

**THE IMPACT OF CAMPUS INFRASTRUCTURE DESIGN ON STUDENT  
LEARNING AND ACADEMIC PERFORMANCE AT  
THE UNIVERSITY OF BENIN**

**BY**

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**NOVEMBER, 2025**

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**A PROJECT SUBMITTED TO THE DEPARTMENT OF ARCHITECTURE,  
FACULTY OF ENVIRONMENTAL SCIENCES, UNIVERSITY OF BENIN, BENIN  
CITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE  
SUCCESSFUL COMPLETION OF THE COURSE, DISSERTATION (ARC 414),  
AND THE AWARD OF BACHELOR OF SCIENCE (B.SC.) DEGREE IN  
ARCHITECTURE,**

**NOVEMBER, 2025**

## CERTIFICATION

This is to certify that this study was carried out by Pemu Emmanuella Oritsetimeyin Matriculation Number ENV2006575 in the Department of Architecture, Faculty of Environmental Sciences, University of Benin, under my supervision.

PROJECT SUPERVISOR

Arc. Osesenaga Erhuwvuoghene Okieimen

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Signature

Date

APPROVED BY:

Arc. Henry Omorogbe

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(HEAD OF DEPARTMENT)

Signature

Date

## DECLARATION

I, Pemu Emmanuella Oritsetimeyin, hereby declare that the Project work entitled **The Impact of Campus Infrastructure Design On Student Learning and Academic Performance at The University of Benin** is a record of an original work done by me, as a result of my research effort carried out in the Department of Architecture, Faculty of Environmental Sciences, University of Benin, under the supervision of Arc. Osesenaga Erhuwvuoghene Okieimen.

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Student's Signature

## **DEDICATION**

It is with deep appreciation and my warmest regards that I dedicate this research to my lecturer, Arc. Osesenaga Erhuwvuoghene Okieimen for mentoring me. To all staff members for their collective effort in teaching me what I have learnt throughout my time in the Department of Architecture, and most importantly to God Almighty for his grace and mercy.

## **ACKNOWLEDGEMENTS**

I want to express my profound gratitude to God Almighty and our Lord and Savior, Jesus Christ, for the success of this research. I am eternally grateful to my loving parents for their unending support spiritually, emotionally and financially. I also wish to acknowledge my project supervisor, in the person of Arc. Osesenaga Erhuwvuoghene Okieimen, for coordinating the progress of our research work to ensure that it is thoroughly completed. I also appreciate all lecturers of the Department of Architecture as well for their intellectual contributions throughout the project work.

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## **ABSTRACT**

The design and quality of campus infrastructure plays a significant role in influencing student learning and academic performance. At the University of Benin, facilities such as classrooms, libraries, laboratories, and recreational spaces form an essential part of the learning environment. However, issues including inadequate maintenance, outdated facilities, and overcrowding have been observed to negatively affect students' comfort, concentration, and academic productivity.

This study adopts a case study approach, using physical observation of facilities and a questionnaire survey administered to students of the University of Benin to assess the impact of campus infrastructure on learning outcomes. The findings reveal that well-designed and properly maintained learning spaces enhance students' concentration, motivation, and academic performance, while poor ventilation, insufficient space, and deteriorating facilities hinder effective learning.

The study emphasizes the need for regular maintenance, infrastructural upgrades, and user-focused design strategies to improve the quality of the campus environment and support better academic outcomes at the University of Benin.

## CHAPTER ONE

### 1.1 BACKGROUND OF THE STUDY

The physical state of a university's environment does more than just provide shelter, it directly affects how students learn and experience their education. At the University of Benin (UNIBEN), facilities like classrooms, lecture halls, libraries, laboratories, and recreational spots all play a role in shaping the academic journey. Yet, as the number of students keeps rising and many buildings get older then weaker, issues such as overcrowded lecture halls, poor maintenance, and outdated resources have become hard to ignore.

Universities are not only expected to improve knowledge but also to create spaces that make learning easier and more enjoyable. A well-lit room, good internet access, or even a quiet corner in the library can make a huge difference in how well a student studies. On the other hand, broken chairs, stuffy classrooms, or old laboratory tools can quickly kill motivation and hurt learning.

Good infrastructure also supports more than results. It has a strong influence on students' well-being, their sense of belonging, and even how social they are. A good campus encourages interests in academics and extracurricular, while a neglected one may leave students feeling discouraged. This is why, globally, universities now compete not only on teaching quality but also on facility standards.

At UNIBEN, complaints about infrastructure have come up again and again from both students and staff. While some renovations and digital resources have been introduced, the school population has been growing more than the required infrastructures. Several buildings still require urgent attention.

Fixing this goes beyond just fixing what is broken. Universities of today have to start thinking about flexible, eco-friendly spaces, sustainable designs, and layouts that can serve various

student needs. Without proper maintenance and proper planning for growth, the steady intake of students will keep making the system difficult and eventually affect academic performance. In conclusion, infrastructure is not a side issue, it is at the very heart of academic success. If UNIBEN closes its infrastructure gaps, the overall learning experience can greatly improve and the institution can build a stronger foundation for the future.

## **1.2 PROBLEM STATEMENT**

The state of several UNIBEN infrastructures are not essentially bad and unusable. The problem the infrastructures majorly faces is overpopulation, therein leading to poor quality of structures and challenges for both students and staff. Many academic and non-academic facilities are aging and poorly maintained. Lecture halls are often overcrowded, libraries lack enough space, and many labs function with old or improper equipment. Without modern classrooms with technology, students also struggle to interact, learn and research.

The rapid growth in student numbers has made the available infrastructures overused. Lecture halls, hostels, and libraries are not enough to accommodate everyone, leading to discomfort, distraction, and frequent breakdown of resources.

Additionally, limited funding continues to slow down progress. Insufficient financial support from both government and private sources delays upgrades and new construction. At times, corruption and mismanagement also make things worse.

Another concern is the lack of long-term planning. Poorly ventilated lecture halls, weak lighting, and limited access for students with disabilities all create a weak learning environment. The shortage of green and recreational spaces further affects students' mental health and overall well-being.

Tackling these issues requires more than piecemeal repairs. UNIBEN needs a well-rounded, forward-looking approach to infrastructure development. One that includes steady maintenance, student-friendly designs, use of technology, and sustainable practices.

### **1.3 JUSTIFICATION OF THE STUDY**

Looking into the impact of campus infrastructure on student learning at UNIBEN is important for several reasons:

- i. Improving Learning Outcomes: A well-planned learning environment can directly boost concentration, engagement, and academic performance. Understanding this connection can help improve student results.
- ii. Identifying Weaknesses: Many of UNIBEN's facilities face issues like overcrowding, poor maintenance, and outdated resources. Highlighting and targeting these problems is the first step to solving them.
- iii. Supporting Policy Decisions: The findings of this study can help administrators, planners, and policymakers make smarter choices about infrastructure investment.
- iv. Encouraging Sustainability: By examining how design affects performance, the study can push for technology and eco-friendly, and inclusive solutions.
- v. Enhancing Student Well-being: Aside from academics, a well-kept campus improves mental health, social life, and overall satisfaction.

This research is not just another academic paper it can serve as a useful guide for shaping future campus planning at UNIBEN. By pointing out gaps and opportunities, it can contribute to building a better, more supportive learning environment.

### **1.4 RESEARCH QUESTIONS**

This study will be guided by the following questions:

1. How does the design, quality, and maintenance of campus infrastructure at University of Benin influence students' learning experiences, motivation, engagement, and academic performance?

2.What key infrastructural factors and challenges e.g. classrooms, libraries, laboratories, recreational spaces, overcrowding, outdated facilities, and accessibility most affect students and staff at UNIBEN?

3.How can technology integration, smart design strategies, inclusivity, accessibility, and sustainable development practices be applied to improve learning environments and student well-being at UNIBEN?

4.What role do funding, government policies, and infrastructure development play in UNIBEN's long-term growth and reputation, and how does the university compare with national and international best practices?

### **1.5 AIMS AND OBJECTIVES**

**Aim:** To study the impact of campus infrastructure design on student learning and performance at UNIBEN, and to highlight how proper planning can support academic excellence.

**Objectives:**

1. To assess how classrooms, libraries, labs, and recreational spaces affect learning.
2. To identify the main challenges the infrastructures face in UNIBEN.
3. To evaluate the benefits of modern, technology-driven learning environments.
4. To examine how the infrastructures influence student well-being and social life.
5. To explore how funding and policy affect campus development.
6. To compare UNIBEN's infrastructure with other institutions, both in Nigeria and abroad.
7. To propose recommendations and solutions for sustainable and suitable campus development for students.

### **1.6 SCOPE OF THE STUDY**

This study focuses on UNIBEN and how its physical environment (e.g. lecture halls, libraries, labs, hostels, and recreational spaces) shapes student learning and overall university life.

