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# Assessment of “The Serious Learner” Outdoor Concrete Statue in TTU, Ghana: A Restoration Process (Before and After)

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## Authors' contributions

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

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## ABSTRACT

This paper assesses the restoration process (before and after) of "The Serious Learner", an outdoor concrete statue found at the forecourt of Oduro block, Takoradi Technical University (TTU)-Ghana. Direct observations and unstructured interviews under the qualitative research method were employed to elicit data from respondents such as art lecturers and students of the Sculpture Department, TTU. Data were analyzed using archival studies, descriptive and visual analysis tools with a studio-based process. The study revealed that "The Serious Learner" outdoor concrete statue formed an integral element of landscaping at the Oduro block, TTU. However, significant features such as the pedestal, body parts, lighting system and finishes of the outdoor statue have deteriorated due to weathering and had received no restoration since its erection. Repairs and management of artefacts in public space, not only in TTU, should be performed every two years to ensure their longevity and posterity as conservation and restoration method is significant in outdoor sculptures.

**Keywords:** Art; outdoor concrete statue; the serious learner; restoration; Takoradi Technical University.

## 1. INTRODUCTION

Art management can be defined as the process of understanding, interpreting and conserving artefacts to sustain them for posterity. Many artefacts are far more charming and have a significant character and a sense of history in their construction by artists using high-quality natural materials. In this sense, artefacts such as traditional sculptures cannot be left out when it comes to documentation [1]. Such artefacts are often more attractive in the landscape settings of institutional buildings such as schools, banks, museums and churches. Takoradi Technical University (TTU), an educational institution located in the Sekondi-Takoradi metropolis of the Western Region of Ghana, is a public tertiary education as part of the role of technical universities to increase access to training for middle and higher-level workforce in the country [2,3].

In 2000, the accession of Aidoo Taylor, a Rector of the then Takoradi Polytechnic (currently Takoradi Technical University), saw a transitional change in its education. While the institution continued to meet its transitional challenges of the current global knowledge on education, it did not compromise its cherished traditions and social values. During Aidoo Taylor's era, the institution has developed a deep-rooted history in hands-on programs. This history goes far back as 22 years ago. It was a source of its pride. One of such hands-on programs was Art, where sculpture as an aspect was a commercial art for visual art students. TTU now has more standing historical outdoor sculptures. There are over 30 outdoor sculptures comprised of reliefs and in-the-round. The historical outdoor sculptures include the bulls made of welded metals, live partners made of welded metals, vigilance made of welded metals, the Rider, the Cenotaph, the Serious Learner, and many others. Of great significance is the historical information they disseminate, the visual impressions they convey and the aesthetic value they add to the quality of the environment.

The outdoor concrete statue "The Serious Learner" is a concrete cement sculpture built in 2005 at the front of the Oduro Block as a student project by the 2002/2003-year batch led by Swanzy-Essien Eric, Atta-Mensah Dominic Nunoo, Norgbedzi Mordzifa, Anni Kelvin Maxwell. The concrete cement statue measures 198 cm x 87 cm x 85 cm, which is 6.5 feet high. The work was supervised by Edwin K. Bodjawah,

who was a lecturer from Sculpture Department, TTU. By understanding it as artistic work located in a collective space, it grants the spatial context of a social and aesthetic identity that is charged with commemorative, historical, and landscape significance. Although the statue has a cultural value, it is noted for its creative concepts and artistic accomplishments. The logic behind the artwork gives a dynamic element of interaction between the students, the University and its community. The outdoor statue forms an integral part of the landscape of TTU. It represents the institution's tradition and identity [1].

The production of "The Serious Learner" is hinged on the philosophy that the core mandate of the students in the University is to study hard to acquire knowledge, learn a skill and apply their creativity on the job market. By understanding this outdoor sculpture as an object "thrown into a space, with students and workers commune, through their infinite visual approaches" for ages, one can observe that the concrete cement statue has not received appropriate care since its inception. Thus neglecting the need to preserve and properly restore it, causing its poor state of conservation while it occupies a key location in a public area in the University which implies a downgraded view of TTU as an educational institution [4]. This paper argues that artworks occupying spaces within the University are supposed to be displayed like museum pieces. Public artworks humanize space by turning it into a place for the timeless dialogue of citizens with history [5]. Therefore, spaces occupying artworks within the institution become an open museum with no ceiling and no walls, allowing direct contact between the university community and artworks. This interaction makes artworks an integral part of the environment [6].

