

## **An Appraisal of the Current Training of Construction Studies in Nigerian Tertiary Institutions**

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**ABSTRACT:** Student's success in their academic studies is the primary goal of the University, Polytechnics, and Colleges. The quality of construction professional's graduates from universities and polytechnics in Nigeria has been the major concern of the industries over the years. The current trend in construction-related education in Nigeria has created a disparity between the quality of training received by the graduates vis-à-vis the employers expectations in the business and industries in the country despite its enormous resources and it is also observed that most student still fail despite being trained which affects their success as a student and which can, in turn, affect their career. The aim of this study is to assess the various factors affecting the academic training of construction professionals in Nigerian Institutions achieved through the assessment of the industrial relevance of the training contents provided to construction professionals, identifying various challenges facing construction related disciplines in Nigerian Institutions and to suggest various ways of improving the training of construction professionals. Student's information and responses were taken at random from final year students of four departments namely Civil Engineering, Building, Architecture and Quantity Surveying departments from two institutions namely Federal Polytechnic Ado Ekiti and the Federal University of Akure respectively through the use of a questionnaire survey. The information gotten from the respondents were analyzed through the mean item score method and from the analysis, it can be deduced that challenges facing construction related discipline mostly are ineffective and rigid curriculum followed by lack of exposure to new cutting edge technology. Looking at the level at which the factors affect student will help us know the way out thereby helping the student succeed in their career and reducing the rate of failure hence helping the institution achieve its main goal which is producing competent construction professionals. Hence it is highly recommended that a flexible and up to date curricula should be urgently developed and implemented. Government through its agencies and professional bodies in the construction industry should help with a 10-year statutory policy for review of curricula. Government should provide infrastructure for learning and lecturers should help their students by taking time to attend to them and finding out their strength and limitations as this requires a joint effort from the parents, students, institution and the government.

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### **I. INTRODUCTION**

The Construction industry plays a key role not only in terms of the national economy of any country but stands as a central function in providing the urban material necessary for man's progress towards greater civilization. The nature of the construction industry is complex and dynamic. Besides, the industry is fragmented and thereby requires the involvement of various professionals and specialists that work together to achieve a common goal (Gray 2000; Gido, Kerzner and Meredith, 2003). Construction activities involve conceptualizing, designing, managing, organizing and coordinating project requirements including time, money resources, technology, and methods. All these must be integrated in the most efficient manner possible to complete construction projects on schedule, within estimated budget, in accordance to the required quality and performance expected by the client Nadeem, Sohail, and Muhammed (2009).

The industry's primary goal, therefore, focuses mainly on achieving value for the money the clients have paid for. This is achieved through good service delivery which centers on ethical standards displayed by the construction industry professionals. The construction industry has the sole responsibility of providing physical development through the provision of infrastructure, manpower development, resource employment, fixed capital formation and improvement of the gross domestic product (Omole, 2000; Hillebrandt, 2000). In the light of this, it is therefore expected that construction professionals should discharge their duties with utmost compliance with professional ethics and standards.

The strength of the link between the construction industry and the public, therefore, sustains its existence through overwhelming recourse to demand the services of its practitioners and unique products such that the relationship is a function of the pride of professionalism.

One of the reasons for this position is that different construction professionals have to come together, even with dissimilarities in their background, training, and exposure, to deliver project goals (Almahmoud and Doloi, 2013). More so, to achieve the goals of a typical construction project, more than one construction professional is involved (Chinyio and Olomolaiye, 2010). Thus Depending on the type and nature, different construction professionals are involved in construction projects. For instance, in complex building projects, the services of architects, engineers, quantity surveyors, builders are important. In a typical bungalow project, only the services of architects or civil engineers may be required. Also in a developing country like Nigeria, it is constant to have architects, civil engineers, builders and quantity surveyors as primary construction professionals on contracted building projects. Other professionals such as services engineers may be commissioned as well but not in all cases. It is also known that construction professionals commissioned on construction projects are tied to the goal of successful project delivery, especially in terms of cost, time and quality (Bowen *et al.*, 2012; Federal Republic of Nigeria, 2006). This suggests a shared area of interest among the professionals.

