SUSTAINABILITY AND ARCHITECTURAL EDUCATION IN THE UNIVERSITY OF JOS- NIGERIA

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This study explores the role of sustainable education as key and crucial to the future of sustainable architectural practices in the built environment. Learning sustainable development in schools of architecture as a subject has a high potential in promoting sustainable future design practices in Nigeria. Results of survey from final year undergraduate, graduate students and lecturers in the Department of Architecture, University of Jos-Nigeria, shows that there is a fair understanding of sustainability. However, there is no taught subject of sustainability in the department, despite the UN declaration which chose 2005-2014 as the decade of sustainable education. The study argues and advocate for the teaching of sustainable development for both learning and shaping the future architectural design practices in Nigeria. Hence, enhancing the sustainability of the built environment and promoting the global agenda of sustainable development.

Keywords: Architecture, Built environment, Education, Nigeria, Sustainable development.

Introduction

There abound studies on what is sustainable development SD – our common goal, and the relevance of SD to every institution, and or organization is no longer debatable. Researchers have recognised there is a shift from the norm in the practices of the design profession to suit the current sustainable requirements within the built environment (Riley et al. 2006).While some similar studies have also noted the important roles of the built environment professionals, in promoting sustainability of the built environment (Altomonte, 2008; Davies et al, 2009). Furthermore, other studies have identified and argued that sustainable development education in the universities as the key instrument for projecting SD (Rusinko, 2007; Murray, 2009; Rusinko, 2010; Krizek et al, 2011).This argument has been supported by the UN, who declared 2005-2014 as the decade of sustainable development education (Rusinko, 2010; Connell and Kozar, 2012). This declaration seems to have escaped recognition in some universities with particular reference to the University of Jos- Nigeria. This research paper seeks to investigate the reasons for the omission of sustainable architectural education for the future design professionals, and how sustainable practices should continue into the professional practices arena.

Literature Review

Nigeria is a sub-Saharan African country who's built environment professionals, especially the architects need to move with the current concern for global sustainability of the built environment. More so, that the

country has been noted to require about 40 million houses in order to meet its housing needs by 2020 (Ademiluyi, 2010; Ogu and Ogbuozobe, 2011) and this requirement is yet to be met and this an indication that the design professionals need be prepared to provide services that are in line with the global concerns for sustainable practices. Again Emuzie et al. (2013) report that the Sub-Saharan Africa region is witnessing continuous increase in the built environment developmental activities, however, they noted that the concerns for this region is the lack of knowledge of sustainable development amongst its professionals within the built environment sector. This paper also seeks to follow up the concern expressed by Emuzie's report within the context of this study. In addition other related study opined that the built environment professionals in Nigeria should have the ability to know what to build and where to build in relationship with the sustainability of the environment (Ogbo et al. 2013).

The University of Jos is one of the leading institutions that offer architectural training in Nigeria. Hence, there is the need for the institution to ensure that the right training of its students is provided in line with the UN declaration and the changing need of the design profession (Davies et al, 2009; Mulder, 2009). Also the built environment professionals are by the nature of their profession are responsible for the sustainability of the built environment (Altomonte, 2008; Chang, 2013). The training and capabilities of architects in training has a significant impact on their future role and their ability to apply sustainable practices that projects the global sustainability agenda for the built environment (Dale and Newman, 2005; Mulder, 2009). It is therefore, importance to ensure that the training of these future professionals is properly guided towards holistic processes that would inform the sustainable practices of the architectural profession. This has been beautifully captured by Altomonte, thus;

> To facilitate this process, it is necessary that mandatory requirements of enhancing sustainable environmental design in the practice of architecture represent a core issue within the formation of professional competence and ethos of the practitioners, therefore challenging a radical change in the way in which the architect's progression toward the profession is sustained by educational methodologies and delivery of contents.
>
> (Altomonte, 2009, pp. 13)

The above quotation suggests two thingsin order to make the professional architect and future architect succeed in their sustainable design practices - a mandatory continues training of the professional architect and the inclusion of sustainable development in the educational content of the future architect. For the professional architect, Altomonte (2009) noted that the level of awareness, knowledge and sustainable practices need to be ascertained before solutions are sought. However, for the future architects; the teaching methods and the taught course content determines the curricula consideration in the different Schools of architecture for full implementation of sustainable development education.

