



## ABSTRACT

The Architectural Educational Curriculum is a minimum guide towards the training/education of students in various schools of architecture. It epitomizes the symbiotic relationship between education and practice, and so determines to a great extent how the graduates cope with the practice in the industry. Hence, this study assesses the current curriculum in relation to the contemporary challenges of the Nigerian Building Industry with a view of ascertaining how much it prepares the graduates to the task ahead. A descriptive survey and purposive sampling is used, which a structured

# REFLECTING ON THE ARCHITECTURAL CURRICULUM OF NIGERIAN POLYTECHNICS TOWARDS MEETING THE CONTEMPORARY ISSUES IN THE NIGERIAN BUILDING INDUSTRY

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## Introduction

The meaning of architecture is thought to be vague. As some scholars have opined, architecture is often difficult to defined or describe and it can be partially be described with the reference to many bodies of knowledge and understanding; scientific, technical, social, political, artistic and symbolic.(under 1990). Architecture has been described as a cultural phenomenon were changes occurred. Architectural education on the other hand is a culture that always change through time and spread from group to group. Thus, Architectural education should therefore embody the importation of all ideas, information, and knowledge on how to enhance the built environment and sustain the ecosystem of human survival and development. The goal of architectural education is sub-summed in the general concept of education, which is to prepare people to improve and perpetuate their society. Architectural education can be traced back to traditional relationship of master builder and apprentice. It was initially taught inside a kind of “guild” as an apprentice frame work practice in both East and West of Europe, (Tzons 2014). The architectural pedagogy originated from two schools; the Ecole des Beaux Arts and the Bauhaus. The Ecole des Beaux Arts traced its origin from academic des Beaux Arts in France and it played an important role in European architecture. It founded the two most influential international educational institutions; the Ecole des Beaux Arts and the Ecole polytechnique. The teaching is based on studio based design education and which is obtainable in master and apprentice system. The academic concerned with teaching the principles of architecture and the studio is concern with the



questionnaire was used to get the necessary data. The study found out that the curriculum covers most of the issues faced by the graduates in the industry, but there is a need to further integrate more on site management practices, specialization, sustainability and room to accommodate future challenges.

**KEYWORDS:** Architecture; Architectural curriculum; Nuhu Bamalli Polytechnic; Nigerian Building Industry

application of those principles, (Udeh 1990). However, Bauhaus school was established in 1919 and was later open in 1925 in the ancient town of welmer Germany and later moved to Dessau. The school trained artisans to be proficient in a craft. It also serve as the prime source of creative imagination. In the Bauhaus there is a distinction between the academic and design teaching methods of the Beaux Arts. The distinction is based on the content of knowledge transmitted in the academy and the role of the studio teacher. The most important part of architectural education in term of curriculum focus and time spend by students is in the architectural designs. It is in the Design studio that the student is expected to gather knowledge from different disciplines in order to inform the development of their architectural designs. Design process consists of constant experimentation, some minor, some major. Architectural curriculum by and large has few real variations in different countries.

The Nigerian architectural school curricular was fashioned after the English model of Beaux Arts traditions and the first generation of Nigerian Architects went abroad in the early 1950s and the school of architecture was established in Ibadan in 1952 and moved to Zaria in 1953. The college was converted to Ahmadu Bello University Zaria in 1962 as a degree awarding institution. Now over 26 universities federal, state and private offering architecture and also over 33 polytechnics running programmes in the same discipline.

The polytechnic system of education is aimed at producing technicians and technologists in all the professional programmes. The training is acquired both physical and intellectually. The polytechnic under study is among the accredited institution by the national board for technical education (NBTE). The board structured the curriculum of all ND and HND programmes to consist of four main components and these are:

- (i) General studies/education
- (ii) Foundation courses
- (iii) Professional courses
- (iv) Supervised industrial work experience scheme (SIWES) (NBTE 1989). The general studies/ education and foundation courses carry 30% of the contact hours while the professional courses carry the 70% which includes ICT and specialization at present. The curriculum is further divided into four semesters each, they are the class room teaching, laboratories, workshop and the studio design room, and the 3-4 month of supervised industrial work experience scheme. (SIWES).

