

# REAPPRAISING BUILDING EDUCATION CURRICULUM: THE ABIA STATE UNIVERSITY-UTURU CASE

*A.N. Iroegbu; O. Onumadu and S. Obike*

## **Abstract**

The Department of Building, Faculty of Environmental Studies Abia State University-Uturu, has in the last twenty eight (28) years been exploring methods that address innovation and modernization of Building Education. The aim of this Department established in 1982 as Construction Management undergraduate programme and later changed to Building in 1992 is to create a Building Education system that will meet the Nigerian Universities Commission/Council of Registered Builders of Nigeria (NUC/CORBON) standard and at the same time incorporate into its programme, features that will align the curriculum with the industrial needs of the country. This paper generally reports the development, and research undertaken by some experts (authors inclusive) in facilitating the development of this curriculum. The paper examined the accreditation of Building programme, aim and objectives of Building Programme. Based on the afore-stated, an appraisal and evaluation of the curriculum was made – discussing the general philosophy for developing the new curriculum. The paper goes further to present the new curriculum. The methods used for development, evaluation and reappraising are also presented. The recommendations, include, that this present curriculum should be allowed to run for at least five (5) years.

## **Introduction**

The Department of Building, Faculty of Environmental Studies, Abia State University, Uturu – Nigeria was established in 1982 as Construction Management undergraduate programme, under the then College of Engineering and Environmental Studies. The college then had two schools – School of Architecture and School of Environmental Studies. These schools were administered by co-

ordinators, who were directly under the Dean of the college, while the Department was directly administered under a Unit Head, who was directly under the co-ordinator of the school. The Construction Management Department (now Building) was under the school of Environmental studies.

The Construction Management Undergraduate Programme of Abia State was the first Construction Management Programme in African Universities (Adindu, 1982; Adindu and Iroegbu 2002; Adindu, 2005). The college then, had two schools and five Departments. The Departments include – Architecture, Building, Estate Management, Geography and planning, Urban and Regional Planning. Outside Architecture, all other four Departments were under the Schools of Environmental Studies.

The first Dean of the College (now Faculty) was Prof. U.M Igbozurike, and the first Head of Unit (now Department) was Mr. G.O. Adindu (now Associate Professor- Retired). The Appendix shows the nominal roll of past Deans/Heads of the Faculty/Department as well as the present Dean/Head of the present Dean/Head of the Present Faculty/Department of Building respectively. So, the work on curriculum development of the Department started with the establishment of the University/Department in 1982, and it was Mr. G.O. Adindu who developed the said curriculum with the experience he got from his former University abroad – University of Waterloo, Ontario – Canada.

Finding out that such degree classification is not readily acceptable at undergraduate level in Nigeria and to make our graduates registerable with existing professional body in Nigeria, the programme was changed to

Building degree programme in 1991/1992 academic session. According to Obiegbu (2008):

The Department had reviewed its programme not only to meet the current National Universities Commission (NUC) Minimum Bench Mark on Academic Standards but also the professional demands of both the Nigerian Institute of Building and the Council of Registered Builders of Nigeria. The Abia State Government been gracious in supporting the programme in the provision of teaching tools and the facilities.

Again, in 2002/2003 session, under the tenure of Prof. Ogwo E. Ogwo, two other Departments were introduced – Department of Fine and Applied Arts; Department of Environmental and Resource Management – making a total of seven (7) Departments. In the same year, the university changed the College system to Faculty system and the name of the College was changed to Faculty of Engineering and Environmental Studies. By this development, there is nothing again like the School of Architecture or School of Environmental Studies, and Co-ordinators. So the two schools were merged to form the Faculty and the Unit Heads – became the Heads of Department (HOD's). By this, the HOD's now report directly to the Dean and not to a – Co-ordinator.

Also in 2007/2008 session under the tenure of Prof. Mkpá Agu Mkpá (the present vice chancellor), the name of the Faculty was changed to read, "Faculty of Environmental Studies". This was proper since the Faculty never established any Engineering Department.

