SECTION

6

3-DIMENSIONAL ART AND DESIGN WITH CONVENTIONAL AND NON-CONVENTIONAL MATERIALS

Creative Methodologies

Fabrication and Construction

INTRODUCTION

In ***Section 5,*** you learned about design briefs and art proposals to produce interesting and creative artworks. In this section you should use that experience to devise and create ideas for 3-Dimensional artworks. In doing this, you can also make use of your previous experience of using various conventional and non-conventional tools, and materials found in your environment to create artworks. In this case, and in this section, you will be using *non-conventional* tools and materials to perform Art and Design Studio tasks such as weaving, carving, assemblage and construction, modelling, and many other tasks involving creation of 3-Dimensional artworks to solve problems in society.

By the end of this section, you should be able to:

- Identify materials, tools, and relevant processes and techniques used in performing 3-D studio tasks.
- Design and create 3-D artworks using conventional and non-conventional materials, tools, and relevant processes to respond to societal problems.

Key Ideas

- Non-conventional and conventional tools and materials are used to create 3-Dimensional Art and Design Studio tasks.
- The creative use of both conventional and non-conventional tools and materials is essential in the artmaking process.

NON-CONVENTIONAL MATERIALS, TOOLS AND METHODS IN 3-DIMENSIONAL ART AND DESIGN STUDIO PRACTICE

Examples of non-conventional materials used to create 3-d artworks

- *Found Objects:* bottle caps, old keys, car tyres, fabric and metal scraps.
- *Recycled Materials:* plastics, cardboard, scraps.
- *Food items* that can be used to create edible sculptures and temporary artworks such as birthday cakes.
- *Textiles:* yarn, thread, fabric, raffia, sisal.
- *Digital and Virtual Reality:* As technology develops, some artists experiment with virtual and digital reality to create three-dimensional works of art. The immersive and participatory nature of the works created helps subvert traditional notions of physicality.

Examples of 3-d artworks created with non-conventional tools and materials

The following are some examples of 3-D Art and Design Studio works that were produced using non-conventional tools and materials:

Figure 6.1: *Digital 3-D Wall Advert.*

Figure 6.2: *Car tyre design: Wim Delvoyet.*

Figure 6.3 *La Poete by Mick Davist.*

Figure 6.4: *Spoon Art –Motorcycle by James Rice*

Figure 6.5: *Paper craft by Sampa Khatune*

Figure 6.6: *Pulled-Back Cornrow*

Figure 6.7: *3-D floor design by Epoxy Floor Ghana Ltd*

Figure 6.8: *Bleach Art for fabric design*

Activity 6.1

Take photographs of or illustrate TEN (10) 3-D artworks done using non-conventional materials in your community to solve specific problems, and record the tools and materials used in creating each artwork.

Activity 6.2

Create a 3-D artwork of your choice to be used to solve a problem in your community using non-conventional materials, tools and relevant processes.

CONVENTIONAL MATERIALS, TOOLS AND METHODS IN 3-D ART AND DESIGN

In ***Section 5***, you learned about conventional tools and materials. Also, you used various conventional tools and materials found in your environment to create 2-Dimensional artworks. In this lesson, you will learn about how conventional tools and materials can be used to create 3-Dimensional artworks such as furniture making, sculpture, ceramics, pottery, jewellery, metalworking, leathercraft, and basketry.

Here are some examples of conventional materials, tools, and methods used in creating 3-D artworks:

Materials:

- *Clay:* modelled or moulded into sculptures, pottery, and ceramic wares.
- *Wood:* Carved or shaped into furniture and sculpture works.
- *Metal:* Welding, casting, forging, assemblage and construction used to create sculptures and installation artworks.
- *Stone:* Carved and shaped stones such as marble, granite, or limestone used for creating sculptures.
- *Plaster:* Used for casting moulds and creating sculptures.
- *Papier-mâché:* Paper pulp and adhesive shaped and dried to create art and crafts.
- *Glass:* Used to create decorative or functional objects from glass including stained glass windows, glass sculptures, and glass jewellery.

Tools:

- *Sculpting Tools:* Tools used for sculpture art include chisels, knives, rasps, sandpaper, wooden or metal spatulas, and wire tools.
- *Pottery Wheel:* For throwing and shaping clay into vessels like bowls, vases, and cups.
- *Welding Equipment:* Used for joining metal pieces together in assemblage and construction works.
- *Woodworking Tools:* Tools used for cutting, shaping, and finishing such as wood gouges, chisels, axes saws, planes, and sanders.
- *Casting Equipment:* Crucibles, tongs, moulds, furnaces, sprues, risers, rammers, ladles, chisels, and brushes.
- *Glass-working Tools:* Tools used to pour liquid metal into moulds to create different shapes when solid such as blowpipes, glass cutters, kilns, pliers, and torches.

