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## EDITORIAL

This is the first time AARCHES J has published a third issue in a year. This issue (Vol. 6 No. 3) publishes the remaining seventeen papers that were accepted by the Editorial Board for the journal for the year 2007, following on from the publication of the first two issues in March and June. The papers in the three issues were resources from the 2006 annual conference of AARCHES that held at the Federal University of Technology, Minna in October, and were peer refereed.

This issue is organized in the same way as the earlier two i.e. in three sections, namely Urbanisation and Sustainability; Education and Management; and Information and Communication Technology. The editorial of the earlier issues [6(1), and 6(2)] focused on Urbanisation and Sustainability; and Education and Management respectively. This editorial takes a look at papers on Information and Communication Technology (ICT) which was the topic of one of the break-up sessions at the conference examining sub-themes on emergent trends in computer aided design, intelligent buildings, and the impact of ICT on architectural education.

There are five papers on ICT in this issue. Odeyale and Balogun's paper examines recent examples of successful adoption of Virtual Reality (VR) technology as applications in construction. It presents a work jointly carried out at the Departments of Architecture and Computer Science of the Federal University of Technology, Akure. The result obtained shows that VR software provides avenues for easy manipulation of the drawing details thereby increasing the management of the construction process. Olatunde Adedayo's paper examines the use of computers in the training of students in the Department of Architecture, Federal University of Technology, Minna. It takes a look at the computer courses offered at the department and examines facilities and manpower available for equipping the graduate architect to meet the present day computer challenges in architectural practice. The paper by Tauheed et al examines the development of intelligent buildings as buildings controlled by machines or robots using high technology to optimise user comfort, energy consumption, safety and work efficiency. It further discusses the benefits and the future of intelligent buildings and advocates their rapid development in Nigeria. Akin Adejimi's paper compares Lagos and Abuja (in Nigeria) with four intelligent cities confirmed by the World Teleport Association's (WTA). It addresses the new horizon of intelligent city system in which communities are linked through broadband telecommunication systems for efficiency, wealth creation and well being of the citizenry. The paper by Owajionyi Frank offers summarized and simplified explanations of the concept of an intelligent building. It also seeks to enlighten both the private and corporate building developers on the emergent high-tech and brings to the fore some challenges it poses to building practitioners in Nigeria in the 21<sup>st</sup> century.

The authors are appreciated for considering the journal as an outlet for their research work in the generation of new knowledge on all aspects of the natural and the built environment. The purpose of the journal is greatly fulfilled in the dissemination of the academic research findings emanating there from.

**Professor Abiodun O. Olotuah**

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## AARCHES J: Journal of the Association of Architectural Educators in Nigeria

### NOTE TO CONTRIBUTORS

AARCHES J is a journal dedicated to the publication of articles, which are product of original research of the contributors, and which are meant to advance knowledge on the theoretical and practical aspects of the natural and the built environment. The purpose of the journal, therefore, is to provide an avenue for the dissemination of academic research findings dealing with environmental problems, planning, design and development for the purpose of advancing higher knowledge in architectural education generally, but in Nigeria, particularly. The journal also seeks to provide a forum for discourse of scholarship between teachers of architecture and researchers in related fields in the social environmental sciences.

The journal will therefore accept, for publication, articles based on original research in all aspects of both the natural and the built environment. In addition, book reviews, comments, letters, announcements and short communications on all aspects of the environment and environmental education can be accepted for publication.

#### Preparation of Manuscript:

Manuscripts must be in English (UK), typed double spaced on one side of A4 (210mm x 297mm) paper with a length not exceeding 6000 words (about 15 pages) inclusive of tables and figures with a 25mm margin on all sides. Three copies of the manuscript must be submitted to the Editor-in-Chief AARCHES J along with N1000 handling fee in cash, or bank draft, payable to the Financial Secretary AARCHES. Electronic submission is strongly encouraged, and should be made to [aarches\\_2006@yahoo.com](mailto:aarches_2006@yahoo.com)

#### Units, Symbols and Abbreviations:

The preferred units are the SI as defined by the ISO standard. Where it becomes necessary to employ the use of units that may not be recognized an explanatory note may be included, as a footnote, the first time such units occur. Similarly, abbreviations that are not commonly recognized must be written in full at their first mention.

