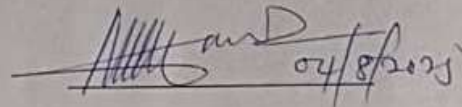


CERTIFICATION

I certify that this research project has been approved as meeting part of the requirement for the award of National Diploma In Architectural Technology, Institute Of Environmental Studies, Kwara State Polytechnic, Ilorin, Kwara State.

ARC. CHUKWUMA N.

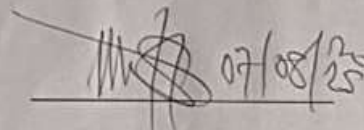
Project Supervisor



Sign and Date

ARC ADEYEMI F.A

Project Coordinator



Sign and Date

ARC TOMORI J.M

Head of Department



Sign and Date

External Examiner



Sign and Date



A PROJECT TECHNICAL REPORT WRITTING
ON
PROPOSED DENTAL CLINIC FOR TANKE BUBU
COMMUNITY, ILORIN, KWARA STATE
BY
OLORUNPOMI BENJAMIN AYOMIDE
ND/23/ARC/FT/012
SUBMITTED TO: THE DEPARTMENT OF
ARCHITECTURAL TECHNOLOGY
INSTITUTE OF ENVIROMENTAL STUDIES
KWARA STATE POLYTECHNIC, ILORIN

2025

DECLARATION

I declare that this Project is a product of my personal research work. It has not been presented for the award of any degree or diploma in any institution. The ideas, observations, comments and suggestions herein represent my own convictions, except where quotations are acknowledged in accordance with conventional academic traditions.

presented before in any previous application and all the sources of information are specifically acknowledged by means of references, under **ARC. CHUKWUMA N.**

Signature: _____

Date: _____

Project Title:

DENTAL CLINIC

CERTIFICATION

I certify that this research project has been approved as meeting part of the requirement for the award of National Diploma In Architectural Technology, Institute Of Environmental Studies, Kwara State Polytechnic, Ilorin, Kwara State.

ARC. CHUKWUMA N.

Project Supervisor

Sign and Date

ARC ADEYEMI F.A

Project Coordinator

Sign and Date

ARC TOMORI

Head of Department

Sign and Date

External Examiner

Sign and Date

DEDICATION

I dedicate this work to Almighty God, the giver of life, wisdom and strength. I also dedicate it to my parents, mentors and every individual who has supported me through this academic journey.

ACKNOWLEDGMENT

I am deeply grateful to Almighty God for the wisdom and grace to complete this work. My sincere appreciation goes to my supervisor **ARC. CHUKWUMA N.** for the guidance, patience and encouragement throughout the project. I also thank the Head of Department and all lecturers of the Architectural Technology Department for their input and inspiration.

To my family and friends, your love, encouragement and sacrifices made this journey easier.

Thank you all.

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ABSTRACT

The need for efficient, hygienic and patient-friendly oral healthcare facilities has continued to grow in Nigeria, particularly in urban and semi-urban communities. This project addresses the design of a modern dental clinic that meets clinical, technological and environmental standards for optimal dental service delivery. The objectives of the project include providing a functional layout, ensuring sterile environments, integrating sustainable materials and enhancing user experience through thoughtful spatial organization.

The research methodology involved extensive literature reviews, field observations, interviews with dental professionals and patients, as well as case studies of existing dental clinics. The analysis also incorporated environmental and site studies to influence the spatial arrangement and design decisions.

Findings revealed that many existing dental clinics lack specialized spaces for sterilization, proper zoning of public and private areas, adequate patient flow and environmental integration. These observations guided the development of a design that prioritizes operational efficiency, proper zoning, natural lighting, ventilation and modern aesthetics.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Dental clinics are specialized medical facilities where preventive, diagnostic and therapeutic oral health services are provided. The significance of oral healthcare in the general well-being of individuals has prompted increasing demand for functional and hygienic dental facilities. In many parts of Nigeria, most dental clinics operate within outdated or poorly designed structures, limiting the efficiency of dental professionals and patient comfort.