Figure 6.9: *Welding Machine*

Figure 6.10: *Glassblowing tool*

Figure 6.11: *Woodworking tools*

Methods:

- *Carving:* Using tools like knives or chisels to cut or shape materials like stone or wood into accurate shapes or figures to create a sculpture.
- *Modelling:* Adding and shaping material, such as clay, to create a 3-D Art and Design works.
- *Casting:* Producing sculptures by pouring metal or plaster into moulds.
- *Welding:* Joining metal pieces or scraps together to create artworks.
- *Throwing:* Using a potter's wheel to shape clay into creative ceramics works.
- *Assemblage and construction:* producing 3-D artworks by combining different objects or materials into sculpture arts.
- *Glassblowing:* Shaping hot, melted glass into artistic forms by blowing air into a blowpipe to create vases and ornamental designs.
- *Weaving:* The process of using flexible materials such as plant fibres, grasses, rushes, reeds, wood, and plastic material to create containers or decorative objects. The process of weaving includes coiling, plaiting, twining, and wickerwork.
- *Loom weaving:* Loom weaving is making cloth (fabric) by crossing threads on a special machine called a loom. It is used to create textiles, including clothing, household linens, upholstery fabrics, and decorative items. Examples of loom

weaving include Hand Loom Weaving, Mechanical Loom Weaving, Tapestry Weaving, Jacquard Weaving, and Rug Weaving.

- *Weaving (Off-loom):* Off-loom weaving is making (cloth) fabric by weaving threads together using hands, without a weaving machine or loom. The methods used in off-loom weaving include Tapestry, Rug Hooking, and Pin Loom Weaving.
- Leather art: The use of leather in creating decorative or functional items including clothing, furniture, bags, belts and wallets, footwear, ornaments and decorative items. Leather art techniques include leather carving, leather tooling (embossing or stamping), leather sculpting, leather painting, leather stitching, leather collage, among others.
- J*ewellery art:* Designing and producing decorative items like bracelets, brooches, cufflinks, earrings, necklaces, rings, and pendants using precious metals like gold, silver, and gemstones. Some techniques used in jewellery art include Metalworking, Stone Setting, Wire, Texturing, Lapidary (Gemstone Cutting and Shaping), Polymer Clay, Stringing and Beading, and Bead Weaving.
- *Metal art* involves shaping and welding metal into beautiful collage, metal wall art, mixed media, sculptures, and decorative objects. Some techniques used in metal art include welding, forging, casting, repoussé, etching, engraving, metal embossing and patination.

Figure 6.12: *Carving*

Figure 6.13: *Welding*

Figure 6.14: *Glassblowing*

Figure 6.15: *Loom weaving*

Figure 6.16: *Weaving (container production)*

Figure 6.17: *Throwing*

Activity 6.3

Provide a written report on TEN (10) benefits of using conventional materials, tools and methods in creating 3-D artworks. Support your answers with photographs or sketches.

Activity 6.4

Make a list of available conventional materials and tools (photographs or original works) found in your community and use appropriate techniques to create a simple 3-D artwork that can be used to solve a social problem.

CREATING 3-D ARTWORKS USING CONVENTIONAL AND NON-CONVENTIONAL MATERIALS, TOOLS AND PROCESSES

In your previous lessons, you have learned how to use non-conventional materials, tools, and methods to create 3-Dimensional artwork. Also, you learned how to use conventional materials, tools, and methods to create 3-D artworks. In this lesson, you will learn how to use both conventional and non-conventional materials, tools, and processes to create 3-D artworks that are useful to solve specific problems in your community.

Techniques that can be used to Combine Conventional and Non-conventional Materials, Tools, and Methods to Create 3-D Artworks

Here are some of the techniques that can be used to combine conventional and non-conventional materials, tools, and methods to create 3-D artworks:

- **Mixed Media Fusion:** This art form involves combining different materials, techniques, and concepts to create artwork. Examples of mixed-media fusion include collage and painting, sculpture, and digital art.
- **Digital Fabrication:** It involves using digital tools and technologies to create physical artworks from digital designs. It makes use of computer-aided design (CAD) software and manufacturing technology to produce artworks ranging from prototypes to finished works. Digital fabrication allows artists and designers to explore complex forms, patterns, and materials that could not be achieved through traditional methods. They include 3-D printing (Figure 62), laser cutting and engraving, Computer Numerical Control (CNC), robotic fabrication, and digital moulding and casting.

