TOWARDS A NEW PEDAGOGY IN ARCHITECTURAL EDUCATION: A BRIEF LITERATURE

Ahmad Mohd Hamdan¹ Fai’zah Mohammed Bashir²* Yakubu Aminu Dodo³ and Henry Idoko Ojobo⁴

¹Executive Directors, Professor, Institute, Sultan Iskandar, UniversitiTeknologi Malaysia, 
², ³ & ⁴Department of Architecture, Faculty of Built Environment, Universiti Teknologi Malaysia, 
faizahbash@yahoo.com

Academically, architecture is in fact itself pedagogy and each building have their own embedded hidden curriculum that can greatly influence and affect learning process. The built environment and the landscape can be a powerful tool of learning, in this regard the campus as a whole should be regarded as a place where learning occurs. Embracing the new pedagogical approaches which in it self’s is all about computerization and simulation of buildings to attain the ultimate goal of designing a building which comfort. The paper try to explain the new trend of design sweeping in all forms of building sustainability; which most emerging schools of architecture curriculums are based on and the older generation schools of architecture are moving towards to; either through revising their curriculum or incorporating some elements of sustainability in their curriculum. Through a critical analysis review of existing literature in Elsevier, ISI web of knowledge and Google scholars; the paper defines what the new pedagogy in Architecture is in the new dispensation of the threat of global warming were, we all need to act including Architects as 50% of all resource consume across the planet are used in construction. It also elaborates the differences between conventional buildings and sustainable buildings as it affect architectural education in the new paradigm shift to sustainability. The paper concludes by suggesting how sustainable Architectural education could be enhanced through a new Architectural pedagogical approach in Nigeria.

Keywords: architecture, educations, curriculum, pedagogy and sustainability.

THE VALUE OF ARCHITECTURAL EDUCATION FROM STUDENTS’ PERSPECTIVES: IMO STATE UNIVERSITY EXPERIENCE

Ikechukwu Onyegiri, T C Elendu; 
Department of Architecture, Imo State University, Owerri. 
onyegiriikechukwu@gmail.com

In order to enhance the student learning experience, students’ opinions and values need to be analysed and understood. This paper provides views and general analysis of how students learn and the teaching approaches and learning opportunities they consider most valuable and essential to their future careers in the architectural profession. Findings are based on survey of ten students from each level in the department of architecture, Imo State University, Owerri.

Keywords: student experience, teaching technique and quality enhancement, best practice, curriculum design, staff students relationship.
THE CHALLENGES OF ARCHITECTURAL STUDIO AS A VITAL SETTING IN NIGERIAN SCHOOLS OF ARCHITECTURE.

Ikechukwu Onyegiri  
Department of Architecture, Imo State University, Owerri.  
onyegiriikechukwu@gmail.com

Departments of Architecture in Nigerian Institutions of higher learning are becoming increasingly aware of the need for on-going combined academic and professional evaluation of the academic and infrastructural effectiveness of their facilities. While still largely believed to be the key learning setting for design and architectural education, the studio is coming under increasing pressure to prove its value, especially in response to what is often perceived as unacceptably low space utilization by those responsible for the provision and management of physical resources. This paper outlines some of the observations, reflections, hypotheses and solutions, which have arisen in the process of exploring the challenges faced by the users and providers of studio space using Imo State University as a study base. The intention is to hopefully stimulate an exploratory, more open and honest discourse around the on-going value of, and opportunities for, a sustainable studio-based education in Nigeria.

Keywords: Design Studio; Space Utilisation; Studio; Learning Culture;

INTRICACIES OF CASE STUDY APPROACH IN ARCHITECTURAL RESEARCH

Stephen Nwabunwanne Oluigbo  
Department of Architecture, Ahmadu Bello University, Zaria  
snolui@yahoo.com

The application of case studies in architectural practice, education (teaching), and as guide for architectural design is widely understood. However, there appears to be misconceptions and limited understanding of the application of case study approach to theoretical research in architecture. In order to put this in proper perspective, a reviewed of basic principles and techniques of case study research was conducted. This was correlated with the requirements for design and theoretical research in architecture. The outcome of this is a proposed framework/guide for the application of case studies in architectural research, especially for postgraduate architectural thesis as obtains in most Nigerian universities.

REGENERATION OF BIOPHILIC DESIGN CONCEPT IN BUILDING DESIGNS

R N Obiozo  
1Department of Construction Management, Faculty of Engineering, Nelson Mandela Metropolitan University, Port Elizabeth, South Africa  Tel No. ritax2k@gmail.com.

Increasing urbanisation undoubtedly has a number of positive consequences. For instance in modern cities people come to live closer together, which could promote social interaction and the pleasure and enjoyment associated with this. Furthermore there is nothing inherently wrong or undesirable about modern building styles and there is no reason to doubt the genuineness of positive reactions to such building. What according to current argument could become problematic is the growing dominance of such non-natural building style at the expense of setting with natural form languages
(natural or artificial). The core argument of the study is that by including elements of ancestral habitats in the built environment one can counter deleterious effects which stem from this dominance resulting in more positive effects and more relaxed physiological and psychological states. Such architectural interventions are referred to as nature based or biophilic architecture. By encouraging architects to integrate nature forms and patterns in their work, they are motivated to study nature’s shapes and compositional rules which enrich their creative curriculum. This entails the study of the landscape to investigate its healing nature.

Keywords: biophilia, green architecture, sustainability, eco-design, psychosocial value

TOOLS AND RESOURCES FOR MULTIMEDIA LECTURE CONTENT DEVELOPMENT AND DIGITAL DELIVERY- THE POTENTIALS OF E-LEARNING TOOLS FOR NIGERIA

Umaru, A¹, Ogbonna, A.C.¹, Audu, U.A.¹, Adamu, M.B²
¹ Department of Architecture, University of Jos.
² Architecture Programme, Abubakar Tafawa Balewa University, Bauchi.

Information Communication Technology (ICT) has no doubt today become a common phrase; also no one is in doubt of the coming of the digital age as well as powers of social networking platform. It is therefore against this backdrop that this paper seeks to examine and determine the availability of tools and resources most suitable for multimedia lecture content development and delivery using all the available social networking tools and platforms available today.