1.2 STATEMENT OF DESIGN PROBLEM

The lack of purpose-built dental clinics results in inadequate spatial arrangements, poor ventilation, insufficient sterilization zones and patient flow congestion. This design seeks to address these issues by proposing a dental clinic that is both functional and patient-centered.

1.3 AIM AND OBJECTIVES

AIM:

- To design a modern dental clinic that promotes hygiene, efficiency and patient comfort.

OBJECTIVES:

- To create well-zoned treatment and support spaces
- To ensure sterile conditions and smooth workflow
- To provide adequate waiting and administrative areas
- To integrate natural lighting and ventilation
- To comply with health and safety standards

1.4 JUSTIFICATION FOR THE PROJECT

There is a growing need for dental clinics that are designed specifically for their purpose, especially in urban and semi-urban centers. This project will serve as a prototype for future healthcare infrastructure.

1.5 SCOPE OF STUDY

THE DESIGN INCLUDES:

- Reception and Waiting Area
- Consultation and Records Room
- Operative Dental Rooms
- X-ray Room
- Sterilization Room
- Implant and Cosmetic Dentistry Room
- Surgery Room
- Pharmacy
- Toilets, Storage and Admin offices
- Parking and Landscape

1.6 RESEARCH METHODOLOGY

- Literature Review on dental clinic design
- Case studies of existing dental facilities
- Site analysis and environmental study
- User interviews (dentists and patients)
- Design programming and space planning

CHAPTER TWO

INTRODUCTION

2.0 LITERATURE REVIEW

2.1 HISTORICAL OVERVIEW

A literature review is essential in providing background knowledge, identifying past work and establishing a foundation for the design of a proposed dental clinic. This chapter highlights the definition, functions, design considerations, spatial requirements and standards relevant to dental clinics.

2.2 DEFINITION OF A DENTAL CLINIC

A dental clinic is a facility where dental services such as diagnosis, treatment and prevention of oral diseases are provided. It houses professionals including dentists, dental hygienists and assistants and may also offer oral surgery, radiology, cosmetic and restorative services. The clinic ensures patients receive both preventive care and emergency interventions for oral health..

CLASSIFICATION

- Private dental clinics
- Public hospital dental units
- Dental teaching hospitals
- General dental vs. specialized (orthodontics, surgery, cosmetic)

2.3 DESIGN CONSIDERATIONS IN DENTAL CLINICS

- **ZONING:** Separate public (waiting, reception) and private (treatment) areas.
- **ACCESSIBILITY:** Must be accessible to disabled persons (ramps, wide doors, etc.).
- **VENTILATION AND LIGHTING:** Natural lighting and cross-ventilation improve comfort.
- **ACOUSTICS:** Soundproofing of treatment rooms enhances patient privacy.
- **INFECTION CONTROL:** Use of cleanable materials and sterile circulation paths.
- **SAFETY AND HYGIENE:** Fire exits, emergency lights, waste disposal systems.
- **AESTHETIC APPEAL:** Soothing color schemes and décor to reduce patient anxiety.

2.4 FUNCTIONAL SPACE RELATIONSHIPS

- Operative rooms must be close to sterilization
- Consultation should be near the records/reception
- X-ray rooms require soundproofing and shielding
- Waiting and admin should be separated from clinical areas

2.5 TECHNOLOGICAL AND ENVIRONMENTAL DESIGN

- Wall-hung units to ease cleaning
- Laminar airflow systems in surgical rooms
- Acoustic treatment in consultation spaces
- Natural daylight and cross-ventilation
- Use of antimicrobial finishes

CHAPTER THREE

3.1 CASE STUDY

A case study is a research methodology that involves an in-depth examination of a specific individual, group, organization, or phenomenon. It is a detailed analysis of a real-world situation or event, aiming to gain a deeper understanding of the underlying issues, relationships and dynamics.