#### Illustrations:

Illustrations in the form of maps, diagrams, graphs, charts, and drawings should be presented on transparent sheets not larger than A4 size with the same margins as the text. Such illustrations should be sequentially numbered and given brief titles written below them.

#### Tables:

Tables, like illustrations, if large enough to be presented on separate sheets are also to be presented as prescribed for illustrations. They shall be numbered consecutively throughout the paper (with Arabic numerals) referring to them in the text as Table 1,2,3 etc. Tables should not duplicate results presented in graphs.

#### References:

References shall be presented at the end of the paper using the American Psychological Association (APA) format, also known as Harvard style, or the Author/year style. The format is usually as follows:

#### Journal Articles:

Takem, T.A. (1998): "Roofing Sheets in Tropical Climates and the Protection against moisture" Journal of Tropical Architecture, 2(4), 25-31.

#### Books:

Meekyaa, U.J., Gyuse, T.T. & Uji, Z.A. (1990): Rural Urban Migration in the Third World. Yola: Paraclette Publishers.

#### Chapters in Books:

Alabi, T.Y. & Yobe, J.K. (1999): "Housing Without Houses" in, Koma, F.E. & Dakum, M.F. (Eds.) Urban Housing and The Urban Poor of the Third World. Jos: LECAPS Publishers (2<sup>nd</sup> edn.), 60-78

#### Final Submission:

All articles will undergo a double-blind peer review process. Contributors will receive copies of their refereed manuscripts for amendments (if any) as recommended by the referees. Final submissions will then be required to be made in two hard copies of the articles plus 3.5 floppy diskette or CD ROM, accompanied by a publishing fee of ten thousand naira (N10,000.00) only in cash or bank draft made payable to the Financial Secretary AARCHES. This fee is subject to review by the Editorial Board from time to time as circumstances may so dictate. Revised papers can also be submitted electronically to [aarches\\_2006@yahoo.com](mailto:aarches_2006@yahoo.com)

#### Off Prints and Reprints:

Each author will receive a copy of the journal for each published paper along with some offprints and/or reprints.



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## ARCHITECTURAL EDUCATION AND RESEARCH: a responsive tool to meet contemporary challenges in architectural practice

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**ABSTRACT:** *This paper highlights the implications involved in the education of architecture students and equipping them to adequately confront the inherent challenges of their profession. Some of these challenges include environmental, socio-cultural, economic, technological, local and global factors. The paper further looks at architectural research as a crucial tool that architects, both academics and practitioners alike, must utilize in order to effectively address the technical, aesthetic, and behavioural issues that arise from the study and practice of the profession. The paper proffers suggestions for architectural educators in Nigeria to rise up and face the challenges of architectural education in the 21<sup>st</sup> century.*

**Key words:** *challenges, knowledge, profession, implication, technology.*

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### INTRODUCTION

According to Ojo (1990) the general purpose of education is to prepare people to improve society in which they live. Architectural education is therefore, aimed at producing a professional, ready for an active, creative research and professional career.

Best (1974) views research as 'the systematic and objective analysis and recording of generalizations, principles, or theories, resulting in prediction and ultimate control of many events that may be consequences or causes of specific activities'. Vielle (1974) sees research as 'international and systematic activities of research that lead to the conceptualization, expression, design, and production of something new'. Research is one of the veritable tools for generating information and knowledge for development. Jaiyeoba (2004) describes it as 'sine qua non' for development. The way in which knowledge can be transformed and developed to affect the society in real terms could be used to measure aggregate success in research. Research in architecture is peculiar, since it is both an academic discipline and a profession. The goals of architectural education and research are essentially to advance the practice of architectural profession and provide adequate research opportunity that is responsive to the

changing contemporary challenges to meet national and international demands. Arayela (2002) points out that research in architecture should be viewed more often as a team endeavour than an individual activity. He observed that researchers working in groups can tackle problems in different approaches, sharing ideas, and knowledge together toward making its contribution to human welfare. This must however be based on the peculiarities of the practice of the profession in the given socio-economics conditions and entrench the creative methods as a synthesis of the scientist, the engineer, the artist, and the administrator. Hence a good architectural education must among others produce a highly qualified architect capable of designing an environment and space for the ever changing processes of human activities in the spheres of work, rest, and play within the limits of rational aesthetic. It is therefore the position of this paper to discuss ways of strengthening architectural education in the 21<sup>st</sup> century.