Kamal and Harun [7] perceived outdoor sculptures as "artworks built in the past which have high historical and artist values and require continuous care and protection to preserve their aesthetic, spiritual, social, political, and economic values". In other words, an outdoor sculpture is expected to have an extended life span, signifying its preservation for as long as possible to retain the outstanding aspects of its existence for the community. Furthermore, Feilden [8] also highlights that an outdoor sculpture is different from a contemporary building because its anticipation is to last indefinitely, and there be various reasons for society to preserve it for as long as possible. The concept of restoration (repair and management) started in the late 19th

century. It came to prominence when Powys [9] of the Society for the Protection of Ancient Buildings (SPAB) attended a conference in Athens in 1931, which resulted in a declaration to define and draw out a responsible philosophical approach to the repair and conserve an architectural monument, the Acropolis of Athens. This monument was called The Athens Charter [10].

The Athens Charter influenced the International Charter for Conservation and Restoration of Monuments and Sites at Venice in May 1964 [11]. The Venice Charter began with a series of definitions. Article 6 (under the Conservation Theory) stated that "the conservation of a monument implies preserving a setting which is not out of scale. Wherever the traditional setting exists, it must be kept. No new construction, demolition, or modification which would alter the relations of mass and colour must not be allowed". The Venice Charter or VC in 1964 was adopted by the newly formed International Council of Monuments and Sites (ICOMOS) as an important modern milestone for the conservation movement [12]. ICOMOS is an international Non-Governmental Organization (NGO) that promotes the study of the theory, methodology, and technology of conservation applied to monuments, historic areas, and sites. It stresses the importance of setting, respect for original fabric, precise documentation of any intervention, the significance of contributions from all periods to the Heritage Building's character, and the maintenance of a Heritage Building for a social purpose [13].

Production of concrete sculptures in Ghana has become very promising due to its strength in material and economic value. Some artists have relied heavily on cement for murals, using it as an artistic medium for sculpture, for concrete techniques and processes using cement [14,15]. After some years of producing such beautiful outdoor concrete sculptures, art maintenance by owners/management for some of these sculptures becomes redundant. In art maintenance, the repairs and management of outdoor concrete sculptures have received little attention from some scholars in Ghana on how conservation methods of materials used in concrete artworks and the restoration approach to these artworks need to be taken care of for their life span. These scholarly views on concrete and cement sculptures are very significant in the heritage value and protection for future generations, but not in the field of repairs and

management of the outdoor concrete sculptures. Documentation on outdoor concrete artworks with their artists is silent on conservation and restoration methods of sculptures in Ghana. In this sense, most outdoor concrete sculptures in the University have not seen any maintenance for the past 10 to 15 years. This situation is an affront to the 1964 and 1965 International Council of Monuments and Sites or ICOMOS resolutions. This resolution indicates that every outdoor sculpture needs a retouched after three years in a salty environment and four years in non-salty locations of its creation.

The assessment of "The Serious Learner" towards the restoration process and conservation practices for the next generation is expected to mitigate the defects in outdoor concrete statues every two years. However, in many cases, the lack of empirical evidence on restoration and conservation practices of outdoor concrete statues in Ghana, especially "The Serious Learner" in TTU, has been hampered by poor maintenance culture by the art department or the institution. Yet, beyond the concrete statue, several challenges to the outdoor concrete statue have to be promptly addressed, including curling of slow wear and concrete damages, cracks, discoloration, and scaling. This critical research gap needed a theoretical probe on the following research questions: what was the physical condition of "The Serious Learner" outdoor concrete statue, and how the outdoor concrete statue could be repaired and managed with restoration methods (before and after) to avoid further deterioration. In view of this resolution, "The Serious Learner" on TTU's main campus at the Oduro block needs utmost attention to be preserved and maintained for posterity to avoid collapse and deterioration. The paper, therefore, assesses the restoration process (Before and After) of "The Serious Learner", an outdoor concrete statue found at the forecourt of Oduro block, TTU-Ghana.