3.2 CASE STUDIES TYPICALLY INVOLVE:

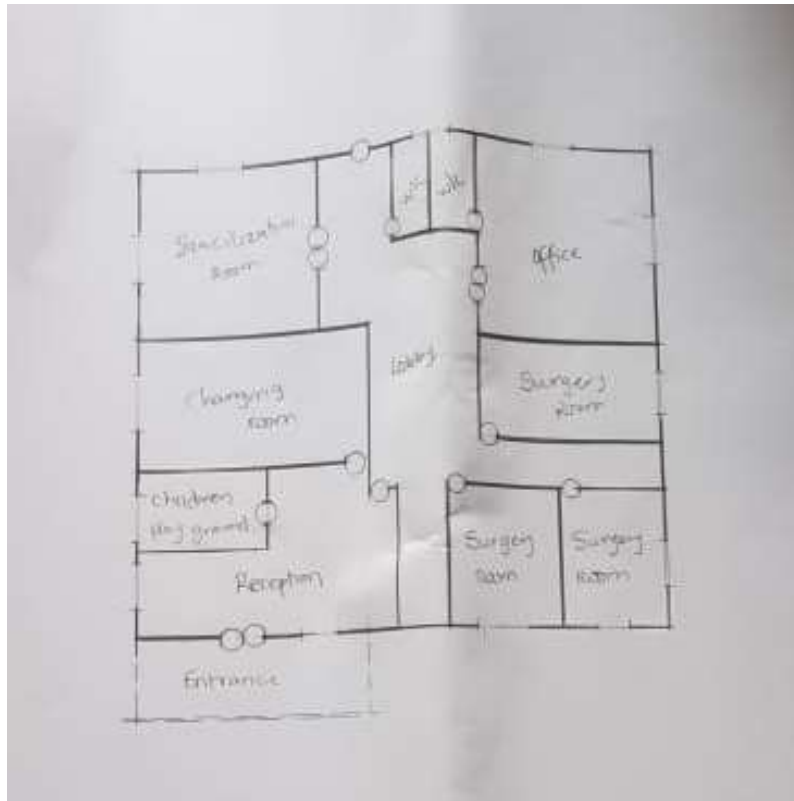
1. In-depth data collection: Gathering detailed information through various methods, such as interviews, observations, documents and surveys.
2. Contextual analysis: Examining the case within its specific context, including historical, cultural, social and economic factors.
3. Thematic analysis: Identifying patterns, themes and relationships within the data.
4. Interpretation and conclusion: Drawing conclusions and making recommendations based on the findings.

3.3 OUTLINE OF CASE STUDIES

1. Oyo state
2. Ilorin Kwara State
3. Lagos State
4. Online case study in United State
5. Online case study in France

3.4 CASE STUDY ONE

Oyo State







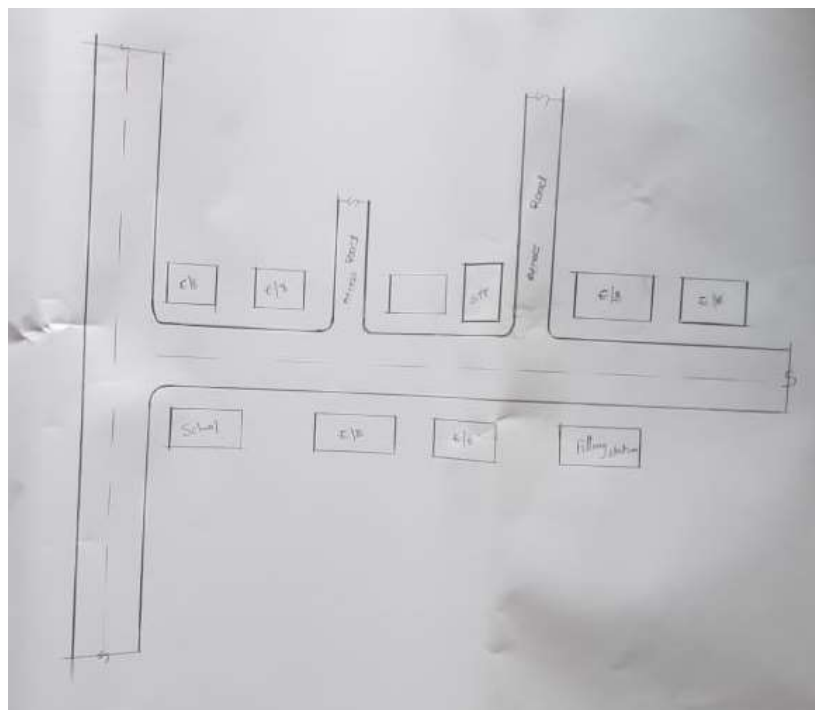
MERIT:

