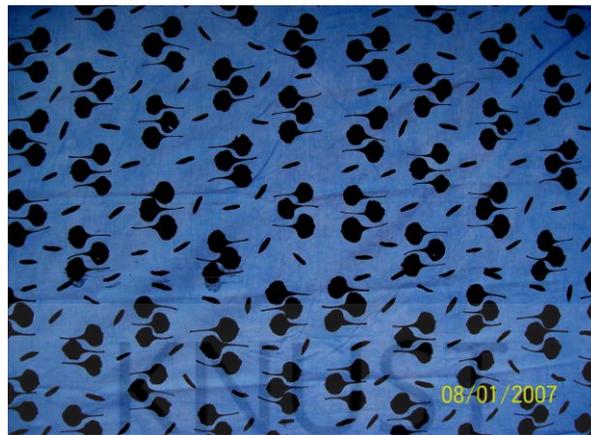
**Plate 4.5b: Finished fabric five**

The colours are in harmony with each other. Though there are no textures, there is a good blend between the motifs and the background. The unit design repeated perfectly as desired. The print is good for curtains and ladies African wear due to the motif arrangement and the elaborate nature of the motifs.

### 4. 4 Appreciation of Project 6

Plate 4.6 is a fabric which was produced using the petals and sepals of the flamboyant flower. The motifs are organized by placing three petals together to form a repeat pattern. Two of the petals at the sides are pointing to the same direction and the one in the middle, pointing to the opposite direction. The general arrangement of the motifs is in half drop pattern and sepals are randomly placed in between the motifs. The motifs are printed with black on a sea blue background and there is no difficulty in

repeating the units of the design. The print is suitable for shirting and dressing fabrics; it is also good for curtains and children's wear in view of the small size of the motifs.



**Plate 4.6: Finished fabric six**

#### **4.5 Appreciation of Project 7**

The fabric in plate 4.7 is produced by using the flower of a plantain as the motif. The unit repeat is organized based on a diamond shape but the arrangement in the printed fabric also depicts ogee pattern. The motifs are printed with green onto a plain light brown background in full drop pattern and this results in good colour harmony. The units of the design repeated perfectly. The print is suitable for curtain and shirting fabrics due to the motif arrangement.



**Plate 4.7: Finished fabric seven**

## 4.6 Appreciation of Projects 8 and 9

### Project 8

Plate 4.8 is another version of plate 4.7 measuring 90cm×122cm, the objects are arranged into a circular pattern. Four of such patterns formed a unit repeat of the design, with few of the objects randomly placed in between them. The motifs are printed in dark brown onto a background of dark yellow in full drop repeat pattern. There is no difficulty in repeating the unit repeats of the design and the colours (coffee brown and dark yellow) are in harmony to each other. The print is suitable for shirting and dressing fabrics and could be used for curtains and table cloths.



**Plate 4.8: Finished fabric eight**

### Project 9

The motif for the fabric (plate 4.9) were derived from onion. The unit repeat was organized based on half drop arrangement to produce scaly effect. The motifs are printed with dark violet on a light brown background. The unit repeats of the design repeated and joined perfectly. The fabric is suitable for mummy cloth because of the motif arrangement and could also be used for African wear and background texture for elaborate motifs.



**Plate 4.9: Finished fabric nine**

#### **4.7 Appreciation of Project 10**

The motif for the fabric (plate 4.10) is derived from melon seed but it depicts dots in the printed fabric. The motifs are distributed unevenly based on all over pattern and printed green on an orange background; it can also be used as a good background texture. The unit repeat did not join properly and there are empty spaces in the print which occurred at regular intervals. The colours are harmonious and the fabric is suitable for children's wear and dresses.



**Plate 4.10: Finished fabric ten**

## 4.8 Appreciation of Projects 11 and 12

### Project 11

The motif used in printing the fabric (plate 4.11) is milled rice and the motif was organized randomly based on all-over repeat pattern. The motifs are printed with black on a light brown background without textures. The effect produced by the print does not depict rice but resembles the skin of a snake. The unit repeat of the design joined well and the effect can be used as a background texture for other motifs. The colours (black and light brown) are in harmony with each other and the fabric is suitable for shirts and dresses.



