

RESEARCH PAPER

**MURAL PAINTING RETOUCHING CHALLENGES; A
GHANAIAN PROFESSIONAL PAINTER'S EXPERIENCE**

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ABSTRACT

Art works especially mural paintings, like all other scientific, historical and educational products of importance must enjoy a prolonged lifetime of aesthetic and functional benefit to society. Unfortunately, the life span of outdoor murals displayed on public buildings in Ghana have been shortened by the ravages of weather, public interaction with them as well as deterioration over years of neglect. Many of such works especially those embedded in the walls of buildings come under severe defacement in the hands of building contractors who either smear them with wall paints or rip them off completely as irrelevant things when such edifices come under extensive renovation. Those that survive the test of time sadly end up with cracks. There seem to be the general lack of professional conservators with the right acumen for addressing the conservation needs of the country. This paper therefore throws a searchlight on preservation and retouching challenges and employs the descriptive method to discuss the researcher's experience in retouching five mural paintings at the Great Hall of KNUST, which had deteriorated and lost their aesthetic values over years of neglect.

Keywords: *Mural Paintings; Defacement; Conservators; Preservation ; Retouching*

INTRODUCTION

Even though Ghana abounds in creative painters, the expertise for the conservation of deteriorating paintings is deficient among members of the painting fraternity. This is because academic programmes for training professional fine art painters in most art institutions do not focus on this area of specialisation. No wonder at Kwame Nkrumah University of Science and Technology (KNUST) in Ghana, many mural paintings decorating various buildings on the

campus have lost their aesthetic values. The murals have suffered various degrees of deterioration and defacement resulting from neglect and manhandling. Unfortunately, much effort has not been put in towards their resurrection. The fact is, experts who can advance this course are not motivated and inspired enough to deem this exercise as a practical research activity to pursue for recognition.

The exigent exercise of restoration requires

technical expertise and artistic sensitivity (Schmitt, 2011) to prolong the life of a deteriorated work of art whilst ensuring that its appearance remains as close as possible to its original condition (Corbett, 2010). It becomes extremely challenging when vital information about the original media used in executing the painting cannot be verified during the process of restoration. In fact, such vital information determines a restorer's course of action in restoration (Street, 2010), and assists in identifying the best solution (Schmitt, 2011). Carretti, *et al.* (2009), have proven that sometime laboratory analyses of the chemistry of a deteriorated painting medium becomes a necessity for settling on the appropriate materials and methods to adopt for its restoration.

Many restorers, who are not privileged to obtain relevant information on works they are to restore, rely on their ingenuity to appropriate a suitable medium and methods to resurrect the deteriorated painting. In Ghana, two painting media (acrylics and Oils) primarily dominate studio-painting practice. Because of this, amateur or self-styled restorers, without any proper analyses of the nature of the pigment base of a painting, resort to the use of either of the two, speculatively to restore a painting from its deteriorating state. Such speculative attempts sometimes result in undesirable and irreversible consequences (Jaxtheimer, 1967).

Art conservators often use the term 'Conservation' generically to embrace restoration, maintenance, repainting and preservation. It includes the actions taken and studies made to revive damaged or deteriorating works of art and maintain them under correct, monitored conditions (Drescher, 2003). Restoration under conservation refers to the removal of surface dirt and discoloured varnish layers, the treatment of the support (canvas/wood/paper), the replacement of missing portions imitating the original by the sympathetic use of similar pigments, or building up fragments of sculpted or moulded areas of an artwork (Blackwood n.d. a), and this process involves retouching of sur-

face blemishes.

The objective of this paper therefore, is first to provide fundamental lessons on destructive agencies and preservation strategies to the longevity of paintings, from the perspective of renowned painting restorers and conservators reported in existing literature. Secondly and most importantly, employ the descriptive research method as explained by Best (1981), to describe, analyze and record the researcher's experience in retouching five mural paintings at the Great Hall of KNUST, which had suffered extreme case of deterioration over years of neglect, to address the issue of challenges in the retouching of mural paintings. The study focused on the media and techniques employed in the retouching.