- i. Proper care of patient
- ii. Well equipped facility
- iii. Adequate parking space
- iv. Good security arrangement

DEMERIT:

- i. No space for future expansion
- ii. Lack of sufficient storage facilities

Ilorin, Kwara State







MERIT:

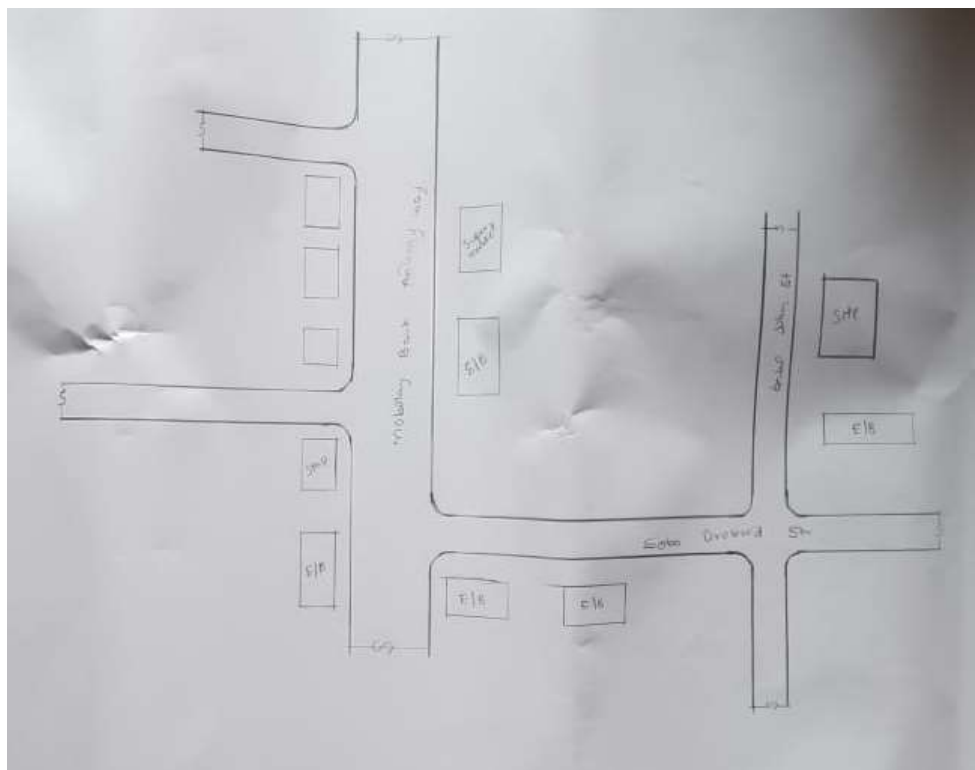
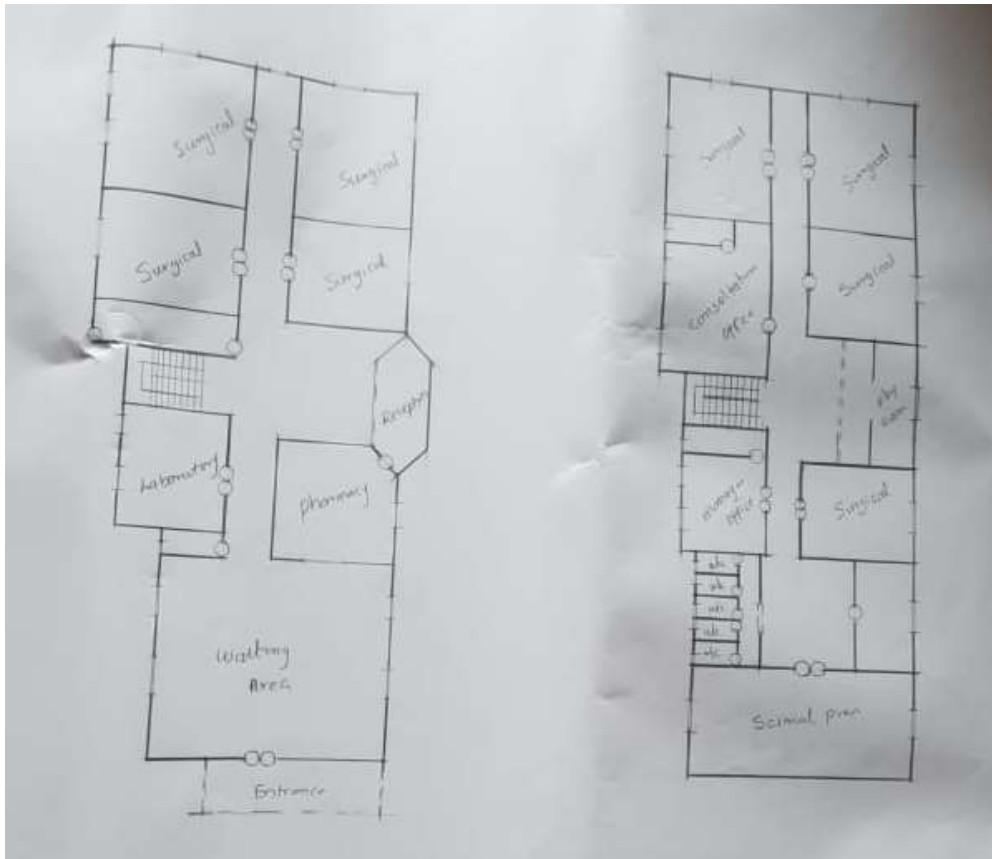
- i. Provision of parking space
- ii. Availability of dental service