### THE NIGERIAN ARCHITECTURAL EDUCATION IN PERSPECTIVE

The Minimum Academic Standard for architectural education in Nigerian Universities as devised by NIA/ARCON spells out the following basic modules:

- I. Architectural design



- ii. Communication skills
- iii. History and Theoretical studies
- iv. Building Construction Technology.
- v. Environmental Control Systems
- vi. Humanities
- vii. Physical sciences
- Viii. Management studies.

It is seen here that the research content has not been given proper attention. However, Chukwuali (2002) proposes a concentration of the modules into four study units in architectural education which include:

- The Design units;
- The Humanities units (history and social sciences)
- The Technology/ construction unit;
- The Research and practice unit.

Research and practice unit seeks to improve the scientific enquiry method in the design process thereby strengthening the theoretical objectives of the curriculum as against the overwhelming learning to the practical objectives. The method of architectural design takes into cognizance the introduction of a research approach, the translation of the design process into a practical problem solving situation that further improves the development of the reasoning ability of the student. This unit thus, integrates research methods, principles and data analysis into the design process. Nkwogu (2002) describes the curriculum of architectural education in Nigeria as 'obsolete', and calls for its review and restructuring in order to elevate the profession to a full-fledged academic professional discipline such as engineering, medicine and law. Architectural education should provide a balance between the practicalities of the studio design and the acquisition of culture based behavioural knowledge, which enables students to relate properly to the society and environment. Two major perceived weaknesses of the curricula of most schools of architecture in Nigeria are:

- i. The emphasis laid on the architectural design studio at the expense of other technical and behavioural studies,
- ii. The absence of research areas of study, which are of great importance

to enhancing the ability of the architect to respond to the societal needs and peculiarities.

Adeyemi (2000) argues that the overemphasis on the studio isolates architecture students from the rest of the universities and denies them of the time to carry out scholarly research and acquire equal knowledge in other disciplines relevant to architectural practice. Architecture programme should not stop at just producing 'scheme designers' it should educate and prepare its graduates into engaging in researches on the built environment as it relates to man, user perception and user friendly structures. The mission of architecture as modifiers of the environment that supports and enhances human activities should never be forgotten. Vitruvius (Encarta encyclopaedia, 2005) posited that the architect is supposed to be well-versed in manual skill and scholarship. He should be educated, skilful with the pencil, instructed in geometry, know much history, know the opinion of the jurist and be acquainted with astronomy and the theory of the heavens'. Therefore architectural education should go beyond professional training unto specialization and research.

Schools of architecture in Nigeria have various philosophies for different programmes they run. Some lay emphasis on the theory of architecture while others on practical aspects. None of the schools of architecture examines and equips students on scientific investigation. However, the Union of International Architects (UIA) has spelt out the objectives of architectural education to ensure uniformity of the curriculum to include:

- an understanding of the profession of architecture and the role of the architect in society in particular in preparing briefs that take account of social factors.
- knowledge of urban design, planning, and the skills involved in the planning process.
- an ability to create architectural designs that satisfy both aesthetic and technical requirements.
- the design skills necessary to meet building user's requirement within



the constraints imposed by cost factors and building regulations.

- an adequate knowledge of physical problems and technologies and of the functions of buildings so as to provide them with internal conditions of comfort and protection against the climate.
- an understanding of the methods of investigation and preparation of the brief for a design project.
- an adequate knowledge of the fine arts as an influence on the quality of architectural design.
- an adequate knowledge of physical problems and technologies and of the functions of buildings so as to provide them with internal conditions of comfort and protection against the climate, UIA Education Charter, section II.3.

It is seen here that all aspects of architectural education and research are adequately touched.