The quality of construction related disciplines graduates from universities and polytechnics in Nigeria has been the major concern of the industries over the years. The industries mostly complaint of inadequate skills required especially in the current cutting-edge technology, having the low practical know-how and lack of confidence.

Due to poor infrastructural facilities haunting Nigerian tertiary institutions, coupled with the number of graduates from different institutions of higher learning that failed to transform the economic fortune of the country towards industrialization, the nation is far from experiencing technological advancements and economic growth (Olorunfemi & Ashaolu, 2008); Ajimotokan *et al.* (2010) attributed the obstacle to national development and growth to lack of viable engineering education and training. Unless an adequate supply of appropriately trained construction professionals can be ensured, the industry will consistently fail to satisfy the demands of the market for an adaptive, innovative and capable service. The industry has a responsibility to its customers to be an enlightened, progressive employer: the needs of the workforce are inextricably linked with the requirements of its consumers and need must be paid to each. History has shown that the effort of an ill-prepared and disenchanting workforce has failed to produce good service, and as a result, the industry is burdened with a poor image.

Going by the quality of training acquired by the graduates of tertiary institutions in Nigeria in the area of construction related discipline, most of them are engaged into several re-training by the industries in order to build their skills for the fact that they are considered to be unemployed at the first intake level. Hence the aim of this study is to assess the training of construction professionals in Nigerian institutions and that can only be done by assessing the industrial relevancies of the training contents provided to construction Professionals undergraduates' students, identifying various challenges facing construction related disciplines in Nigerian Institutions and to suggest various ways of improving the training of construction professionals in Nigerian Institutions.

The scope of this study was limited to selected higher institution and Federal University of Technology Akure (FUTA) and Federal Polytechnic Ado Ekiti (FPA) was chosen as a case study and the students in the final year level of the departments that make up the construction related discipline i.e. the architectural students, quantity surveying students, building students and the civil engineering students. The reason for choosing final year student is that they have undergone all necessary training and has more experience at the undergraduate level than any other level and are also ready to go into the labor market of their course of study. Also, Nigerian higher education institutions are numerous in number it will be quite too big for a student researcher to cover all, and also the limited cash or financial resources available to the researcher contributed to the limitations.

## **II. LITERATURE REVIEW**

### **2.1 SEQUENCE OF HIGHER EDUCATIONAL LEVELS IN NIGERIA**

In Nigeria, there are different pathways to higher educational levels. Three possible channels are identified, the first channel assumes that some graduates went through the colleges (NCE) and then to the University. The other two channels are the more common ones especially for construction disciplines, that is, those who went straight from secondary schools to the University and those who went through polytechnics to the University. This assumption is predicated on experience from the labor markets and the years of schooling involved in each higher education levels, which place a higher value on the University, Polytechnics, and NCE, in that order.

### **2.1.1 Aims of Higher Education**

Higher education, including professional education has as important, the acquisition, development and inculcation of the proper value orientation for the survival of the individual and societies, the development of the intellectual capacities of individuals to understand and appreciate environment, the acquisition of both physical and intellectual skills which will enable individuals to develop into useful members of the community, The acquisition of an overview of the local and external environments (FGN, 2004).

### **2.1.2 Ways to Pursue Higher Education Goals**

The National Policy on Education again stated that higher educational institutions should pursue these goals through teaching, research, dissemination of existing and new information, the pursuit of service to the community and by being storehouse knowledge (FGN, 2004).

### **2.1.3 Higher Education Regulatory Bodies**

The regulatory bodies in charge of educational sectors at tertiary levels in Nigeria constitute the National Universities Commission (NUC), the National Board for Technical Education (NBTE) and the National Commission for Colleges of Education (NCCE). These are the main organs of the Federal Ministry of Education that ensures the proper management of the entire Universities, Polytechnics, Monotechnics as well as Colleges of Education. The bodies are responsible for planning, organizing, managing, funding, monitoring, and supervision of activities and development of the tertiary institutions in the country in order to ensure an effective and efficient control of higher education in the nation (Fagbulu *et. al*, 2005). Also, all the professional institutions have an organ for monitoring and supervising the academic content in their various disciplines through accreditation exercises.

