RETHINKING THE UNIVERSITY TEACHING: THE CHANGING ROLES OF THE UNIVERSITY TEACHERS FOR THE ATTAINMENT OF THE SUSTAINABLE DEVELOPMENT BY 2050 IN NIGERIA

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Abstract
The academic world is facing enormous challenges in meeting global tasks associated with Sustainable Development (SD). The seventeen (17) goals are expected to be the focus of the university curricula for the attainment of Sustainable Development by 2050. The university is expected to provide an organizational structure that would facilitate the attainment of these goals. University teaching is one of the mechanisms that would promote knowledge, skills, values and attitudes for the attainment of the goals. University teaching processes are however didactic, rather than negotiated; the methods are mainly lecture, one-to-many, instead of interactive. The teaching sequence is regimented rather than diversified with interactive resource materials. The assessment follows pre-determined standard answers, instead of open-ended responses with supportive, innovative and creative ideas. All these culminate in university teaching not being able to develop students' potentials, increase their competencies and the understanding needed for knowledge-based economy to shape the global economy. The 17 SDGs present a challenge that demands for modification of the university education process. There is need for changing the roles of university teachers to attain the SD. This paper therefore sought the views of 200 university teachers from five universities (three conventional and two specialized universities) in the South-East and South-South of Nigeria on university teaching demands to attain the SD. Four research questions based on how to integrate the SD in the university curricula and the use of the required resource materials; and the assessment techniques guided the study. The descriptive survey used a questionnaire constructed on a 4-point scale containing 25 structured items to collect relevant data that were analyzed through mean scores. Any item that had a mean score of 2.50 and above was regarded as a positive response, otherwise, it was regarded as a negative response. Based on the findings, some recommendations were made to the universities for the attainment of the 17 SD by 2050.

Key Words: sustainable development goals, Rethinking University teaching, changing roles of teachers

Introduction
The academic world has been charged to seek, establish and disseminate a clearer understanding of Sustainable Development (SD). The International Association of Universities, (IAU) has been active and has been making efforts in encouraging universities to promote

sustainable development. The academic world however is facing enormous challenges in meeting the objectives expected to ameliorate the global tasks associated with Sustainable Development (SD). Report by Global University Network for Innovation in Chronicles of Education (2017) observed increasing social instabilities – including deepening economic inequality; continuing violence against women; continuing exclusion of indigenous persons; increased lack of personal safety; a growing number of extreme weather events providing evidence of climate change, environmental degradation and flooding.

All these appear to have contributed to a general sense of preoccupation and urgency about the sustainability of the present development agenda and by implication, challenge the universities to rethink about the roles they must play within their peculiar environment for the attainment of the 2030 agenda. It is a well-known fact that education is the most powerful weapon that can break the shackles of ignorance and promote sustainable development. The roles are dependent on the organisational structure of universities which enables them to integrate the sustainable development into their teachings, research, community engagement and campus operations. (Shephard, 2008).

The organizational structure of a university is a frame work that guides the machinery of an institution. It is responsible for the advancement of the university's objectives, her administration, and management of academic policy, planning and financing. Laurrilard (2013) likened the university organizational structure to a 'learning organization' which is capable of being adaptive to its changing environment to survive. Learning organization according to Senge (1990: 3) is where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together.The rationale for learning organizations is to ensure that in situations of rapid change only those that are flexible, adaptive and productive excel. For this to happen, it is argued, organizations need to 'discover how to tap people's commitment and capacity to learn at *all* levels' (*Senge, 1990:* 4). By implication, a university should design a structure where members of the community will through capacity building produce staff with collective aspirations, who will easily adapt and proffer solutions to the existing and imminent global tasks. The 21st century workplace demands creative and innovative skills which workers require to be successful. These skills must be provided by the universities.

Learning organizations are characterized by total employee involvement in a process of collaboratively conducted and collectively accountable change, geared towards shared values or principles (Watkins and Marsick, 1992;118). Literature has presented what leaders of institutions of learning should do to promote attainment of goals. Leaders of learning organizations best achieve cooperation through a process of creating a shared vision and clear purpose (Eisenberg &Goodal, 2007). Leaders need to act in a manner that encourages the sharing of information between all the members of the organization (Treleaven, 2004). There is need to establish knowledge link between the members of the organization and the organization. The knowledge link according to Bogenrieder & Nooteboom, (2004) forms a symbiotic relationship between the individual and the organization, thus establishing the importance of cooperative collaboration within learning organizations.