**Plate 4.11: Finished fabric eleven**

### Project 12

The dimension of the fabric (plate 4.12) is 90cm×122cm and the motif used in printing it is panicle of rice. The motifs are arranged into-all over pattern and the tips of all the motifs are pointing to the vertical direction. The fabric is printed with dark brown onto a plain orange background and there is no problem in repeating the unit repeats of the design. The colours (orange and dark brown) are in harmony with each other and the fabric is good for dresses and shirts.



**Plate 4.12: Finished fabric twelve**

#### **4.9 Appreciation of Projects 13 and 14**

##### **Project 13**

The design in plate 4.13 is a version of a fabric in plate 4.12. The motifs are arranged based on all over repeat pattern with the motifs pointing to all directions so there is no definite unit repeat for the print. The motifs are printed in black on a yellow background with no texture and colours are in harmony with each other. There is no problem in repeating the unit repeats of the design and the print is good for shirts, dresses and a background texture.



**Plate 4.13: Finished fabric thirteen**

## **Project 14**

The fabric in plate 4.14 is produced using fishtail as the motifs. Three of the motifs are organized into triangular shape which served as the unit repeat of the design with single ones placed in between them. The motifs are printed with black on a golden yellow background without textures in all-over repeat pattern and the unit repeats of the design joined perfectly well. The print is suitable for dresses and shirts considering the size (small) of the motifs and can be used as a texture for elaborate motifs.



**Plate 4.14: Finished fabric fourteen**

### **4.10 Appreciation of Project 15**

The fabric (plate 4.15) is produced using plastic pegs as the motif. Four of the motifs are arranged with their heads meeting at a point and five of such arrangement with single ones in between them formed a unit repeat of the design. The fabric is printed with red on a light blue background based on full drop repeat pattern. The unit repeats of the design joined perfectly with no difficulty. The print is suitable for children's wear and curtain due to the brightness of the print.

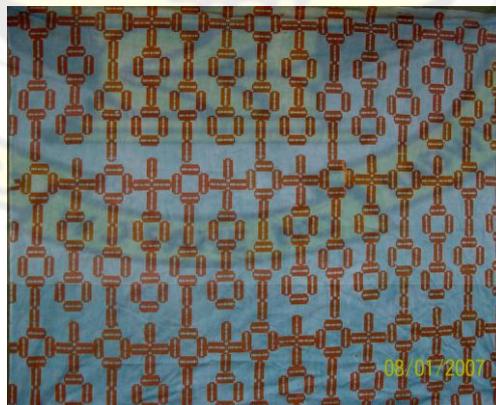


**Plate 4.15: Finished fabric fifteen**

#### **4.11 Appreciation of Projects 16 and 17**

##### **Project 16**

This fabric (plate 4.16) is produced using razor blades as the motifs. Four of the objects are arranged into square with another four joined to form a cross placed on top. Three of such arrangement formed a unit repeat; the objects are organized based on half drop repeat pattern. The motifs are printed with brown on light green background without textures and the unit repeats of the design repeated perfectly. The fabric is good for shirts and dresses.



**Plate 4.16: Finished fabric sixteen**

### **Project 17**

The design in plate 4.17 is produced using cotton swabs as the motifs. Two of the objects are placed horizontally with another placed vertically in between them. The motifs are organized into half drop repeat pattern and printed with blue-black on orange background with no textures but the colour harmony is good. The unit repeats of the design joined well. The fabric is suitable for dresses, shirt and curtains and can also serve as background texture for other motifs.

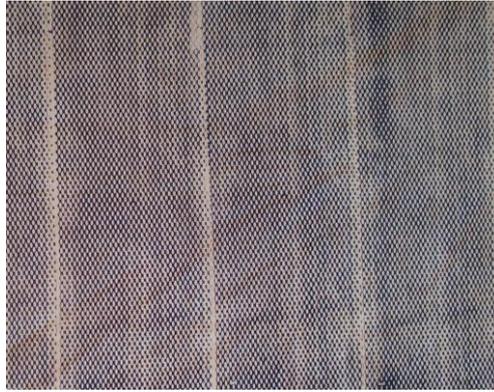


**Plate 4.17: Finished fabric seventeen**

### **4.12 Appreciation of Projects 18 and 19**

#### **Project 18**

The fabric (plate 4.18) with a dimension of 90cm×122cm is produced by using wire mesh as the motif. The fabric is printed with blue black on a cream background which gave a good colour harmony. The unit repeats of the print did not join properly and there are vertical empty spaces created in the print. The print is good for shirting and dress fabric; it could also serve as a background texture for other prints.