Keywords: Information Communication Technology (ICT), Digital, social networking, Multimedia, e-Learning

NIGERIA’S EDUCATION POLICY: ISSUES OF SUSTAINABLE CURRICULUM DEVELOPMENT IN NIGERIA

Morakinyo, Kolawole, Ogunrayewa, Michael and Adeola, Ademola
Department of Architecture, College of Environmental Sciences & Management, Caleb University Lagos, Nigeria.
opekolamorak5817@yahoo.com

Sustainable architectural education is the bedrock of sustainable architectural practice in Nigeria. Hence, Architectural education must therefore be able to meet the needs of not only the present but the future; so as to fulfil the major goal of sustainability. Presently architectural education in Nigeria is performing poorly below expectations, so there is a great need for training of architects in Nigerian Schools of Architecture to be sustainable, as its reflects in the quality of architects produced from architectural schools in Nigeria. This paper examines the current developmental trends for sustainability in architectural education in Nigeria, its challenges, specific objectives of architectural education in Nigeria, ways to achieve its sustainability and gives an overview of sustainability education at a glance in Nigeria. The paper also reviews literatures on education for sustainable development. The methodology employed for this study is literature search and survey. Finally the paper concludes by noting the needs to rise up to the major challenges and putting Architectural Education in Nigeria in a right footing.

Keywords: Architectural Education, Current Trends Nigeria and Sustainability
A BLENDED INSTRUCTIONAL APPROACH TO TRADITIONAL LEARNING IN CONTEMPORARY HIGHER EDUCATION: A PARADIGM SHIFT FOR THE 21ST CENTURY?

Okwoli, Peter
Department of Architecture, University of Jos, Jos, Nigeria
fjpeteokwoli@gmail.com

The 21st century is characterized by a technology-infused environment with a budding generation of digitally conscious youths that are highly conversant with various forms of electronic gadgets and tools from the information and communication technology (ICT) sector, such as personal computers (laptops etc.), cellular or smart phones, digital (satellite) television channels and other emerging electronic media that allow people and organizations to communicate and share information digitally. This is a widespread trend in the industrialized world and a fast growing tendency in the developing nations, Nigeria inclusive. With such a background, it has become paramount to address the challenges and expectations of the 21st century learners and provide them with alternative and new learning opportunities capable of responding to theirs and teachers growing interest in technology-based learning experiences. This paper will attempt to make an insightful probe into the present level of development and the degree of adoption of this seemingly new approach to educational instruction that has come to be known universally as blended learning and make recommendations where appropriate.

Keywords: Electronic gadgets, ICT, electronic media, educational instruction, blended learning.

PERFORMANCE IN ARCHITECTURE SCHOOLS: THE STUDENTS’ DOMAIN CONCEPT

Oko, Joseph Oko
Department of Architecture, University of Jos, Jos, Nigeria
agaba30@yahoo.com

Frequently, in the academia, and in other enlightened circles there are discourses, treatises and debates on the falling standard of education in Nigeria, especially when comparing the colonial / immediate post-colonial era on one hand with the early 1990s to the present day period on the other hand. There seems to be a general consensus that the standard has fallen and it is still falling, what is still a source of discordance are the factors that have led to this trend. This paper is a participation in the discourse by contributing a concept that has the potential of reversing this ugly trend. The “Student Domain Concept” is an idea enunciated by this paper that relates to what the architecture student can and should do within his/her sphere of influence, control or jurisdiction with respect to enhancing good academic performance. The special nature of architectural education was underscored and compared with some other professional courses. Aspects of attitudes to life and approach to architectural studies that inhibit or enhance good performance were examined. It is hoped that the tenacious application of the provisions of this study and recommendations by the student of architecture will put him /her in good stead to not only perform well academically but also be instrumental in reversing the ugly downward trend in Architectural Education.

Keywords: Academic Performance, Architectural Education, Educational Standard, Student Domain Concept.
Crime and insecurity in the built environment have been with man ever since the inception of human settlements. The degree and extent of the threat they engender however varies with communities, extent to which it has been addressed by a particular community, policy makers and a host of other variables. This paper examined the current trends and International Best Practices with respect to crime, security and design of the built environment with a specific slant towards the urban residential environment. This was done by examining the researches and opinions of built environment professionals, scholars, criminologists and the discerning public. This exposition opened greater vistas on the subject especially when situated within contemporary and potential future challenges in Nigeria. The major findings are that what is trending now is to attempt to design out crime at the early stages of a community and that for crime to be discouraged, it is imperative to modify the environment and several intervening variables for an area and this is not being taught at any stage of the training and teaching that produce the architect. There is therefore the need to systematically include issues of crime, security and the design of the urban residential and residential neighbourhoods into the curriculum of the training of the architect.

Keywords: Built Environment, Crime, Current Trends, Curriculum, Design, Planning, Residential, Security.

The process of learning how to design is among if not the most important activity students of architecture engage in during their years of formal training. This process involves learning to think critically about design problems and generating acceptable proposals that satisfy the practical requirements of the building. Students are expected to learn by reflecting, thinking and doing while the studio instructor guides. This way of learning-by-doing is an old tradition in architecture by which design skills are developed. The learning opportunities offered in the architectural design studio however, largely depend on the communication methods the studio instructor chooses to adopt and whether or not they recognize the students’ learning styles. Understanding the students’ learning styles and integrating it in the way architectural design is taught will conform more to student-centered teaching approaches gaining wide acceptance around the world. The study examined learning styles of second year architecture students of the University of Jos in architectural design studio using Kolb’s Learning Style Inventory (LSI).

Keywords: Academic performance, design studio, learning styles, students, studio instructor
ESTABLISHMENT OF FACULTIES/COLLEGES OF ARCHITECTURE IN NIGERIAN INSTITUTIONS OF HIGHER LEARNING: THE ROLE OF ARCON AS THE REGULATORY BODY - THE JOURNEY SO FAR

Professor Uji, Zanzan Akaka
Department of Architecture, University of Jos

Stringent calls have in the past couple of decades been continuously made (at all fora on architectural education) about the necessity of reviewing the curriculum of Architectural education in Nigeria. Unfortunately, no concrete efforts have been made towards suggesting any fundamental direction and routes along which the review should take. Some blame had, in fact, been heaped on the colonialists for bequeathing on us a foreign-based curriculum too strange for it to continue to be of any further use.