LONGEVITY OF MURAL PAINTINGS

Literature abounds with information showing that murals have been used in ancient times especially those of the ice age cave painting, the protodynastic Egyptian Frescoes and most significantly, during the medieval and renaissance era (Adams, 1999), to provide pictorial account of historical events bordering on religious and social issues, and to help the public understand the ideals of society. Most of these murals were executed in fresco as a means of keeping records of human activities and promote religion (Fleming 1970). This phenomenon has not changed, as contemporary artists of the digital age continue to project subjects of social significance through their murals. The dominant support of Fresco for murals has however seen some modifications in modern times as artists explore other surfaces like canvases, wooden panels, and concrete surfaces. Aluminium alloy is among the best supports that are used to check the tendency of warping (Jaxtheimer, 1967).

Interestingly most murals of the medieval and renaissance era, especially those displayed on edifices that are still standing in good state, have stood the test of time and survived over centuries of harsh environmental conditions.

This is because care and preservation of those murals have been a constant phenomenon that is dealt with through physical labour and patience.

Destructive agencies

Five major agencies of the environment pose a threat to the qualities and longevity of all art objects including **murals**. These are: Light, Temperature and Humidity, Bio-deterioration, Air pollution and Acid Rain. These destructive agencies are all natural causes. In addition to these is the human causative factor of mishandling, accidental falls and defacement.

Light is the major factor to consider, as far as displayed colour deterioration is concerned. Light harshly causes chemical changes in the material of the painting (Paint-pigment) resulting in the bleaching or fading out of the colour. Its damaging effect depends on spectral characteristic of light, intensity of light, duration of exposure to light and susceptibility of the painting to light (Thapa, 1984). Colour, as the most striking component of a painting, when it loses its visual effect ruins a painting's attractiveness to the viewing public thereby becoming obsolete and non-impacting.

Temperature controls relative humidity of the atmosphere. According to basic science, when atmospheric temperature increases, humidity decreases (Long, 2001) which brings about atmospheric dryness. This decrease in humidity causes painting supports (paper, canvas and wooden panels) to become brittle. On the other hand, humidity is a suitable condition that enables fungal growth in paint pigment especially water-based media. In excessive wetness, fibres of wooden panels swell and soften. This situation causes mural paintings on wooden panels to deteriorate very fast (Thapa, 1984). As these extreme weather conditions affect a painting, it develops cracks as the pigment and binding agent contract at different rates to the support. The cracks will harbour dirt, which will lead to discolouration (Blackwood, n.d. b).

Bio-deterioration describes biological agents mostly cellulose-fibre eaten insects e.g. book worm, silverfish, cockroaches, termite, booklice, mud wasp etc. which eat up stretchers, wooden panels, and watercolours and perforate canvas. Other microorganisms like fungi, algae, lichens, mosses, and bacteria are also responsible for great damage to paintings. They can stain art papers, disfigure paintings and even produce undesirable colour and odour (Thapa, 1984).

When dust particles settle on a painting surface, they cause abrasive effects. The dust becomes stuck to the surface in the mist of high atmospheric moisture content resulting in discolouring of the paint pigment (Thapa, 1984). Other air pollutants which could lead to discolouration of canvas and wooden panel paintings, include soot, household grease or oils and even tobacco smoke.

Acid Rain is another destructive agency that poses great threat to art works especially murals on buildings. This is normal rainfall which has been polluted as a result of higher than normal amounts of nitric and sulphuric acids in the atmosphere (Likens, 2001). Although these pollutants form a negligible quantity, they have a strong and damaging effect on paintings (Thapa, 1984).

Preservation Strategies

Major European cities housing historical monuments of murals have become sites of international tourist attraction yielding foreign exchange to the countries of origin. Michelangelo Buonarroti's famous 'Creation' which adorns the interior of the Sistine Chapel in Rome, and Raphael's School of Athens in the Vatican, all works of the Sixteenth Century are perfect examples. Mention can also be made of Leonardo da Vinci's 'Last Supper' mural painting of Santa Maria delle Grazie in Milan (Fleming, 1970). In Africa, the pyramids in Egypt have remained one of the most spectacular historical sites of the world for tourists of modern times to experience the beauty of well preserved mu-

ral paintings and offer them wealth of information about life in ancient Egypt. According to historical data, walls of Egyptian New Kingdom tombs and temples were covered with reliefs and paintings to provide the (*ka*) with familiar scenes from the earthly existence of the dead (Adams, 1999). Undoubtedly, such income yielding murals can be said to receive regular care and preservation treatment to help maintain them in the state that was left by the original artists.