However, for complete programme of a Faculty of Environmental Studies, two other major Departments were lacking in Abia State University – Faculty of Environmental Studies. They are:

1. Department of Land Surveying.
2. Department of Quantity Surveying.

These two (2) – all important Departments need to be established for a complete curriculum of a programme in Environmental Studies in particular and construction industry at large. The Building Department currently runs a programme leading to the award of Bachelor of Science (B.Sc) degree. This programme is concerned with transmission of the knowledge and concepts in science and technology of building, and is aimed at producing Professional Builders who would function immediately and effectively in government construction and in management of facilities serving the needs of the society. The B.Sc programme is by tutorials, laboratory, studio; workshop and field work (on live projects) and projects supported and reinforced by practical training in construction industry.

Courses are designed to impart sound knowledge to students (undergraduates) on application of scientific principles to solution of practical problems. In this regard, a good background in mathematics, physics and chemistry is required. These subjects enable the students develop the necessary technical skills, intellectual discipline and the power to analyze, solve complex structural system problems, design and construct buildings.

The B.Sc programme is for duration of five (5) years consisting of nine (9) semesters of study in the University and one semester (second semester of fourth (4<sup>th</sup> year) compulsory practical training in construction industry. The first two years of study are common to all the branches of Environmental, Engineering and Construction Industry Studies. From the second (2<sup>nd</sup>) year onwards, the emphasis is on the teaching of courses in the various area of Building Technology. In second semester of fourth (4<sup>th</sup>) year, the students embark on a six (6) months industrial training, while in final year, an in-dept

study of some aspect of Building Technology is undertaken by each student in the form of a project.

The Department of Building, Faculty of Environmental studies has no problem in terms of staff. Lecturers are employed from areas of Engineering, Quantity Surveying and Land Surveying as part of building lecturers to take charge of some courses that were supposed to be taken from such Departments, since Abia State University have no such Departments for now. This paper discusses the general philosophy for developing the curriculum and then goes ahead to present the contents of the curriculum. The methods used for evaluation of the curriculum are also presented. In general, this work is intended to serve as a building block for the establishment of new Departments of Building, in any university or the modernization of the existing ones.

#### **Method**

In January, 2007 the Departmental Board of Building Department embarked on the exercise of developing and formalizing their curriculum in line with the faculty directive. In addition to National Universities Commission's (NUC) guidelines on Minimum Academic Standard/Departmental Programmes from other Universities in Nigeria/Overseas, a number of theoretical works were also considered.

The vision of Building Department was to develop a Building Curriculum which ensures that the student graduate will have specific abilities or knowledge upon graduation. First, the Department requested for departmental brochures from many Universities in Nigeria offering Building in order to enable them commence the research. Some of the Universities did comply.

The brochures from overseas university were easily obtained from the university library. The Department then compiled reports of staff from their informal surveys of Building

graduates from other universities and employers to assess the desired characteristics of the graduates, the importance of specific knowledge or skills for their job requirements and the degree to which the students received adequate coverage of such knowledge or skill in their academic programme. Based on this survey it was agreed that effort should be concentrated on the brochures from Nnamdi Azikiwe University – Awka (Obiegbu, 2008).

It was also agreed that the following lecturers be adjunct to the Department to assist in the development and implementation of this programme. They are: Prof. E.O.P. Akpan; Engr. (Dr.) D.O. Onwuka – both of Federal University of Technology, Owerri. Bldr. K.C. Okolie; Bldr. D.A. Obodoh both of Nnamdi Azikiwe University, Awka. Mr. G.A. Onyemechi from University of Nigeria Nsukka, and Engr. Grant Onwuka from Federal Polytechnic – Nekede.

Identifying key concepts from other Building curricular that should be included in Abia State University curriculum entailed a lot of work which the Departmental Board did (Onumadu, 2008). The final curriculum was developed at the instance of Bldr. M.E. Obiegbu with several innovative approaches that will face Building Professionals in the coming decades (Obiegbu, 2008; Iroegbu, 2008; Onumadu 2008 & Obike, 2008). The development of sound curriculum for Building Department will require a good knowledge of:

- i. The accreditation process by the National Universities Commission (NUC).
- ii. Council of Registered Builders of Nigeria (CORBON). These issues will first be examined before going into the philosophy of the curriculum, its development and evaluation.