LEAPFROGGING, TUNNELLING THROUGH AND OVERCOMING: MEETING THE NEEDS OF CONSTRUCTION EDUCATION IN NIGERIA

Professor Natalia A. Anigbogu
Department of Building, University of Jos, Jos, Nigeria
natashaanigbogu@yahoo.com

This paper attempts to identify different strategies that are employed or might be employed in overcoming the multiplicity of construction education challenges in Nigeria. Nigerian higher education generally has been a topic of a continuous debate and a subject of many institutional reforms, most of which are characterized by a blanket top-down approach. There are, however bottom-up initiatives by academic staff and to some extent students that impact greatly on different aspects of higher education in Nigeria. This is especially pronounced in the training of the construction professionals. Processes of globalization, technological advancements, particularly digital media and multimedia technologies, revolutionized the learning and teaching environments and the very lives of students and academic staff and created new opportunities for teaching and learning.

Keywords: Higher Education, Construction Education, Leapfrogging, Nigeria

THE ROLE OF REVISED TAXONOMY IN CREATING EDUCATIONAL OBJECTIVES IN ARCHITECTURE CURRICULUM DEVELOPMENT FOR NIGERIAN UNIVERSITIES

Inusa, Yaktor Joshua, Nimlyat, Pontip Stephen, Ella, Inalegwu Inalegwu and Odoala, Michael Chijioke
Department of Architecture, University of Jos, Jos, Nigeria
jyaktor8@gmail.com

Since there is a general consensus that Nigerian educational fortunes have been on the downward trend which affects architectural education, the significance of architecture curriculum development should be emphasised. The purpose of this paper is to examine the Role of Revised Taxonomy in creating Educational Objectives in Architecture Curriculum Development for Nigerian Universities. Textual analysis was used to examine the structure of the revised taxonomy with the view to examining how create educational objectives in development of architecture curriculum for Nigerian Universities. In the revised taxonomy, the one dimension of the cognitive domain of the original
taxonomy was expanded to two (knowledge and cognitive process) dimensions. Findings show that the knowledge dimension is the subject matter which expresses the content while the cognitive process dimension is the verb which determines learning activity in an objective. Therefore, it is possible to apply this framework to create depth and breadth in learning objectives in architecture. This study has demonstrated the usefulness of the revised taxonomy in creating educational objectives in the context of architecture curriculum development for Nigerian Universities.

**Keywords:** architectural education, architecture curriculum development, Bloom’s taxonomy, educational objectives, revised taxonomy.

**SUSTAINABLE ARCHITECTURAL EDUCATION: PEDAGOGICAL LEARNING OUTCOMES OF SUSTAINABLE ENVIRONMENTAL DESIGN**

1Inusa, Yaktor Joshua, Ajufoh, 2Michael Onyemaechi and Lekjep, Ripnung Shem

1Department of Architecture, University of Jos, Jos, Nigeria

2Department of Architecture, School of Environmental Technology, Federal Polytechnic, Bauchi

Since the role of architects in mitigating Carbon dioxide (CO2) emission to curtail climate change has been emphasised to be significant, sustainability in architectural education has placed a high demand on architectural educators. This paper aims at examining Sustainable Environmental Design (SED) issues with the view to recommending ways architect-educators can create pedagogical learning outcomes to promote best practices in Nigeria. The approach for this study is the review of the European Qualification Framework (EQF) for Lifelong Learning in which learning outcomes are structured in terms of knowledge, skills and competence considered at eight qualification levels of Education. Findings indicate that the last three levels of EQF correspond to the three architectural qualification levels in Nigerian Universities and can be used to define a progression of abilities in environmental sustainability that students should gradually attain in design. This paper has demonstrated ways as practical guide architect-educators can focus their pedagogical learning outcomes in SED to aid learning among students. The paper also recommends ways the EQF can be contextualised to create pedagogical learning outcomes of SED to improve sustainable architectural education in Nigerian Universities.

**Keywords:** Architectural education, learning outcomes, sustainability, sustainable architectural education, sustainable environmental design.

**THE PROPOSED FACULTY OF ARCHITECTURE PROJECTS IN NIGERIAN UNIVERSITIES: THE CHALLENGE OF HUMAN CAPITAL DEVELOPMENT.**

Basil O. Agoha

Department of Architecture, Anambra State University, Uli, baseconsultants@yahoo.com

Recently, the issue of unbundling the departments of architecture in Nigerian universities into Faculties of Architecture, seems to becoming a reality with the nod given to the project at the 2012 Architects’ Colloquium. The departments were encouraged to mount at least two programmes that could metamorphose into departments together with the existing departments of architecture as the third to give the minimum number of departments required to form a faculty. On establishing the programmes with the requisite facilities, staff and standards each Department is to apply to
individual University Senate for the faculty status and inform Architects Registration Council of Nigeria, ARCON, accordingly for follow-up and consummation activities. This being a new initiative in Nigeria, is no doubt bound to have a lot of challenges foremost of which is that of human capital needs and development. This paper assesses the human capital situation in selected departments of architecture against the background of other challenges and suggests the ways forward if the Faculty project could sustainably take off smoothly.

**Keywords:** Challenge, Development, Faculty, Human Capital, Project.

**INFRASTRUCTURAL AND INTERCONNECTIVITY CONSIDERATIONS IN THE DESIGN OF MODERN ARCHITECTURE STUDIOS IN NIGERIA: LESSONS FROM LEADING SCHOOLS OF ARCHITECTURE**

Olu Ola Ogunsote¹ and Bogda Prucnal-Ogunso²

¹ Department of Architecture, School of Environmental Technology, Federal University of Technology, Akure, Nigeria  
profogunsote@gmail.com

² Department of Architecture, Faculty of Environmental Sciences, University of Jos, Jos, Nigeria  
bogdaogunsote@gmail.com

The architectural design studio remains central to the training of architects despite recent revolutionary advances in e-learning premised on novel methodologies and technologies. Adapting training methods based on master-trainee relationships and craftsmanship to the rather impersonal e-learning methods is very challenging, and requires appropriate environment and infrastructure. The aim of this paper is conceptualization of a model architectural design studio equipped with the infrastructure required for modern-day training of architects. The paper adopts a case study methodology based on visits to several schools of architecture including the Departments of Architecture at the University of Tokyo, Tokyo; Tokyo Institute of Technology, Tokyo; Kyoto University Katsura and Yoshida Main Campuses, Kyoto; University of Sydney, Sydney; University of California, Los Angeles; Graduate School of Design, Boston; Illinois Institute of Technology, Chicago; University of Tennessee, Knoxville; and the Bauhaus, Dessau. The paper examines the challenges faced in the training of CAD literate architects, and identifies critical areas requiring interconnectivity including e-library, 3-D modelling, plotting, rendering and animation. The facilities and resources that require modernisation include wired/wireless networking, shared printing, digital projection, lighting, ventilation and air-conditioning; power supply to laptops, working surfaces, exhibition spaces, social spaces, professorial laboratories, engineering and environmental science laboratories, workshops and museum.