## 2. MATERIALS AND METHODS

The study adopted a qualitative research approach in discussing the physical conditions of "The Serious Learner" with opposite characteristics, trends and categories of conservation methods [16-18]. The study purposively selected 10 research participants consisting of 2 management staff, 3 art lecturers and 10 art students from TTU whose expertise were enough for attaining data saturation. Unstructured interviews using a face-to-face

technique were conducted to help achieve in-depth condition assessments regarding management problems and the extent of deterioration of the statue at the location [17,19]. Direct observations helped check the deterioration nature of the artwork and to ensure the awareness of the mind on how the outdoor statue looks, reflects and makes meaning in the site-specificity of TTU's main campus [20].

Data were analyzed using archival studies, descriptive and visual analysis tools with studio-based processes to help study the outdoor statue. Archival studies supported the study in finding historical truth by recovering the historical record of the outdoor statue erected in 2007. Archival documents for the study containing data on the outdoor statue comprised of year, materials used and art students who produced the work [21,22]. Data gathered on the production stage of the outdoor statue and its restoration stage using studio processes were captured and described in this study with descriptive and visual analysis tools [23]. The studio-based process helped the restoration stage of the outdoor statue. The studio processes were centered on the artistic techniques and procedures of repairing and managing (conserving) the sculpture [24,25]. Again, the documentation on the outdoor statue used in this study was supported with photographs to identify, describe and file all the data needed on the repairs and management (conservation) practices of "The Serious Learner" outdoor statue [26]. The study considered research ethics such as maintaining privacy, preserving confidentiality, and maintaining rights to anonymity and determination. Therefore, the research participants' consent, privacy, and risk factors were paramount to the study [27].

## 2.1 Tools and Materials

In line with the objective of this study, the tools and materials employed by the artists for the restoration of the outdoor statue were as follows; modelling spatulas made of metal, cutlery of spoons and knives, a plier, a scraper, a sieve mesh, three (3) head pans of sand, a bag of cement, two pieces of quarter ( $\frac{1}{4}$ ) iron rods, one flip of a wire brush, a flip chicken mesh, a rough and a smooth abrasive papers, one mini gallon of enamel paint, two mini gallons of based paints, two (2) brushes, three boxes of 60 by 60-floor tiles, three (3) bags of tile cement, a rounded bulb, chalk line, level, tape measure, grout float,

tile spacers, notched trowel, sponge, grout, thinnest, tile underlayment, grout release agent, tile, grout sealer, rubber hammer, cable wire, half (1/2)inch full of PVC pipes, trowel, head pan, two (2) pieces of more hammer, two (2) pieces of chisels, a wheel barrow, ten (10) bags of green grasses and two (2) trips of black soil from a tipper truck.

### 2.1.1 Technique

Direct modelling was employed the artists by retouching the concrete statue of "The Serious Learner". This technique allowed the art restorers to fill the cracks and the broken off portions of the outdoor statue. Concrete as material adaptation can be used for an artefact in context of utilitarian, ornamental, and monumental structures [28]. The concrete is a composition of sand, gravel, crushed stone, which settles along with lime or cement. It undergoes a reaction and hardens once adding water. Concrete with iron rods was used as reinforcement to structural components of the outdoor statue to add endurance to the artwork [29].

## 3. RESULTS AND DISCUSSION

### 3.1 Assessment on the Physical Condition of "The Serious Learner" Outdoor Concrete Statue

It was revealed from the responses and observations that the outdoor statue's physical condition has stood the test of time from about 17 years ago since its inception in 2005 to 2021. It was observed that the artwork has concrete degrades over time from its erection of the artwork in 2005 to 2021. Concrete degrades found on the outdoor statue were cracks, crazing, discoloration, scaling and curling of slow wear and damages [30].

One of the study participants shared that:

"Concrete problems or degrades vary but could include discolorations, shrinkage, scaling and the rest (Personal communication, 3/5/2021).