The importance of providing sustainable education that meets and enhances sustainability, technological innovations and ethical requirements doprepare the built environment professional to serve as sustainability advocates and are also able to provide holistic services to the community (Sullivan and Rosin, 2008; Connell and Kozar, 2012). Thus, these professionals do not only owe their services to the profession but to their immediate communities as well.

From time to time educational training undergoes curriculum review in Nigeria by the National University Commission (NUC). However, Onwuka (1996) observed that the exercise is fruitless because it is not based on feedback from an evaluation and or an assessment study. A later study by Abubakar (2011) supports Onwuka observation but also noted that after decades of non-review of the architecture education curriculum in Nigerian Universities, the planned joint review by the NUC and the Nigerian Institute of Architects/Architects Registration Council of Nigeria (NIA/ARCON) is not an action derived from any research initiative or evaluation. This research study is also an attempt to provide feedback to NUC and NIA/ARCON who are the recognised bodies responsible for the accreditation of all Schools of Architecture in Nigeria.

Following the arguments in the brief review, this research paper sought to ascertain the awareness level of sustainable development amongst this research's participants and to assess participants' level of understanding on SD issues. Their opinions on the current lack of stand-alone or integrated sustainable course content in the curriculum at the department of architecture university of Jos were also sought. This research paper in the overall is an attempt to promote the future of global sustainable development within the built environment, with a focus on the training of the built environment design professionals with particular reference to the architectural educational training in the University of Jos. In addition the paper provides recommendations for the way forward for the architectural education and the promotion of sustainable professional training in general.

Research Methodology

A quantitative survey is adopted and a non-probable sampling method - purposeful sampling technique. Saunders et al. (2009) opined that a purposeful sample is suitable for exploratory studies were the inquiry is geared towards a specific subject matter. The assertion by Saunders et al makes the choice for purposeful sampling technique suitable for this study, which is targeted at sustainable architectural training. According to Davies et al. (2009) in order to seek solutions that are futuristic in the professional design training studies, opinion of key stakeholders (professionals, academics and students) must be sought. In agreement with the suggestion of Davies et al this research paper carried out its survey amongst students and lecturers (these lecturers are both professional practitioners and academics) at the University of Jos.

The participants were limited to 30 final year undergraduates, 30 post graduate students (MSc.1 and MSc.2 students) and 25 teaching staff of the department of architecture participated in answering the questionnaire survey. A total of 85 questionnaires were distributed and 8 were not returned. The total number of returned questionnaires were 76 (N=76). The number of participants was determined largely by the number of academic staff who were available at the time of the survey. The survey for the study was conducted concurrently during the period of an on-going PhD research between April and September, 2013. The researcher is also an academic staff of the department which made it easy to access the participants and to collate the data for this study.

As noted by Saunders et al. (2009) questionnaires are well suited for data collection where descriptive or explanatory research is undertaken. Based on Saunders et al conclusion, a structured questionnaire was designed with 'YES' 'NEUTRAL' and 'NO'.

Data Analysis

In this section the collated data are presented in Tables with simple descriptive analysis in percentages. The self-administered questionnaire contained seventeen (17) structured questions in five sections presented in Tables 2 to 6. The tables show the detailed responses by each grouphowever, it the overall percentages that form the basis for the descriptive analysis for the study.

Descriptive Survey Profile

In Table the response rate is calculated out the 85 distributed questionnaires a total of valid 76 (n=76) questionnaires were returned, representing a total response rate of 89% was achieved. The 30 Undergraduates (u) students had a 100% response rate, 27 Graduate students (G) and 19 Lectures (L), had 90% and 76% response rate respectively. Table 2 presents the gender profile of the respondents with 38% female and 62% male respondents. This is a typical trend within the built environment professions where the number of males is always more than their female counterpart.

Table 1. Response rate and respondent's status.