Thus, the curriculum produced by the national board for technical education (NBTE) is a minimum guide for the training of Nigerian polytechnic students and was just recently updated in the year 2020 to cater for contemporary issues in the industry since it was last produced



about three decades ago. Architecture on the other hand is a profession that has been evolving over time, with the need for aspects of its training to be improved to meet the current realities in the industry. The architectural graduates of the polytechnic are faced with challenges in respect to their job prospects amidst issues like specialization and use of modern equipment and technology. Thus, it is the aim of this study is to assess the NBTE curriculum and training of the Architectural technicians and technologists of Nigerian polytechnics with a view of seeing how much of the contemporary issues it addresses using Nuhu Bamalli Polytechnic, Zaria as a case study.

#### **Objectives of the Study**

- i. To examine the students familiarity with their job expectations in the Nigerian building industry.
- ii. To outline the current challenges in the practice of Architecture in the Nigerian Building Industry .
- iii. To examine the current NBTE curriculum and relate it to the contemporary challenges faced by the Architect in the building industry.
- iv. To determine what area in the curriculum/training that needs improvement towards meeting the contemporary challenges in the Nigerian building industry.

#### **LITERATURE REVIEW**

The literature review focuses on architectural education, curriculum development, learning theories, job expectation of the polytechnic graduate and the contemporary challenges in the Nigerian building industry.

Bruch (1993), defined curriculum as the formal and informal content and process by which learners gain knowledge and understanding, develop skills, and alter attitudes, appreciations and value. In another definition, (NTI n.d cited Hass 1980), defined all the experiences that individual learners have in a programme of education whose purpose is to achieve broad goals and related specific objectives which is planned in terms of a framework of theory and research of past or present professional practice.( Bunch,1993 cited Doll, 1986), defined curriculum as all the learning experience offered to a student while under the direction of an institution of learning. In another definition by Tanner and Tanner (1980) cited by (Bunch 1993), that curriculum is best defined as all of the events that lead to the content, process, or outcomes of the learners in the form of understanding, knowledge, skill, attitude, competencies and appreciation or a framework by which a teacher may teach and student may learn. In this case, some people see curriculum as a means of all the learning experiences that the learners acquired under the guidance of the instructor directed towards acquiring some skills or competence. However, the philosophy behind curriculum development is the purpose, activities and how will the educational activities be structured and scheduled and how will the outcomes be evaluated. In developing a curriculum, one will decide an instrument for needs assessment of the curriculum, (Bunch 1993 cited Taba, 1962). Architectural curriculum developers will have to consult with business men, community leaders and organization, governmental agencies and professional group in order to develop and process the curriculum activities (Bunch 1993 cited knowledge, 1980). Curriculum development is the planning process that results into broad and specific curriculum development.

- (i) The of aims goals and objectives



- (ii) The selection of appropriate learning experience and content for the achievement of aims, goals and objectives.
- (iii) Organization of learning experiences
- (iv) Evaluations of the extent to which the objectives identified in step one have been achieved. (NTI n.d).
- (v) Researchers and educational philosophers state that there are several ways of learning; some views learning have change significantly. Learning theories that seek to explain how learning occurs and how people learn, constructivism as a theoretical lens use to study architectural design studio (Lueth 2008).

(Lueth 2008 cited Sarason 2004), described learning as a process that occurs in interpersonal and group contents and is always composed of an interaction of factors to which we append labels such as motivation, cognition, emotion or effect, and attitude “learning was also defined as the process of becoming capable of doing something as a result of having had certain experience (of doing something or something happening)” (Lueth 2008 cited Marton and Tsui 2004). Lueth (2008) cited Schon (1987) in his study of reflective practitioner, he specially talked about the learning in design. He acknowledged that students were expected to know how to design without being taught and were not told how to go about doing design; so instead, they must discover for themselves this process of design. These definitions give examples of learning theory that have been used to interpret design studio learning. There are other theories that might relate to the learning that occur in the design studio; these include constructivism, social constructivism, constructionism and radical constructivism. These theories have relationship with behaviorism which includes Bandurus’s social learning theory and Vygotsky’s social development theory.