Universities that adopt the learning organizational strategies produce a force field that generate an amplified effect as each member contributes his or her energy to the development of the whole. Teamwork therefore, is a vital ingredient of a genuine learning organization.

 The roles played by the universities in integrating the sustainable development through the 17 SDGs in their curricula serve as part of the learning organizational system. The universities are

unique by the edict establishing them, as such, ,the different nomenclatures associated with the names of the universities, their faculties and schools determine the functions performed within the environment in which they are situated and invariably the roles they can play towards global issues. The universities can contribute to the attainment of the SD based on the various disciplines (Cortese, 2003; Calder & Clugston,2003; Lozano-Ros, 2003) noted that in the last decade an increasing number of higher education institutions (HEIs) have been engaged in incorporating and institutionalizing sustainable development (SD) into their curricula, research, operations, outreach/extension, and assessment and reporting. Despite several efforts by HEIs (Boks and Diehl, (2006). Wemmenhove and Groot, 2001), affirm that SD is still an innovative idea in most universities. Supporting, (Lozano,2006) stated that it has not yet permeated into all disciplines, scholars, and university managers, or throughout the curricula. (Fien, 2002).

The attainment of the SD cannot be feasible if the 17 goals are not incorporated in the various disciplines of the university curriculum. Globalization requires organizations to change from rigid formula-driven entities to organizations that are fast, flexible and fluid; to be part of the global economy and use of ICT for all national and individual activities; calls for most cost-effective, efficient, and flexible mode of education. In education ICT has the potentials to revolutionize pedagogy, access to quality education and improvement of educational management (Offorma, 2015). The university should be composed of faculties, schools, departments that work to consolidate individual expertise and to minimize duplication and inefficiency of effort. Kagawa, (2007) suggests a whole university approach which explicitly links research, educational, operational and outreach/extension activities and engages students in each. Integrating the SD in curricula is a dual challenge of maintaining the holistic focus of SDGs while aligning specific goals with core disciplines. For example, all 17 goals are relevant to all the disciplines but some specific goals are more relevant to some other disciplines. For example, Offorma (2013) projects that by 2030, the higher education curriculum in Engineering and Geology will include exploration and extraction technologies, the application of which will facilitate conversion and transformation of the numerous minerals in Nigeria into materials that are sustainable, eco-friendly and cost effective. These tasks require a multidisciplinary approach to curriculum development. Working collaboratively will help faculties to create a universally relevant platform for course integration in various disciplines (Offorma, 2014). The integration approach is expected to be part of the changing roles in which a university teacher should show competence while developing the curriculum.
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The university teaching is one of the mechanisms that would promote knowledge, skills, values and attitudes that would help to achieve the planned curriculum. Knowledge is in the experience of the world and is represented in symbols that help to describe the world (Laurrilard,2013). It allows students to think, explore, innovate, and reflect, to develop new mindsets and skills to cope with complexities and ambiguities (Nie, Tan, Liau, Lau, & Chua, 2013). The university is a center of excellence and a hub for human capital development. Most teaching and assessments in higher education according to Shephard (2008) focus more on cognitive skills of knowledge and understanding, rather than on affective outcomes of values, attitudes and behaviors. This may not harness and maximize students' potentials to be active, creative, reflective, and self-directed learners in an innovation-driven and rapidly changing world (Partnership for 21 Century Skills, 2009).

The use of resource materials cannot be excluded in teaching and learning. Laurillard (2013) thus suggested the use of the following media:
1. Narrative media
2. Discursive media
3. Interactive media

4. Communicative media and
5. Adaptive media

Implementing the curriculum is an aspect that needs the consideration of the above media for the realization of the sustainable development. It requires a teaching process that is action oriented, reconstruction of knowledge and active participation of learners with appropriate resource materials.

Assessments need to meet the specific and immediate goals of a course as well as establish a basis for students to undertake their own assessment activities in future. Blooms digital taxonomy therefore suggests the use of assessment techniques that will lead to the reconstruction of knowledge, communication, collaboration and cooperation.

This paper therefore, investigated university teachers' perception of the use of university organizational structure, the curriculum, the university teaching and assessment in the attainment of the SD, especially as it has been observed that university teaching is taking a different dimension. The new dispensation requires change and refocusing in university teaching.