**Keywords:** Architectural Design Studio, Architecture School, E-learning, Physical Infrastructure.

**AN APPRAISAL OF GRAPHIC THINKING SKILLS IN NIGERIAN SCHOOLS OF ARCHITECTURE (A CASE STUDY OF THE DEPARTMENT OF ARCHITECTURE, UNIVERSITY OF JOS, NIGERIA)**

Ebele O. Enwerekowe, Erekpitan Ola-Adisa and Inalegwu Ella  
Department of Architecture, Faculty of Environmental Sciences, University of Jos, Jos, Nigeria  
e_ebele12@yahoo.com

Graphic thinking refers to a process of thinking assisted by sketching. At the stage of concept formulation in the design process, this type of thinking is instrumental to developing the ideas in the
design as thinking and sketching work closely to serve as a stimulus. There is a long-standing history between architecture and graphic thinking. From Renaissance times, most of the masters depicted their novel ideas and dynamic thinking in notebooks that revealed a lot about the process rather than the product of design. These were carried out in a variety of methods and scales including recent processes of graphic thinking though with the introduction of digital media of communication. This process is less manual and thus, far less observable. This study examines graphic thinking among design students in the University of Jos. It also aims at assessing the processes they adopt when designing. The study intends to highlight lapses in the process of design as illustrated in the graphic development adopted by students of design and puts forth four suggestions intended to encourage and enhance the incorporation of adequate graphic design development among such students. The quantitative analysis of the study draws conclusions from literary data and observations of students’ design development through graphical means.

**Key words:** concept, design process, development, design process, graphic thinking

**INSTRUMENTS OF ASSESSMENT OF STUDENTS’ PORTFOLIO EXAMINATION: AN APPRAISAL OF THE JURY SYSTEM IN THE DEPARTMENT OF ARCHITECTURE, UNIVERSITY OF JOS**

Erekpitan O. Ola-Adisa, Ebelechukwu O. Enwerekowe and Umaru A. Audu

Department of Architecture, University of Jos, Jos, Nigeria

olaefeadisa@gmail.com

The jury system has been a traditional architectural learning assessment tool since the early years of the 20th century. It was imported into schools of architecture in Nigeria by expatriate lecturers that formed the core of pioneer staff of the early schools of Architecture. The jury system is well documented through extensive literature review. While this process has been the de facto method of evaluation in Nigerian Universities, there is little documentation on students’ perceptions of this process. The purpose of this paper is to fill this informational gap and attempts to answer the questions of how jury practices are performed in the context of the Nigerian Universities and how students perceive the system with its underlying practices in such a context. An empirical study has been carried out with a view to investigating the jury system and students’ perceptions. The assessment as revealed through the study gives significant contributions to the development of a set of recommendations to improve the performance of the jury system and its acceptability to architecture students.

**Keywords:** Architectural education, design studio, jury system, Instruments of Assessment

**EFFECTS OF PHYSICAL INFRASTRUCTURE ON STUDENTS PERFORMANCE IN DEPARTMENT OF ARCHITECTURE, UNIVERSITY OF JOS**

Lekjep, Ripnung, Dantong, J. S. D.and Inusa, Yaktor Joshua

Department of Architecture, University of Jos, Jos, Nigeria

lekjep@yahoo.com

Many schools of Architecture in Nigeria were designed and built between nineteen sixties and nineteen eighties. Others were developed a few years after with facilities that met the required standards. The living environment was conducive and friendly for academic activities. The conducive living environment created a sense of importance and responsibility in the minds of the graduates of those days towards excellence performance. (Obasi,2005). In recent times, it has been observed that
most of this infrastructure has degenerated in standard, while the number of students has increased compared to the facilities provided, hence affecting students’ performance academically. It is a fact that architecture create environment and the environment creates man, therefore the decayed infrastructure will definitely affect student performance. This paper examines the physical infrastructure provided in relation to number of students and their performance in Architecture Department, University of Jos. The methodology adopted for this research work is through questionnaires and data obtained through inventory of facilities in the Department of Architecture, University of Jos by the author. The data were analysed using descriptive statistics and correlation analysis. The result signifies that infrastructure has great effect on students’ performance in department of Architecture, University of Jos. It is believe that this research work will prove and proffer suggestion for improvement on the present ugly decayed infrastructure in our institution of higher learning in Nigeria.

Keywords: Performance, physical infrastructure.

RESIDENTS SATISFACTION WITH ENVIRONMENTAL QUALITY OF SELF-HELP HOUSING IN TUDUN-WADA JOS, NIGERIA

Gwatau, Detur and Okwoli, Peter
Department of Architecture, University of Jos, Jos, Nigeria
deturgwatau@yahoo.com

Nigerian urban centres such as Tudun-Wada Jos are generally plagued by severe housing and infrastructural decay. The challenges they face include rapid population growth, service deficiencies, inadequate land administration and poverty, lack of planning and social breakdown. The study argues that the environmental quality of residents is enhanced by their own perception when they take full control of their housing provision in terms of construction and provision of amenities. The study concludes that the area is populated with polygamous families who exerted enormous pressure on the housing facilities and the capability of the individual or government alone to embark on rehabilitating the area might not be achievable under the current economic conditions. While the individual with the help he or she gets concentrates on providing the necessary facilities, the government can provide the community with technical advice, equipment or other inputs, in this way, slum formation in most Nigerian urban centres could be drastically reduced.