Concrete for artworks remains a popular material used in building structures in Ghana due to its versatility and sustainability [6]. The significance of concrete structures includes its architectural or engineering design, materials and construction techniques, or both guide decision-making on conservation [31].

**Table 1. Condition assessments on ‘The Serious Learner’ outdoor concrete statue**

<b>Name of Statue:</b> “The Serious Learner”		<b>Checklist No:</b> 1
<b>Location:</b> Right in front of Oduro Block, Takoradi Technical Takoradi University–Western Region, Ghana.		<b>Type of Sculpture:</b> Outdoor Concrete Statue
<b>Areas Assessed:</b> 1. Open Joint 2. Erosion 3. Cracks 4. Spalling 5. Grime, Organic, Growth, and Black Crust. 6. Structural System Flaws 7. Materials 8. Methods 9. Human Activities 10. Animal 11. Environment 12. Benefits		<b>Year produced:</b> 2005
		<b>Owner/supervisor:</b> Edwin K. Bodjawah
		<b>Date inspected:</b> 2 <sup>nd</sup> May, 2021
<b>S/No./Areas</b>	<b>Description</b>	<b>Problem causes</b>
Open Joints	Loose, broken mortar	Result of poor mortar bond, sculpture movement, ageing and water intrusion
Erosion	Worn Edges or Surfaces	Natural wearing away of the concrete through weathering and chemical degradation
Cracking	Narrow, irregular fissures in Movement within the sculpture from the concrete surface	expansion, contraction, and settlement longer the wider cracks are evidence of structural flaws
Spalling	Fracture and loss of surface lamination	Caused by trapped moisture or lamination of crystallized salts, corrosion of embedded steel or iron, freeze-thaw cycles or joint mortars that do not allow for natural expansion and contraction.
Grime, Organic, Growth, Black Crust	Dark patches, stains, discoloration	Accumulation of waterborne and airborne dirt and pollutants or lichen and algae. Some lichen secretes organic acids that eat away at the concrete
Structural System Flaws	Surface evidence of these hidden problems may include cracking and displaced reinforced pieces	Causes include improper design or installation, inappropriate mortars and insufficient or incorrect anchoring systems.
Method of Production	Direct modelling	Corrosion of reinforcing steel in concrete results in an expansion that creates tensile stresses in the concrete statue, which eventually causes cracking, delamination, and spalling
Material Used	Cement, Sand, Stones, Water (H <sub>2</sub> O), Iron rods, Wire mesh	Broken-off concrete portions
Human activities	Vandalism of statue by sitting on the statue for relaxation	Concrete scaling causes fading, flaking and peeling of paint on the Statue
Animals	Bird’s dropping,	Discoloration of the sculpture
Environment	Humidity, Acid Rain, Dust, Salt	Concrete scaling causing fading, flaking and peeling of paint on the Statue.
Benefits of the Statue	Beautification, Preservation of heritage, Socio-economic, Political, Cultural significance	Loss of benefits

Again, it was revealed that the site-specificity of the outdoor concrete statue at TTU's main campus is located at the Effiakuma New site. TTU's main campus is close to New Takoradi, a town in the Western Region of Ghana where it shares a boundary with the sea (Atlantic Ocean). The physical conditions of the outdoor statue have been challenged due to the saline weathering condition of the sea and its location.

The outdoor concrete statue was exposed to many environmental factors depending upon its geographic or site-specificity.

One of the art lecturers mentioned that:

“Other concrete problems and threats were acid rain and fluctuations in temperature and relative humidity. The excessive rain and moisture

caused the mould growth and dirt on the outdoor concrete statue” (Personal communication, 11/5/2021).

Determining the causes of deterioration is also central to the development of a conservation and repair plan for heritage [32,33]. The condition assessment began with a close-up investigation of modes of deterioration shown in Table 1. Again, some non-destructive testing methods were carried out to check its porosity. For instance, the artist used a handheld hammer to knock the artwork to feel its porosity. This testing led to identifying areas of severe delamination. This approach is in line with ICCROM (1986), stating that any restoration carried out on a heritage artwork must at all costs have a condition assessment done to identify the real cause of the problem.