Areas focus to focus on include;

Lecture halls and classrooms: seating, lighting, ventilation, and technology sources.

Libraries and study areas: book availability, digital access, and study spaces.

Laboratories: equipment quantity and quality, and accessibility.

Hostels: living conditions and their impact on focus and student's well-being.

Recreational spaces: green areas, sports, and relaxation facilities.

This study will also compare UNIBEN's infrastructure with other universities in Nigeria and internationally, drawing lessons for better practices.

### **Limitations:**

This study is to UNIBEN in particular and may not reflect other schools.

Data will rely heavily on surveys, interviews, and reports, which may have some limits.

Infrastructural development is an ongoing process, and recommendations may take time to fully implement.

### **1.7 STUDY AREA**

The study takes place at the University of Benin (UNIBEN), in Benin City, Edo State, Nigeria.

UNIBEN is one of the country's leading higher education institutions, with a diverse student body and a wide range of facilities that affect both academic and social life.

#### Key areas of focus;

- i. Academic infrastructure: lecture halls, libraries, and laboratories.
- ii. Residential and social facilities: hostels, sports centers, green areas, and campus transportation.
- iii. Technological infrastructure: internet access, ICT centers, e-learning platforms, and smart classrooms.
- iv. Sustainability and planning: energy efficiency, and eco-friendly practices.

While this study is centered on UNIBEN, the insights gained may also be useful for understanding infrastructure challenges and opportunities in other Nigerian universities.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 THE IDEA BEHIND CAMPUS INFRASTRUCTURE DESIGN AND ITS IMPACT ON STUDENT LEARNING

The term or need for campus infrastructure, especially a good one stems from the need to create a good working environment for student engagement, and overall academic performance. A well-planned educational space contributes to effective knowledge transfer, students' well-being, and academic productivity. This study explores how infrastructures, including academic buildings, residential facilities, recreational areas, and digital learning spaces, influence students' experience at the University of Benin (UNIBEN).

The core ideas behind the impact of campus infrastructure design on student learning include:

1. Creation of a Conducive Learning Environment:

Well-designed lecture halls, libraries, and laboratories contribute to good knowledge retention, collaboration, and academic engagement.

The incorporation of proper lighting, ventilation, and acoustics in learning spaces improve concentration, attention and memory.

2. Enhancing Student Well-being and Productivity:

Quality student housing, green spaces, and recreational areas promote mental and physical health, indirectly improving academic performance.

Access to quiet study zones, comfortable and well planned seating, and modern learning tools reduces academic stress and improves efficiency.

3. Boosting Academic Performance Through Technology Integration:

The integration of digital learning tools, smart classroom systems, and high-speed internet allow for innovative learning methods and research opportunities.

The provision of technology hubs and digital libraries supports self-teaching and learning.

#### 4. Promoting Inclusivity and Accessibility:

A well-designed campus ensures a more universal access for students with disabilities through ramps, elevators, and other assists with the aid of technology.

Flexible learning spaces aid in the different learning styles and academic needs.

#### 5. Encouraging Student Engagement and Campus Experience:

Vibrant social spaces, cultural centers, and multipurpose halls support extracurricular activities and student socialization.

The integration of more green landscapes and recreational zones contributes significantly to relaxation and creativity.

#### 6. Supporting Sustainable Development and Future Adaptability:

Eco-friendly architecture, sustainable buildings, and proper waste management contribute to a healthier campus environment.

An adaptive and well planned infrastructure ensures that campus facilities grow with technological advancements and student needs.

By evaluating the University of Benin's campus infrastructure, this study aims to identify how a well-designed academic and social space can contribute to students' learning outcomes and overall academic performance.

## **2.2 THE FUNCTIONS & PROCESSES OF CAMPUS INFRASTRUCTURE DESIGN ON STUDENT LEARNING AND ACADEMIC PERFORMANCE**

The design of campus infrastructure plays a crucial role in shaping the academic experiences and overall well-being of students. Other than providing physical spaces for learning, a well-planned infrastructure enhances intellectual engagement, improves social interaction, and supports various aspects of student life.

Here's how campus infrastructure design impacts student learning and academic performance at the University of Benin;

### 1. Enhancing Learning Environments

**Improved Classroom Spaces:** Appropriately designed classrooms with adequate lighting, ventilation, and acoustics create an atmosphere perfect for concentration and effective learning.

**Technology-Integrated Spaces:** Smart classrooms equipped with digital tools and interactive learning technologies will improve the lectures, promoting student engagement and comprehension.

### 2. Supporting Student Well-being and Productivity

**Recreational and Green Spaces:** Access to good, well maintained outdoor spaces like parks and other relaxation areas reduces stress and improves mental health, which contributes to improved academic performance.

**Health and Fitness Facilities:** Campus gyms, sports complexes, and wellness centers encourage physical activity, which has been linked to increased brain function and improved academic outcomes.

### 3. Facilitating Collaboration and Social Learning

**Library and Study Hubs:** Well-designed libraries, reading rooms, and other study spaces encourage independent research and learning together improves intellectual growth.

**Student Interaction Zones:** Common areas such as student lounges, cafeterias, and multipurpose halls provide platforms for socializing, networking, and exchange of knowledge.

### 4. Promoting Accessibility and Inclusivity

**Disabled-Friendly Infrastructure:** The presence of ramps, elevators, and assistive technologies ensures that all students, including those with disabilities, can enter educational infrastructures and participate fully in campus life.

Flexible Learning Spaces: The addition of multipurpose halls and lecture theaters allows students to engage in various learning activities, from lectures to group discussions and individual research.

## **2.3 THE BENEFITS OF CAMPUS INFRASTRUCTURE DESIGN ON STUDENT LEARNING AND ACADEMIC PERFORMANCE**

Case Studies of Infrastructure Impact at The University of Benin (UNIBEN);

### 1. Development and Modernization of the John Harris Library:

As a current student at the University of Benin, the transformation of the John Harris Library stands out as a key infrastructural development that directly influences academic achievement. The library is strategically situated at Ugbowo Campus along the main drive between the students' complex and the students' Halls of Residence and opposite the Clinical Students Hostel., has evolved into a modern academic hub with extensive seating capacity and digital resources (University of Benin Student Handbook, 2025).

The main library building offers space for over 900 readers, along with specialized carrel areas for research students and faculty. Beyond this, the expansion through the Donald Partridge E-Learning Center significantly increased capacity—accommodating about 3,000 readers and added computer facilities with internet bandwidth access (University of Benin Student Handbook, 2025).

From a student perspective, this modernization has several benefits;

- **Improved Access to Academic Content:** Expanded digital libraries and OPAC (Online Public Access Catalogue) make it easier to locate books, journals, and research materials without long waits or limited physical access.
- **Enhanced Research Productivity:** The library's ICT facilities, including networked workstations, support both undergraduate and postgraduate research activities, allowing students to work collaboratively or independently in conducive learning spaces.

- Support for Academic Performance: A well-resourced library correlates with better study habits, increased reading engagement, and improved research output, important components of academic success in tertiary education.

#### Reference

University of Benin Student Handbook (2025). John Harris Library description. UNIBEN Publications.

### 2. Upgrading of Lecture Halls and Digital Facilities:

Another visible impact of infrastructure investment at UNIBEN has been the ongoing renovation of lecture halls and academic spaces. Under recent administrative efforts, dilapidated lecture theatres, especially in the Faculty of Social Sciences, were refurbished with updated seating, ventilation, and learning aids such as projectors and digital boards.

These improvements matter for students in the following ways:

- Comfort and Health: Better seating and ventilation reduce physical strain during long classes, which is especially important during peak heat periods in Benin City.
- Improved Learning Engagement: Digital facilities help lecturers present multimedia content, making lessons more interactive and easier to follow.
- Reduced Disruptions: Modern hall upgrades decrease distractions caused by poor acoustics or bad lighting, allowing students to stay attentive and retain information more effectively.
- Reference

UNIBEN Renovates Dilapidated Structures (2020). Independent Newspaper Nigeria.

### 3. Revitalization and increase in Student Hostels and Campus Living Conditions:

Student accommodation is often overlooked but is an essential component for campus life.

Quality living conditions are a necessary support system for academic focus and personal wellbeing. Recently, UNIBEN had embarked on some major hostel renovations, addressing

long overdue maintenance issues such as plumbing, electrical fittings, roofing repairs, and room refurbishments across the Ugbowo and Ekehuan campuses. (Nigerian Education News, 2025)

In addition to these large-scale renovations:

Students in Hall 3 and Hall 4 have observed improvements such as bathroom renovations, replacement of lighting fixtures, and installation of more reliable furniture. (ACJ UNIBEN, 2025).