Five research questions guided the study:
1. To what extent does the university organizational structure lead to the attainment of SD?
2. What strategies should the university teachers use in curriculum integration for the attainment of SD?
3. What are the changing roles of the university teachers in curriculum implementation for the attainment of SD?
4. What type of media should the teachers use to attain SD?
5. What techniques should the teachers use in assessing the learning outcomes?

Methods
This study is a descriptive survey that investigated the perceptions of the university teachers on their changing roles for the attainment of SD. The study was carried out in five universities in the South-East and South-South of Nigeria. The population of the study comprised five thousand university teachers from three conventional universities and two specialized universities. The conventional universities had all the disciplines such as Faculties of law, Medicine, Education, Engineering, Social Sciences, Arts. Sciences, while the specialized universities were the universities of Agriculture and Technology. Through purposive sampling technique, 200 lecturers, (140 from the conventional universities and 60 from the specialized universities) were sampled. A structured questionnaire constructed on a 4-point Likert type of scale, containing 20 items were used to elicit information from the respondents. The instrument was face validated by five university teachers from the sampled universities. The internal consistency of the instrument was calculated using Cronbach Alpha. An estimated reliability coefficient of 0.79 was realized showing a high reliability index. The data were analyzed using mean scores. A mean of 2.5 was accepted while a mean below 2.5 was rejected.

Results

Table 1: Means scores showing the university teachers' responses to the extent the university organizational structure could lead to the attainment of SD

S/N	ITEMS	SA	A	D	SD	CWS	MEAN
1	Teamwork	640	60	30	5	735	3.7
2	Inter- departmental networking	580	105	24	8	717	3.6
3	Inter-university networking	452	141	56	12	661	3.3
4	Sharing of knowledge	452	135	28	20	635	3.2
5	Expanding of knowledge	516	84	52	17	669	3.4
6	Use of innovation	454	125	54	15	659	3.3
7	**GRAND MEAN**						**3.4**

A mean of 3.4 showed that the university teachers believed that the university organizational structure can lead to the attainment of the SDGs. Attainment of SD can be realized through teamwork, inter-departmental networking, inter-university networking, sharing and expanding knowledge, and use of innovations.

Table 2: Mean scores showing the university teachers' responses to the strategies of the teachers should use in curriculum integration for the attainment of SD.

S/N	ITEMS	SA	A	D	SD	CWS	MEAN
1	Use of interdisciplinary themes	520	90	60	10	680	3.4
2	Use of specialized themes	528	105	50	8	691	3.5
3	Use of research	504	126	44	10	684	3.4
4	Use of community Service	476	132	40	17	665	3.3
5	Use of realizable educational objectives	580	105	24	8	717	3.6
6	Use of contents relevant to the learners' needs	504	126	44	10	684	3.4
	Grand mean						**3.4**

A mean of 3.4 indicates that the university teachers perceived the use of the above strategies in curriculum integration would promote the attainment of SD.

Table 3: Mean scores of the university teachers' response on the curriculum implementation for the attainment of the SDGs

S/N	ITEMS	SA	A	D	SD	CWS	MEAN
1	Use of negotiated methods	408	144	160	20	632	3.1
2	Use of didactic method	84	90	248	25	447	2.2
3	Use of reflective methods of teaching	480	114	60	14	668	3.3
4	Case studies scenarios	464	126	54	15	659	3.3

S/N		SA	A	D	SD	CWS	MEAN
5	Knowledge management	540	87	36	28	691	3.5
	Grand mean						**3.1**

A mean of **3.1** indicates that the university teachers perceive that the above methods in curriculum implementation would lead to the attainment of SDG. The use of didactic method was rejected by the teachers.

Table 4. Mean scores of university teachers' response on the type of media the teachers should use to attain SD.

S/N	ITEMS	SA	A	D	SD	CWS	MEAN
1	Use of adaptive media	496	108	52	16	670	3.4
2	Productive media	112	75	128	83	398	2.0
3	Narrative media use	500	114	50	14	678	3.4
4	Use of interactive media	456	165	52	15	688	3.4
5	Use of discursive media	424	144	56	18	642	3.2
	Grand mean						**3.0**

A mean of **3.0** showed that the university teachers believed the use of the above types of media could lead to the attainment of SD.