DEMERIT:

- i. Lack of proper sterilization equipment
- ii. It is not well landscaped
- iii. Not in a conducive environment

3.6 CASE STUDY THREE

Lagos State







MERIT:

- i. Highly qualified team
- ii. It is well landscaped
- iii. Calm and peaceful environment

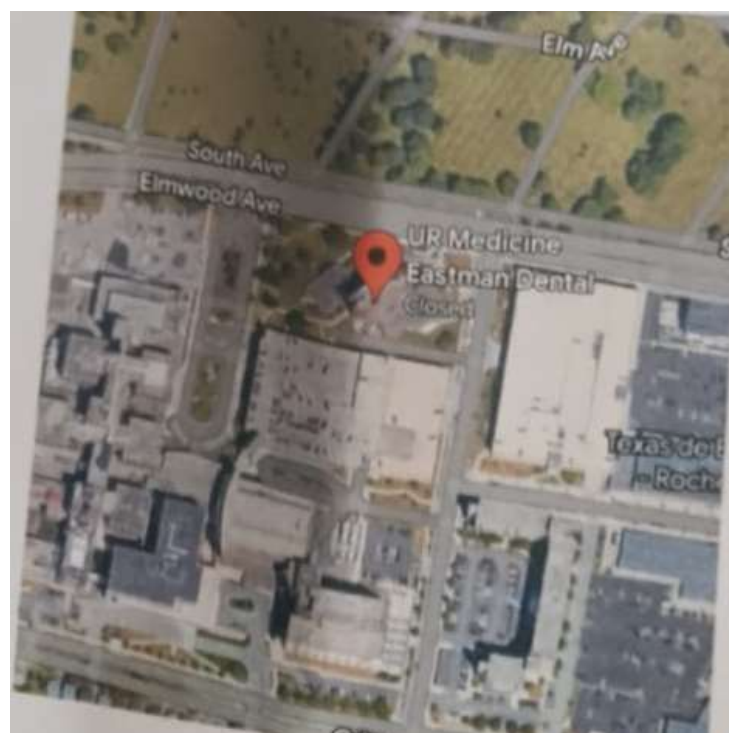
DEMERIT:

- i. No space for future expansion

3.7 CASE STUDY FOUR

ONLINE CASE STUDY

ELMUROOD AVE, ROCHESTER NEW YORK

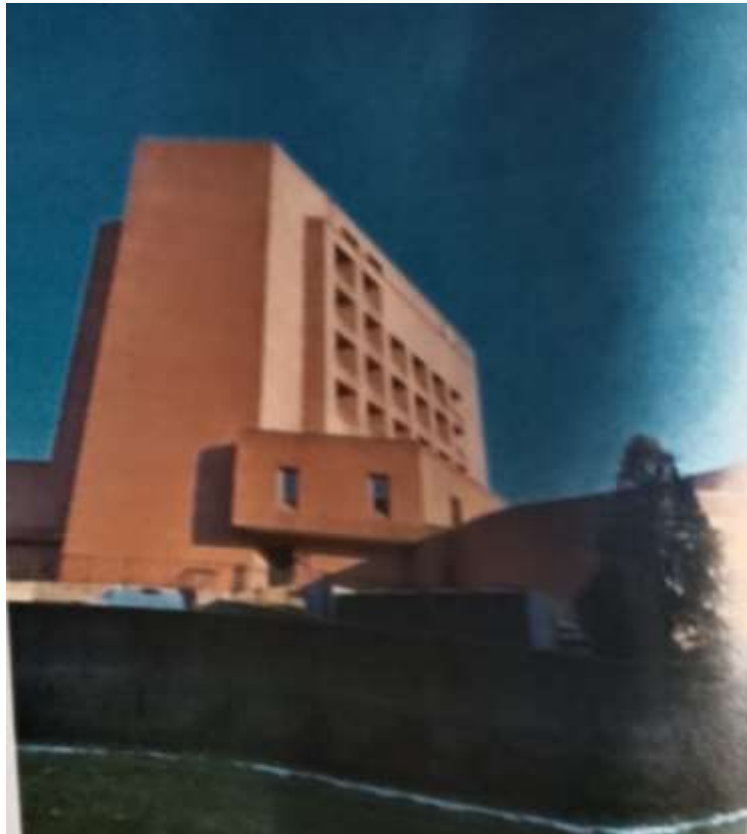


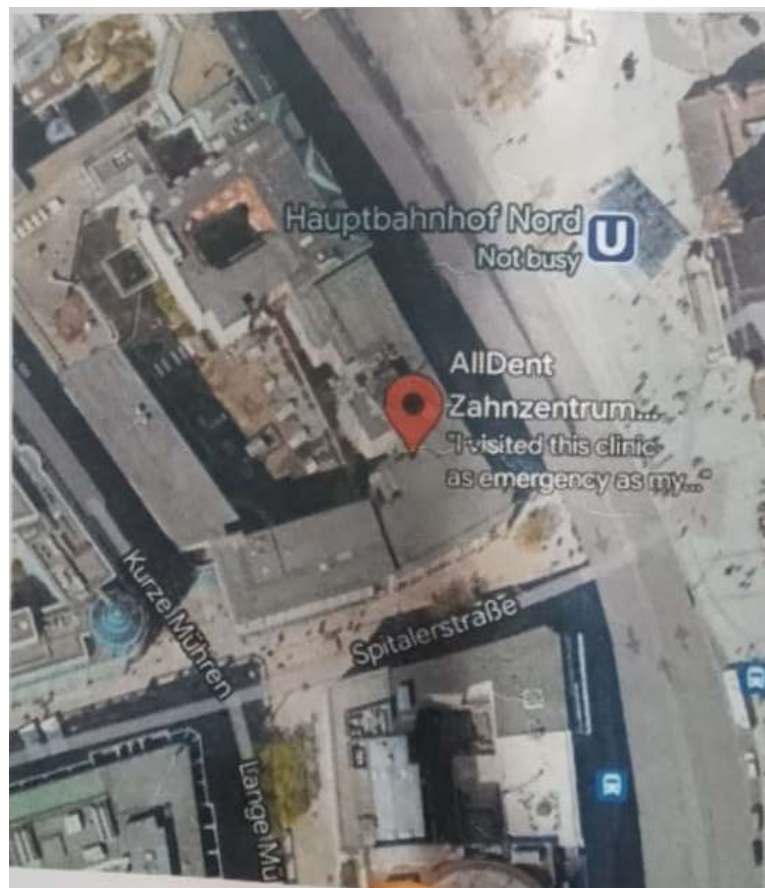


3.8 CASE STUDY FIVE

ONLINE CASE STUDY

CENTER ZAHNZENTRUM AT ZAHNZENTRUM GERMANY



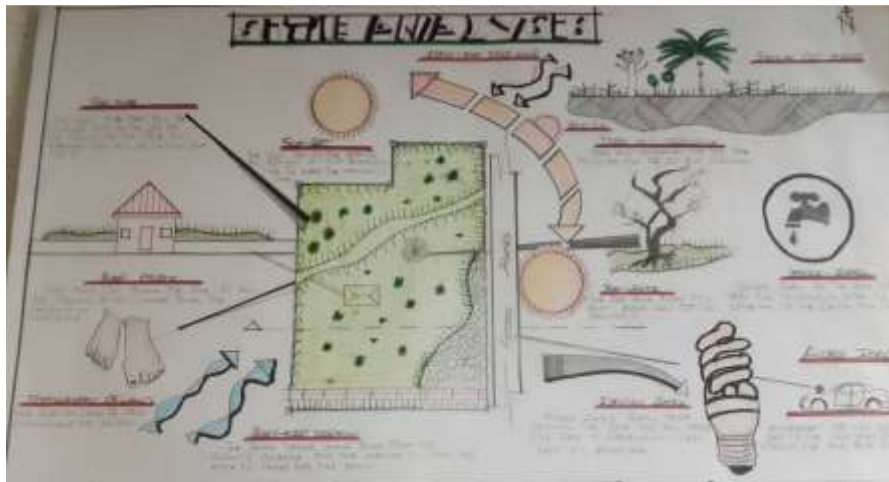


CHAPTER FOUR

4.0 STUDY AREA/SITE ANALYSIS

4.1 SITE DESCRIPTION AND ANALYSIS

The proposed site is located in Tanke Bubu Community Ilorin, Kwara State.



4.2 SITE SELECTION CRITERIA

- Proximity to patient population
- Accessibility by public/private transport
- Low noise and pollution exposure
- Good drainage and level ground



4.3 SITE INVENTORY

- Soil: Sandy-loam, stable
- Vegetation: Sparse with scattered shrubs
- Access Road: 8m wide
- Utilities: Existing power line, borehole potential
- Slope: Negligible, <3%



4.4 CLIMATE DATA

- Avg. temperature: 29°C
- Wind: NE-SW
- Rainfall: March–October
- Sun path: East–West

4.5 DESIGN CRITERIA

PROJECT GOALS

To ensure effective workflow, high sterilization standards and positive patient experience