#### **Accreditation of Building Programme**

Based on the need to maintain basic minimum standard of practice and professionalism in Nigeria, all degree

programmes run in the Universities including the Building programme must be accredited by the NUC. The NUC to this effect, has published its Minimum Academic Standard and this document is very essential for any Department, be it a new Department seeking fresh accreditation or an existing Department seeking re – accreditation. Also in Nigeria, any degree programme run in Department of Building must be accredited by Council of Registered Builders of Nigeria (CORBON). The CORBON to this effect usually makes available to Department its requirement.

CORBON requirement is usually NUC Minimum Academic Standard plus additional professional requirement which most Registered Builders in academics are familiar with. A Department is usually free to set higher standard, but the standard must not fall below the minimum of NUC and CORBON. The goals and objectives of any accreditation are to set desired standard and monitor adherence to that standard usually by visitations. The aim was to certify at meeting all formal official requirements of academic excellence, curriculum and facilities – so as to have programmes which will:

- i. Assure employers and other members of the community that graduate of all academic programmes have attained an acceptable level of competency in their area of specialization.
- ii. Certify to the International Community that the programmes offered in the Universities are of high standards and their graduates are adequate for employment and for future studies. The status of accreditation of an academic programme may be identified at one of the following levels:
  - a. Full Accreditation:- These shall be granted any degree programme that has met the Minimum Academic Standard (MAS). Full accreditation shall be granted for a period of five (5) academic sessions with a mid – term appraisal.

After the five academic session, there shall be a re-accreditation visit. To the Glory of God, the Department of Building after being denied accreditation in 2006/2007 academic session had a full accreditation in 2007/2008 session both by NUC and in CORBON.

- b. Interim – Accreditation:- This shall be granted to any degree programme that has minor deficiencies that must be rectified within a stipulated period. This is granted for not more than two (2) academic sessions after which the programme would be automatically due for revisitation.
- c. Denied Accreditation:- Denied accreditation applied to any degree or other academic programme, which has failed to satisfy the approved academic standard. Request for re-visititation for the purpose of accreditation shall come from the University concerned. The criteria for accreditation of Building based programmes in Universities in Nigeria are derived from issues relating to academic matters – goals and objectives of the programme, the curriculum, resources available for teaching the programme, satisfactory standard and quality of students’ work, effective management of the Department, good financial support and satisfactory rating of graduate performances on the job by employers.

#### **Philosophy of the Programme**

The philosophy underlying Building Education is to develop and advance the science and practices of building science and building production management. It is important to emphasize that building involves building construction, technology and techniques, buildability and maintainability analyses, building construction process and methodology

in the areas of site management, contract management, financial management, building production and maintenance.

The Building graduates are therefore expected to devote substantial part of their lives solving national problems of how to make Nigeria technologically truly independent and break new grounds in all aspects of building techniques, building production management, construction processes and building maintenance.

#### **Aim and Objectives of Building Programme**

The objectives of a degree programme in Building are to train competent graduates in building construction process, its management and maintenance. In addition, the programme should provide sufficient general knowledge and specified skills and techniques which will enable the professional builder to manage and control the technological, economic, human and material resources involved in the Building Production.

The building graduate is also trained to interact effectively with owners, developers, other allied professionals, manufacturers, suppliers and other stakeholders in the construction industry including artisans and craftsmen and be fully equipped for public and private sector services and self employment. Since the lack of maintenance of any building will accelerate its deterioration and eventual collapse, there is also a need to groom the building graduates in the art, science, technology, techniques and culture of building maintenance technology, maintenance management and facilities management.

#### **The Building Curriculum**

The programme structure of the building curriculum development for the Abia State University-Uturu, based on the above challenges is presented bellow. While flexibility is allowed in the depth of the body of knowledge required in the Building programme, it is

essential that all programmes will ensure that students become conversant with the following major aspects of Building:

1. Building and construction technology.
  2. Design principles and appreciation.
  3. Building materials science.
  4. Environmental science.
  5. Building Production management.
  6. Building services.
  7. Structural theory and design.
  8. Construction management.
  9. Measurement of building works.
  10. Estimating and tendering.
  11. Construction plant and equipment.
  12. Project management.
  13. Environmental management.
  14. Building maintenance.
  15. Building surveying.
  16. Professional practice and procedure.
  17. Information technology.
  18. Economics of construction industry.
  19. Budgeting and financial control.
  20. Awareness of major issues currently at the frontiers of Building Research and Development.
  21. Management and conservation of man-made and natural environment.
  22. Entrepreneurship for Builders.
  23. Housing systems and processes.
  24. Architectural design.
  25. Law of contract and Arbitration.
  26. Industrial law/law of master and servant.
- Also, practical skills reflecting the skills expected from graduate builders from this programme are outlined as follows:
- a. Competence in feasibility and viability studies.
  - b. Skills in Buildability and maintainability analyses.
  - c. Competence in Building production management.
  - d. Competence in Assemblage and construction of all types of Buildings.