UNIBEN has also built new hostels such as the Daisy Danjuma hostel, TETFund hostels and NNPC hostels, UNIBEN is still lacking in accommodation. Also despite these hostels being relatively new they still lack proper structure and also demand proper maintenance

The direct effects on student learning include:

- **Better Rest and Focus:** Clean, safe, and comfortable living spaces help students rest adequately, which supports cognitive functions like memory, attention, and exam performance.
- **Enhanced Safety and Health:** Upgraded hostels reduce health risks associated with unsafe buildings or poor sanitation, enabling students to spend more time on academic work rather than dealing with preventable issues.
- **Community Building:** Improved shared spaces foster peer learning, group study sessions, and stronger social support networks—all essential elements of a thriving academic community.

Reference

University of Benin to begin major hostel renovation (2025). The Nigeria Education News.

#### The Role of Infrastructure in Academic Excellence

Across these case studies, the connection between infrastructure and student learning outcomes is clear:

Academic Resources: Modern libraries with digital access support research, reduce barriers to information, and encourage independent learning.

Learning Environments: Upgraded lecture halls promote better comprehension and participation in academic discourse.

Student Welfare: Quality hostels and living conditions are foundational to student wellbeing, which, in turn, impacts academic performance and campus engagement.

In summary, infrastructure design at UNIBEN plays a significant role in shaping the academic experience. Thoughtfully upgraded facilities not only enhance the physical environment but also contribute to improved engagement, academic success, and holistic student development.

## **2.4 THE CHALLENGES OF CAMPUS INFRASTRUCTURE DESIGN ON STUDENT LEARNING AND ACADEMIC PERFORMANCE**

The design and maintenance of campus infrastructure play a crucial role in shaping students' academic experiences. However, several challenges can slow down the effectiveness of infrastructure in supporting student learning and academic performance at the University of Benin:

### **1. Inadequate Learning Facilities**

Many lecture halls and classrooms are overcrowded, poorly ventilated, and lack adequate lighting and acoustics. This negatively affects students' concentration and engagement during lectures, leading to reduced academic performance.

### **2. Limited Access to Modern Technology**

The integration of smart classrooms, digital libraries, and high-speed internet is essential for modern learning. However, insufficient ICT infrastructure can limit students' ability to access digital resources and conduct research.

### 3. Poor Maintenance of Infrastructure

Frequent power outages, broken desks, outdated laboratory equipment, and deteriorating hostel facilities contribute to a poor learning environment. The lack of regular maintenance affects the overall functionality and usability of campus facilities.

### 4. Insufficient Recreational and Wellness Spaces

A well-balanced academic life requires recreational spaces such as sport complexes, parks, and relaxation areas. Limited or poorly maintained recreational facilities can lead to increased stress and reduced student well-being, indirectly affecting academic performance.

### 5. Accessibility and Inclusivity Challenges

Students with disabilities often face difficulties navigating campus infrastructure due to the lack of wheelchair ramps, elevators, and assistive learning devices. This limits their access to quality education and participation in academic activities.

Several studies have examined the challenges of campus infrastructure on student performance: "The Impact of the Learning Environment on Academic Performance" by Okafor and Adekunle (2018): This study found that poorly designed classrooms and inadequate facilities significantly hinder student engagement and learning outcomes.

"Technology and Higher Education: The Role of Digital Infrastructure" by Nwachukwu (2020): This research highlights how the lack of ICT infrastructure affects students' ability to engage in research and collaborative learning.

## **2.5 POSSIBLE SOLUTIONS TO IMPROVE CAMPUS INFRASTRUCTURE FOR ENHANCED STUDENT LEARNING**

To address these challenges, several solutions can be implemented to improve campus infrastructure at the University of Benin:

### 1. Public-Private Partnerships

Collaboration between the university, government, and private sector can provide funding for new infrastructure projects, renovations, and technology upgrades.

### 2. Investment in Smart Learning Facilities

Introducing modern classrooms with digital boards, high-speed internet, and advanced learning technologies can enhance interactive learning experiences.

### 3. Regular Maintenance and Upgrades

A structured maintenance plan should be implemented to ensure lecture halls, laboratories, hostels, and recreational facilities remain in optimal condition.

### 4. Enhancing Recreational and Wellness Spaces

Developing well-maintained parks, student lounges, and sports complexes can improve students' mental and physical well-being, leading to better academic performance.

### 5. Promoting Inclusive Infrastructure

The university should invest in wheelchair-accessible pathways, elevators, and assistive technology to ensure all students, regardless of ability, can fully participate in academic activities.



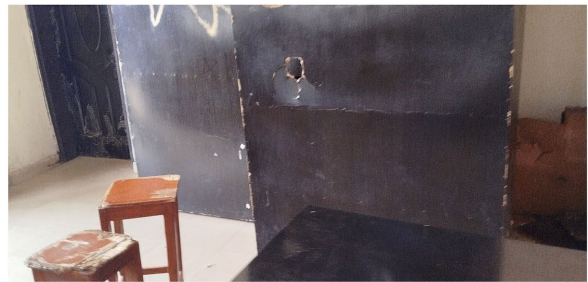
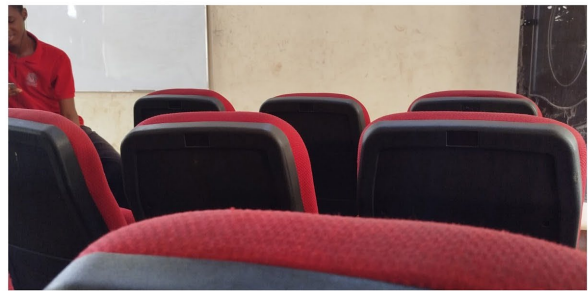


The University of Benin Library is an important academic facility, but its effectiveness is limited by poor maintenance and infrastructural challenges. Observations show deteriorating walkways, aging building components, and inadequate ventilation, which result in poor airflow and uncomfortable indoor conditions, especially during periods of high student use. These issues affect students' concentration, comfort, and overall learning experience, indicating the need for improved maintenance and infrastructural upgrades within the University of Benin Library.



This is a lecture hall at the department of life sciences meant to accommodate hundreds of students, it is too cramped and not enough seats, it is in need of renovation as well.

From the faculty of environmental science. There is a lot to still keep maintained; from the ceilings to the shelves.





By addressing these infrastructure challenges, the University of Benin can create a more conducive learning environment, ultimately improving student engagement, academic performance, and overall university experience.

## **2.6 CURRENT PRACTICES IN CAMPUS INFRASTRUCTURE DESIGN AND STUDENT LEARNING**

At the University of Benin, campus infrastructure plays a key role in supporting student learning and academic performance. Various strategies and practices have been implemented to enhance the functionality of learning spaces, improve student engagement, and create a conducive academic environment.

### **1. Classroom and Lecture Hall Design**

Many lecture halls and classrooms are designed to accommodate large student populations, but challenges such as overcrowding and poor acoustics persist.

Some classrooms have adopted modern teaching aids such as projectors and public address systems to enhance learning.

### **2. Digital Learning and ICT Integration**

The university has invested in digital libraries and e-learning platforms to provide students with access to online resources.

Some departments have introduced smart classrooms with interactive whiteboards, though access remains limited.

Internet connectivity is available, but slow speeds and inconsistent service can hinder research and online learning.

### 3. Hostel and Residential Facilities

Student hostels provide accommodation for a significant portion of the student body, but overcrowding and inadequate maintenance remain concerns. The introduction of private hostels near campus has offered alternative housing solutions, though affordability remains an issue.

### 4. Recreational and Wellness Facilities

Sporting facilities such as football fields and gymnasiums provide students with opportunities for physical activity.

Green spaces and relaxation areas have been incorporated into parts of the campus to improve student well-being.

### 5. Accessibility and Mobility

The university has made efforts to improve pathways and road networks within the campus to ease movement.

However, there is still a lack of proper accessibility features such as ramps and elevators for students with disabilities.

## **2.7 FUTURE DIRECTIONS FOR CAMPUS INFRASTRUCTURE IMPROVEMENTS**

To enhance student learning and academic performance at the University of Benin, several key strategies and future improvements can be explored:

### 1. Research and Data-Driven Planning

Conducting campus-wide assessments to identify infrastructure gaps and prioritize improvements.

Engaging students, faculty, and stakeholders in surveys to understand their needs and challenges.

Implementing a master plan for phased development and expansion of campus facilities.

## 2. Modernizing Learning Environments

Expanding the use of digital learning tools, smart classrooms, and virtual labs to improve academic engagement.

Ensuring reliable internet access across campus to support research, online courses, and collaborative learning.

Upgrading lecture halls with improved seating, ventilation, and lighting to enhance the learning experience.

## 3. Sustainable and Smart Campus Development

Introducing energy-efficient buildings, solar-powered facilities, and green infrastructure to promote sustainability. Improving waste management and water conservation practices to maintain a clean and healthy environment.

Designing multipurpose academic and social spaces to encourage collaboration and student interaction.

## 4. Enhancing Student Housing and Well-Being

Expanding and renovating hostels to reduce overcrowding and improve living conditions.

Providing better sanitation and maintenance services to ensure a hygienic environment.