### **3.2 Restoration Process (Before and After) of “The Serious Learner” Outdoor Concrete Statue**

Studio-based procedures formed a systematic approach to repairing the sculpture. The study found that five (5) procedures were employed for the restoration method. The procedures were surface preparation on the sculpture (The Serious Learner), selection of materials for the repair of the sculpture, finishing with cement mixture and clearing of surroundings and tiling of the pedestal.

#### **3.2.1 Surface preparation on the statue (The Serious Learner)**

It was revealed that in undertaking the surface preparation of the outdoor concrete statue, the artists provided appropriate care to the substrate for repairs. The artists cut the border of the broken-off area. The surface preparation began by removing broken concrete surfaces with a hammer, plier and wire brush. The artists then remove the cracks on the surface to provide a better bonding and solidifying with the existing concrete. Paint peel-off was removed by scraper and coarse sandpaper to establish the degree of the repair. The artists remove all powder substances and dirt from the statue. Again, concrete deterioration such as cracking and delamination of metal caused by corrosion were removed for proper repairs and management. The artists finished the surface preparation to replicate the original appearance of the statue. A

maintenance strategy is the most effective way to help shield the outdoor concrete statue of "The Serious Learner" from deteriorating. Fig. 1 shows a surface preparation on the sculpture (The Serious Learner).

#### **3.2.2 Selection of materials for the repair of the sculpture**

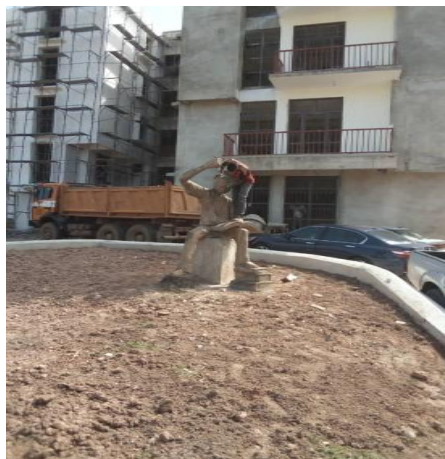
Again, it was observed that in restoration, it was vital to compare the selected materials to the original concrete materials such of size, color and texture. The artists prepared an aggregate of cement for repairing the outdoor concrete statue. The concrete’s properties of durability and resistance to deterioration were a selection of materials for the sculpture. In this case, a cement mixture was used similar to the original concrete surface of the work. A prepared mortar with 15 kilograms of Portland cement, 20 kilograms of sand and 20 liters of water was used as a curable consistency to patch the statue. Crack, crazing, curling, scaling, discoloring and spalling were repaired by the artists. The artists considered re-pointing. Re-pointing helped the new mortar as a compressive strength than the surrounding masonry to avoid spalls at the joints. Few repaired cracks were accomplished by injecting an adhesive material into the fissure to provide water impermeability and prevent further cracking. The artists repaired minor cracks by routing crack surfaces and filling them with patching material such as mortar [28,29]. Patching was used to repair the areas of the damaged statue with a matching cementitious material that is applied and built up in layers until it matches the original profile. The artists used chicken mesh and binding wires for larger patches to secure mortar.

#### **3.2.3 Finishing with cement mixture and clearing of surroundings**

The study revealed that the detailing work with sealants required considerable attention. However, artists filled active cracks with cement mixture as penetrating sealants. A protection system such as the resin application was applied to the statue to protect it and increase the length of the service life of the outdoor concrete statue. The artists prepared land around the statue with cutlass and hoe to make it bear for replanting green glass [31], as shown in Fig. 2.



**Fig. 1. Surface preparation of the outdoor concrete statue**



**Fig. 2. Finishing with cement mixture and clearing of surroundings**

### **3.2.4 Tiling the pedestal of outdoor concrete statue**

#### *3.2.4.1 Surface preparation of the pedestal*

It was revealed that in the tiling pedestal, the statue's pedestal surface needed preparation to get rid of deteriorated cement mildews, fungi and black molds on the pedestal with chisels and a mall hammer before tiling. The artists used tiles with a mortar to finish the original pedestal. Tiling gave the pedestal a solid and level base that resulted in the durable finish. The following steps show tiling the pedestal.

