Attaining Sustainable Development Using New Assessment Paradigm

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Abstract

The global ambition today is the attainment of sustainable development. Many nations around the world have embraced the need for education to achieve sustainable development.Development requires citizens of different countries world over to be adequately empowered to enable meaningful contribution of their quota. Education has been identified as an instrument for planned and systematic intervention into socio-economic development but that is not without some conditions precedent. Some conditions involve making the education system effective to inculcate skills, citizenship values and entrepreneurship. The teachers' competence in lesson delivery techniques and knowledge in comprehensive assessment to improve the citizens becomes imperative. This paper described what sustainable development entails.The targets and indictors of sustainable development are multidisciplinary, diverse array of teaching methods and assessment procedures would be involved to assess learning for improved performance of both students and teachers. Hence, the paper also highlighted the innovative assessment strategies which support learning for life in the diverse disciplines. Some recommendations were presented to help to revolutionize assessment practices for sustainable development.

Introduction

Nigeria like most countries of the world needs problem solvers and inventors who will blaze new trails and make discoveries in the course of sustainable development. Sustainable development tends to investigate and emphasize the development of the present without compromising the future generation.Throughout the process of transiting from old fashioned era to a more dynamic, resourceful and Information and Communication Technology (ICT) based model where skill, problem solving and creativity take precedence, the situation calls for the education system to be adjusted to the dynamics. The processes of teaching and learning in the various educational levels need to implement practices that support development of skills and competences that will protect and promote collective human capital are to be transmitted. Reid and Petocz (2006) stated that sustainability requires creativity, flexibility, ethical practice and critical thinking. Therefore, approaches required to enable citizens achieve these characteristics need to be put in place in the teaching and learning processes.

The education systemwould serve to inculcate the aforementioned skills for sustainable development and make provision for appropriate assessment practices. Education for sustainability is primarily an approach and attitude, and demonstration of values and principles expected in students.Sustainable development is based on a balance between principles of environmental protection, social justice, economic well-being and diversity (http://www.iiste.org/journals/). It encompasses a broad range of paradigms, ideas and practices and as such instructional objectivesneed to be diversified to engender development.

Students need to be encouraged to view the world through another lens by re-orienting education towards sustainable development. In other words, sustainable development must be embedded as a core value amongst teachers and students. It entails additional development of realistic collaborative assessment and practical support for sustainable learning and teaching. There is need to rethink the practices of pedagogy and assessment to authentically benefit students and their diverse backgrounds in the curriculum and its implementation towards sustainable development.

Various instruments are available for assessment of different attributes as concerns their level of acquisition by the learner. Instruments for assessment of teaching and learning need to be made valid and reliable despite diversity of the curriculum, so as to take care of the diversity of disciplines involved in sustainable learning. Assessment is an indispensable tool in learning. Assessment is one of the tools teachers can use to inform their teaching and the learning of their students. Assessment allows individuals, communities and countries to track the quality of schools and the educational system. In Nigeria, it appears assessment measures are only concerned with precision of candidates' scores rather than the intellectual value (Okpala and Anyanwu, 2010). More so assessment has failed to tell us whether candidates have acquired the capacities to use the knowledge and skills acquired in a pluralistic and diverse society like Nigeria. The situation if not checked could hamper the achievement of the national goals as well as those of sustainable development.

Multiple goals help to develop implementation and monitoring strategies for achievement of sustainable development. Education is known as "an instrument par excellence''. Pedagogy and assessment in education need to be tailored towards giving room for greater scope such that could take care of the multiple goals. Hence, the use of assessment measures that contribute in practical ways to achieve sustainable development becomes imperative. They need to be equipped to undertaketo do this in a wide range of setting and in a variety of circumstance.

Sustainable Development and what it entails:

Sustainable development is a major focus of countries worldwide. Countries get committed to making citizens become learners throughout life. The commitment will be required of individuals, the state, employers and providers of education and in training. Education is desirable and is fundamental to the provision of improved quality of life. To provide education, we need to consider the nature of the society and the skill and competence need of the citizens. The skill and competence needs will guide our teaching, learning and assessment for sustainable development.

Sustainable development was defined by the World Commission on Environment and Development in Boud (2000), as development that meet the needs of the present without compromising the ability of future generations to meet their own needs. Its goal is an unending quest to improve quality of people's lives and surroundings and to prosper without destroying the life supporting systems that current and future generations of humans depend on. Basically sustainability is about what we expect as products of educating our students and education providers have a responsibility to encourage actions and attitudes that will protect the planet and give current the future generations the chance to meet their needs and lead sustained lives.