Any painting in an environment of harsh atmospheric conditions will require regular preservation measures to sustain its original visual qualities and longevity. Preservation generally involves cleaning off both surface dirt and discoloured varnishes to reveal the painting as nearly as possible as the artist left it (Corbett, 2010). It has to do with the task of repairing, or even replacement of parts of the flaking mouldings on frames, and securing of flaking paint in order to nullify or at least reduce the rate of deterioration of the painting (Wales, 2007a). Preservation is also concerned with occasional drying of paintings especially those in excessive humid environments to check the growth of fungus. Jaxtheimer, (1967) suggests that application of alcohol several times after drying can kill the fungus growth and other microorganisms. Restorers however, have to cautiously use alcohol for this treatment in order not to weaken the binding agent of the paint especially with oil medium.

Good hanging practice and safe movement handling, careful cleaning to rid off dust and grime should be a regular norm in preserving the quality of a painting (Sutton, 2008). Even the most sensitive watercolour, and all kinds of paintings, will tolerate cleaning with bread crumbs (Jaxtheimer, 1967).

Most oil paintings are finished with varnish as a protective shield over the paint medium. The paint medium absorbs this varnish over a short span of time making them appear patchy as they age. As a preservative measure therefore,

re-varnishing usually within the first 5 years will be useful (Sutton, 2008). It is however worthy to note that no recent painting should be given this treatment if the binding agent of the paint is unknown (Jaxtheimer, 1967).

RETOUCHING CHALLENGES

Murals of significant importance must not be allowed to deteriorate beyond reclamation before difficult methods are applied to resurrect them. Challenges that restorers face in an attempt to resurrect such deteriorated paintings are overwhelming and often characterised by undesirable results especially when the business of restoration is not handled by a specialist in art restoration.

The Cambridge Arts Council in the city of Cambridge in Massachusetts is an example of an institution, which understands the essence of protecting public art. As part of its comprehensive approaches, it brings on board professional conservators who know the arts to monitor their condition from year to year. They commission artists for their inputs on materials, fabrication techniques, and preventative measures, as well as on such contextual issues as the work's susceptibility to vandalism, accidental damage, and environmental deterioration, all in the bid to ensure that murals are not only made permanent, but will make the responsibility of maintenance much lighter (Yngvason, 2003).

Before the real business of restoring a painting begins, the restorer must ensure that any damaged canvas of holes, cracks, rents or splits, or warped boards are put right as a matter of importance. A painting whose pigments have completely changed and lost their original state of brilliance because of chemical reaction, poses a lot of challenge to the restorer. Some colours decompose and change into other shades. Some darken beyond recognition. For example, chrome yellow can decompose into greenish black. There are instances where oil varnish turns yellowish and discolours the entire painting, calling for meticulous removal from the entire painting (Jaxtheimer, 1967).

The greatest condition that makes restoration extremely challenging is when upon all the extent of damage, there exist no information about the original artist, the medium of expression and the age of the painting. It is too easy for a painting to suffer complete destruction when there is no such guiding information to complement the knowledge and expertise of the restorer. It is true that daily professional dealing with matters of restoration can improve one's experience and ability to say at a glance what medium base was used for a particular painting, and even be able to test doubtful cases. However, in such an instance it is advisable to entrust such a work to a professional agency, which has specialized in art restoration (Yngvason, 2003).

The researcher, in this project was confronted with some critical challenges. Firstly he could not ascertain the original medium base of the paint because the binding agent had completely weakened such that the pigments could no longer adhere to the wall surface. There was also complete loss of colour brilliance. In simple language, the colours had faded and turned chalky. Unfortunately too, there was the lack of data about the specific media of the mural paintings. Again the whereabouts of the original artists to provide such vital information were also unknown. Secondly, two of the paintings were inadvertently smeared with drips of emulsion paint when the Great Hall came under renovation.

As a matter of principle, a chemical investigation of a deteriorated paint could establish its medium base to facilitate the retouching process. However, this could not be done because the researcher had only seven days to restore and hand over the murals to the university authorities. It was for this rationale that three postgraduate students studying under the tutelage of the researcher were engaged under his instruction and guidance to assist in completing the exercise on schedule. Under such a circumstance, it will take personal experience and professional acumen to adopt the most appro-

priate materials and methods to restore five deteriorated mural paintings which have never been retouched before. There was however, no incidence of cracks nor does flaking of old paint to warrant acquisition of appropriate materials for filling.