## **2.2 ACADEMIC TRAINING OF CONSTRUCTION PROFESSIONALS**

Training is the acquisition of skills, knowledge and competencies as a result of the teaching of vocational or practical skills. It is also an organized activity aimed at imparting information to improve the recipient knowledge and skills. The construction industry is a unique industry that constitutes a large number of professionals whereby these professionals have to undergo a level of academic training at one point or another. It is of a high point that the academic knowledge that has been received by the professionals has always had a great impact on their competency in the construction world.

The professionals in the construction industry are the Architects, Civil Engineers, Quantity Surveyors, Builders, are trained in university, polytechnic, technical colleges etc.

### **THE ARCHITECT**

Anyanwu (2013) points out two roles of Architect which are linked to site activities. First, the architect helps the client to formulate his requirements in an understandable form, bearing in mind any statutory conditions that may apply. In the process of formulating client's requirements, site characteristics are inculcated, especially since site conditions are different for different projects and locations. This could be in form of proper demarcation of the constructed area from on-site production area. It would be counterproductive to be batching and mixing concrete where the building is going to stand. The second is during the construction stage where the architect visits the site periodically for inspections to ensure that in general, the work being carried out on site is in compliance with architectural design and specifications. This is another important role of Architect that is significant for construction site management. It serves as check and balance to earlier plans by the Architect and other stakeholders. Architects have very important roles on the construction site, which in turn, is important to construction site management.

### **ARCHITECTURE STUDENTS**

The academic training of students in this department enables students to develop the beginnings of a specialized career within the broad field of architecture the objective of the programme is to develop the student's ability in problem analysis and creative thinking which tools are indispensable to successful architectural career (Cheetham 2007). However, it is essential that the student become quite conversant with the following major courses aspect which is Graphic communication, Architectural design, the theory of structures, building materials, Principles of measurement and description, Building components and method.

### **2.2.2 THE BUILDER**

The unique roles of Builders are preparing: the buildability and maintainability report, the project quality management plan, the project health and safety plan, programming construction works, managing the construction process and specifying materials and workmanship (Obiegbo, 2009). Preparing buildability and maintainability report ensures that the construction becomes easy and simple as possible, reduces waste, such as excessive cutting of components, maximum use of site plant leading to increased productivity. The programme of work preparation helps to establish the method to be used for construction on site (method statement) while

the quality management plan provides information on operations and to serve as a reference manual for site personnel. The safety management plan details the procedures of establishing safety culture on the construction site and including a statement on the welfare provisions on site, the first aid facilities and how to attend to an accident in event of an occurrence. Managing the construction process is about dynamics of the construction in order to achieve specified quality standards, and this includes ensuring on-site, and/or off-site implementation of all the project monitoring and control documents. In essence, builder roles are important to construction site management. The material handling and specification ensure that specifications are met on the site. Most of these roles of Builders are site-based while the others are linked to sites in one way or another.

### **BUILDING STUDENTS**

The wide range of the builder's responsibility means they have to be educated, trained and highly skilled (Lavy 2005). The department of building offers a five-year bachelor degree in the Universities and two tier two years National diploma and Higher National Diploma in the polytechnics with a wide range of subjects related to the construction management and services that support the core activities of any construction product. In addition to the knowledge imparted by way of lectures, the programme emphasizes on acquiring practical skills as well which will eventually lead to the award of a Bachelor of Science/Technology or a HND. The aim of this training is to educate and train the students of Building for sound technical, entrepreneurial, and managerial skills necessary for the control of the project construction process for the benefit and satisfaction of the clients and the society (Meyer 2006). In pursuit of these, courses have been drawn out which will teach the students a step by step comprehensive knowledge they need in order to excel in the profession. During the academic training, students are to pass all compulsory and elective courses. Since the builders interact with a wide range of specialists members of the construction team, these calls for a multidisciplinary knowledge of other related professions. The training of the building course will, therefore, embrace all facets of construction work and management if they are to function effectively as site engineers in the construction industry. While flexibility is allowed in the depth of the body of knowledge required in the course of Building training, it is essential that the student become quite conversant with the following major topic aspects which are: structural design and detailing, structural mechanics, construction technology, theory of structures, site management, building science and properties of materials, maintenance management and building production and project management.