#### IMPLICATION OF ARCHITECTURAL EDUCATION AND RESEARCH IN THE 21<sup>ST</sup> CENTURY

One of the fundamental needs in strengthening architectural education is the development of more adequate research basis. A large number of works (Best, 1974, Jaiyeoba, 2004, Anunobi, 2006) have identified that, there has been inadequate research content in architectural educational system in Nigeria. Research method in educational institutions should be viewed as a very crucial tool to architectural practice. The current curriculum in architectural education is designed in such a way that research in architecture is virtually non-existent. The architectural education has been tailored in training of design skills and less of intellectual development through scientific research. Anunobi (2006) points out that holders of masters' degrees in architecture find themselves seriously handicapped in the pursuit of doctoral degree. They have to begin from the scratch to learn elementary statistics and modern research and reporting style'. The problem assumes a crisis dimension if the doctoral pursuit is by dissertation only without

coursework. Thus, it is pertinent that the curriculum of architectural education at the undergraduate level should be altered and builds in more academic research content, and deemphasize much design. These should include research methodology, research statistics, research seminars, and quantitative method as well as scientific enquiry method. Uji's (2000) 'systems methodology' approach to design theory also recognizes this lack of research direction in current methodology for architectural profession. Hence the early inculcation of research content in architectural curriculum will make architect graduate to be balanced both professionally and academically in the 21<sup>st</sup> century. Likewise, they will evolve new and dynamic development in construction technology methods, and building materials as students and practitioners of architecture continue to keep themselves abreast with these new developments in their field of endeavour. The scope of architectural education will also become widened and strengthened through research.

#### SUGGESTIONS FOR ARCHITECTURAL EDUCATORS IN NIGERIA

Anderson (1998) explains that the split between research and practice that is evident in architectural profession is being centrally concern with the current structure in architectural training and practice which ought to fulfil the goal of the profession to the highest standards. The insufficient attention given to research has created several crippling obstacles. Schools of architectures will continue to be perceived by the humanities as a professional programme which train practitioners incapable of understanding the philosophical and epistemological concerns of the academic world (Akande et al, 2006). On the other end, the scientist will continue to view architects as artists unaware of the complexities of the scientific world and, as a result, unable to conduct true research. Jaiyeoba (2004) suggests that there is an urgent need for architects, educators and practitioners to close ranks through



workshops and seminars to discuss strategies/approaches to research taking into consideration past and present limitation. The following are therefore suggested:

- Architectural educators should lift the level of professional practice to a greater height in the country through research.
- There is the need to strengthen architectural education in the development of a more adequate research basis through outreach to initiate the following:
  - a. **Networks and information Dissemination.** This will:
    - Facilitate the exchange and updating of information among faculty/schools using internet;
    - Coordinate and publish the work of living labs` such as intelligent workplace under the centre for building performance and diagnostics of Carnegie Mellon.
    - Create and circulate slide for video course material. For example this could comprise ten lectures by contemporary design visionaries, case studies of great buildings.
  - b. **Assessment and Accreditation.** This will;
    - Encourage individual schools to conduct a self- assessment to create a base line of sustainability components in all aspects of curriculum and operation.
    - School self- assessments can be used in aggregate to develop and publish sustainability ratings for all architectural school, and work with NIA and ARCON to examine and revise the accreditation standards.
    - Ph. D programme in schools of architecture should be encouraged and made accessible for those that are research oriented.
    - Funding and provision of adequate grants in our architectural schools should form one of the bases of accreditation.
    - There should be provision of courses which focus on the importance of research in the architectural profession and the fundamental

method of conducting research at undergraduate level, thereby making students better equipped to bridge the gap between the professional fields such as architecture, and the research field such as environmental psychology.

## CONCLUSION

The practice of architectural profession as obtained as present in Nigerian education should be reviewed. This review should begin from the educational structure to the practice of the profession in content to bring it in accordance with contemporary realities. This can only be achieved through a review of architectural curriculum in structure and content. Architectural education would have to be widened so that it can accommodate research component into new technology and management techniques. In this millennium the architect has to be versatile in all human endeavours to be able to perform tasks of different kinds before him. Research is a crucial tool that architects both students and practitioners alike must utilize in order to effectively address the technical, aesthetic and behavioural issues that arise from the study and practice of the profession. Continuing Professional education should be arranged for architect practitioners to make them writing practitioners while educators should practice more to become academic practitioners. The convergence of ideas will provide a vibrant atmosphere for research and development.

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