Generally, a procedure adopted to renovate and return an artefact to its original condition is determined by the degree of damage caused to it. For paintings, restoration can be done by retouching, if the damage is with regard to surface blemishes. Some damages might require removal of accumulated dirt on the surface of the painting. In a case of discolouration of surface varnish, it will call for meticulous removal of the layer of varnish from the entire painting. The researcher in this project adopted the *Retouching Method* to restore the five mural paintings to their present state at the Great Hall.

RETOUCHING MATERIALS

For this project, Artist Bristle Brushes, Polyvinyl Acetate (PVA) solution, distilled water and Acrylics constituted the principal materials used for the retouching project. In addition was a trigger sprayer for spraying binding solution, and sandpaper (P120) for removing excess emulsion paint.

Artist Bristle Brushes

There are varieties of artist brushes for executing paintings. The choice of a range is basically determined by the artist style of work and not by convention. For this project the flat and filbert range of bristle brushes were combined. The flat brush (Plate 1), was used because of its capability of loading and spreading paint quickly and evenly over any surface, and for obtaining special effects like soft touches even though it is a bristle brush. The fast drying character of acrylics necessitates a brush of this nature to facilitate even and fast spreading of paint. The Filbert (Plate 2), which is also a flat brush but differentiated by its dome-shaped brush tip was used for its capacity for performing detail work as well as good coverage.

**Plate 1: Flat brush****Polyvinyl Acetate (PVA)**

PVA (a synthetic resin polymer) is a very strong water base adhesive, which is a component of a widely used type of glue, referred to variously as wood glue, white glue, carpenter's glue, school glue or PVA glue (Wales, 2007b). Ghanaian studio painters use this as a binder for sizing and preparing the grounds for their paintings. It was used as a fixative to rebind the loose pigments to the surfaces as the first step in the retouching process.

Distilled Water

PVA requires water as the dilutive for thinning out its consistency and make it spread easily on surfaces. Ordinary tap water can be used to achieve the desired result but the presence of various ions in ordinary tap water could increase the deterioration of colours as the artwork ages. In this project however, the use of distilled water, purified to eliminate all manner of chemical impurities, became necessary to prevent possible undesirable reaction that could occur should the medium of paint used in the murals under retouching be any other than acrylic. Distilled water has the importance of improving the quality of products it is used to manufacture. It is known to prolong the life

**Plate 2: Filbert brush**

span of aquarium fish and products like lead acid batteries and many manufactured beverages (Butt, 2001; Mukherjee, n.d.). Distilled water has been the choice of the researcher, as a professional painter, in all his watercolour and acrylic paintings since 1995.

Acrylics

This was the painting medium used in retouching the colours of the murals. Acrylic is a water-based medium but with a unique character of becoming water resistant when dry. The amount of water used in diluting an acrylic paint affects its finish. Depending on how much the paint is diluted, it can finish as watercolour (more water) or an oil painting (less water).

Trigger Sprayer

This is a special spray bottle fitted with a trigger spraying pump that sprays or mist fluids when the trigger is pressed. The dispensing is powered by the user's effort in exerting continuous pressure on the trigger. The mechanism draws the liquid content up a siphon tube from the bottom of the bottle, and the liquid is forced out of the nozzle of the trigger pump. This is opposed to the spray can, which the liquid content is sealed under pressure and dispensed



Plate 3: Trigger Sprayer

when the container's valve is opened with a Press.

RETOUCHING PROCEDURE

The chemical composition of paints and pigments determines which cleaning methods conservators employ in treating paintings under restoration (Mok, 2005). In a situation, where the original paint medium of an old painting weakens and turns chalky and smudgy, the need to rebind the painting medium to the ground before any retouching of colours could take place becomes inevitable. The essence of rebinding is to prevent the old loose pigment from smudging and staining the retouching colours.

Treatment of the Ground

The first step in this retouching procedure was to rebind the original paint medium, which had weakened and become smudgy to the wall surface with a rebinding solution. Surfaces that had been smeared with wall emulsion paints (plates 4a and 5a), were not scraped off since the emulsion had set in the chalky paint. However, areas where the emulsion paint had thickened, rising slightly above the surface were

carefully levelled with smooth sandpaper. This treatment was done before the rebinding solution was applied.