#### **2.2.3 THE CIVIL ENGINEER**

The roles of Civil engineers are related to the Architects'. Civil engineers' produce drawings, specifications, schedules and other relevant data that may be required for the overall design of the project which in these cases are mostly civil projects, however, on building projects, structural stability of the structure is their forte and they do visit the site periodically for inspections to ensure that in general, the work being carried out is in compliance with their engineering drawings, schedules, and specifications (Anyanwu, 2013). In civil engineering and infrastructure projects, civil engineers' roles are much more extensive. They include analysis of maps, drawings, blueprints, aerial photography and other topographical information, designing of hydraulic systems and structures following strictly construction codes, calculating load and grade requirements, liquid flow rates and material stress points to ensure that the structure can withstand stress, ensuring construction safety in its entirety and surveying the land before construction begins to ensure that there are no impediments in the way of where the structure will be built (Hussin and Omran, 2009). Taken together, these roles are either performed on-site or for the site. In both cases, civil engineers' roles are important to construction site management.

#### **THE CIVIL ENGINEERING STUDENT**

The wide range of the civil engineering responsibility means they have to be educated, trained and highly skilled (Lavy 2005). The department of civil engineering offers a five-year bachelor degree in the Universities and two tier two year National diploma and Higher National Diploma in the Polytechnics with a wide range of subjects related to the structural construction management and services that support the core activities of any construction product. In addition to the knowledge imparted by way of lectures, the programme emphasizes on acquiring practical skills as well which will eventually lead to the award of a Bachelor of Science/ Engineering or Technology from a University or a HND from the Polytechnic. The aim of this training is to educate and develop the students of Civil Engineering for sound technical, entrepreneurial, and managerial skills necessary for the control of the project procurement process for the benefit and satisfaction of the clients and the society (Meyer 2006). In pursuit of these, courses have been drawn out which will teach the students a step by step comprehensive knowledge they need in order to excel in the profession. During the academic training, students are to pass all compulsory and elective courses. Since the Civil Engineering interacts with a wide range of specialists members of the construction team, these calls for a multidisciplinary knowledge of

other related professions. The training of the Civil engineering will, therefore, embrace all facets of construction work and management if they are to function effectively as structural engineers of the construction industry. While flexibility is allowed in the depth of the body of knowledge required in the Civil engineering training, it is essential that the student become quite conversant with the following major topic aspects which are: structural design and analysis, soil mechanics, fluid mechanics, theory of structures, construction management, materials of construction, structural steel works etc.

#### **2.2.4 THE QUANTITY SURVEYOR**

Quantity Surveyors are professionals concerned with the cost and contract management of construction projects (Maarouf and Habib, 2011). The roles of Quantity Surveyors include controlling construction costs by accurate measurement of the work required, achieved by the application of expert knowledge of costs and prices of work, labor, materials, and plant required (Anyanwu, 2013; Hussin and Omran, 2009). This role is significant to construction planning where the focus is on optimal resource utilization that is, what, when and how resources come, and how they are utilized on-site. In short, it is significant to construction site management and improved value management to the client and the construction team.