**Plate 4.18: Finished fabric eighteen**

### **Project 19**

The background texture (crisscross lines) of the fabric (plate 4.19) is printed with wine onto a cream background. The main motifs are printed with green in full drop repeat pattern. The unit repeat of the design did not fit properly which resulted in vertical empty spaces on the background. The colours of the fabric are in harmony with each other and it is suitable for mummy cloth in view of the fact that the background colour (wine) will not soil easily.



**Plate 4.19: Finished fabric nineteen**

### **4.13 Appreciation of Projects 20 and 21**

#### **Project 20**

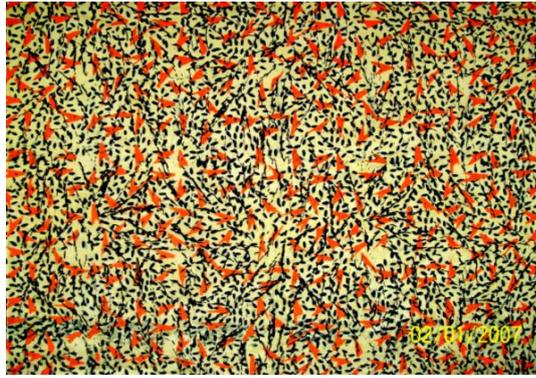
The dimension of the design in plate 4.20 is 90cm×122cm; the background texture (crisscross lines) is printed with dark violet on a light yellow. The main motif is printed in black based on full drop repeat pattern and the colours are in a good harmony with each other. The unit repeat design of the texture did not join perfectly and this gave an additional vertical line effect to the print. The fabric is good for mummy cloth and curtain due to the elaborate nature of the motif.



**Plate 4.20: Finished fabric twenty**

#### **Project 21**

The texture of the design in plate 4.21 is printed with black onto a yellow background in all-over repeat pattern. The main motif is printed in orange also in all-over repeat pattern. The unit repeats of design for both the textures and the main motif repeated perfectly and the colour harmony of the fabric is good. The fabric is suitable for mummy cloth as well as African wear for both men and women since the motifs are small and the colours are too bright.

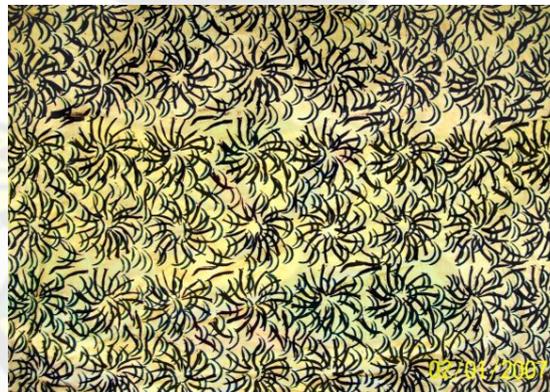


**Plate 4.21: Finished fabric twenty one**

#### **4.14 Appreciation of Projects 22 and 23**

##### **Project 22**

The background texture (scaly) of the sample fabric (plate 4.22) is printed with blue onto light yellow background in full drop pattern.



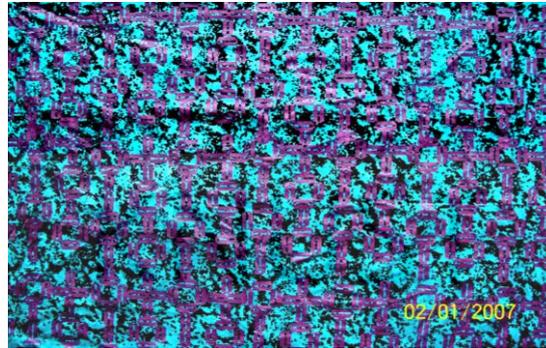
**Plate 4.22: Finished fabric twenty two**

The main motif is printed with dark brown. There is no problem of repeating the unit repeats of the design and the colour harmony of the fabric is good. The motifs are arranged in full drop pattern which give the feel of flow as a the fabric is suitable for dresses, shirts and curtains.