Application of the binding solution was not done with a brush, but with the trigger sprayer (Plate 3). The bottle was filled with the solution and sprayed on to the surface. The application was carefully done to prevent the liquid from dripping down the surface. The entire surface was adequately dumped and allowed to dry completely before the actual retouching of the colours was executed.

Preparation of the Binding Solution:

The binding solution was composed of an undiluted PVA solution of factory made consistency and distilled water. This was formulated in the ratio of one part of PVA to ten parts of distilled water.

Retouching

After the rebinding solution had completely dried, the mural paintings were retouched with selected colours that were deemed close to the original effect. The researcher did not have the benefit of previously taking photographs of their original state to serve as a guide. The selection of the colours was presumptively done even though the researcher's technical expertise in colour composition instinctively played a prominent role.

Mixing of Colours

The mixing of the paints to obtain the desired colour shades was the most challenging aspect of the whole exercise of reclamation. To obtain a particular shade, a lot of experimentation of mixing various shades in varying ratios of colour had to be done by the trial and error approach to achieve positive result. This practice often causes amateurs to overuse paint when fishing out for specific shades of colour to retouch, thereby increasing the cost of painting.

Colours used for Retouching

Painters have a wide range of colours to select for their expression. Ability to obtain a specific

shade of colour and imitate to achieve a desired result is mastered through constant studio practice. In this project, the colours were selected based on the faded shades in the original murals as follows;

- (a) Titanium White (b) Cadmium Yellow
- (c) Cadmium Red (d) Ultramarine Blue
- (e) Yellow Ochre (f) Alizarin Crimson
- (g) Burnt Siena (h) Burnt Umber
- (i) Prussian Blue (j) Ivory Black

Technique of Retouching

Technique is the artist trademark, which is mastered over years of constant expression in painting (Jaxtheimer, 1967). The researcher's arduous task was to imitate the original effects of colour orchestration and brush strokes that were achieved by the original artist(s). This explains why the trigger sprayer was used to apply the binding solution to the pigmented mural surface instead of brush. The retouching was effectively executed using the brush applicator. The area of coverage determined the size and type of brush (Plates 1 and 2) to use whilst distilled water was used as the solvent for mixing and thinning the paint.

RESULTS AND DISCUSSION

Due to the presumptive approach in the treatment and retouching of the deteriorated paints, the expectation was that evidence of possible chemical reaction would be noticed within the period of two years after retouching. However, six years after retouching, the five paintings have not exposed any traces of such reactions. Certainly, six years could be challenged by critics as a short span to draw conclusion on the efficacy of a procedure for retouching mural paintings in a water-based medium. However, it is enough to present signs of early deterioration.

Three major activities significantly accounted for the result of this retouching project. The first had to do with the method of preparing the binding solution. The second was about the mode of correcting the over pigmentation of the

paint medium of the murals before retouching them. The third was the adoption of distilled water as a solvent for mixing the paint to retouch instead of ordinary tap water.

The binding solution of PVA factory made consistency and distilled water prepared in a ratio of one part of PVA to ten parts of distilled water and gently applied to dump the painting surface successfully fixed the weak and smudgy pigments to the support. After thoroughly drying, it was tested by first dragging a finger on the surface to check whether it would stain with the chalky pigment. The second test was to brush wet tip brush to check whether the pigment would dissolve. The result of these tests showed that the pigment had completely sealed with the painting ground. This technique may not be successful should the ratio of water far exceed that of the PVA than has been prescribed in this paper.

In essence painters must not discard their old works, which expose traces of pigmentation. A spray of binding solution as described in this paper will correct and restore the deterioration. The use of the trigger sprayer rather than brush to spray the binding solution to the pigmented surface is an additional skill that restorers should consider in resolving retouching challenges. The practice of using sprayers to apply paint is not a new phenomenon in the painting fraternity, but its adoption as a strategy for fixing pigmented paint medium to its parent ground is a valuable asset of knowledge to introduce. Because of this mode of application, all the original colour shades, even though were deteriorated to some extent, were retained. The style of the finish to the paintings was also not destroyed. It was therefore very easy to imitate the faded colours and enrich the effects.