#### **THE QUANTITY SURVEYING STUDENT**

The wide range of the quantity surveyor's responsibility means they have to be educated, trained and highly skilled (Lenard 2010). The Department of Quantity Surveying offers a five-year bachelor degree in the Universities and a two tier two year study for National diploma and Higher National Diploma in the Polytechnics with a wide range of subjects related to the construction cost management and financial services that support the core activities of any construction product. In addition to the knowledge imparted by lectures, the programme emphasizes on acquiring practical skills as well which will eventually lead to the award of a Bachelor of Science/ HND. The aim of this training is to educate and train the students of Quantity surveying for sound technical, entrepreneurial, and managerial skills necessary for the control of the project procurement process for the benefit and satisfaction of the clients and the society (RICS 2005). In pursuit of these, courses have been drawn out which will teach the students a step by step comprehensive knowledge they need in order to excel in the profession. During the academic training, students are to pass all compulsory and elective courses. The Quantity Surveyor interacts with a wide range of specialists and members of the construction team, these calls for a multidisciplinary knowledge of other related professions. The training of the Quantity Surveyor will, therefore, embrace all facets of construction work and management if they are to function effectively as financial managers of the construction industry (Amoah 2011). While flexibility is allowed in the depth of the body of knowledge required in the quantity surveyor training, it is essential that the student become quite conversant with the following major topical aspects which include Construction Technology, Measurement of building works, measurement of civil and industrial engineering work, tendering and estimating, contract administration, building construction economics, material services, specification, building maintenance, architectural design theory and practices, laws of contract, micro and macroeconomics.

#### **2.3 CHALLENGES FACING CONSTRUCTION RELATED DISCIPLINES IN NIGERIA**

Due to poor infrastructural facilities haunting Nigerian tertiary institutions, coupled with the number of graduates from different institutions of higher learning that failed to transform the economic fortune of the country towards industrialization, the nation is far from experiencing technological advancements and economic growth (Olorunfemi&Ashaolu, 2008); Ajimotokan et.al (2010) attributed the obstacle to National development and growth to lack of viable construction related discipline training. The condition of the Nigerian state can be described as poor due to inability the government to make provisions that are necessary for national development since after the independence, according to Dike (2005), valuable changes that could bring positive changes in terms of improving the living standards of the citizens, brings about employment opportunity, poverty reduction and many other things are the quests for national development.

The Nigerian tertiary institutions are faced with enormous challenges in terms of the general conduct of construction related discipline programs which failed to equip students with the necessary skills to cope with the challenges of the world of work and the modern day society. The challenges faced are discussed as follows:

##### **2.3.1 Ineffective Construction Curricula**

The effectiveness of a program starts with effective and adequate curriculum design that is up to date and will guide and equip the students with the skills needed in their respective areas of specialization. The curriculum of construction related discipline is described as obsolete and needs to be thoroughly reviewed from time to time by the bodies concerned in order to meet with the world standard and allow Nigerian graduates to compete globally. Therefore, for construction related discipline to fully support economic growth, there should be a change of the tools that are currently being used in solving the problem as the problem is equally changing

from time to time. This implies that construction related discipline curricula should be flexible in nature, examined frequently and modified in order to accommodate certain societal needs (Kofoworola, 2003; Onwuka, 2009).

### **2.3.2 Inadequate Practicals for Construction students in Nigeria**

Adedokun (2011) lamented that, it is quite embarrassing to discover that there are some graduate of such professional fields who never experience to handle or touched tool throughout their program and maintained that if all engineering awarding institutions in Nigeria were to be holistically audited in terms of equipment, many graduates will have their certificates rejected or recalled. Atsumbe and Saba (2008) postulated that students undergoing construction related discipline in Nigeria should be exposed to the current edge technology machines during their programs for them to be able to develop emotional stability and self-confidence in their respective places of work, this opportunity should be given to them during their students' industrial work experience scheme (SIWES) by allowing them with free access to handle machines in the industries.

### **2.3.3 Poor Facilities for the teaching of Construction related discipline in Nigeria**

The dilapidation of laboratories and equipment in the Nigerian tertiary institutions has been a major concern to all stakeholders in construction related discipline. Most of the tertiary institutions' laboratories and equipment were the old ones provided since the inception of the institutions for decades and hence they are completely obsolete for the current training of our graduates. The ratio of the facility to student usage is grossly inadequate, and for those institutions that have laboratories are facing an acute shortage of supplies of consumables and equipment (Owolabi & Rafiu, 2010).