Participants	Undergraduates(U)	Graduates (G)	Lecturers (L)	Total response rate %
Distribution (85)	30	30	25	100
Returned (**N=76**)	30	27	19	**89**
difference		-3	-6	11
Total group response rate (%)	**100**	**90**	**76**	

Source: field survey, 2013

Table 2. Gender profile.

Participants	Undergraduates(U)	Graduates(G)	Lecturers(L)	Total	Percentage %
Female	15	11	03	29	**38**
Male	15	16	16	47	**62**
Totalnumber of respondents	30	27	19	76	100

Source: field survey, 2013

Descriptive Analysis for Knowledge and Awareness Level of Respondents

In the review undertaken, a concern was expressed on the seemly limited level of awareness and knowledge amongst the built environment professionals. This section attempts to validates the concern expressed and the findings revealed in Table 3 indicated that 45% of the respondents are confident that they are well aware of what SD is all about, 34% were neutral and 22% were not fully aware of SD is all about. 32% respondents affirmed they are well knowledgeable about SD with 46% in the negative and 22% remained neutral. An overwhelming 91% of the respondents are not aware that 2005-2014 has been declared the decade of sustainable education, this is a clear explanation for the lack on why SD education has not yet been structured into the curriculum of this school of architecture. 71% of the responded from Table 3 have the view that there is no enough information on SD, while 25% think otherwise. Although the awareness level of the respondent is below average, 66% feel that the lack of sustainable development education and professional training makes them feel less prepared for the challenges of the challenges within the built environment. Whereas, 22% of the respondents chose to remain neutral to the question

Table 3. Knowledge and awareness.

Statements / Questions ↓	Options →	Yes			Total Yes %	Neutral			Total Neutral %	No			Total No %
	Respondents→	U	G	L		U	G	L		U	G	L	
1.I am well aware about SD		8	11	15	**45**	15	6	4	**34**	7	10	0	**22**
2.I am well knowledgeable about SD		5	8	11	**32**	5	9	3	**22**	20	10	5	**46**
3.I am aware that 2005-2014 is declared decade of SD education by UN		0	1	4	**6**	2	0	0	**3**	28	26	15	**91**

4. Is there enough information on SD?	3	6	10	**25**	2	1	0	**4**	25	20	9	**71**
5. Does the lack of sustainable education and professional training makes you feel you are less prepared for the new challenges in the built environment?	19	17	14	**66**	7	7	3	**22**	4	3	2	**12**

Source: field survey, 2013

Assessing Perceptions on Current Curriculum

This section presents the findings on the current status of SD education curriculum in this department of Architecture. None of the respondents indicated that there is SD stand-alone course or even an elective course in the Department, 12% remained neutral and 88% have no knowledge of a running course on SD education. Result for question 3 in Table 4 shows 84% of the respondents feel that SD education is relevant and important, while none felt it was not but 16% did not make a decision by remaining neutral. 92% are of the opinion that SD be included in the curriculum, none objected but only 2% had no opinion. These results suggest that SD education is highly regarded by the respondents.

Table 4. Opinions on curriculum.

Statements / Questions ↓	Options →	Yes			Total Yes %	Neutral			Total Neutral %	No			Total No %
	Respondents→	U	G	L		U	G	L		U	G	L	
1. Is there a SD education course or SD elective course in the department?		0	0	0	**0**	9	0	0	**12**	21	27	19	**88**
2.SD education is relevant and important to the sustainability of the built environment		22	21	19	**84**	8	6	0	**16**	0	0	0	0
3. Do you think the current curriculum is well rounded for professional competence?		14	11	5	**40**	10	8	5	**30**	6	8	9	**30**
4. Do you think SD education should be introduced as a course in the department?		26	24	19	**92**	4	3	0	**9**	0	0	0	**0**

Source: field survey, 2013

Descriptive Analysis for the Future of SD

In Table 5, 97% of the respondents indicated that they are interested in acquiring more knowledge on SD, no respondent declined but 3% had no decision on the question. Earlier reviews suggest SD education as 'key' to the practice of sustainability in the built environment and those opinions informed Questions 2 and 3in Table 5. 93% and 77% respondents affirmed to questions 2 and 3 respectively, suggesting that they view SD education and training as an important factor that can shape their design decisions. However, a few of the respondents represented by 7% and 23% had neutral responses to questions 2 and 3.