##### **Project 23**

The sample fabric (Plate 4.23) is printed with black textures onto a green background in all-over pattern. The main motif is printed with violet in half drop pattern, and the

unit repeats of the design repeated perfectly. The colour harmony of the fabric is satisfactory but the main motifs can not be seen clearly because the background colours are dark. The fabric is suitable for dresses and shirts because the motifs are printed in a all-over repeat pattern.



**Plate 4.23: Finished fabric twenty three**

#### **4.15 Appreciation of Projects 24 and 25**

##### **Project 24**

The texture of the sample fabric (plate 4.24) with the dimension 90cm×122cm is printed with black and blue onto light brown background. The main motifs are printed with the same colours (black and blue) in full drop pattern and it also shows ogee pattern. The unit repeats of the design repeated perfectly and the colour harmony is good. The fabric is suitable for curtains because the unit repeat of the design is bold.



**Plate 4.24: Finished fabric twenty four**

### **Project 25**

The sample fabric (plate 4.25) is printed with violet texture on a cream background and the main motif is printed with green in all-over pattern. The unit repeats of the textures did not join perfectly thereby creating vertical gaps on the background. The colour harmony of the fabric is good and the fabric is suitable for dresses due to small nature of the motifs.



**Plate 4.25: Finished fabric twenty five**

### **4.16 Appreciation of Projects 26 and 27**

#### **Project 26**

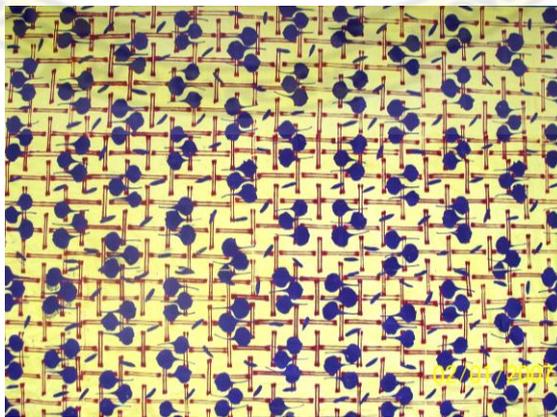
The sample fabric is printed with black textures on light yellow background in full drop and the main motifs (plastic pegs) are printed with dark blue in full drop pattern. The unit repeats of the design joined perfectly and the colours yellow, black and blue are in harmony with each other but the main motifs can not be seen clearly. The fabric could be used for dresses, shirts and curtains because the vertical and horizontal lines which give the feel of flow to the motifs in direction.



**Plate 4.26: Finished fabric twenty six**

### **Project 27**

Plate 4.27 is a sample fabric with the dimension of 90cm×122cm. The textures are printed with wine onto yellow background in all-over repeat pattern. Three petals grouped together with the two at the sides pointing to the same direction and the middle one pointing to the opposite direction form the unit repeat of the design. The main motifs (flower petals) are printed with blue based on half drop repeat pattern. The unit repeats of the design repeated perfectly and the colours yellow, wine and blue are in harmony with each other. The fabric is suitable for children's wear, dresses, shirts, curtains and table cloth because the colours are bright and the motifs are flower.



**Plate 4.27: Finished fabric twenty seven**

#### **4.17 Appreciation of Project 28**

The sample fabric in plate 4.28 is printed with two colours (violet and green) onto a pale blue background. The motif for the texture is cotton swab and it is printed with violet in half drop pattern. The main motif is pieces of cocoyam leafstalk. Three pieces are joined together to form the unit repeat of the design and they are arranged diagonally and printed with green. The unit repeats of the design joined very well and colours pale blue, violet and green are in good harmony. The fabric is suitable for dresses, shirts, children's wear and cloth for the youth since the colours bright.



**Plate 4.28: Finished fabric twenty eight**

#### **4.18 Appreciation of Projects 29 and 30**

##### **Project 29**

The sample fabric (plate 4.29) is printed with black and blue onto a golden yellow background. The texture is printed with black and it depicts dots of different shapes. The main motifs (pawpaw leaves) are arranged in an alternating upside-down pattern in horizontal lines in full drop repeat pattern and are printed with blue. Short vertical and horizontal lines are printed in between the leaves to bind them together. The unit repeats of the design joined correctly; the background colour (golden yellow) dominates in the fabric but the colours golden yellow, black and blue are in harmony

with each other. The fabric is good for dresses, children's wear and African wear for men because they are bright.