THEORETICAL, PHILOSOPHICAL AND STYLISTIC LEANINGS OF ARCHITECT-EDUCATORS IN NIGERIAN UNIVERSITIES

Stephen Nwabunwanne Oluigbo
Department of Architecture, Ahmadu Bello University, Zaria
snolui@yahoo.com

The key distinguishing factors through which renowned architects made their mark is the theoretical and philosophical foundation on which their works stood, and the measure of distinctiveness and consistence in maintaining their style. Outstanding buildings in major cities in Nigeria reflect a variety of architectural expressions. However, there appears to be little to suggest the existence of distinctive and consistent stylistic and philosophical leanings by architects in Nigeria. Architect-educators are at the interface between theory and practice and are thereby in the best position to chart directions. They also constitute a major influence on their students who are the future architects. It is in this light that this study examines the theoretical, philosophical and stylistic
leanings of architect-educators in Nigeria’s schools of architecture. Questionnaires were administered at three schools of architecture. The data was subjected to descriptive statistical analysis and non-parametric tests. The result shows that only a few of the respondents demonstrated strong philosophical stance. Also, there was no significant difference in theoretical, philosophical and stylistic leaning between architects from the three surveyed schools. This calls for more dialogue to set agendas and ensure that architect-educators take their proper place in determining the character of the built environment.

**Keywords**: Analogy; Architect-educator; Philosophy; Style; Theory.

**DIGITAL REVOLUTION AND ARCHITECTURE: GOING BEYOND COMPUTER-AIDED ARCHITECTURE (CAD).**

*Salisu Abubakar and Mukhtar Mohammed Halilu*

*Department of Architecture, Ahmadu Bello University, Zaria.*

arcsalisu@yahoo.com

The age of Computer-aided design (CAD) has come and is on its way out especially within the developed world. It is now Building Information Modelling (BIM), which is creating enthusiasm among architects the world over. But new thinking is now even making BIM a construction phenomenon rather than a design method. New concepts like Blobism, Performative architecture, Digital fabrications, Parametricism and Nanotechnology amongst others have evolved as a result of the digital revolution that swept the world in the first decade of the 21st century. New digital technology together with new construction processes are giving the architect new controls over his designs and are restoring the architect back to his pedestal of being a master-builder. Using rigorous literature review, this paper traces these developments from the 1990’s to 2011, with examples based on principles made possible as a result of digital technology and its effect on post-modernist movement. The paper also considers the possibility of the digital culture in bringing up new movements in architecture. Consequently it can be seen that accessibility to digital tools and softwares constitute a major shift in the definition and content to be provided in architectural education in the 21st century in our architectural schools.

**Keywords**: Blobbing, Fabrication, Nanotechnology, Parametricism, Performative

**STRATEGIES FOR ACHIEVING SUSTAINABLE HOUSING IN NIGERIA BY PRIVATE INITIATIVE**

*Agbo, N. O.*

*Department of Architecture, University of Jos, Jos*

agbon@unijos.edu.ng

This paper identifies quality and adequate housing as an important indicator of economic development; and the private sector as the greatest contributor to housing delivery. It attributes the current housing crisis to ever increasing household formation and dilapidated existing stock without significant increase in new housing construction. The author blames the present challenges to new housing construction by the private sector, and among other things poor investment planning and unnecessary pride built on misguided personal concepts. The paper finally highlights effective strategies which when adopted would enable the common man to increasingly participate in housing development.
Architecture programmes are structured around the acquisition of design skills by students. The studio is the place where the majority of architecture students spend their time learning to design and inadvertently also developing the social skills needed to become confident professionals. In recent times there has been a growing recognition of the idea that the physical space where learning takes place has a significant impact on the learning outcomes of students. The impetus for this paper is not unconnected to concerns in what is observed as students’ unwillingness to stay and work for long periods of time in the studio. The question the study addresses is the extent student behaviour and subsequently their academic performance is affected by the design features of studio space. Using the Department of Architecture in the University of Jos as a case study, data was collected from a focus group interview with selected students. Furthermore, a documentation and analysis of floor plans and photographs of existing buildings and infrastructure in the department was carried out. The paper concludes by proffering recommendations and guidelines on the design of future design studios that will be both innovative and appropriate to the needs of architecture students in the twenty-first century.

Keywords: Learning environments, learning outcome, studio space

The students’ use of programs such as AutoCAD in the design of their studio projects before manually drafting their designs for portfolio examination forms a significant part of the design process. This paper examines students’ use of Computer Aided Design and Drafting (CADD) software programs in studios, in the Department of Architecture, University of Jos as case study. This paper also looks at the possibility of using use of CADD for the various aspects of the design process. This is accomplished through informal interviews with MSc students who are more inclined to use CADD as part of their conceptual design process and 3-D graphic modelling. This study is able to identify the effects of the use of computers in the design studio and how the teaching of CADD would enhance the methods employed in studio instruction.

Keywords: Architectural Design, Computer Aided Architectural Design (CAAD), Computer Aided Design and Drafting (CADD), Design Process.
THE NEED TO MAKE COMPUTER AIDED DESIGN AN INTEGRAL PART OF THE ARCHITECTURAL CURRICULUM

1Michael Onyemaechi Ajufoh and 2Yaktor Joshua Inusa
1Department of Architecture, School of Environmental Technology, Federal Polytechnic, Bauchi
2Department of Architecture, University of Jos, Jos, Plateau State
1mikeajufoh@yahoo.com

We live in a world where medicine, real estate, manufacturing and so many other facets of life have been computerized. Photorealistic finishes are being adopted to help the architect express himself more and also help him clearly present designs to clients. Basically, we are now able to accomplish greater amount of work more efficiently than ever before with more dexterity. Most architectural firms now have little patience in training a fresh graduate in CAD, Hence the need for CAD to be deeply integrated into the architectural curriculum. This paper tries to highlight the significance of CAD-based curriculums, that is, from year one to final year. It tries to put forth an argument on the need for design projects to be done using CAD. It also tries to recommend the computer courses required for CAD proficiency for schools of architecture in Nigeria. In all the paper tries to provide the basic facilities needed to run a CAD-based curriculum.

Keywords: Architectural Education, CAD, Curriculum, Nigeria, Software,

ASSESSMENT OF INFRASTRUCTURAL PROVISION AND QUALITY ASSURANCE IN NIGERIA SCHOOLS OF ARCHITECTURE

1Ayoola, H. A and 2Nasamu, R. O
1Department of Architecture, Federal University of Technology, Akure, Nigeria
2Department of Architecture, Joseph Ayo Babalola University, Ikeji-Arakeji, Nigeria
1ayooladayo@yahoo.com

The quality of infrastructural facility in an educational institution contributes to a conducive teaching and learning environment. For effective learning in a school of architecture, the facilities must be up to date not only in quantity but also in quality. Infrastructural provision in tertiary institution is very complex and capital intensive as it involves not only the infrastructure provision but also adequate maintenance and renewal. Infrastructure provision includes, lecture rooms, studios, workshops, libraries, ICT centres and CAD laboratories, furniture, hostels and sporting facilities. All this facilities are determinants in the ranking of institutions globally and will likely attract students, staff and foreigners to the institutions. The level of infrastructure facility present in an institution will also create a serene environment for teaching, research and learning. This study aimed at assessing the quality of infrastructural facility in three Nigerian schools of architecture and also the perception of the users to their adequacy, maintenance and relevance. One university each from a federal, state and private university in Nigeria was chosen for the study.