### **2.3.4 Dichotomy between Nigerian Institutions and Industrial Requirement**

Construction related discipline is characterized as a different type of education compared to traditional science Education, Management, Psychology, Medicine, Arts etc. Since great importance is attached to the development of creativity of students by construction related discipline, then there is a great significance attached to practical education in which for this reason, conducting construction related discipline in conjunction with industries is also of great importance for the training of construction-related students (Ye & Lu, 2011).

Universities in the developing world play a very important role towards the economy and the industry in a number of ways as assessed by the American National Academy of Engineering. Collaboration between academia and industry is a vital instrument for development which came in different ways such as faculties, hiring of students by the industries, graduates; exchange of researchers temporarily; consultancies; academic and industry, engineers and scientist joint research, grants and contracts offered by the industries to academia, conferences, seminars, publications etc. in some cases, the stakeholders of industries are made advisory board in a number of universities and is increasingly seeing as an effort in promoting science and technology, but such arrangements between universities and industries are completely absent in the Nigerian education system (Onwuka, 2009).

### **2.3.5 Inadequate Funding of Education in Nigeria**

The quality of output from the tertiary institutions depends solely on proper funding of the sector by the bodies concerned for the provision of teaching, learning and research facilities. The indication of how a country gives priority to its education at all levels depends on the overall budget for education in relation to the overall resources allocation. The expenditure on education involves the total spending on academic institutions and other supporting educational services. Funding in Nigeria involves all the three tiers of government namely; Federal, state, and local government.

### **2.3.6 Unqualified Construction related discipline teachers in Nigeria**

Adedokun (2011) and Shu'ara (2010) reported that academic staff of tertiary institutions is haunted by a low number of Senior lecturers with a Ph.D. qualification which is seriously affecting construction related discipline in the country. The current situation is quite unhealthy for Nigerian tertiary institutions where the majority of the academic staff belong to the junior cadre of Assistant lecturers, lecturers I, lecturers II who happened to be learning the ropes, these groups of lecturers usually have a master's degree with no much experience in research and most of them belong to the engineering faculties. The minority numbers of Professors are getting close to retirement age and the gap that was created between the lower lecturers and the higher ranks created a vacuum that is difficult to fill in, and there are also some Professors in engineering that are based abroad for greener pastures and refused to come back because of the poor remunerations. This has generated a lot of setbacks in the area of construction related discipline in Nigeria.

### 2.3.7 Poor Teaching methods

The teaching methods adopted by the academic staff of tertiary institutions in Nigeria are most frequently demonstration, students centered or lecture method. The situation is partly due to the difficulties to run experiments and run some tests required for the teaching and learning because of the absence of materials and equipment for practical training. This made the teaching and research in construction-related discipline very difficult which resulted in producing ill-prepared and insufficient graduates that are required for national development (Owolabi&Rafiu, 2010).

## III. RESEARCH METHODOLOGY

The survey research method was adopted in this paper. The targeted population for this study is the Nigerian higher institution since it is not possible to reach out to the entire institution, this study was limited to Federal University of Technology Akure (FUTA) and Federal Polytechnic Ado Ekiti (FPA). The target populations will be the number of students in the final level of the department of the construction-related sector i.e. students of the Department of Architecture, Quantity Surveying, Building and Civil Engineering.

All samples will be limited to the aforementioned higher institutions. A total of 56 Questionnaires was administered, and it was distributed equally which is seven (7) questionnaires per department in the two higher institutions and a total of fifty (50) was retrieved. It was observed that about 85.7%, 85.7%, 92.9%, and 92.9% of the questionnaires distributed were received from students of quantity surveying, architecture, civil engineering, and building department respectively and they are all final year students.

In developing the questionnaire used in the collection of primary data, prior studies of both Mohamed (2006) and Jimoh (2012) were reviewed and used. The structuring of the questionnaire comprises of four sections, Section A which comprises of items which deal with the general particulars or demographic information about the respondents. Information included were the Area of Specialization, Gender, Religion, the Age range of Respondent, Mode of entry into the institution, Mode of selection of an area of specialization, Program of study and Institution of Respondent. The other sections address the specific objectives of the research which were grouped as follows; Section B assessed the industrial relevancies of the training contents provided to construction professionals undergraduate students. Section C identified various challenges facing construction related disciplines in Nigerian Institutions while Section D suggested various ways of improving the training of construction professionals. For the purpose of statistical analysis, numbers were assigned to each anchor. The anchors used was: Strongly Disagree (=1); Disagree (=2); Neutral (=3); Agree (=4); strongly agree (=5).