**Plate 4.29: Finished fabric twenty nine**

### **Project 30**

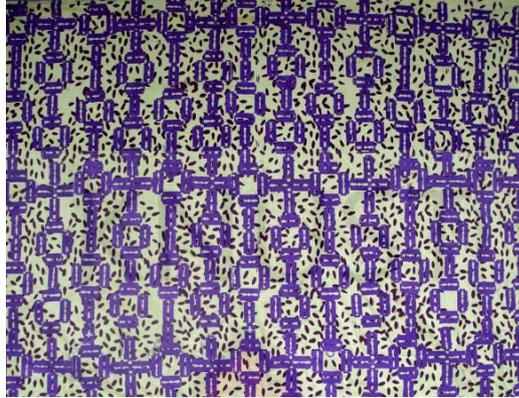
Plate 4.30 is a sample fabric with the dimension of 90cm×122cm which is printed with two colours (coffee brown and orange) onto pale green background without textures. The motifs are arranged into circular pattern. Four of such patterns formed a unit repeat of the design with few of the objects randomly placed in between them and printed with dark brown. The other motifs (fishtail) are superimposed on the first motifs with yellow. The motifs are well distributed, the fabric is suitable for mummy cloth, dresses and African wear for both men and women since the motifs are small and colours are dull.



**Plate 4.30: Finished fabric thirty**

#### **4.19 Appreciation of Project 31**

The sample fabric (plate 4.31) is measured 90cm×122cm. The texture is a shape of melon seed and it is printed with black based on all-over repeat pattern onto a light brown background but the texture portrays dots.



**Plate 4.31: Finished fabric thirty one**

The main motifs depict the shape of a razor blades which are printed with violet in half drop repeat pattern. Four of the objects are arranged into square with another four joined to form a cross placed on top, and three of such arrangements formed a unit repeat of the design. The main motifs are superimposed on the textures and as a result the shapes can not be seen clearly. The colours (light brown, black and violet) are in good harmony. The fabric is suitable for mummy cloth, dresses and shirts.

#### **4.20 Appreciation of Projects 32 and 33**

##### **Project 32**

Plate 4.32 is a sample fabric is printed with wine and green onto a brown background. The textures are made of line of varied sizes and lengths printed with wine. The main motifs (ferns) are printed with green in a half drop repeat pattern. In view of the different sizes and the arrangement of the motifs, there is an illusion of depth or recession in the fabric. The unit repeats of the design repeated perfectly and colours

brown, wine and green are in harmony with each other. The fabric is suitable for mummy cloth and curtains because main motifs are bold.



**Plate 4.32: Finished fabric thirty two**

### **Project 33**

The sample fabric (plate 4.33) with the measurement 90cm×122cm is printed with wine and blue onto an orange background. The texture is printed with wine and it depicts bubble effects of varied sizes. The main motifs (ferns) are organized into a circular pattern which forms a unit repeat of the design which is printed with blue based on full drop pattern. The main motifs are elaborate and the arrangement conveyed the idea of convergence. The unit repeats of the design repeated perfectly and the colours (orange, wine and blue) are in good harmony with each other. The fabric is suitable for mummy cloth, curtains and African wear for both men and women since the main motifs are bold.



**Plate 4.33: Finished fabric thirty three**

#### 4.21 Appreciation of Project 34

Plate 4.34 is the sample fabric with the measurement of 90cm×122cm. The fabric is printed with blue and dark brown onto a pale brown background. The texture depicts dots and is printed with blue. The unit repeats of the texture did not join properly creating empty spaces which occurred at regular intervals. The main motifs are printed with dark brown in a diagonal pattern. The colours (pale brown, blue and coffee brown) are in good harmony. The print is suitable for mummy cloth, dresses and shirts because the motifs are small.



**Plate 4.34: Finished fabric thirty four**

Designs generated from objects sourced from the environment can be used in printing fabrics for different end uses. The objects can be selected, manipulated and used as the main motif or as a texture depending on their sizes. Though the screens were developed as a unit, they were successfully printed together as a unit fabric with interesting features.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Summary

The traditional method of producing a screen is by drawing, painting, colour separation, coating the design with black ink and screen development. The use of objects for screen development has been given the needed attention. The main purpose of the study is to identify and describe natural and man-made shapes and patterns that exist in the environment. The selected ideas were manipulated and organized into suitable repeat patterns, which were used in producing sample fabrics. This is supported by a step-by-step guide to develop screens for better understanding and reference purposes.