Table 5. Interest and for SD.

Statements / Questions ↓	Options →	Yes			Total Yes %	Neutral			Total Neutral %	No			Total No %
	Respondents→	U	G	L		U	G	L		U	G	L	
1. Are you interested in acquiring more knowledge and educational training on SD?		28	27	19	**97**	2	0	0	**3**	0	0	0	**0**
2. Do you think SD education will promotes sustainable professionalpractices within the built environment?		25	27	19	**93**	5	0	0	**7**	0	0	0	**0**
3. Do you think SD education can improve your choice of design features?		20	19	19	**77**	10	8	0	**23**	0	0	0	**0**

Source: field survey, 2013

Perceptions on the Way Forward by Respondents

A surprising 100% 'yes' was recorded for statement 1 in Table 6, this is an indication that the respondents are interested in having an improved curriculum that would enhance the quality of architectural education. The statement on collaboration for structural review of the existing curriculum follows a similar trend with 99% of the respondent choosing the 'yes' option, leaving 1% responded who opted for the 'no' option. The third statement had a slightly lower result, 80%opoted for 'yes', 9% 'neutral and 11% outright 'no'. While the last statement results showed 75%, 21%, and 4% chose the options for 'yes, 'neutral' and 'no' respectively.

Table 6. Perceptions on the way forward.

Statements / Questions ↓	Options →	Yes			Total Yes %	Neutral			Total Neutral %	No			Total No %
	Respondents→	U	G	L		U	G	L		U	G	L	
1.NUC and NIA/ARCON should undertake a review on the curriculum of architectural education and provide standards and credit units for SD education courses		30	27	19	**100**	0	0	0	**0**	0	0	0	**0**
2.Research collaborations should be encouraged in order to evaluate the best structural curriculum review for sustainable architectural education		30	26	19	**99**	0	1	0	**1**	0	0	0	**0**
3.Continuous professional developmental courses on SD should made mandatory for all design professionals		26	18	17	**80**	3	4	0	**9**	1	5	2	**11**
4.Accreditation panels should consider and include a checklist for SD scores/points should be		19	21	17	**75**	11	5	0	**21**	0	1	2	**4**

Source: field survey, 2013

Conclusions and Recommendations

This study has drawn some insights from its reviewed literature and primary findings and concludes:

That it is not enough to have architectural training that provides for only statutory architectural design concepts, visuals and philosophies but for curriculum contents for sustainable development practices and dynamics with global trends. As this would enhance and promote personal and professional sustainable actions that would enhance the sustainability of the built environment in Nigeria and beyond.

There is a need for a holistic architectural education and training for both architectural students and the architect in practice. Therefore, the Department of Architecture, University of Jos, should pursue the inclusion of SD education in its course contents and also as a stand-alone course for its students. By so doing the department would conform to the current academic, professional expectations and provide holistic education to its students. Even more so, that both students and lecturers according the findings in this study are favourably inclined to the restructuring of the academic curriculum to suit the current evolving demands.

Although the study is limited to the University of Jos, it is expected that this study would spur similar studies. The recommendations here provided are by no means exhaustive but an attempt directed towards contributing to the advancement of architectural education and the sustainability of the built environment in general. The study recommends;

- That the Nigerian University Commission (NUC) needs to restructure the current curriculum and established a minimum SD education curriculum content across its universities
- Research integration and dissemination (local, national and international) is encouraged in order to provide tangible information that would provide proper restructuring of holistic academic training.
- NUC and NIA/ARCON should initiate an accreditation checklist and practice certification for sustainable compliance for schools and professional practices.
- Case study and strategic evaluation (learn from others within & outside Nigeria) are necessary for restructuring architectural education in Nigeria.
- Awareness and Information sensitization on current local and global concerns on SD should be undertaken and circulated periodically to schools and on professional bulletins or websites.
- Inaction is not option for all stakeholders in the built environment professions for the promotion of a sustainable built environment.

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