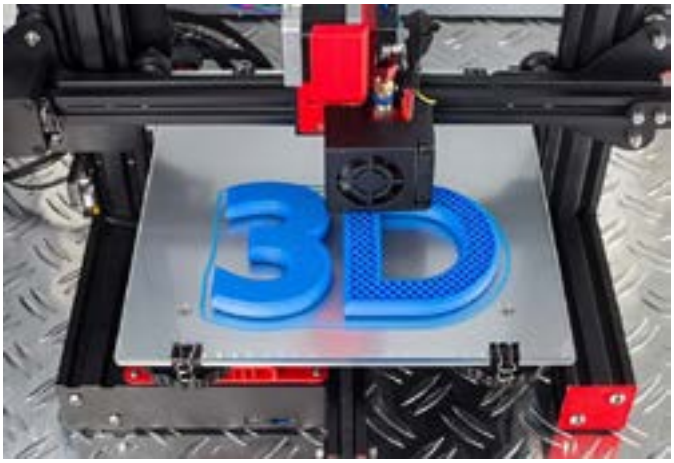

Figure 6.18: *The Art of Combining 3D Printing and CNC Machining*

- **Found Object Assemblage and Construction:** This process involves creating sculpture works from found objects, and recycled materials. Examples of found objects include bones, scraps, wood, bottles, and plastics. Figure 63 is an example of an assemblage and construction artwork.

Figure 6.19: *Art (Sculpture) from everyday objects and materials*

- **Interactive Technology Integration:** Adding electrical items like sensors, lights, or sounds to 3-D artworks to attract the attention of viewers, bring them closer to the artwork, and feel part of the works (Figure 64).

Figure 6.20: *Interactive 3-D designs with light*

- **Experimental Processes:** Explore unconventional methods such as bio-art using living organisms, or kinetic art and design work by employing movement, to challenge perceptions and evoke emotional responses. Trying out new art forms like using living things (bio-art) or moving objects (kinetic art) helps people see and interpret art differently (Figure 65).

Figure 6.21: *Artwork produced with a living organism*

- **Collaborative Approaches:** This involves working with a group of experts such as engineers, biologists, or computer scientists and making use of what they know to help create a new art (Figure 66) suitable for solving problems in society.

Figure 6.22: *Akwasi Bediako Afranie "Kwasiada Frankaa", a digital 3-D artwork that can be experienced in 360 VR on mobile.*

Activity 6.5

Produce a pictorial, drawing, or video inventory of 3-D artworks created with a combination of conventional and non-conventional tools, materials, methods, and processes.

Activity 6.6

Find out from your community or online, FIVE (5) 3-D artworks that were created with a combination of conventional and non-conventional materials, tools, methods, and processes, and record your observations.

Activity 6.7

Design and create a 3-D artwork using a combination of conventional and non-conventional materials and tools that can be used to solve a particular problem in your community.

Review Questions

1. Describe TEN (10) advantages of using non-conventional materials, tools and processes in designing and creating 3-D artworks.
2. Produce a digital or manual visual diary of non-conventional materials and tools found in your environment that can be used in designing and creating 3-D artworks.
3. Describe TEN (10) advantages of using conventional materials, tools and processes in designing and creating 3-D artworks.
4. Create a digital or manual scrapbook of conventional materials and tools found in your environment that can be used in designing and creating FIVE (5) different 3-D artworks.
5. Present a pictorial or written report showing the processes that can be followed in using conventional materials and tools to design and create a 3-D artwork of your choice.
6. Present a written report with pictorial examples to explain FIVE (5) techniques that can be used to combine conventional and non-conventional materials, tools, and methods to create 3-D artworks.
7. Create a digital or manual visual diary showing TWENTY (20) 3D artworks of popular Ghanaian artists and designers which were created with conventional and non-conventional materials, tools, methods, and processes.
8. Using a combination of conventional and non-conventional materials, tools, methods, and processes, create your 3D artwork that can be used to solve a specific problem in your society.

EXTENDED READING

1. Benjamin, W. (1972). A short history of photography. *Screen*, *13*(1), 5-26. Retrieved from https://monoskop.org/images/7/79/Benjamin_Walter_1931_1972_A_Short_History_of_Photography.pdf

2. Newhall, B. (1982). *The history of photography* (p. 167). New York: Museum of Modern Art. Retrieved from https://monoskop.org/images/5/52/Photography_1839-1937_MoMA_1937.pdf

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