- e. Skill in co-ordination and project management of building projects.
- f. Skills in the management of building construction works from planning/tender stage to completion and profitability of all the operations involved.
- g. Skills in instruction, control and inspection of site operative's works.
- h. Competence in the most appropriate and cost effective method of construction and sequence of site operations for the entire building construction project – this include the preparation, implementation, updating, review and monitoring construction methodology, construction programme, Information Requirement Schedule (IRS), Project Quality Plan, Project Health and Safety Plan and Early Warning Systems (EWS).
- i. Skills in the setting out of building, ensuring correct positioning of all elements of building and supervision of foundation, formwork and temporary supports, superstructure, concrete, wood, aluminium and structural steel works for all types of buildings.
- j. Skills in building up unit rates, obtaining and analyzing quotations, tendering and making recommendations for the purchase of all materials, components and sub-contract works and other construction resources required for building project.
- k. Skills in the preparation of project quality management plan, fire safety, health and safety plan and instruments for building construction.
- l. Competence in building maintenance technology.
- m. Skills in carrying out condition survey of building and preparation of schedules of condition and dilapidation; identifying building defects, recommending appropriate remedies and organization of rehabilitation and maintenance works.
- n. Skills in carrying out Building Facilities Management.
- o. Skills in carrying out maintenance of buildings.
- p. Skills in value management and building project risk analysis.
- q. Skills in monitoring and evaluation of Building projects.
- Among the general skills required for the programme include:
1. Written and oral communication skills.
  2. Information technology skills.
  3. Information retrieval skills in relation to primary and secondary source – including information retrieval through on – line computer search, internet, e-mails.
  4. Inter – personal skills with ability to be engaged in team work and oral submission of proposals.
  5. Qualitative and quantitative problem solving skills.
  6. Time management.
  7. Study skills needed for Continuing Professional Development (CPD).
- On the learning outcomes, the behavioral attributes of the holders of bachelor degree in building are expected to be governed by the laws of Nigeria in general and the code of professional conduct of the Professional body (The Nigerian Institute of Building). The following are the specific attributes:
8. Ability to discharge responsibilities to the client or the employer with full regard to the public and building professional interest.
  9. Ability to uphold the dignity, standing and reputation of the Nigerian Institute of Building and the Council of the Registered Builders of Nigeria.

10. Ability to keep confidential information confidential.
11. Ability to be free from corruption.
12. Ability to use professional skills and integrity acquired for the good of the society.
13. Skills to be abreast with new thoughts and developments in the Building science, technology and industry.

### **Evaluation of the Curriculum**

The Building Curriculum for the Abia State University has a number of factors built into it to help evaluate the programme, in addition to the evaluation carried out by an external moderator and employers. The internal indicators used to evaluate the curriculum are testing – during training, design (studio work) exercise, industrial attachment and field trips, external (moderation) moderator, employer and alumni association.

**Testing:-** Testing (Quiz) is done at least twice in a semester. At the middle of the semester, a class test is given which will form part of the continuous assessment which carries 30% of the final grading. A student who registers to study for a degree programme in Building is also evaluated in terms of attendance. Students are normally required to satisfy 70% attendance of scheduled classes in lectures, tutorials, practical, workshops and field trips to be eligible to take examination.

### **Design (Studio Work) and Workshop Practice:-**

Several design exercise and studio work are incorporated in the curriculum. The students are exposed to workshop practice in the area of woodwork, plumbing, metal, block laying & concreting in year II. In year III, courses in Building services (Electrical/Mechanical; plumbing/ Acoustics) etc are taught. Also from year III to year V, they are exposed to various drafting and building designs, while in second semester final year, a student is

required to carry out a research project. Each student working under the supervision of an academic staff is required to submit a report on his findings and undergo oral examination.