Table 5: Mean score of university teachers' response on the use of techniques
 for the assessment of the learning outcomes

S/N	ITEMS	SA	A	D	SD	CWS	MEAN
1	Use of learning triangles	616	66	32	8	722	3.6
2	Use of feedback boxes	488	120	48	14	670	3.4
3	Use of Self-assessment	88	90	104	96	378	1.9
4	Use of Correlative charts	128	129	180	35	492	2.4
.	**Grand mean**						**2.5**

A mean score of **2.5** shows the assessment techniques the university teachers should use in assessing the learning outcomes for the realization of SD.

Discussion

The data in Table 1 with the grand mean of 3.4 showed that the university organizational structure would contribute to the attainment of SD. The use of team work, inter-departmental and inter-university networking creates opportunities for faculties to exchange ideas and proffer solutions for social, economic, environmental, and technological challenges of their community. This demands commitment of the members of the team to the attainment of the set goals. The project carried out within the university should be based on the challenges of the community where the university is situated. It can also attract the attention of other universities in the form of inter-university networking, whereby knowledge, and innovative ideas are shared for solution of environmental problems. The internet gives a wider scope in the project that will be beneficial to

diverse communities depending on their felt needs. Universities should create opportunities for the faculties to be trained to acquire the necessary competencies to be able to participate effectively in solution of the felt needs for sustainable livelihood.

The use of the organizational structure according to Laurrilard (2013) is interactive in nature where the sharing of knowledge within working groups will lead to knowledge expansion, innovative ideas and the incorporation of such ideas into the university curriculum. There is therefore the need for universities to equip the faculties through effective organizational structure to key into the new developmental dispensation to be able to play their roles in integrating the SDGs in the university programmes (Offorma, 2014).

Research question 2 sought to find out the strategies the university teachers perceived to be used in integrating SD in the curricula. The grand mean of **3.4** showed that using inter disciplinary knowledge, SD contents can be integrated in the different faculties. Eradication of poverty, for instance, can be a topic in the faculties of Law, Medicine, Engineering and Education for the conventional universities. The same goes to the specialized universities. Universities of Agriculture should be at the fore on food production and agri-business, while universities of technology will make contributions on the fabrication of tools for the food production and preservation. Nigerian is very rich in foods, legumes, and fruits which are seasonal. These are wasted during their peak yields as there is lack of preservation. The universities of Agriculture and Technology can collaborate to find solutions to this waste, which will lead to the attainment of poverty eradication, food security, good health and even economic empowerment.

Thematic approach to curriculum development is a strategy to expose the learners to wide range of knowledge, skills, values and attitudes. Critical areas of knowledge are integrated and presented to the learners in themes that will equip them to be functional members of their society. It broadens their knowledge facilitates transfer of knowledge. This is one value required in problem solving. For example, Nigeria is facing a lot of challenges in gas flaring, erosion, flooding during the rainy season. These can be integrated as themes in the different curricula of the universities. They can be cooperatively and collaboratively treated as university projects to proffer solutions. Interdisciplinary knowledge can be applied by a group of students in a project to find solutions to problems of their society.

 Inter disciplinary approach is a 21st century strategy to enhance knowledge, skill acquisition, and to add value to the solution of global challenges. A learner, irrespective of his gender, religious inclination, and social status should contribute in proffering solutions to problems. This can be achieved through interdisciplinary learning in the university curricula. The objectives in the curricula will however, not be achieved without the teaching-learning process in which the teacher plays a very vital role as a facilitator of learning.

The respondents also believe that research and community development should be strengthened in universities. Universities' primary functions are teaching, research and community service (FRN, 2013). These three should be seriously pursued if the development agenda will be attained by the country by 2050. It is through research that solutions to prevalent and emerging issues are tackled. The solutions are taken back to the communities to provide sustainable development. Therefore, there should be seamless collaboration between the academia, the private sector business enterprises and faith-based organizations in finding solutions to the problems of the society.

Research question 3 was on the changing roles of the university teachers in curriculum implementation for the attainment of SD. The grand mean score of 3.1 shows that the teachers

all agreed that the changing roles in methods of teaching would contribute greatly to the attainment of SD. Teacher's use of didactic method has been criticized as being teacher centered instead of learner centered. As teacher centered method of learning, the objectives were mainly for students to accumulate knowledge, fill their heads with facts, commit them to their memories and reproduce them during examinations. It could be for these obvious reasons that the mean score for the use of didactic method was low. Laurrilard (2013) had argued that it is the responsibility of the teacher to know the conception of learning their students are inclined to. The one fit size lecture method of teaching had often led to memorization and regurgitation of knowledge which may not serve the purposes of SD. University teaching requires a teaching method that will involve the use of the 4Cs of collaboration, communication, creativity and knowledge construction (Offorma and Obiefuna, 2017). The use of the 4Cs will use methods such as the negotiated instruction, case studies and situated learning. Negotiated instructions will enable the learners to reconstruct knowledge. This can be achieved through strategies like debates, simulation, field trips, theatre, arguments with detailed descriptions and explanations.