There is need for imperatives to develop in students, capabilities that will sustain a sense of stewardship in a changing world, develop personal strategies for dealing with change, as well as setting agenda for lifelong learning. To be active agent in learning and to adopt a "learning approach to life, members of the society need to focus as much on judgment they make about learning of tasks themselves. These judgments constitute a full range of evolving assessment strategies in the fast changing world.

Rethinking assessment strategies:

Assessment procedures traditionally focused on formal testing. Cachia, Ferrari, Ala-Mutka and Punie, (2010) stated that assessment procedures in formal education and training have traditionally focused on examining knowledge and facts through formal testing. The traditional testing do not encourage grasping of skills, lately, however, there had been growing awareness that curricula – and with their assessment strategies – need to adequately reflect more on the skills needed for life. Society gets constantly re-shaped giving rise to new skill and competence needs. The initiative of effort to engender development connotes a declaration of fundamental principles for building a just,

sustainable and peaceful global society in the 21st century.Skills such as problem-solving reflection, creativity, critical thinking, learning to learn, risk-taking, collaboration and entrepreneurship are becoming increasingly important (Redecker*et al.* in Redecker and Qystein, 2013).Therefore, assessment should involve looking at students' ability to engage in and complete complex thinking and problem solving tasks rather than discrete knowledge.

For students to become effective lifelong learners, developing the important requisite skills as they evolve, they need to be prepared to undertake assessment of the tasks they are faced with throughout their lives. This would enable the teacher identify whatever standards are appropriate for the task in hand and seek various form of feedback to enable them undertake subsequent learning more effectively (Boud, 2000). Assessment provides statement of what counts and directs learner's attention appropriately to those matters. Formative assessment guides the learner in how to learn, what is to be learned and indicates how well progress is made to get to the expected end. Summative assessment does not locate assessment in the hands of learners and as such needs to be substituted. It takes responsibility for judgment about learning from the possible learner and places it in the assessor. It also gives misleading message that assessment is not an act of the learner, but an act performed on the learner. Though, it is neither possible nor desirable to remove summative assessment acknowledging its legitimate role in certification, there is need for a significant shift of balance to equip learners to sustain themselves as lifelong learners and assessors.

Traditional assessment practices concentrated efforts on cognitive knowledge and perhaps few of psycho-motor skills to the utter neglect of values and other affective details that lead to the education of the total person. Amuche and Iyekekpolor (2015) avers that the effect of such outputs of education has stemmed the tide of the persistent problems in the Nigerian society such as inequality, injustice, poverty, unemployment, hunger and diseases, violence, bloodshed and terrorism, pollution and degradation of environment. Innovative assessment according to Shute and Beker (2010) calls for practitioners to rethink the way assessment is conducted and competencies defined, particularly placing the assessment process in the context of lifelong learning across the cognitive, affective and psychomotor domains. This rethink will encompass different techniques and methods with new thrust to improve the quality of student learning. The shift to the formative assessment of learners' range of skills during the learning process simulate real life situations and combine all three domains while developing critical thinking skills and building confidence. The new trend will evolve alternative assessment tools not only to help alleviate test anxiety and performance anxiety (instrumental to reliance on examination malpractice), but also produce citizens that are self-reliant, productive and worthy, fit to steer the wheel of sustainable development. Assessment must be through ensuring that the method:

- Supports a balance of assessments, including high-quality standardized testing along with effective formative and summative classroom assessments
- Emphasizes useful feedback on student performance that is embedded into everyday learning
- Requires a balance of technology-enhanced, formative and summative assessments that measure student mastery of 21st century skills
- Enables development of portfolios of student work that demonstrate mastery of 21st century skills to educators and prospective employers
- Enables a balanced portfolio of measures to assess the educational system's effectiveness in reaching high levels of student competency in 21st century skills (American Association of Colleges for Teacher Education, 2010).

Sustainability through New Assessment Paradigm:

Assessment practices require students identify problems, investigate solutions, perform analyses work with stakeholders and enable them develop sustainability plan. More so, the practices afford them the opportunity to develop critical thinking, problem solving and communication skills in preparation for their different professional practices.