Keywords: Infrastructural facilities, environmental quality, physical facilities, acceptability of infrastructural facilities, maintenance culture.
STUDIES ON COMFORT LEVELS OF NATURALLY VENTILATED ROOFS OF TROPICAL BUILDINGS

Odim O. Odim, PhD and Nwanguma O. Ephraim,
1Enugu State University of Science and Technology, Enugu
2Dept. of Architecture, Imo State University, Owerri.

1odimgroup@yahoo.com
2favourandflourish@yahoo.com

Natural roof ventilation in buildings particularly in tropical environments in most developing countries has been generally neglected by stakeholders in the building industry. Most architects and environmental designers tend to overlook the provision of simple structural devices for enhancement of adequate roofs ventilation which contributes to more acceptable comfort standards of buildings. This paper through controlled experiments examines the comfort standards of buildings with and without provisions for roof ventilation. Thermal comfort data were obtained using the Space Syntax Research Methods (SSRM). Data were analysed using statistical tools involving the central tendency and dispersion of the recorded data. Hypotheses were also tested. Results showed that roof ventilation has significant effect on indoor comfort level of buildings in the tropics. Provisions for adequate roof ventilation at the design stage of buildings were therefore recommended.

Keywords: Building, Temperature, Thermal Comfort, Tropical Climate, Ventilation.

CURRICULAR AND PEDAGOGICAL IMPLICATIONS OF STANDARDIZING POSTER PRESENTATIONS IN NIGERIAN SCHOOLS OF ARCHITECTURE.

Bogda Pruncal-Ogunsote, Olu Ola Ogunsote and Bolanle Voitek Ogunsote
1Department of Architecture, University of Jos, Jos, Nigeria
2Department of Architecture, Federal University of Technology, Akure, Nigeria
3Department of Architecture, University of Warsaw, Warsaw, Poland

bogdaogunsote@gmail.com
profogunsote@gmail.com
vogunsote@gmail.com

The evolution of traditional architectural design portfolios comprising of penned drawings of plans, elevations, sections and sometimes perspective views into e-portfolios, posters and 3-D holographic prints has become reality in leading schools of architecture. Even when draughting, modelling and craftsmanship are required at some levels, the presentation of designs is standardised, based on posters and models. This paper documents the common elements of standards used for architectural design e-portfolios and posters in leading schools of architecture in Europe, America, Australia and Asia. It highlights the advantages and disadvantages of this modern presentation technique, and concludes that establishing a standard for Nigerian schools of architecture can significantly improve their ranking in the world. Complying with this standard would however require in-depth reviews of the curriculum, adoption of novel pedagogical approaches, enhancement of staffing quality, and provision of modern infrastructure and facilities. The paper proposes a standard for e-portfolios and poster presentations appropriate for the level of technological development, and the socio-economic realities of the country. It details a model curriculum, prescribes necessary modifications of architectural pedagogy, recommends the minimum qualifications and skills required of staff, and proposes infrastructure and facilities necessary to achieve this transformation and enhance international ranking.
NIGERIA’S EDUCATION POLICY: ISSUES OF SUSTAINABLE CURRICULUM DEVELOPMENT

Aderonmu Adewuyi Peter
Architecture Department, Covenant University, P.M.B. 1023, Ota, Nigeria
peter.aderonmu@rocketmail.com

The concerns for education sustainability have prompted debates, brainstorming, dialogues and legislations world over. The outcome of these endeavours has, in a way, favoured the reduction of ‘unemployment and unemployables’ syndromes and engendered sustainability in the face of economic development forces. These syndromes have been linked to curriculum issues and educational pedagogic processes. The Nigerian education policy (NPE) stakeholders need to consider the upsurge of some other policy statements and intentions by other interest groups; which include the education strategic Plan for tertiary institution in Nigeria (ESP), ‘education for all’ (EFA), Millennium Development Goals (MDGs), Vision 20:2020, and Decades on Education for Sustainable Development (DESD2005-2014). This study performed critical evaluation and appraisal of development issues as highlighted in the policy statements. The analysis showed that the status quo of education curriculum is yet to have an ideology of its own when compared to the index of educational sustainability globally. Further to this, some hindrances impinging on the policy-curriculum’s realization were identified. These were identified and discussed along with suggestions and legal proposals which may aid the Vocational and Technical Education (VTE)-Dieted Policy-curriculum implementation and development.

Keywords: Curriculum, education policy, Nigeria, Pragmatic pedagogy

PUBLIC-PRIVATE PARTNERSHIP (PPP) AND INFRASTRUCTURE PROVISION IN NIGERIA

Olufemi A. Oyedele

Public Private Partnership (PPP) is a collaboration of the public and private sectors in the financing and development of public goods and services (agriculture, communication, infrastructure etc.). This phenomenon has been globally seen by many as the new economic paradigm. India has benefitted a lot in infrastructure provision by the private sector through PPP. Public Finance Initiative/Public Private Partnership (PFI/PPP) is a key policy instrument that is being used to transform public services. The key element of PFI/PPP is risk management. This assertion involved the creation of more public-private partnerships (PPPs). Criticisms of PFI especially by the UK Labour Party in 1997 before the election led to the introduction of PPP. The collaboration of government and the private sectors in the production of public goods and services is based on the notion that government has no business in production of some goods and services in order to ensure value for money (vfm). The experience of PPP in Nigeria has not been a thing to write home about. Concessioning of Lagos-Ibadan Expressway, Kuto-Bagana Bridge, Lekki-Epe and Maervis management of Airports have been sour. This paper will look into the factors that make PPP unsuccessful in Nigeria and will suggest recommendations for adoption.