#### *3.2.4.2 Laying Out Pattern and making cuts*

The artists measured the rectangular pedestal with the tape measure and had 120cm length by 45cm breath. A manual snap cutter was adequate for cutting thin tiles used for the

pedestal. The manual snap cutter has a scoring wheel used to first etch a cut line and a lever press to snap-cut the tile along this line. Since the snap cutter leaves a jagged edge along the break, a carborundum file was used when the edges needed to be smooth or dressed.

#### *3.2.4.3 Application of Mastics*

The artists used a notched trowel to spread the adhesive on the pedestal. The 60 by 60 tiles require a 1/2-inch notch trowel. The artists began the layout lines and pressed the mastics against the pedestal for a good bond. The artist then sets the trowel on edge and rakes the mastics to create ridges equal to the notch depth. The artists took care to ensure that layout lines remained visible. The space for the work was adequate to ensure ventilation that the mastics have strong noxious fumes and may be volatile and extinguished any pilot lights.

#### 3.2.4.4 Laying Tiles

The surface of the pedestal was properly prepared, suitably levelled, cleansed, dried, and free of dust, grease or any loose material. The pedestal surface was secured without deflection and capable of carrying any additional load. In tiling the walls of the pedestal, consideration was given to floor tiles because of their heavyweight compared to wall tiles. Its weight of 3kg per m<sup>2</sup> allowed the artists to use it together with adhesive and grout. The artists performed different roles in concentrating on laying and bedding the tiles, while the others provided a constant supply of loose tiles and made cuts and retrieved tools as needed. A rubber mallet was used to gently but firmly tap and beds each tile into the mastic. Artists took appropriate care not to press or shift the tiles around to avoid having the mastic squeeze up into the grout lines between the tiles. Plastic spacers were placed

between each tile as necessary. The mastic did not stick to the spacers, which were easily removed before the grouting of the joints began. The artists used a 4-foot level to ensure that tile edges were aligned and levelled across their surface.

#### 3.2.4.5 Passing electric wire and fixing the bulb

The artists used electric cable encased in a half ½ inch PVC pipe through "The Serious Learner" concrete statue from the pedestal and to the right hand of the figure holding the lamp. The artists prepared the ground by creating a pipe-laying channel from the statue to the source of tapping electric power at the Oduro block. The bulb was fixed to the right hand of the sculpture (The Serious Learner) to complete the lighting process. Fig. 4 shows the process of passing electric wire and the fixing bulb to the statue.



**Fig. 3. The artist lays tiles around the pedestal**



**Fig. 4. Passing of electric wire and fixing of the bulb**



#### 3.2.4.6 Grout the Joints

The tile mastic was allowed to set for at least a day before removing the spacers and grouting the joints. The artists used premixed grout since it was easier and available in a wide range of colours to match or contrast the tiles. Because grout can stain or stick tightly to porous or unsealed tile, the tile distributor recommended applying a sealer to the tile faces before grouting began. The artists used a rubber float to squeeze the grout into the joints. This process was done to ensure that the grout filled the spaces between the tiles. As work was ongoing, the cleaning of excess grouts was done to the tile faces with a coarse cloth and damp sponge, but the artists took appropriate care not to wet the grout, which may weaken it [26]. The artists wipe diagonally across the joints to avoid pulling the still-fresh

grout out of the grooves. After the dried grout, the artists used a releasing agent to clean any grout haze from the face of the tiles and then applied a grout sealer.

#### 3.2.4.7 Application of enamel paint onto the sculpture (*The Serious Learner*)

Before applying paint to the statue, the artists ensured that the statue was free of all forms of dirt by washing it with a soap solution and a duster. It was then allowed to dry for thirty minutes to ensure the paint sticks well to the body of the sculpture. The paint was then applied with a brush onto the statue with a half-gallon of enamel paint mixed with two litres of thinner. The finishing was done to retain the original form of the statue with bronze enamel paint, as shown in Fig. 5.