4.6 SPATIAL AND FUNCTIONAL REQUIREMENTS

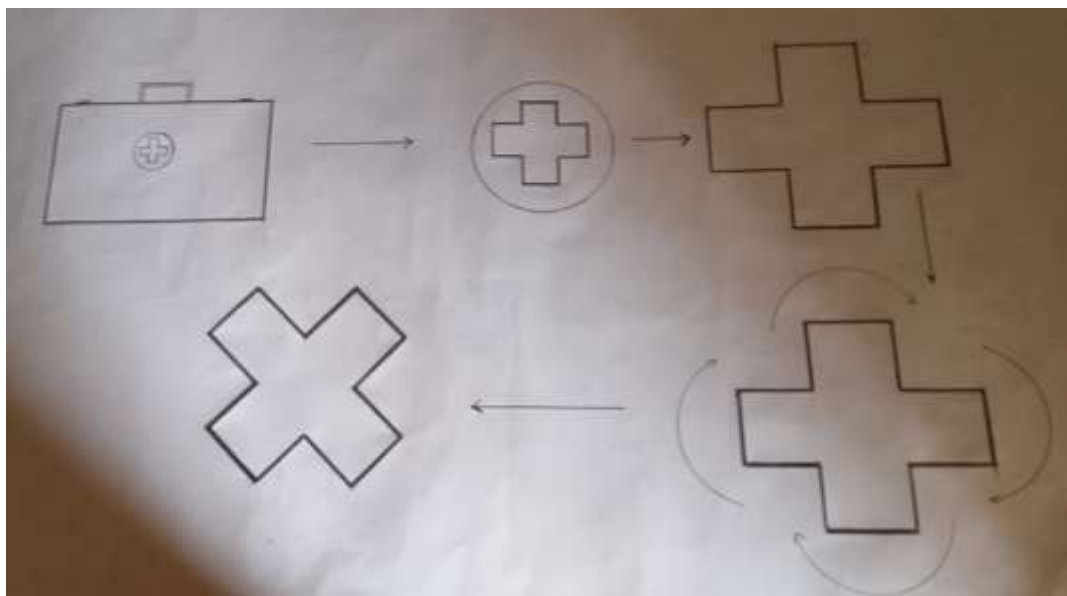
- Reception and waiting area
- Operative dental rooms
- 1 X-ray room
- 1 Cosmetic room
- Sterilization/lab
- 1 Surgery room
- Doctor's office
- Records & Nurse Station
- Toilets & Store

CHAPTER FIVE

5.0 DESIGN APPROACH/REALIZATION

5.1 CONCEPT DEVELOPMENT

The layout is inspired by a first aid symbol, commonly represented by a cross, is universally recognized as a sign of medical care, healing and emergency response. This symbol as a design concept for dental clinic emphasizes the clinic's roles as a place of health, safety and immediate care. This concept not only enhances visual communication but also builds trust and familiarity with patients, creating a strong connection between the clinic's design and its function of providing essential dental service.



5.2 SKETCHES AND GRAPHICS

- Zoning and flow diagrams
- Concept evolution sketches
- Exploded 3D layout views

5.3 ENVIRONMENTAL & TECHNOLOGICAL DESIGN

- Cross ventilation in treatment rooms
- Clerestory lighting in corridors
- Antibacterial epoxy floor finish
- Noise insulation for X-ray and surgery
- Solar + grid hybrid lighting
- Rainwater harvesting for toilets

5.4 CONSTRUCTION AND MATERIALS

- Concrete block structure
- Tiled roofing with aluminum flashings
- Antimicrobial paint
- PVC ceiling in wet areas

5.5 BUILDING SERVICES

- Plumbing: Treated water tank and borehole
- Electricity: Grid + backup inverter
- Air-conditioning in treatment zones
- Medical gas piping (future provision)

5.6 LEGAL/PLANNING CONSIDERATIONS

- Medical waste disposal compliance
- Radiation shielding for X-ray room
- Minimum accessibility standards (ramps, signage)

5.7 CONCLUSION AND RECOMMENDATIONS

CONCLUSION

This project demonstrates how proper architectural planning can enhance oral healthcare delivery. The proposed dental clinic prioritizes safety, hygiene, efficiency and patient-centered care.

RECOMMENDATIONS

- Government should standardize clinic design guides
- Further studies should assess the impact of design on patient anxiety and treatment success
- Use of modular dental units should be explored for rural settings