Keywords: Infrastructure, Infrastructure Development, Public Finance Initiative, Public-Private Partnership, Construction Risk Management.
COMPUTER SIMULATIONS IN BUILDINGS: IMPLICATIONS FOR BUILDING ENERGY PERFORMANCE

Nimlyat, P. S., Dassah, E. and Allu, E. L. A.
Department of Architecture, University of Jos, Jos

The goals to achieving a better performance of buildings require more innovative use of computers. This paper is a review of the literature about the use of computer simulation in building design and construction. This review examines the types and good examples of computer simulation. The literature review indicated that although computer simulations cannot replace completely the building fabric and components, they offer various advantages both for the building and its environmental performance. This study suggests that the successful application of computer simulations use in assessing the energy performance of buildings depends on how they are integrated into the design phase and building life-span and how the professionals use it. Computer simulation can be applied at the building design phase and also on building in use. The most appropriate use of computer simulation in building seems that use them to optimize the design of its components and service systems according to their requirements for indoor air quality while achieving energy savings in the building. Computer simulations in buildings make it possible to analyse in detail a number of solution for the building geometry and construction as well as its design and operation. This study also implied that computer simulations have great potentials of significantly increasing the energy efficiency of a building while also providing enhanced human comfort. Computer simulation has therefore become a necessary tool that should be incorporated into the architectural curriculum in order to achieve sustainable building performance measurement.

Keywords: Computer Simulation, Energy Performance, Energy Saving, Energy Efficiency, Performance of Buildings

NEW TRENDS IN ARCHITECTURAL CURRICULUM DEVELOPMENT – A PANACEA FOR SUSTAINABLE ARCHITECTURAL EDUCATION IN NIGERIA.

Ogunrayewa, Michael Olabode, Morakinyo, Kolawole Opeyemi and Adenubi, Olufunmilola
Department of Architecture, College of Environmental Sciences & Management, Caleb University Lagos, Nigeria.

Curriculum development in architecture is a panacea for sustainability in Nigerian schools of architecture. The curriculum of architectural education in Nigeria is designed for students to attain, specific educational ends or objectives in their chosen career, hence, for architectural education to be efficient; there is need for effective curriculum. Curriculum planning involves making series of decisions and choices which are based on values and grounds to be covered to reach the goals of education.. The development of syllabus for various subjects at all levels of education and suggestions about teaching methods, textbooks, and other instructional materials represent aspects of curriculum development architectural education in Nigeria. Curriculum development in architecture is oriented towards providing school programs; the curriculum materials and is basically a plan of structuring the programmes to coordinate in an orderly manner the element of time, space, materials, equipment, personnel and language for use by the learners. The methodology employed for this study is literature review of past studies on curriculum development.
This paper reviews the relevance of current academic curriculum in architecture and seeks to take a critical look at current problem of the curriculum of architecture and it will also give a general view and opinion of the study nationwide. The paper concludes by suggesting recommendations towards effective curriculum development in Architectural Education in terms of what is lacking in the program now and remedy to this problems.

**Keywords**: Architectural Education, Architectural curriculum, Curriculum Development, New Trends, Nigeria, and Sustainability,

### AN ASSESSMENT OF THE ADEQUACY OF UNIVERSITY TRAINING ON SUSTAINABILITY IN THE BUILT ENVIRONMENT

**Y.D. Izam**¹ and **O.S. Ameh**²

¹ Department of Building, University of Jos, PMB 2084, Jos- Nigeria ² Department of Building, Ahmadu Bello University, Zaria, Nigeria.  

majidadi67@yahoo.com

A major challenge to the practice of sustainable construction in Nigeria is the apparent lack of knowledge on sustainability concept by the built environment professionals. This knowledge-gap impedes the ability of built environment professionals to adequately deal with impending environmental crises as well as make decisions for a more sustainable built environment. The paper reports results of a study to verify the level of awareness, among built environment students and educators, with construction sustainability issues. Another aim of the study was to bench mark the existing Bachelor of Science and Postgraduate built environment curricular in five foremost Nigerian Universities in order to assess the extent of incorporation of sustainability related issues. The content analyses were undertaken on five key disciplines which included Architecture, Building, Civil Engineering, Quantity Surveying and Urban and Regional Planning. The results of the descriptive research confirmed significant gaps in the current university training of built environment professionals as well as low level of familiarity with sustainability issues by both students and educators. It was recommended that the minimum standard curriculum need to be revisited by the NUC and the relevant professional bodies in Nigeria should reflect the centrality of sustainability issues in their mandatory continuous professional development programmes (CPD).

### INVESTIGATING THE MOST EFFECTIVE TRAINING FOR CONSTRUCTION CRAFTSMEN THAT WILL OPTIMISE PRODUCTIVITY IN THE NIGERIAN CONSTRUCTION INDUSTRY.

**Arc J.S.D. Dantong** and **R.S. Lekjep**.  

Department of Architecture, University of Jos.

This research work is aimed at investigating the most effective training type that can optimize the productivity of the Nigerian Construction Craftsmen. Achieving this the following objectives were set-up; - Identification and determination of training types, most severe factors militating against, and most suitable and efficient type of training applicable to construction craftsmen in Nigeria. This research adopted literature review, oral interview and use of questionnaire in its methodology. Only construction professionals were used for the ranking of severe hindrances and efficient type of training to be adopted for construction craftsmen. Analysis of findings involved the use of statistical methods (ranking). Hindrances to training were identified as poverty lack of effective regulatory body, government negligence and lack of support from the construction industry. Lack of effective
The regulatory body was ranked as most severe with a combine rank agreement of 67.69% while "poverty" was least with 0.00%. Similarly, 22 types of training that can be applicable were established. The most efficient type "vestibule Schools" ranked 83.24% and the least was "sink-or-swim type with 0.03%. This study recommends increase in support both from Government and the construction industry in financing technical and vocational institutions. They should also be instrumental in promoting stringent measures on craftsmen's registration. Regulatory body should also be put in place to monitor the activities of these construction craftsmen.