The respondents' backgrounds was measured using nominal scales, which are purely arbitrary level for identifying each type of respondents. The rating scale is the most widely used format for getting responses from respondents on an object, event or attribute. Here, the respondent has a chance of expressing his or her extent of agreement or disagreement on a particular scale. The response categories of such questions are called quantifiers.

## IV. ANALYSIS OF FINDINGS

**Table 4.1 The level of industrial relevance of content provided in civil engineering**

<b>Civil Engineering</b>	<b>Mean</b>	<b>Ranking</b>
Structural design and analysis	4.70	1
Strength of material	4.16	2
Structural Engineering	4.11	3
Soil mechanics	4.10	4
Civil Engineering practices	3.80	5
Engineering drawing	3.50	6

Source: Field Survey, 2018

Table 4.1: the level of industrial relevance of content provided on a scale 5-1 in civil engineering. The results and findings as tabled shows the structural design and analysis is the most relevant course in the industry carrying the mean score of 4.70 followed by strength of material, structural engineering, soil mechanics, civil engineering practices and engineering drawing is the least relevant course in industry each carrying a mean score of 4.16, 4.11, 4.10, 3.80 and 3.50 respectively.

**Table 4.2: The level of industrial relevance of content provided in Architecture**

<b>Architecture</b>	<b>Mean</b>	<b>Ranking</b>
Graphic communication	5.06	1
Architectural design	4.90	2
Building law	4.81	3
Theory of structures	4.36	4
Building material	3.60	5
Principle of description	3.10	6

Source: Field Survey, 2018

Table 4.2: the level of industrial relevance of content provided on a scale 5-1 in Architecture. The results and findings as tabled above show that graphic communication is the most relevant course in the construction industry with a mean score of 5.06, while architectural design, building law, theory of structures, building material carry a mean score of 4.90, 4.81, 4.36 and 3.60 respectively and principle of description is the least relevant course with a mean score of 3.10.

**Table 4.3: The level of industrial relevance of content provided in Quantity Surveying**

<b>Quantity Surveying</b>	<b>Mean</b>	<b>Ranking</b>
Measurement of Building works	4.88	1
Tendering and estimating	4.55	2
Contract Administration	4.55	2
Construction Technology	4.30	4
Building Economics	4.22	5
Building maintenance	4.00	6
Material service and specification	3.77	7

Source: Field Survey, 2018

Table 4.3: the level of industrial relevance of content provided on a scale 5-1 in Quantity surveying. The results and findings as tabled above show that Measurement of building works as each of their mean rank the highest with a mean score of 4.88 followed by Tendering and estimating and contract administration with a mean score of 4.55, construction technology 4.30, Building economics, building maintenance with a mean score of 4.22 and 4.00 respectively and material service and specification is the least relevant course with a mean score of 3.77

**Table 4.4: The level of industrial relevance of content provided in Building Programme**

<b>Building</b>	<b>Mean</b>	<b>Ranking</b>
Construction technology	5.00	1
Structural design and modeling	4.90	2
Site management	4.80	3
Building science and properties of the material	4.20	4
Building production and project management	4.10	5
Structural mechanics	4.00	6

Source: Field Survey, 2018

Table 4.4: the level of industrial relevance of content provided on a scale 5-1 in Building Program. The results and findings as tabled above show that construction technology is the most relevant course in the industry with a mean score of 5.00 while structural design and modeling, site management, building science and



properties of maintenance carry a mean score of 4.90, 4.80 and 4.20 respectively. However, Building production and project management and structural mechanics as their mean rank lowest with a mean score of 4.1 and 4.0 respectively.