Increasing recreational spaces, mental health support services, and wellness programs to improve student well-being.

## 5. Accessibility and Inclusivity

Implementing universal design principles to ensure that all students, including those with disabilities, have equal access to learning spaces and campus facilities.

Constructing ramps, elevators, and specialized learning aids for students with special needs.

## **2.7.1 SCALING UP CAMPUS INFRASTRUCTURE DEVELOPMENT**

Scaling up campus infrastructure investments can have several benefits for student learning and academic success:

### **1. Improved Academic Performance**

A well-designed campus fosters a positive learning environment that enhances student concentration, engagement, and academic achievement.

### **2. Attraction of Talent and Research Opportunities**

Modern infrastructure attracts top faculty, researchers, and students, positioning the university as a leading academic institution.

Improved research facilities encourage more collaborations and funding opportunities.

### **3. Economic and Institutional Growth**

Upgraded infrastructure can lead to increased student enrollment, boosting the university's reputation and financial sustainability.

Improved facilities create opportunities for partnerships with industries, businesses, and government agencies.

### **4. Strengthening the University Community**

Investing in campus infrastructure promotes a sense of pride and belonging among students, faculty, and alumni.

Enhanced recreational, social, and cultural spaces contribute to a well-rounded student experience.

## **2.7.2 RESEARCH GAPS IN CAMPUS INFRASTRUCTURE AND STUDENT LEARNING**

While efforts have been made to improve campus infrastructure, several gaps remain that need further research and attention:

## **1. Insufficient Data on Infrastructure Impact**

There is limited research on how specific infrastructure improvements affect student learning outcomes. More studies are needed to assess the correlation between campus design and academic performance.

## **2. Lack of Sustainable Development Strategies**

Current infrastructure planning does not fully integrate sustainability principles such as energy efficiency and climate resilience.

More research is required on eco-friendly campus designs that balance sustainability with functionality.

## **3. Digital Divide and Technological Gaps**

Unequal access to digital learning tools and slow internet speeds create a gap in student learning experiences.

Research should explore cost-effective ways to implement widespread digital transformation.

## **4. Inadequate Student-Centered Designs**

Many campus facilities do not prioritize student comfort, accessibility, and mental well-being. Research is needed to develop inclusive infrastructure models that cater to diverse student needs.

## **5. Funding and Maintenance Challenges**

Limited financial resources hinder large-scale campus development and the proper upkeep of existing infrastructure.

Exploring alternative financing models, such as public-private partnerships, could help bridge this gap.

By addressing these research gaps and implementing strategic improvements, the University of Benin can create a more conducive learning environment, ultimately enhancing student academic performance and overall university experience.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 INTRODUCTION**

To get a clear picture of how campus infrastructure affects learning at the University of Benin, this study used a structured research approach that still left room for flexibility. The idea was not just to measure physical features of the environment, like buildings and classrooms, but also to understand how students, staff, and administrators actually experience those spaces in their daily lives.

This chapter explains the research design, the survey tools that were used, how participants were selected, the ethical guidelines followed, and the steps taken to analyze the data.

#### **3.2 RESEARCH DESIGN**

The study adopted a mixed-method design, combining both numbers and people's experiences. Numbers can show trends, but they don't always tell the full story, especially when it comes to something as personal as learning environments.

On the quantitative side, the research looked at facilities such as lecture halls, hostels, libraries, and laboratories, rating them for adequacy, accessibility, and suitability. On the qualitative side, it gathered voices and stories from students, staff, and administrators about how those same spaces shape their academic lives.

By blending these two angles, the study was able to bring out common issues, like overcrowding, poor ventilation, and weak ICT access, while also pointing to possible solutions such as smarter space planning, sustainable design, and better integration of technology. Together, these insights show how strongly campus design can affect both performance and well-being.

### **3.3 SAMPLE SURVEY**

#### **Introduction**

The survey was a key tool in the study because it gave participants the chance to describe their own experiences with the university's facilities. This way, the findings were grounded in real life rather than assumptions.

#### **Target Audience**

The survey reached three main groups:

- Undergraduate and postgraduate students across different faculties
- Academic and non-academic staff
- Administrators and facility managers

Bringing together these perspectives gave the study both the user's experience and the institution's view.

#### **Survey Content**

The survey was divided into four sections:

##### **1. Awareness and Perceptions**

Participants reflected on the condition of campus facilities, the ones they used most, and how those spaces influenced focus, productivity, and learning. They also shared whether issues like bad lighting or overcrowding had ever interfered with their work.

##### **2. Case Studies of Specific Facilities**

Certain facilities such as the main library, lecture theatres, hostels, labs, and ICT centers were examined more closely. Participants rated them from 1 (very poor) to 5 (excellent) in terms of adequacy, comfort, and accessibility, with space for open comments and suggestions.

### **3. Attitudes and Opinions**

This section asked about broader views: the importance of infrastructure compared to other academic factors, how resources should be allocated, and expectations for new types of learning spaces like smart classrooms or digital libraries.

### **4. Demographics**

Basic details such as age, gender, faculty, and level of study were gathered, allowing comparisons across different groups.

#### **3.4 SELECTION CRITERIA FOR CASE STUDIES**

Facilities chosen for closer analysis were selected using a few guiding principles:

- **Relevance:** Spaces had to be directly linked to academic life.
- **Frequency of use:** Busy spaces like lecture halls and libraries were prioritized.
- **Variety:** Both well-maintained and poorly maintained facilities were included.
- **Records:** Preference went to facilities with available documents (like plans or reports).
- **Engagement:** Places with high student-staff interaction were emphasized.

This ensured that the research wasn't limited to "landmark" buildings but also covered everyday facilities that play a big role in student life.

#### **3.5 ETHICAL CONSIDERATIONS**

Ethics guided the study from start to finish. Participants were told the purpose of the research and gave their consent before taking part in surveys or interviews. They were promised anonymity and confidentiality, with the option to withdraw at any point.

All secondary sources were properly acknowledged and cited to maintain transparency and academic integrity.

### **3.6 METHODS OF DATA ANALYSIS**

Data was analyzed using both numbers and themes.

Quantitative data from surveys was summarized with percentages, averages, and frequency distributions. Charts and tables helped visualise the results.

Qualitative data from open-ended questions and interviews were examined for recurring themes, such as seating shortages, ventilation issues, or lack of ICT facilities. These narratives gave depth to the statistics.

Secondary data (including university planning documents and previous studies) was reviewed alongside the primary findings to provide context.

By bringing these sources together, the study created a fuller picture of how the University of Benin's infrastructure shapes academic performance and the overall student experience.

### **3.7 CONCLUSION**

This chapter has detailed the research methodology used to explore the impact of campus infrastructure design on student learning and academic performance at the University of Benin.

The study employs a mixed-methods approach, integrating surveys, interviews, and case study analysis to provide a comprehensive understanding of the subject. The next chapter presents the results and discussions based on the collected data.

## CHAPTER FOUR

### ANALYSIS AND PRESENTATION OF DATA

This chapter summarises the research findings regarding the necessity for “The Impact of Campus Infrastructure Design On Student Learning and Academic Performance At The University of Benin”

#### 4.1 PRESENTATION OF RESULTS (DATA)

##### 4.1.1 Demographics of Respondents

What is your age group?

50 responses

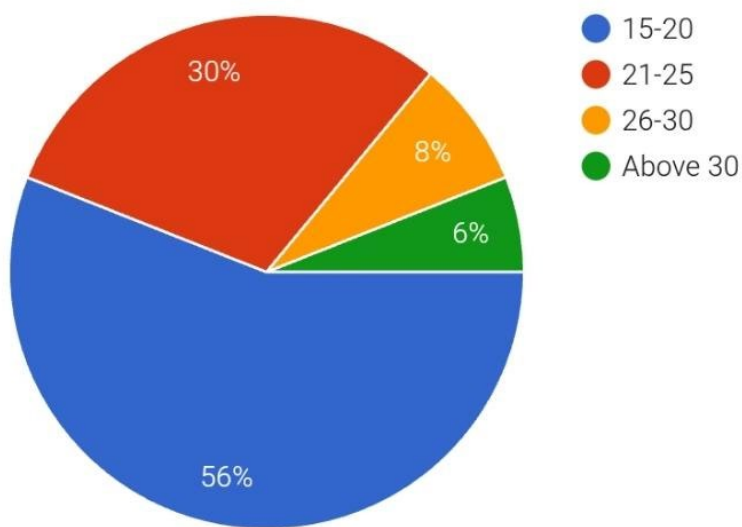


fig 1:

The pie chart in fig 1 shows the age distribution of 50 respondents:

15–20 years: 56% (majority)

21–25 years: 30%

26–30 years: 8%

Above 30 years: 6%

Overall, most respondents are between 15 and 20 years old, while very few are above 30.