**Key words:** Investigate, Most-severe, Most-effective, Productive, Construction-Craftsmen.

**BENCHMARKS FOR OPTIMAL ORGANISATIONAL STRUCTURE IN ARCHITECTURAL PRACTICE**

ErekpitanO. Ola-Adisa  
*Department of Architecture, University of Jos, Jos, Nigeria*

olaefeadisa@gmail.com

The structure of practice management in the Western world is quite different from what obtains in most developing nations of the world. The unique challenge posed by the Nigerian practice scenario makes it imperative to establish practice patterns and develop models to cater to the myriad issues that evolve in the sustainable practice of architecture. In Nigeria the study of practice management is still at its formative stage, making the development and implementation of sustainable practices issues difficult. This study is based on a larger ongoing study which is developing models for the strategic management of architectural practice with the aim of better understanding how practices compete with each other for work. This larger longitudinal study is assessing the ways in which architectural practices are distinctive as a knowledge-based profession, and the characteristics of their industrial context. This study examined existing literature subjected to rigorous review. The conclusions show how strategic choices for sustainable architectural practice in relation to structure can deliver competitive advantage through increased organisational creativity. No single structure is recommended, rather the dimensions of structure are instead considered. These include complexity, formality and de-centralisation. The recommendations serve as benchmarks for optimal organisational structure of Nigerian architectural practices that support creativity particularly in the area of sustainability, thereby enhancing competitive advantage.

**Keywords:** Architectural Practice, Organizational Structure, Strategic Management, Sustainable Practice

**RELATIONSHIP BETWEEN WORKS INSPECTION AND QUALITY IN THE DEVELOPMENT OF BUILDING INFRASTRUCTURE IN NIGERIA**

Y.D.Izam  
*Department of Building, Faculty of Environmental Sciences, University of Jos,*

majidadi67@yahoo.com

The Nigerian construction industry is engulfed in many problems such as poor quality projects and rising cases of building collapse. The paper demonstrates through critical review of literature, the existing connection between works inspection and project quality. Using existing practice templates of built environment professionals and provisions of the National Building Code, it was highlighted that quality is orchestrated through all life cycle stages of a building project. The paper emphasized
the important role of the Architect in quality specification and quality conformance, as well as challenges confronting works inspection in Nigeria. As a way towards ensuring quality production of buildings, the paper recommended among others, inclusion of works inspection practice in the training of construction professionals and enactment of appropriate policy environment for the practice of works inspection.

**LENGTH OF RELATIONSHIP BETWEEN TRADES SPECIALIST AND SITE MANAGER IN INFORMAL BUILDING CONSTRUCTION PROJECTS: LESSONS FOR THE ARCHITECT**

Muhammad SaniAdamu Tal  
Department of Architecture, University of Jos, Nigeria.  
[ms_adamu2009@yahoo.com](mailto:ms_adamu2009@yahoo.com)

The increasing shift towards self-employment, labour relationships and the Design-Build procurement system in the construction sector around Nigeria and the growing direct involvement of formal architects in the informal construction processes have led to an increasing complexity of relationships and employments. The paper, examined the length of relationship implications of this complexity between trades specialist and the site manager, in the informal construction of projects delivery in Nigeria. Recruitment through intermediaries clearly limits the opportunity for formal relationships between the trades’ specialist and the site manager. The relationships between the trades’ specialist and the site manager in the informal construction of projects is analysed and discussed amongst the variables of method of control exercise by the site manager, and the number of rivals employed by the site manager within the same scope of a single project. Correlation analysis was used to examine the relationships. The results indicates that the length of the relationship between the site manager and the trades specialist is directly related to the flexibility of method of control exercised by the site manager but, inversely related to the number of rival trades specialist within the scope of a single building project.

**Key Words:** Informal Construction; Trades Specialist; Site Manager.

**TOWARDS A TIERED HOLISTIC ARCHITECTURAL EDUCATION IN NIGERIA**

Olusegun Oriye, Ph.D.  
Department of Architecture, College of Environmental Sciences, Joseph Ayo Babalola University,  
Ikeji-Arakeji, Osun State, Nigeria.  
[arcooriye@yahoo.co.uk](mailto:arcooriye@yahoo.co.uk)

The focus of architectural education in Nigeria had been on full professional training. Whereas the classification of industry has demarcated the roles to the professional, the technologist, technician and the artisan (craftsman/draftsman) cadres, the emphasis has been on the full professional cadre. Though these cadres overlap in their industrial responsibilities and consequently on the training programmes, this has not been adequately reflected in the focus of government, the regulatory body i.e. ARCON, the professional body, NIA the employers of labour and the candidates wishing to enter into the Profession. This has created a situation that some cadres of what should be the ‘Architecture Family’ feel left out/abandoned and either join other bodies or express their
frustration by anti-institute activities. This situation should be ameliorated. The thrust of this work is to look into the classifications of cadres and skills in Industry as it relates to the Architectural Industry in Nigeria, and to proffer appropriate solutions that will enhance the practice of the Profession to eliminate quackery, structure the profession properly, expand opportunities for the emergence of the ‘Architecture Family’.

Keywords: Architectural occupations, Professional, Technologist, Technician, Draughtsman, Professional Development

SUSTAINABILITY AND CONTEMPORARY ARCHITECTURE DEVELOPMENT IN ABUJA, NIGERIA.

Abbas Mu’azu,
School of Architecture
University of Portsmouth, UK
PO1 3AH
eabass77@yahoo.com
abbasmuazu@myport.ac.uk

The drive for sustainable development is now common place in virtually all spheres of human endeavours and adequately conspicuous within the realms of the built environment in both developed and developing world contexts. This paper examines the current worldwide positioning of sustainability discourses in relation to the contemporary outputs of the construction industry in Abuja. This is examined both in spatial contexts (both in localised and urban design settings) as well as the material contexts. The general analyses shows that such understanding of sustainability issues appears to be construed, ignored or relegated. The paper considers the position of architectural education, and then government interventions as pivotal for any meaningful sustainable solution.

CONVERSION OF DEPARTMENTS OF ARCHITECTURE INTO FACULTIES IN NIGERIAN UNIVERSITIES: CHALLENGES AND PROSPECTS.

Lukman, S. M.
Department of Architecture, Ahmadu Bello University, Zaria.
smlukman@yahoo.com

The quest for the transformation of the departments of architecture into faculties in Nigerian Universities keeps on re-echoing at all fora organized for the advancement of the cause of architecture. This new status, according to the advocates becomes necessary in view of the multi-faceted nature of the discipline of architecture. It is against the above back-drop that this paper seeks to critically examine the level of preparedness of the pioneer school of architecture in Nigeria, the Zaria School, both in terms of human and material resources to cope with the challenges and responsibilities that come along with the new status.

Keywords: architecture, discipline, diversity, speciality.