Both summative and formative assessment influence learning. Summative assessment is terminal and is used for certification. It gives no guide to improve learning. Summative assessment does not provide the agenda to improve learning (Bond, 2000). It just directs students' attention to "what counts", tells us what to learn without communicating directly or does unambiguously. Formative assessment provides the fine tuning mechanism for what and how we learn. It also guides us in how to learn what we wish to learn and goes further to show how well we are doing in progress to reach the target. We need a significant shift of balance in order to equip students to sustain themselves as lifelong assessors. This provides an important starting point for examination of what is needed for sustainable assessment.

Sustainable assessment need to meet both specific and immediate goals as well as establish a basis for students to undertake their own assessment activities in lifelong learning. Sustainable assessment as a term has resonance with sustainable development. Sustainability encompasses the knowledge, skills and predispositions required to support lifelong learning activities, therefore, focus on methods and techniques needs to be replaced by a new conception of assessment required for lifelong learning. Where assessment tasks act to undermine lifelong learning they cannot make positive contribution to sustainability.

New emphasis of assessment should be directed towards provision of evidence for who the learners are in the cognitive, psychomotor and affective domains of development, what they could do, rather than credits in certificates whose validity might be difficult for the owners to defend. The emphasis shifts from assessment associated with the end product of learning process to formative evaluation of learners' range of skills during the learning process.

Assessment must transcend the testing paradigm and develop new concepts of embedded, authentic and holistic assessment. Moreover, there is a pressing past to make the conceptual shift between traditional and 21st century testing and develop assessment pedagogies, frameworks, formats and approaches that reflect the core competences needed for life supported by coherent policies for embedding and implementing assessment in daily educational practice.

To improve teaching and monitor learning properly and make formative assessment effective the teacher should always keep in mind how to use feedback and make changes in teaching. There is need for the teacher to know the skills to be improved in the learning process and how to change presentation format based on attainment. Students need to voice through class control. The assessment measure as much as possible needs to model the learning to enable students learn from it as the process goes on. The assessment should be embedded.

Considering efforts in education as a change agent to encourage changes that will create sustainability in terms of environmental integrity, economics variability and a just society for present and future, assessment strategies may be more authentic using some measures elucidated in this paper. The approaches are generally referred to as student centered because they stimulate students learning and facilitate their development of proactive attitudes. The goal to develop new practices of assessment geared to foster lifelong learning skills through student teachers would develop their own capacity to self- assess, reflect on and take an active role in managing their own learning (Nicol *et al.* all in Amuche and Iyekekpolor, 2015).

Teachers' assessment measures are based on simplistic stimulus response view of learning instead of preparing for mastery of roles that constitute the professional encounter of what has been previously learned. Such assessment measures involving new approaches that are innovative include

group, peer and self-assessments. Multiple measures of performance will yield the best and most dependable information about competency and so more time needs to be dedicated to it.

The need arises for the constituent units of the society or the society as a whole to find models, metrics and tools for articulating the extent to which activities undertaken are unsustainable. Assessing trend helps identify and convey information on countries' performance in fields like environment, economy, society and technological development. The information conveyed are initiatives that exist as indictors and framework for sustainable development.

Various sustainability indices exist in the sustainability domain. These help unveil values that constitute what we care about for measurement. The values constitute indictors that condense the complexity of our dynamic environment to manageable information on which sustainability assessment will be based. Development of indicators is considered to be a unique approach for assessing sustainable development. Warhurst (2002) explains that measuring sustainability could be by improvement in the various areas measured through sustainable indicators individually and assessing the overall improvement achieved towards sustainable development by aggregating these individual areas with regards to their respective dimension. Explaining further, Laucker and Nijkampin Amuche and Iyekekpolor (2015) emphasized the target value of indicators and states that "a given indicator doesn't say anything about sustainability unless a reference value such as threshold is given to it".Spohn (2004), highlights that sustainable development indices (SDIs) can be used to:

- Assess and evaluate performance
- Provide trends on improvement as well as warming information on declining trend for the various dimensions of sustainability i.e. economic environment and social aspects.
- Provide information to decision makers to formulate strategies and communicate the achievements to the stakeholders.

Development of a framework for selecting SDIs requires different approaches which the same author identified thus:

The top-down approach which enables experts and researchers to define the overall structure for achieving the sustainability and subsequently it is broking down into set of indicators. On the contrary, the "bottom up" approach requires systematic participation of various stakeholders to understand the framework as well as key sustainable development indicators.

Many models have been developed for measuring to ascertain how well polices and commitments are demonstrated regarding sustainable development. The scope of this paper is not intended to include the explanation of the models. However, it is noteworthy that the models help identification of the key sustainability performance indicators into the key sustainability performance index (Singh *et al.,* 2011) evaluated for a time frame. Formulation of index used three central steps namely normalization, weighting and aggregation.