## What is your gender?

50 responses

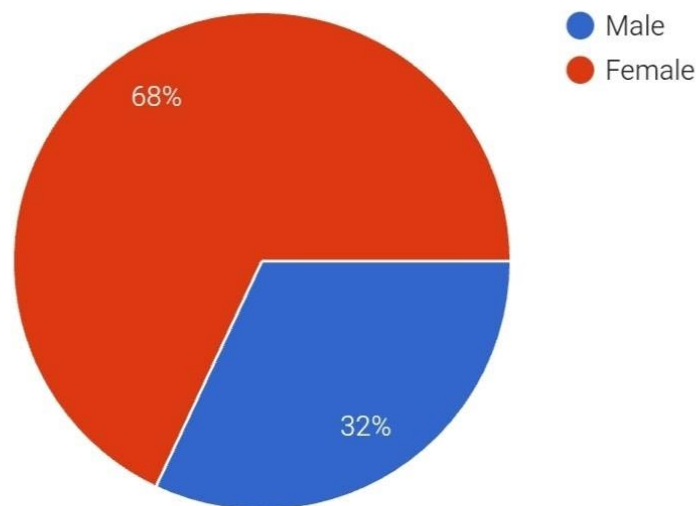


fig 2:

The pie chart in fig 2 shows the gender distribution of 50 respondents:

Female: 68%

Male: 32%

The majority of the respondents are female.

## What year are you?

50 responses

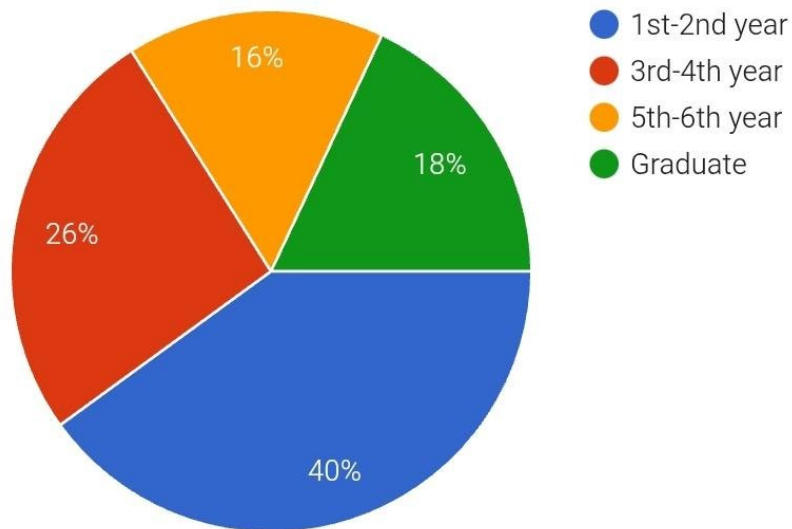


fig 3:

This pie chart in fig 3 shows the academic level of 50 respondents:

1st–2nd year: 40% (largest group)

3rd–4th year: 26%

5th–6th year: 16%

Graduates: 18%

Overall, most respondents are in the early years of study, while a smaller proportion are graduates or in advanced years.

**SECTION 1: SHOWS THE OPINIONS OF RESPONDENTS ON THE IMPACT OF CAMPUS INFRASTRUCTURE ON STUDENT LEARNING AND ACADEMIC PERFORMANCE.**

**1. How do the buildings and facilities at UNIBEN affect how you learn?  
Multiple choice**

50 responses

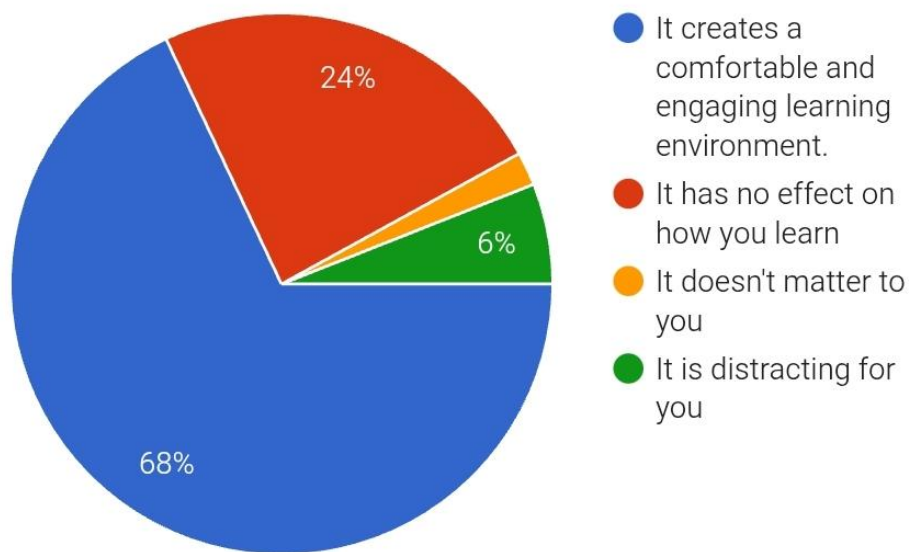


fig 4:

This chart in fig 4 shows how 50 respondents feel about the effect of UNIBEN's buildings and facilities on their learning:

68% (majority) of respondents believe that UNIBEN's buildings and facilities create a comfortable and engaging learning environment. 24% of respondents believe the facilities have no effect on their learning. 6% find the facilities distracting, while only 2% believe it doesn't matter.

Overall, most respondents believe the campus environment positively supports their learning, while only a small minority find it distracting or irrelevant.

## 2. Which of these do you think help students do well in school the most?

Multiple choice

50 responses

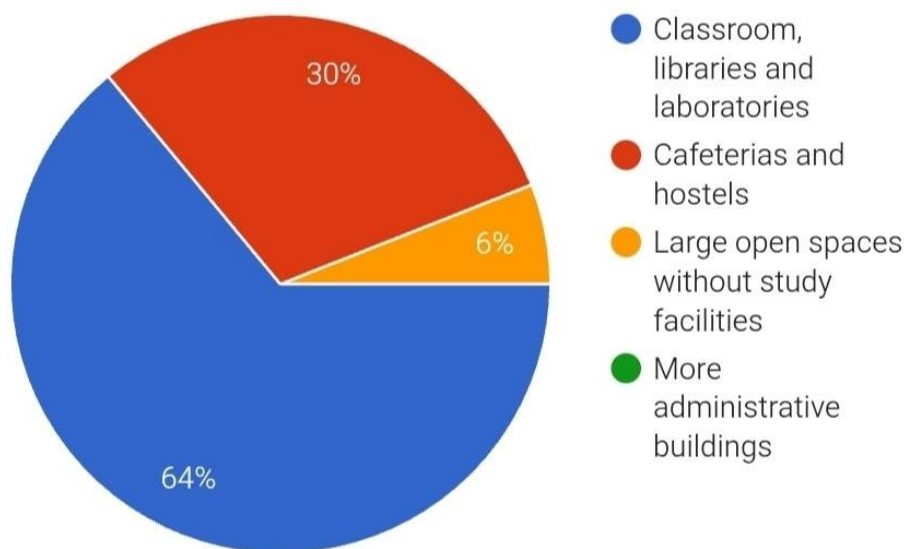


fig 5:

This chart in fig 5 shows 50 respondents' opinions on what best helps students do well in school: 64% (majority) of respondents believe that more classrooms, libraries, and laboratories would improve the campus environment. 30% of respondents prefer more cafeterias and hostels. 6% believe that large open spaces without study facilities are important, while 0% prefer more administrative buildings.

Overall, most respondents believe the campus environment would be better with more classrooms, libraries, and laboratories.

### 3. How does the condition of school facilities affect your learning?

50 responses

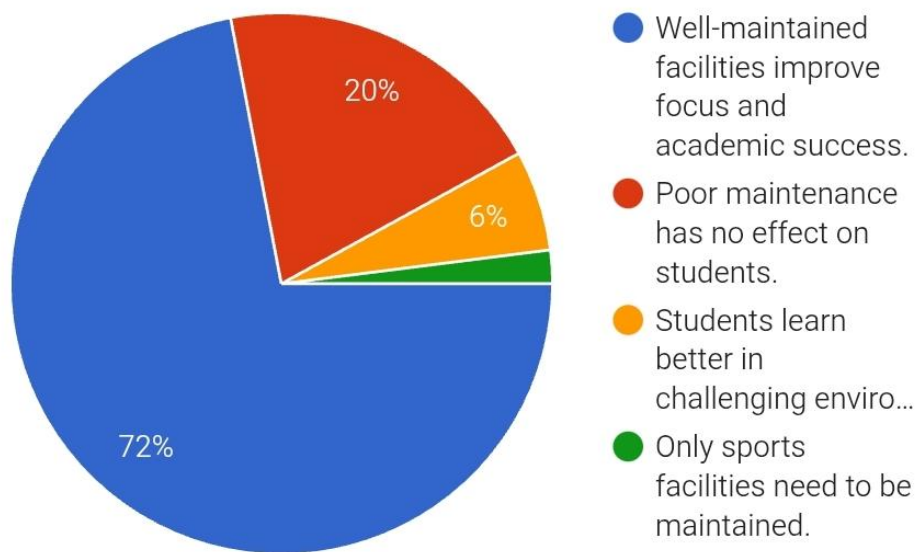


fig 6:

This chart in fig 6 shows 50 respondents' opinions on how the condition of school facilities affect their learning:

72%(majority) of respondents believe that a well maintained facility improves their focus and academic success. 20% of respondents believe that poor maintenance has no effect on them. 6% believe that respondents learn better in challenging environments and only 2% believe that only sports facilities need maintenance.