#### **Job Expectation of an Architectural Graduate of Polytechnic in the Building Industry**

The architectural graduate of polytechnic is usually employed as an architectural technologist. Architectural technologists are specialists in the science of architecture, building design and construction who work closely with architects and help to turn the architect’s concept into reality in the completed construction (Zaki, et al,2020). Hence, a study by Udochukwu (2017) showed that the following were bulk of the expectations required of an architectural technologist in the industry:

- i. Ability to make sketches based on the brief.
- ii. Ability to effectively incorporate ideas and comments from superiors in the design stages.
- iii. Effectively produce presentation, perspective and detailed drawings using appropriate software.
- iv. Ability to produce designs that satisfy the demands in the brief.
- v. Ability to produce designs based on standards.
- vi. Ability to produce designs based on budget and cost estimates.
- vii. Complete designs within the target time frame.
- viii. Ability to assist in supervision of construction works.
- ix. Ability to relate cordially with other members of the construction team.
- x. Ability to make progress reports.



### **The Challenges of the Architectural Profession on the Graduate of the Polytechnic in the Nigerian Building Industry**

The Architectural profession is continuously evolving and this is because of the constant growth in science and technology, ever changing socio-economic and cultural needs which directly or indirectly impacts on the education and practice of architecture. This has necessitated for the need to look at the training of architecture student in respect to the contemporary trends in practice and the challenges faced by the graduates especially in the Nigerian building industry, which is marred by so many challenges. The challenges so far identified by studies from Oluduro (2011) and Ndadok (2020) where outlined as follows;

- i. Lack of understanding of the duties and work process of the architect
- ii. Non payment of professional charge based on the standardized scale of fees
- iii. Corruption
- iv. Organizational challenges
- v. Managerial roles
- vi. Proliferation of the building industry by other disciplines outside the building domain
- vii. Effect of global recession and explosion of the real estate sector
- viii. High cost of building materials
- ix. Making time for hand sketching
- x. Knowledge of building materials and specification
- xi. Keeping up with the ever changing computer hardware and softwares and ICT reformations.
- xii. Grappling with politics.
- xiii. Entrepreneurship knowledge and diversification of the profession
- xiv. Environmental sustainability knowledge

### **METHODOLOGY**

The study is going to be empirical and purposive sampling will be used to collect the data. Structured questionnaires will be administered and reviewing existing literature such as NBTE curriculum, text books, journals, and others scholarly papers and consultation with relevant stakeholder will be carried out. However, there are two polytechnics in the State, but Nuhu Bamalli Polytechnic Zaria is chosen for the study because it is a State owned institution and fast growing. The department under which the study is going to be carried out has a total number of 26 (twenty-six) academic staff but 1(one) is on fellowship with about sixty-three (63) Higher National Diploma (HND) students. The HND students are chosen in this study because of their out of school experience especially after the National Diploma Programme. The questionnaires will be administered to staff and students and the data will be analyzed using descriptive statistics.

### **DATA ANALYSIS AND PRESENTATION**

Descriptive Statistics is used for the data analysis and the questionnaire contain variables which will be examined thoroughly to obtain necessary information to aid the study. Frequency tables, percentages, will be used to explain the results of the study.



**Section 1: Demographic Data**

The research population of the architecture staff and students in Nuhu Bamalli Polytechnic that returned their questionnaire are eighty-eight (88). Table 1 shows that and it is made up of twenty five (25) academic staff and sixty-three (63) students respectively.

**Table 1: Respondents' Population**

Respondents	No. of Population
Staff	25
Students	63
Total	88

**Table 2: Respondents Gender**

Respondents	Staff		Students	
	Male	Female	Male	Female
88nos.	23	2	60	3

**Table 3: Respondents Age bracket**

Respondents	Staff			Students		
	25-35	36-45	46-above	15-20 21-25	26-30	31-above
88 nos.	9	6	10	0 51	8	4

**Table 4: Respondents' Years of Experiences**

Respondents	Staff		Students		
	1-10	11-20	0.4-1	2-5	6-10
88 nos.	6	19	55	5	3

From table 2 and table 3 respectively, it showed that there are twenty three (23) male and two (2) female staff respondents, where nine (9) of them aged in ranges of (25 – 35) years, six (6) aged in range of (36 – 45) years, ten (10) aged in range of (46 and above). It was found out that out of the twenty five (25) staff respondents; one (1) possess Ph.D as his highest degree while fourteen (14) possessed M.Sc. qualification and six (6) possessed both NIA/ARCON certificates. From table 4, it showed that nineteen (19) of them had working experience of (11 – 20) years while six (6) of them have experience of (1 – 10) years.