The project began with the review of related literature on the topic. Libraries in various departments and the main library of the KNUST were visited. Other information was gathered from books of private collection from friends in the Textiles Section of KNUST. The internet was also used to source for information on the study. Data collected were mostly in the form of text and photographs. The researcher visited Kumasi central market and immediate surroundings in Agona Ashanti to sample a variety of natural and man-made ideas (objects) for the study.

The study aims at exposing students especially second cycle students to another version of screen development. The study gives a comprehensive illustrative description of the step-by-step procedures and techniques used in developing the screens. It also discusses the findings and appreciation of the results of the projects.

## **5.2 Conclusion**

The results of the study have revealed the possibilities of using ideas from the environment in developing screens. The success of the project is a motivation for textile students (designers) to explore this technique of screen development for printing interesting fabrics. The study highlights creative development and use of skills and understanding of motif arrangement. Screen printing involves critical observation and careful manipulation of motifs, tools and equipment used for the various processes. The objects (ideas) obtained from the environment could be employed in printing any type of fabrics for a specific end-use.

The study also revealed the following; interesting designs can be printed within a short period and this will save cost and time, wet objects can be used successfully in screen development, this method of screen development require a good sense of colour since designs are not painted, this method screen development is suitable for three dimensional objects and designing is no longer a preserve for those who are skillful in drawing. The researcher concludes that objects (ideas) sourced from the environment can be used straight away in developing screens without drawing them.

## **5.3 Recommendations**

The benefits of manipulating ideas (objects) obtained from the environment and using them in screen printing is of great importance to the amateur textile designers. The following recommendations have been suggested for consideration:

1. The project report should be published and copies made available in libraries to serve as research materials for textile designers to develop their skills in designing.

2. The technique of using ideas (objects) from the environment for screen printing should be introduced into the Textiles curriculum especially the second cycle institutions to foster creativity and interest in designing.
3. Textile designers should experiment with other ideas in the environment to bring varieties in designing and designs.
4. The project should form the base for other researchers to conduct further research on the topic.

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## REFERENCE

1. Adu-Akwaboa S. (1994). *Art for Schools and Colleges*. Kumasi. Samarg Publication, p. 156.
2. Allen C. C. (1982). *Beyond Basic Textiles*. New York. Fairchild Publication, (pp. 14,449)
3. Best, J. W. (1981): *Research in Education*. (Fourth edition), Prentice Hall, Inc., Englewood Cliffs, New Jersey.
4. Clarke W. (1977). *An Introduction to Textile Printing*. London. Butterworth & Co. Ltd, p. 34.
5. Gupta et al (1999). *Text Book of Clothing and Textiles*. New Delhi. Kalyani Publishers, p. 121.
6. Hall A. J. (1980). *The Standard Handbook of Textiles*. London. Butterworth and Co. Ltd, pp.283, 295 & 296.
7. Quartey, S. M and Awoyemi, M. C. (2002): *Research Methodology In Education*, K “N: A.B LTD.
8. Built-environment (2008). Retrieved October 15, 2008, from <http://www.answers.com/topic/built-environment-1>
9. Social-environment (2008). Retrieved November 25, 2008, from <http://www.answers.com/topic/social-environment>
10. Tortara and Markel (2005). *Dictionary of Textiles*. (7<sup>th</sup> Edition),. New York. Fairchild Publication, pp.445 & 498.
11. Tortara G.P. (1992). *Understanding Textiles*. New York. Macmillan Publishing Company, pp. 425 &431.
12. Pietro et al (2000). *Finishing*.. Italy. Acinni T Foundation, p.79.

13. Storey J. (1992). *Manual of Textile Printing*. New York. Thames and Hudson, Inc, pp. 11 & 110.
14. Storey J. (1992). *Textile Printing (Revised Edition)*,. London Thames and Hudson Ltd, p. 107.
15. Welford T. (1966). *The Textiles Student's Manual*. London. Sir Isaac Pitman & Sons Ltd, p. 207.
16. Screen-printing (2008). Retrieved December 25, 2008, Wikipedia, Free Encyclopaedia <http://en.wikipedia.org/wiki/Screen-printing>
17. Wynne A. (1997). *Textiles*. London. Macmillan Education Ltd, pp. 258 & 260.