Overall, most respondents believe that well maintained facilities will improve the focus and academic success in school.

**SECTION 2: SHOWS THE OPINIONS OF RESPONDENTS ON THE CHALLENGES AND OPPORTUNITIES IN CAMPUS INFRASTRUCTURE DEVELOPMENT.**

**4. What are some of the biggest problems with UNIBEN's infrastructure?**

50 responses

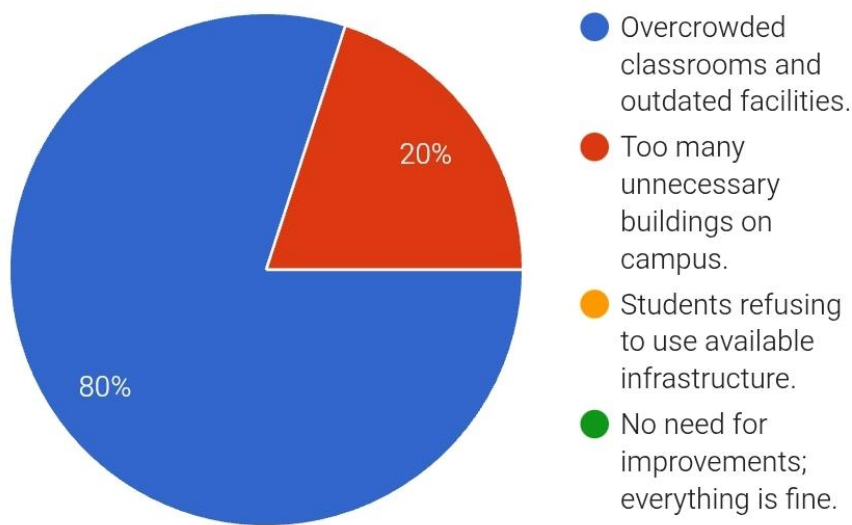


fig 7:

This chart in fig 7 shows 50 respondents opinions on some of the biggest issues with UNIBEN'S infrastructures

80%(majority) of respondents believe that the overcrowded classrooms and outdated facilities are the major problems of UNIBEN with 20% of students agreeing to too many unnecessary buildings on the campus.

The majority of the respondents do not feel that students are refusing to use the available infrastructure or that there is no need for improvement but that the ones that are available are too little causing overcrowding.

## 5. How can new tech and better designs help students?

50 responses

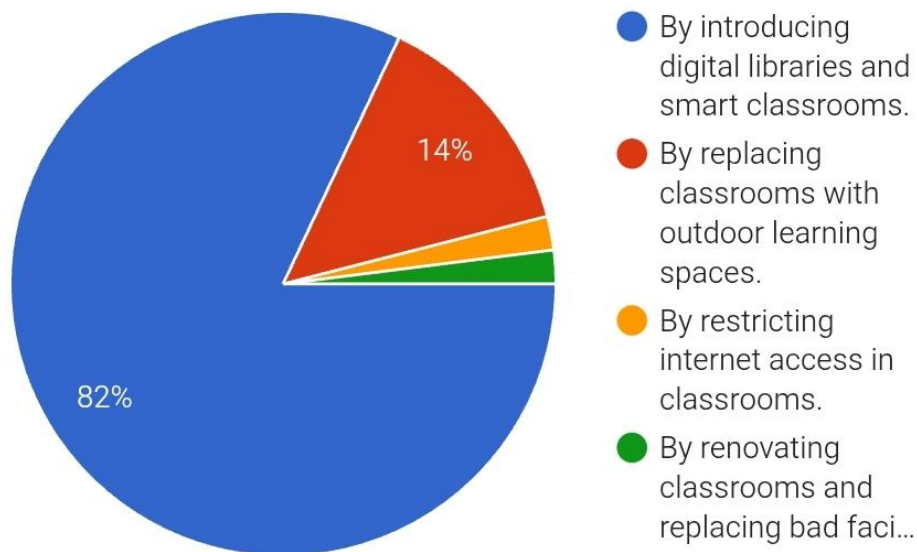


fig 8:

This chart in fig 8 shows 50 respondents' opinions on how new tech and better designs can help the students.

82% (majority) of respondents believe that introducing digital libraries and smart classrooms would help students. 14% of them are of the notion that replacing classrooms with outdoor learning spaces would be best while few believe that renovations and restricting internet access would be best.

Overall most respondents believe that adapting digital libraries and smart classrooms would be what is best.

## 6. How important is money and government support in fixing or improving school facilities?

Linear scale (1 to 5)

50 responses

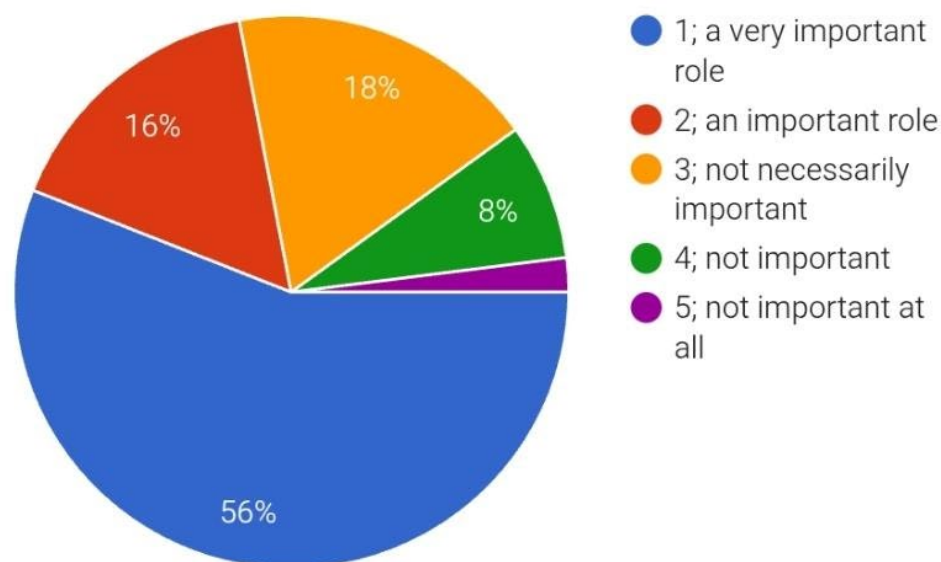


fig 9:

This chart in fig 9 shows 50 respondents' opinions on how important money and government support is in fixing or improving school facilities.

This image summarizes the results of a survey asking about the importance of money and government support in fixing or improving school facilities, based on 50 responses using a linear scale from 1 (very important) to 5 (not important at all).

56% of respondents believe money and government support play a very important role (Scale 1).

18% consider it to have an important role (Scale 2).

16% think it's not necessarily important (Scale 3).

8% rate it as not important (Scale 4).

Less than 2% (represented by the small purple slice) find it not important at all (Scale 5).

All together more than 70% of them believe that it plays an important/ very important role, only a few people believe it doesn't matter (necessarily).

## 7. How can the campus be built to support all students, including those with special needs?

50 responses

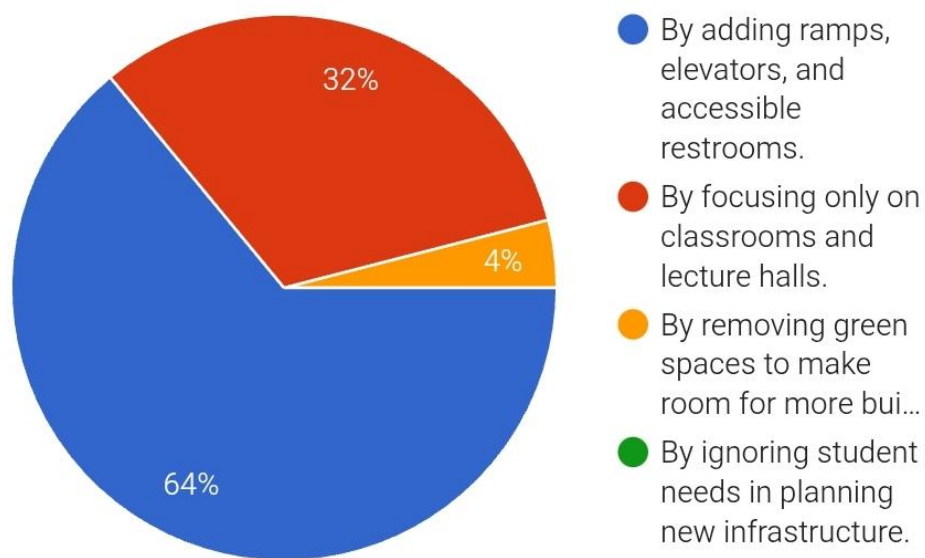


fig 10:

This chart in fig 10 shows 50 respondents' opinions on how the campus can be built to support all students, including those with special needs.