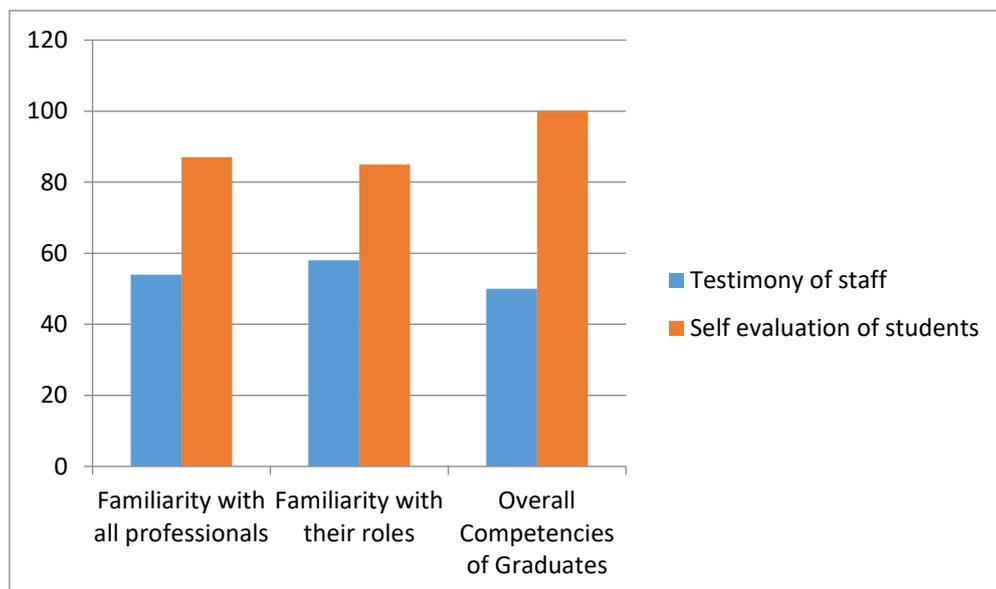
From Tables 3 and 4 respectively, it also showed that there are sixty- three (63)students, males sixty (60) and six (3) female respondents, where zero (0) of them aged in ranges of (15 – 20) years and fifty-one (51) aged in range of (21 - 25) with just about eight (8) above twenty six (26) and four (4) above thirty (30). There site experiences of architecture (either during the industrial training period or after the National Diploma programme) ranged from fifty-five (55) of them having (0.4 – 1) years, then five (5) of them having (2 – 5) yrs while three (3) of them have experience of (6 – 10) years, see Table 4.



## Section 2: Assessment of the objectives of study

**Objective 1:** To examine the students familiarity with their job expectations in the building industry.

1. The study found that there was about 88% confidence on the part of student respondents and about 56% confidence on the part of staff respondents, that HND graduates are familiar with all the professionals involved within the Building Industry during the course of their programme.
2. The study also revealed about 88% confidence on the part of student respondents and about 50% confidence on the part of staff respondents, that the roles of architectural technologist in the building industries were quite clear to HND architecture graduates during the course of their programme. Furthermore, 100% of the respondents mentioned site supervision as one of the roles expected of them, 76% of the respondents mentioned design as being one of the roles expected of them, 64% of the respondents mentioned detailing/working drawing as one of the roles expected of them respectively.



**Figure 1: Competency levels of students in terms of familiarity with the expectations of the Building Industry**

**Objective 2:** To outline the contemporary challenges of the Architect in the Nigerian building industry.

1. What are the contemporary challenges facing the architect today  
Studies by Oluduro (2011) was used to identify the challenges of the Architect in the industry and they are as follows;
  - i. Lack of understanding of the duties and work process of the architect
  - ii. Non payment of professional charge based on the standardized scale of fees
  - iii. Corruption
  - iv. Organizational challenges
  - v. Proliferation of the building industry by other disciplines outside the building domain
  - vi. Effect of global recession and explosion of the real estate sector



- vii. High cost of building materials
- viii. Making time for hand sketching
- ix. Knowledge of building materials and specification
- x. Keeping up with the ever changing computer hardware and softwares and ICT reformations.
- xi. Entrepreneurship knowledge and diversification of the profession
- xii. Environmental sustainability knowledge
- xiii. Grappling with politics.

**Objectives 3:** To examine the current NBTE curriculum and relate it to the contemporary challenges faced by the Architect in the building industry.

Table 5. Staff opinion on whether education/training of the students can ameliorate most of the contemporary challenges outlined.