Sustainability should note inter-linkages and dynamics developed in a system. Indices should be well constructed such that sensitivity and uncertainty analysis can always help in testing the efficacy and robustness.

Conclusion

Sustainability has been shown to be an essential aspect of education. Various levels of education embark on practical actions to integrate sustainability into their different programmes. There is yet need to investigate with the students to make connections between their academic study and their view of the world. For measureable is about sort of building yourself and your environment to make sure that there is a tomorrow and a tomorrow after that (Emma in Macquarie University

(n.d)). Attributes critical effective thinking and value based learning contribute to build self and environment so as to envision a sustainable future.

Adequate assessment measures will facilitate the acquisition of the attributes. If the assessment measures that facilitates the learning of the attributes are put in place sustainable development will be accelerated. It is the hope of the writer that when learning is assessed adequately, requisite, knowledge, skills and values will be acquired. The acquisition will engender sustainable development.

Recommendation

1. The assessment practices of teacher at all levels should involve multiple measures of performance at all the three domains of behaviour. This will provide dependable information to help improve teaching and learning
2. Monitoring and supervision of teacher educators may become imperative to ensure that new graduate output of teacher education would produce personnel not only competent in lesson delivery techniques but also in approaches to assessment. This will improve the quality of education
3. National or state tests should be encouraged on regular basis to hold schools accountable for the performance standards. The regular testing motivates the teachers and students to imbibe the culture of pursuing ever increasing higher standards.
4. Education reform Act should be enacted to punish failure by operators to comply with regulations on prescribed assessment practices.
5. Choice of assessment formats that encourage and promote self-regulated learning should be encouraged. This will enable students acquiring knowledge, skills and values necessary for life.
6. Experts involves in accreditation of teacher education programme should demand accountability from the operators of the institutions by considering their assessment practices as evidence of quality assurance.

References

American Association of Colleges for Teacher Education (2010). Partnership for 21st century skills. 21st century knowledge and skills in educator preparation. New York: Routledge.

Amuche, C.I. & Iyekekpolor, S.A.O. (2015). Imperatives of innovative assessment practices for sustainable development in Nigeria. *Journal of Economics and Sustainable Development*,6(11), 32-38.

Boud, D. (2000). Sustainable assessment: Rethinking assessment for the learning society. *Studies in Continuing Education*, 22(2), 151-167.

Cachia, R., Ferrari, A., Ala-Mutka, K., &Punie, Y. (2010). Creative learning and innovative teaching. Final report on the study of creative and innovation in education in EU member states (Seville, JRC – IPTS).

KEI (2005). Knowledge economy indicators, work package 7, state of the Arts Report on simulation and indicators. Macquarie University (n.d). Sustainability. Retrieved 17th April 2017

Okpala, N. P. & Anyanwu, I. E. (2010). Enhancing the Operational Efficiency of Examination Bodies: The National Examinations Council (NECO) Perspective. Paper presented at 28th Annual conference of the Association for Educational Assessment in Africa held at Abuja.

Petocz P. & Reid, A. (2006). University lectures' understanding of sustainability. Higher Education, 51(1), 105-123.

Redecker, C. & Qystein, J. (2013). Changing assessment – towards a new assessment paradigm using ICT. *European Journal of Education*, 48(1).

Shute, V. J. &, Beker, B. J. (2010). Innovative assessment for the 21st century- supporting educational needs ISBN: 978-14419-6529-5: Retrieved on 6th of Oct.2010

Singh, R.K., Murly, H.R., Gupta, S.K., Dikshit, A.K. (2011). An overview of sustainability assessment methodologies. *Ecological Indicators*, 15, 281-299.

Singh, R.K., Murly, H.R., Gupta, S.K., Dikskit, A.K. (2007). Development of composite sustainability performance index for steel industry index for steel industry. *Ecological Indicators*, 7, 565-588.

Spohn, O.M. (2004). Sustainable development indicators within the German water industry: A case study carried out at Chalmers University of Technology, Sweden.

Warhurst, A. (2002). Sustainability indicators and sustainability performance management. Report to the project: Mining minerals and sustainable development (MMSD). International institute for environmental and development (IIED), Warwick England. http://www.iied.org/mmsc//mmsd.pdfs/sustainability-indicators.pdf.

World Commission on Environment and Development (1987). Our common future. Oxford University Press, Oxford. http://www.iiste.org/journals/.