64% (majority) of respondents believe the campus can best support all students, including those with special needs, by adding ramps, elevators, and accessible restrooms. 32% believe the focus should only be on classrooms and lecture halls. 4% suggest removing green spaces for more buildings, while 0% support ignoring student needs in planning infrastructure.

Overall, most students believe that making facilities more accessible is the key to supporting everyone on campus.

## 8. What are smart ways to build a campus that's good for students and the environment?

50 responses

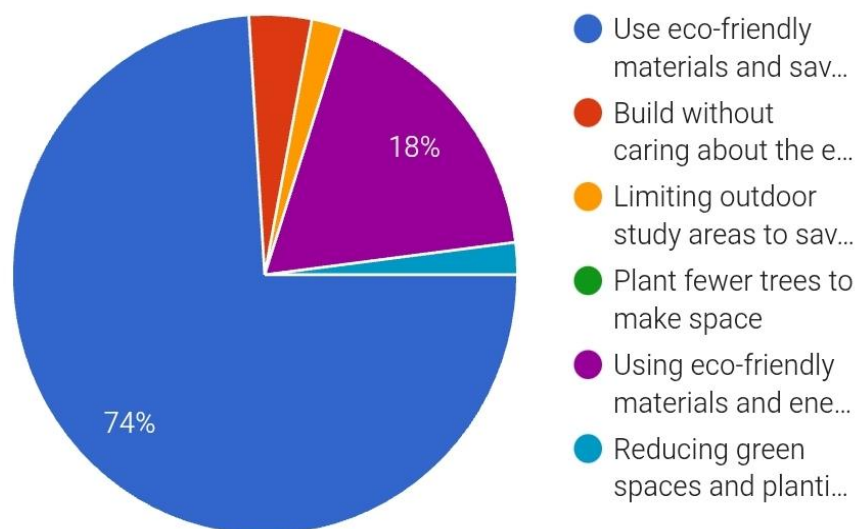


fig 11:

This chart in fig 11 shows 50 respondents' opinions on smart ways to build a good campus for students and the environment.

74% (majority) of respondents believe that the smartest way to build a campus that benefits both students and the environment is by using eco-friendly materials and saving energy. 18% support using eco-friendly materials and energy-saving designs. 4% believe in limiting outdoor study areas, while 2% suggest planting fewer trees to create space. Only 2% support building without caring about the environment, and 0% support reducing green spaces and planting.

Overall, most students believe sustainability through eco-friendly materials and energy efficiency is the best way to build a student- and environment-friendly campus.

9. On a scale of 1 to 5, how much does the school's infrastructure affect your university experience?

50 responses

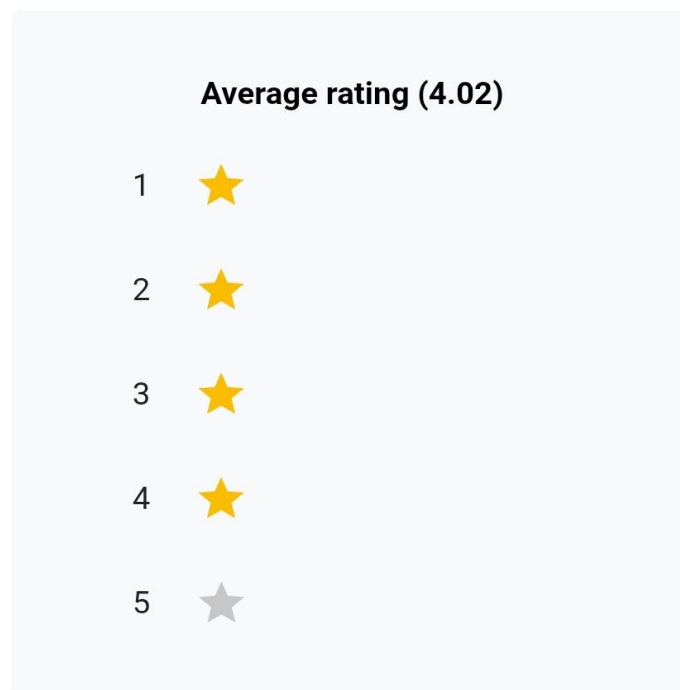


fig 12:

This chart in fig 12 shows 50 respondents' rate how much the school's infrastructure affects their university experience.

The image shows survey results where 50 people rated how much school infrastructure affects their university experience on a scale of 1 to 5. The average rating was high, at 4.02, suggesting that infrastructure significantly impacts their experience.

## 10. Compared to other schools, how do you see UNIBEN's campus and facilities?

50 responses

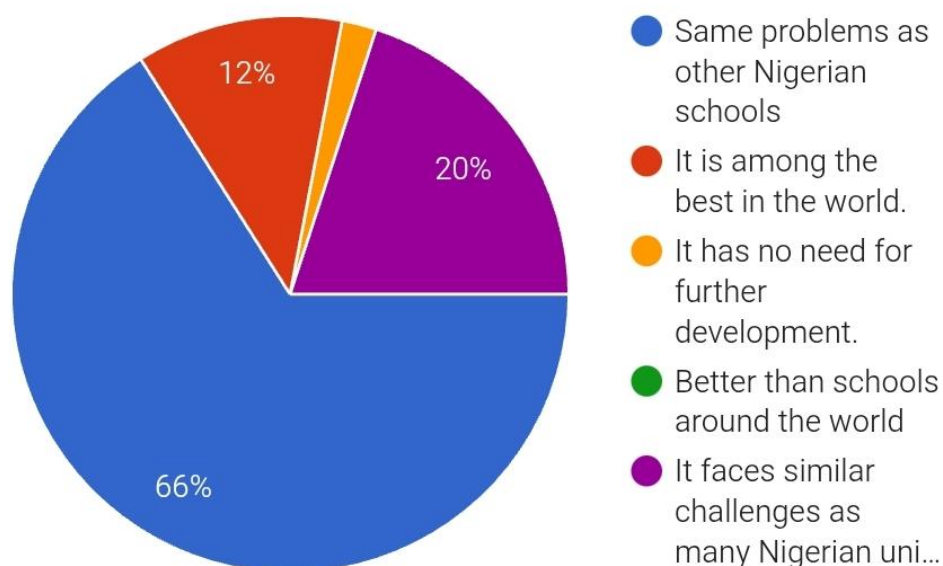


fig 13:

This chart in fig 13 shows 50 respondents' opinion on the facilities in UNIBEN compared to other schools.

66% (majority) of respondents believe that UNIBEN's campus and facilities have the same problems as other Nigerian schools. 20% think it faces similar challenges as many Nigerian

universities. 12% believe it is among the best in the world, while only 2% say it has no need for further development.

Overall, most students see UNIBEN's campus and facilities as comparable to other Nigerian universities, sharing similar challenges rather than standing out globally.

## 11. What can we learn from other countries about building better campuses?

50 responses

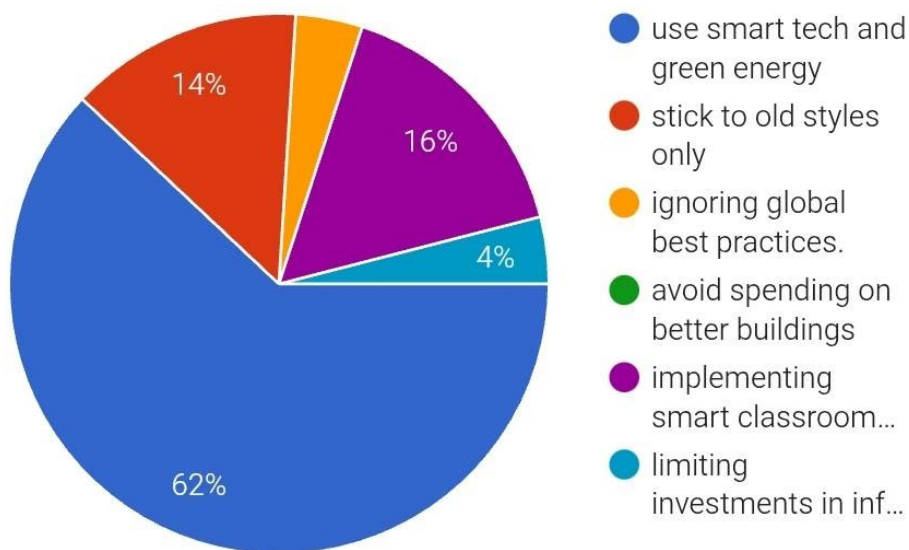


fig 14:

This chart in fig 14 shows 50 respondents' opinion on what we can learn from other countries about better campuses.