The use of distilled water for mixing the paint to retouch the colours was a major contribution that is meant to help Ghanaian painters prolong the lifespan of mural paintings in water-based medium. The unique property of distilled water as has been revealed in this paper (Butt, 2001;

Mukherjee, n.d.), provides conclusive ground for endorsing as the most appropriate solvent for water-based painting media including acrylics. The researcher who is the restorer of the five murals, as a professional painter has explored distilled water as a solvent since 1995. Distilled water is not only safe for retouching works but a better alternative to ordinary tap water which is mostly used as a diluents for paintings that require the use of water as solvent.

Early discolouration or pigmentation of water-based paints as a sign of decomposition is an experience that no painter will like to face. In any situation, whether on canvas or wall surface, where the problem of pigmentation and chalkiness characterise a painting under retouching, the use of brush to rebind the pigments will further smudge the already weak colours and that will render it extremely difficult to detect the possible shade of colour to much in retouching. The use of a trigger sprayer rather than a brush to apply binding solution should be the best alternative to maintain the state of the deteriorated colours for imitation.

The walls of the Great Hall of KNUST display concrete evidence of the success of this project. Below are the pictorial representations of the state of the murals before and after retouching.



Plate 4b: Mural of a chief sitting in state (after retouching)

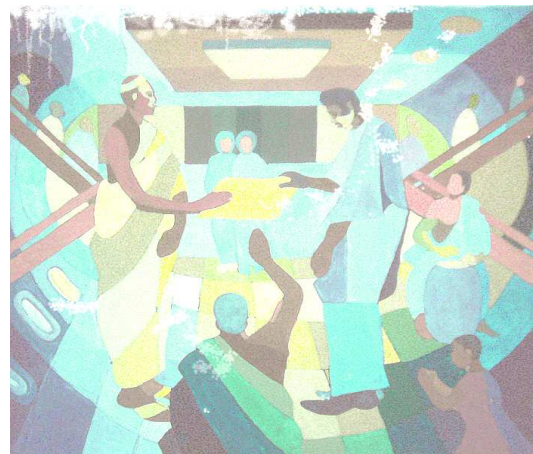


Plate 5a: Mural of graduation ceremony (mural smeared with emulsion paint)

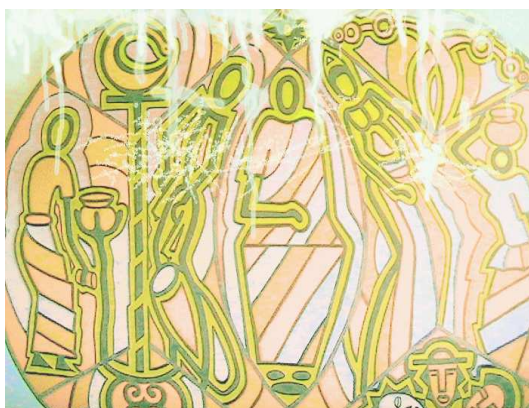


Plate 4a: Mural of a chief sitting in state (mural smeared with emulsion paint)



Plate 5b: Mural of graduation ceremony (after retouching)



Plate 6a: Mural of a Linguist (before retouching)



Plate 6b: Mural of a Linguist (after retouching)



Plate 7a: Mural of graduands (before retouching)



Plate 7b: Mural of graduands (after retouching)



Plate 8a: Mural of the Independence Arch (before retouching)



Plate 8b: Mural of the Independence Arch (after touching)

CONCLUSION

The researcher in this paper has demonstrated the possibility of retouching any mural painting irrespective of the degree of dilapidation to enhance its aesthetic, social and educational values in society. KNUST's great hall foyer is always a spectacle of beauty when very important ceremonies held there attract public dignitaries. The evidence of this is the five murals displayed on the various walls of the foyer.

This research has highlighted some preservation and restoration challenges that confront restorers. It has also presented the experience of the researcher in retouching five KNUST Great Hall mural paintings, essentially to provide the vital impetus for professional painters to take up the challenge of restoring the country's deteriorated murals of historical and educational significance to society. Some vital retouching strategies have therefore been expounded to provide technical knowhow for members who will be desirous of meeting the country's conservational needs in the area of mural paintings.

It is important to sensitise technocrats in Ghana to deem the art of restoration as an intellectual and a dexterous exercise that should engage the attention of professional experts for academic recognition. It will therefore augur well to introduce conservation strategies in the curriculum of study of the Bachelor of Fine Art painting programme at KNUST to prepare Painting Students to meet the art conservation needs of this country.

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