Suggestion	Frequency	Percentage(%)
Yes	25	100
No	0	0
<b>Total</b>	25	100

Table 6: Staff opinion on the sufficiency of the current content of the Architectural curriculum

Suggestion	Frequency	Percentage (%)
Excellent	0	0
Good	23	92
Neutral	1	4
Fair	1	4
Poor	0	0
<b>Total</b>	25	100

From table 5 & 6, the study showed that education and training of the students is vital to addressing most of the challenges faced by the graduates in the industry while 92% of the staff were in agreement that the curriculum was sufficient enough. Acknowledged by them is that issues of ICT and computer knowledge have been integrated at every level of the training and entrepreneurship knowledge was also considered.

Table 7: .Staff rating of the challenges which Architectural Educational Curriculum Design can address

S/N	Challenges	Mean (X)	Notes
1	Lack of understanding of the duties and work process of the architect	3.00	Total No. of Respondents= 25 Ranking scale; 5.00- Excellent 4.00-4.99- Good 3.00-3.99- Average 2.00-2.99- Fair 1.00-1.99- Weak
2	Non payment of professional charge based on the standardized scale of fees	1.50	
3	Corruption	2.85	
4	Management roles (e.g Project & office management knowledge)	3.22	



5	Proliferation of the building industry by other disciplines outside the building domain	2.13	
6	Effect of global recession and explosion of the real estate sector	3.10	
7	High cost of building materials	3.57	
8	Making time for hand sketching	2.57	
9	Knowledge of building materials and specification	4.26	
10	Keeping up with the ever changing computer hardware and softwares and ICT reformations.	4.31	
11	Entrepreneurship knowledge and diversification of the profession	4.24	
12	Environmental sustainability knowledge	3.99	
13	Grappling with politics.	2.01	

Table 7 showed the ratings of the challenges identified by the literature in relation to the aspects curriculum design can address and knowledge of computer and ICT, building material and specification, specialization and entrepreneurship were highly prioritized.

**Objectives 4:** To identify what areas in the Educational curriculum and training of the students that needs improvement towards meeting the contemporary challenges of the Nigerian building industry.

Staff opinions in this regard where based on open ended questions and all suggestions where group into themes to establish the following;

#### **Project and Site management knowledge**

As identified by the response, naturally, the architect is a trained leader by virtue of his role in the building industry. The architect is responsible for conceiving the design ideas and so guides other professionals in the project towards achieving the desired goal. With the fast emerging field of project management, other disciplines are fast encroaching into the role of the architect in many building projects because of their management skills. The Architect receives little or no training in architectural design management and left to learn on the job and so should be incorporated in his training. Health and safety education (HSE) on construction site and knowledge of modern Equipment and their uses is another important aspect which the graduate needs.

#### **Entrepreneurship and Specialization knowledge.**

With the current growing unemployment rate and competition within the industry, entrepreneurship knowledge is very vital and has been integrated accordingly in the curriculum. But aspects of the areas which the architect can excel should be further strengthened in the entrepreneurship curriculum especially crafts that his directly involved in such as material finish (painting, wall paper installation, tiling and so on). Specialization areas should be introduced at the Higher National Diploma (HND) level such as interior design,



landscape design, urban design, architectural conservation, site and facility management which the student architect can align to through the process of the HND study from the first year. Sustainable material and architecture knowledge

Building material knowledge and specification is an important aspect emphasized which will give headways to the ever changing socio-economic issues especially high cost of building materials and also bridge the gap in the environmental sustainability knowledge. Sustainable construction and Fabrication knowledge is also necessary to meet up with the challenges.

### **CONCLUSION AND RECOMMENDATIONS**

From the study, it can be concluded that the contemporary challenges faced by the architect in the industry exist and the current Architecture educational curriculum has addressed many of the outlined issues but there a need for a few additions and the need for flexibility to allow for openings for improvement to address future challenges. The study showed that aspects of site management especially project management and health and safety education should be looked into. Building material knowledge and sustainable architecture can be further emphasized in the curriculum at most of the levels to accommodate challenges that arise from the ever changing socio-economic circumstances. Hence, Architectural educators and professionals should promote sustainable architecture through direct experiential learning, using appropriate methodologies, tools and techniques, must continually evolve and disseminate the knowledge base on sustainability through exemplary research and architectural practice.

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