62% (majority) of respondents believe that implementing smart classroom technology and focusing on green energy are key lessons to learn from other countries for building better

campuses. 16% advocate for using smart tech and green energy (which seems to overlap significantly with the largest category). 14% suggest sticking to old styles only, while only 4% believe in ignoring global best practices and avoiding spending on better buildings.

Overall, most respondents emphasize the importance of leveraging smart technology and sustainable energy solutions for campus development, highlighting a strong preference for modern, environmentally conscious approaches over traditional methods or neglect of global standards.

## 12. How can good facilities help UNIBEN grow and improve its reputation?

50 responses

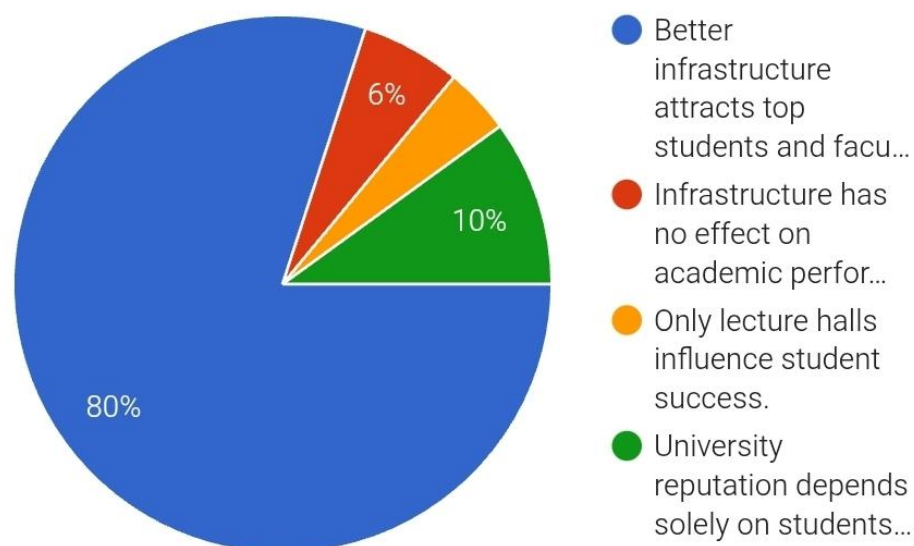


fig 15:

This chart in fig 15 shows 50 respondents' opinion on how good the facilities in UNIBEN help grow and improve its reputation.

This pie chart from 50 responses shows that the vast majority (80%) of people believe that better infrastructure and facilities are key to improving UNIBEN's reputation and attracting top students and faculty. Other factors like infrastructure having no effect, only lecture halls influencing success, or reputation depending solely on students were considered far less important

## **4.2 CONCLUSION**

In conclusion, the design and condition of campus infrastructure at the University of Benin have a strong effect on how well students learn and perform academically. When classrooms are overcrowded, laboratories lack modern equipment, or hostels are poorly maintained, students often find it harder to concentrate and achieve their best. On the other hand, when facilities are well-designed, accessible, and supportive of modern learning, students feel motivated, comfortable, and more focused on their studies.

This shows that campus infrastructure is not just about buildings. It is about creating an environment that encourages productivity, reduces stress, and supports academic success. To achieve this, there must be proper planning, regular maintenance, and continuous improvement of facilities across the university.

## **CHAPTER FIVE**

### **RECOMMENDATIONS AND CONCLUSION**

#### **5.1 RECOMMENDATIONS**

Based on the findings of this study on the impact of campus infrastructure design on student learning and academic performance at the University of Benin, several recommendations are proposed. These recommendations are aimed at improving the quality, functionality, and sustainability of campus facilities in order to create a more supportive and effective learning environment.

##### **5.1.1 ENGAGING STUDENTS AND STAFF**

Students and academic staff are the primary users of campus facilities and interact with these spaces on a daily basis. As such, their input is essential in the planning, design, and upgrading of university infrastructure. The University of Benin should adopt participatory planning approaches that actively involve students, lecturers, and relevant staff during decision-making processes related to infrastructure development.

By incorporating user feedback through surveys, forums, and consultations, the University can better identify existing challenges and ensure that proposed projects respond directly to real needs. This approach not only improves the functionality of facilities but also fosters a sense of ownership and responsibility among users.

##### **5.1.2 BETTER PLANNING AND EXPANSION**

The rapid growth in student population at the University of Benin has placed significant pressure on existing infrastructure. There is therefore a need for a comprehensive and forward-looking physical development plan that aligns infrastructure growth with enrolment trends.

Such planning should focus on the strategic expansion of lecture halls, laboratories, hostels, libraries, and study areas to prevent overcrowding and overuse. Proper space planning will

enhance comfort, reduce stress, and improve the overall quality of the learning environment, thereby supporting better academic outcomes.

### **5.1.3 MODERN LEARNING TECHNOLOGY**

Contemporary education is increasingly dependent on technology, making the integration of modern learning tools essential. The University of Benin should invest in reliable internet connectivity, functional ICT centres, e-libraries, and smart classrooms equipped with digital teaching aids.

These facilities will enhance teaching effectiveness, support independent learning, and enable students to access academic resources beyond the physical classroom. Improved technological infrastructure will also position the University to compete more effectively within the global academic environment.

### **5.1.4 MAKING FACILITIES ACCESSIBLE FOR ALL**

Campus infrastructure should be designed to accommodate all users, including students and staff with physical disabilities. The University of Benin should prioritise inclusive design principles by providing ramps, elevators, accessible restrooms, appropriate signage, and barrier-free classroom layouts.

An inclusive campus environment promotes equality and ensures that no student is disadvantaged due to physical limitations. Making facilities accessible reflects social responsibility and aligns with global best practices in campus design.

### **5.1.5 MAINTAINING WHAT IS ALREADY BUILT**

Many infrastructural challenges within the University are not solely the result of poor initial design, but rather inadequate maintenance. To address this, the University should establish a structured and well-funded maintenance system that includes regular inspections, prompt repairs, and preventive maintenance strategies.

Sustaining existing facilities will extend their lifespan, reduce long-term costs, and ensure that learning spaces remain functional, safe, and conducive for academic activities.

#### **5.1.6 CREATING A GREEN AND SUSTAINABLE CAMPUS**

Future infrastructure development at the University of Benin should prioritise sustainability. This includes the use of environmentally friendly building materials, natural ventilation strategies, energy-efficient lighting, and renewable energy sources such as solar power.

In addition, the incorporation of green spaces, landscaped areas, and shaded outdoor environments can enhance thermal comfort and promote mental well-being. A sustainable campus not only supports learning but also contributes positively to environmental conservation.

#### **5.1.7 ADEQUATE HOUSING AND STUDY SPACES**

Given the increasing student population, there is a growing demand for on-campus accommodation and dedicated study spaces. The University should expand hostel facilities and develop additional study centres to reduce overcrowding and improve living conditions.

Quiet and well-equipped study areas are essential for research, group discussions, and independent learning. Adequate housing and study facilities contribute significantly to student comfort, academic focus, and overall well-being.

#### **5.1.8 REGULAR FEEDBACK AND MONITORING**

Infrastructure development should be an ongoing process rather than a one-time intervention. The University of Benin should implement a system for regular monitoring and evaluation of campus facilities to assess their effectiveness in supporting teaching and learning.

Periodic feedback from students and staff will help identify emerging challenges early and guide timely improvements. Continuous evaluation ensures that infrastructure remains responsive to changing academic and technological demands.

## **5.2 CONCLUSION**

The quality of campus infrastructure at the University of Benin goes hand in hand with the academic performance of students. Well-designed and well-maintained facilities create a learning environment that encourages success, while poor infrastructure makes studying stressful and less productive.

If the University can invest in modern, inclusive, and sustainable facilities, while also maintaining what already exists, it will greatly improve the learning experience. More than just physical buildings, a well-planned campus creates a positive academic atmosphere that helps students reach their full potential.

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**APPENDIX A**  
**INFORMED CONSENT**

University of Benin,  
Department of Architecture,  
Benin City, Edo State.

Dear Respondent,

**QUESTIONNAIRE**

I am a final year student of the Department of Architecture from the above named institution carrying out a research study on: “THE IMPACT OF CAMPUS INFRASTRUCTURE DESIGN ON STUDENT LEARNING AND ACADEMIC PERFORMANCE AT THE UNIVERSITY OF BENIN.”

This questionnaire is only for academic research. Please answer the questions honestly, as your responses are very important for the success of this study. All information you provide will be kept private, and you do not need to write your name or any personal details.

Thank you for your acceptance and co-operation.

Yours faithfully,

Pemu Emmanuella Oritsetimeyin.