**Industrial Attachment:-** Industrial attachment programme during the second semester of fourth year provides a unique opportunity for most student builders to witness for themselves how their profession is organized. It is a period for self evaluation by the students. In order to evaluate the students in the Industrial Training (IT) programme, the Department has incorporated into its curriculum, IT Seminar which are done before and after each encounter of the student with the industry. The pre-attachment seminar prepares the students for the task ahead while the post – attachment seminar is use to grade the student. It is also required that a student should submit a written report to qualify for grading.

**Field Trips:-** The Abia State University, Uturu has field trips as part of its comparison. These field trips (live projects) are designed to give students a first hand impression of how Building construction project look and how they are being managed. This component influences their appreciation of Building Production Management and impacts on their understanding of lectures. This is another period of self evaluation, as serious students do not have difficulties reconciling theories with practices in the industries.

**External Moderators:-** An external examiner is invited once every year to evaluate the programme. The external examiner will go through students' project, look at examination questions and answer sheets, interview some students, check lecture notes given to students and interview the staff. The external examiner then gives an assessment of the programme

which will then be submitted to the Vice Chancellor.

**Employer and Alumni Association:-** Another important component that helped the Department maintain quality of the programme is to convene meetings with Alumni, practicing Builders, and Employers to discuss the quality of the programme (Iroegbu, 2008). This will assist in developing a feedback quality control system. This part is yet to be implemented – since Building graduates of Abia State University, Uturu (ABSU) find it difficult to come together after graduation.

### **Conclusion**

Seasonal academicians with diverse background led discussion on the curriculum development described in this paper. It was a rich experience as they shared thoughts, which they believe will be of benefit to the Department in the coming years. They include: Bldr. M.E. Obiegbu, Engr. G. Onwuka, Engr. (Dr.) D.O. Onwuka, Engr. A.N. Iroegbu, Suvr. C.C. Mbakwe, Suvr. G.U. Ogbenna, Assoc. Prof. J. Onyeka, Bldr. D. A. Obodoh, Bldr. A. Umezurike, Bldr. K. Okolie, Bldr. O. Onumadu, Bldr. S. Obike & Prof. E.O.P. Akpan. They all accepted the challenge that, this exercise of curriculum development is a dynamic one and that continuous review is needed if the Department should be abreast with latest development.

### **Recommendations**

Based on the reappraisal and evaluation of the curriculum, the following recommendations have been proffered:

1. The present curriculum and programme should be allowed to run for at least five (5) years.

2. Future plans will focus on bringing together, all stakeholders for evaluating the programme.
3. This may be followed by a workshop to discuss the direction of the curriculum development – especially in terms of innovations and modernization.
4. Building technology graduates of ABSU, should be meeting after graduation.

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***A.N. Iroegbu***  
*Department of Building ,*  
*Faculty of Environmental Studies*  
*Abia State University, Uturu.*

***O. Onumadu***  
*Department of Building ,*  
*Faculty of Environmental Studies*  
*Abia State University, Uturu.*

*and*

***S. Obike***  
*Department of Building ,*  
*Faculty of Environmental Studies*  
*Abia State University, Uturu.*

**Appendix**

**Nominal Roll of Past Deans of the Faculty/HOD'S of Building & the Present Dean & HOD of the Faculty and Department of Building Respectively.**

S/N	DEAN	HOD	YEAR
1	Prof. U.M. Igbozuruike (Pioneer Dean)	Mr. G.O. Adindu	1985-1991
2	Prof. E.E. Okpara	Mr. G.O. Adindu	1991-1992
3	Prof. A.U. Awuzie	Mr. G.O. Adindu	1992-1995
4	Dr. M.A. Ijioma	Mr. Adindu	1995-1997
5	Assoc. Prof. G.O. Adindu	Engr. Omerekpe	1997-1999
6	Hon. I.U. Mbadiwe	Assoc. Prof. G.O. Adindu	1999-2003
7	Prof. M.A. Ijioma	Assoc. Prof. G.O. Adindu	2003-2005
8	Prof. E.I.C. Agwu	Assoc. Prof G.O. Adindu (2005-2007)	2005-2006
9	Prof. I.U. Kalu	Bldr. M.E. Obiegbu (2007 - Date).	2006-Date