**Fig. 5. Application of enamel paint**



**Fig. 6. Greening the sculpture's environment**



**Fig. 7. Before and After Restoration**

**Documentation of Restoration on the Statue (Serious Learner):**

**Description of the sculpture**

**Title(s):** The Serious Learner

**Creation date:** 2005

**Author(s):** Students' project

**Subject:** Beautification

**Dimension:** 198 cm x 87 cm x 85 cm, which is 6.5 feet high.

**Materials:** Concrete cement, iron rods, wire mesh, paint, cable wire, and electric bulb

**Date of Restoration at current location:** 2021

**Inscription (if any):** None

**Foundry/factory:** Sculpture Studio, TTU

**Customer:** Sculpture Department, TTU

**Owner/supervisor:** Edwin K. Bodjawah

**Information on the State of Conservation/Structural conditions:** Surface molds, mildews, fungi, cracks, crazing, discoloration, scaling and curling of slow wear and damages, paint peel-offs, breakages at joints.

Surface appearance: Break in joints and surface discoloration.

**Presence of water:** Yes

**Vandalism:** Yes, due to lack of care

**Presence of treatment/Conservation conditions:** “The Serious Learner” has been repaired and managed by Frederick Boakye-Yiadom, Evans Kwadwo Donkor and Owusu-Ansah Ankrah.

**Additional Information:**

**Brief description of the artworks:** The work is an in-the-round cement sculpture. The technique used was direct modelling, casting and construction with lighting finishes.

**Location:** The artwork is located at the New Oduro Block, TTU (Refer to Fig. 8). The red intersection lines indicate the exact location of the outdoor concrete statue on the map.



**Fig. 8. Location of “The Serious Learner” outdoor concrete statue in TTU, Sekondi-Takoradi, Western Region-Ghana (Image courtesy, Google maps. 2022)**

#### 3.2.4.8 Greening the sculpture's environment

After the preparation of the land, two tipper truck trips of black soil were spread onto the prepared land by the artists with rakes. The ten (10) bags of green grasses were planted in the black soil on the prepared land with cutlasses and watered twice a-day (morning and evening). It was done continuously for one month with watering cans. This process was to ensure proper germination of the green grass [31]. Fig. 6 shows the greening of the sculpture's environment.

### 4. CONCLUSION

The paper assessed the restoration process (Before and After) of "The Serious Learner" outdoor concrete statue found at the forecourt of Oduro block, TTU-Ghana. The key findings revealed that the sculpture (The Serious Learner) has not been repaired and maintained since its inception in 2005. This situation has led to the deterioration of the statue for the past 17 years. This condition is in support to the Venice Charter in 1964, as adopted by the newly formed International Council of Monuments and Sites (ICOMOS), which suggests that the heritage of outdoor artworks should be restored and conserved after four (4) years of its creation especially those nearer to a salty environment. After 17-year in production of the outdoor concrete statue, the study saw significant deterioration in the statue due to poor mortar bond, ageing and water intrusion that had brought about open joints. Naturally, wearing away of the concrete through weathering with chemical degrading had caused erosion beneath the pedestal. The expansion and contraction in the statue caused cracks that were evidence of structural flaws. There was fracture with loss of surface lamination caused by trapped moisture or lamination of crystallized salts, corrosion of embedded steel or iron, freeze-thaw cycles or joint mortars that did not allow for natural expansion and contraction. Amid all these challenges, the study bridged the repairs and management gap by restoring the outdoor concrete statue "The Serious Learner" back to its former state using restoration methods and processes. The results showed no discernible variations between the conservation procedure of restoring "The Serious Learner" outdoor concrete statue based on Article 6 (under the Conservation Theory), which claimed that "keeping a setting that is not out of scale implies preserving a monument." Wherever the customary environment is, it must be preserved.

The restoration was seen as a profound method of conserving by lengthening the life span of outdoor concrete sculpture on TTU's main campus. Repairs and management of artefacts in public space, not only in TTU, should be performed every two years to ensure their longevity and posterity, as conservation and restoration methods are significant in outdoor sculptures.

### CONSENT

As per international standard or university standard, participants' written consent has been collected and preserved by the author(s).

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### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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