**Table 4.5: Challenges faced by construction related discipline in Nigerian institution**

<b>Challenges</b>	<b>Mean</b>	<b>Ranking</b>
Ineffective and rigid curriculum	4.9	1
Lack of exposure to new technology	4.5	2
Inadequate facilities	4.4	3
Failure to fund education adequately	4.1	4
Lack of provision of a field trip	4.0	5
Lack of practical class	3.8	6
Fewer experience lecturers	3.5	7
The dichotomy between Nigerian institution and industrial requirements	3.4	8
Poor library facilities	3.2	9

Source: Field Survey, 2018

Table 4.5: challenges faced by construction related discipline in Nigerian institution. The results and findings as tabled above show that Ineffective and rigid curriculum each of their mean rank the highest with a mean score of 4.9 followed by Lack of exposure to new technology with a mean score of 4.5, followed by inadequate facilities, failure to fund education adequately, lack of provision of field trip, lack of practical class and less experience lecturers with each carrying a mean score of 4.4, 4.1, 4.0, 3.8, 3.5 respectively. However, dichotomy and project Poor library facilities as their mean rank lowest with a mean score of 3.5 and 3.2 respectively.

**Table 4.6: Ways of improving the training of construction professionals**

<b>Suggested ways of improvement</b>	<b>Mean</b>	<b>Ranking</b>
Creating Nigerian institution and industrial linkages	4.9	1
Exposure to current edge technology	4.5	2
Designing an effective and adequate curriculum	4.4	3
Equipping institutions with adequate facilities	4.1	4
Creating a new training method	3.8	5
Recruiting with Ph.D. qualification	3.5	6
Adequate funding by government	3.4	7

Source: Field Survey, 2018

Table 4.6: some highlighted ways of improving the training of construction professionals. The results and findings as tabled above show that creating institutional and industrial linkages each of their mean rank the highest with a mean score of 4.9 followed by Exposure to current edge technology with a mean score of 4.5. However recruiting with Ph.D. qualification and Adequate funding by the government as their mean rank lowest with a mean score of 3.5 and 3.4 respectively.

## **V. DISCUSSION OF FINDINGS**

Based on this research work on, it was deduced that some courses have more industrial relevance than the other. For example in the department of Architecture, graphic communication and architectural design have more industrial relevance than any other course offered, while in the department of civil engineering, structural design and analysis, and strength of materials have more industrial relevance than other courses. In the department of quantity surveying, measurement of construction works, contract administration and tendering and estimating have more industrial relevance than any other course offered, and in department of building, construction technology and structural design and modeling have more industrial relevance than any other course offered respectively. It was also discovered that ineffective and rigid curriculum, lack of exposure to new

technology and inadequate facilities are the challenges mostly faced by construction professionals in Nigerian Institutions and poor library facilities is not a major challenge faced by construction professionals perhaps due to the advent of the internet and globalization.

## **VI. RECOMMENDATIONS AND CONCLUSION**

### **RECOMMENDATIONS**

This is about recommending the necessary way out and solution to help reduce the problem and enhance better performance as regards the training of construction professionals.

Based on the discussion, this paper recommends the following;

Institutional and industrial linkages must be facilitated by the both the schools management and the corporate construction professionals in the industry, while it is not seen as a major challenge, it is seen as the most important step to remedy the situation.

Courses with much industrial relevance should be given serious attention and Students should be exposed to current edge technology through departmental investments and cross-industry participation.

The Government and its regulatory agencies of the tertiary institutions (NUC, NBTE) and Construction professional organizations (NIA, NIOB, NSE, NIQS) should design and ensure implementation of an effective and flexible curriculum to aid in the effective training of construction professionals.

The Government should help to provide learning infrastructure and facilities in schools as this is vital to construction professionals training through adequate funding.

### **CONCLUSION**

From the study above, it can be concluded that challenges facing construction related disciplines in Nigerian Institutions mostly are ineffective curricula, lack of exposure to new cutting edge technology while poor library facilities affect them the less perhaps because of the social media and that some courses have industrial relevance than the others thereby making them more important for employers of labour.

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