University teaching should consider a teaching method that allows the students to gain experience in conception of topics, representation of skills and the use of epistemological developments. The method will help the students in comprehending the academic discourse, interpreting the forms of skill representations and giving a description as it is understood by the student. Answers to topics should be seen from different perceptions by the teacher. It is based on this that the university teachers should adopt team teaching method. Different teachers with different perceptions teach the students and make teaching diversified unlike when knowledge is coming from only one teacher.

The new teaching methods should be apt in the teaching of the SDGs. Topics in SDGs are multidisciplinary and should be learnt through negotiated instruction. Use of case studies gives vivid description of issues and where necessary scenarios should be used to make representations. The methods require the use of media representations. Lecture method has often been taught in abstractions and students have learned in abstraction. The use of media that will make the 4Cs feasible in teaching and learning will be of great value in attaining the SD.

Research question 4 was required to find out the type of media teachers should use to attain SD. The result in Table 4 showed that the teachers were optimistic that the use of technology would play a vital role in teaching and learning in the university to promote the attainment of SD. Knowledge is represented in media forms. Laurrilard (2013) identified basic media forms that can help in the university teaching methods. They include: narrative, interactive, adaptive, communicative and productive media. One basic characteristic of the media is that they make use of audio, video or graphic designs. These new technologies will open new online correspondences within and between universities. The online correspondences will increase communication, collaboration, creativity and knowledge construction that arise during teaching and learning the contents of SD. The use of narrative media modifies the traditional lecture method by ensuring that the students participate in teaching and learning. She suggested the use of in-text questions and activities to encourage actions in the print media. For the other media, the use of graphics, audio, visuals or their combination will improve the mode of interaction and production between learners or learners and their teachers.

Research question 5 was on the assessment technique to be used for the realization of SD. Every teaching sequence must be assessed or evaluated for evaluation to be comprehensive. Teaching and evaluation should be sequential, covering lower order thinking skills (LOTS) and higher order thinking skills (HOTS). Bloom's digital taxonomy emphasizes learners' thinking processes rather than behaviors and consequently listed the lower order and higher order thinking skills to

include; remembering; understanding; applying; analyzing, evaluating and creating. Aligning blooms digital taxonomy to the 21st century digital skills show that teachers should be conversant with the use of assessment techniques such as the use of rubrics, learning triangles, correlative charts and feedback boxes, mind mapping in the appropriate LOTS or HOTS. These assessment techniques can improve students' potentials; increase their competence for the understanding of the tenets of the SDGs. These new roles for the university teacher make the teaching and learning in the 21st century feasible and adaptable to the challenges of the global task.

Conclusion

The paper examined the changing roles of the university teachers for the attainment of SD through rethinking of the university teaching. It therefore explored how the university organizational structure, the curricula, methods and instructional media would lead to the attainment of SD. It is evident from this study that universities need to review their administrative structures, curriculums and their implementation strategies to be able to accomplish their roles in revolutionizing and disseminating knowledge and impacting human capital development. The earlier the universities adapt to the rethinking' process, the faster and feasibility the attainment of the SD. Universities are drivers of innovations and should promote the attainment of the SD through effective implementation of relevant programs to the society, which is the essence of sustainable development.

Recommendations

Based on the findings, the following recommendations are proffered:

1. University administrations should review the organizational structure and align it to the demands of the time to contribute to the attainment of SD.
2. Universities should play their leading roles in research, and community service by collaborating and partnering with the private sector, business enterprises and faith-based organizations in pursuing the 2030 agenda.
3. University teachers should integrate the SD in their curricula through inter-faculty and inter-departmental collaborations in teaching and research.
4. University teachers should endeavor to use interactive and reflective methods in teaching to create friendly learning environment that will promote active learning which will be transferred to the attainment of the SD.
5. The use of appropriate assessment techniques will bring about confidence in the sharing of ideas and knowledge among and between learners in different environments and this can encourage global solution to the problems of sustainable development.

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