

Retraining of Teachers: a Strategy towards Effective Teacher Preparation for Climate Change Curriculum in Nigeria

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Abstract

Climate change has in recent times impacted greatly on society globally, creating negative impacts and serious challenges to man. The consequences of climate change have necessitated the call for its inclusion in the educational curriculum of nations. It is noteworthy that no educational curricula can be implemented successfully without quality teachers who are products of effective teacher preparation, hence, the justification of this study. This paper attempts to present effective teacher preparation strategy for climate change curriculum implementation in secondary schools in Nigeria. It therefore identifies the problems confronting effective teacher preparation for climate change education and also provides a framework for climate change teacher education in Nigeria.

Keywords:

Strategy,
Teacher preparation,
Climate change,

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Background to the Study

Climate change phenomenon is globally threatening human existence. It affects all spheres of life. The impact of climate change calls for its incorporation into the school curriculum. This agitation is informed by the fact that the main aim of any school curriculum is to prepare students towards developing skills and knowledge that would enable them to tackle problems confronting society. It therefore follows that the emerging challenges of climate change would only be tackled if school curriculum that place emphasis on understanding the concepts, causes, effects of climate change, ways of mitigating its effects and evolving coping/ risk management and rehabilitation measures is implemented.

The Nigerian education curriculum is yet to fully embrace climate change, its consequences and management. As a result of this, teacher preparation strategies for climate change are somehow deficient in terms of structure of programmes and quality of its products. The teacher preparatory institutions (Colleges of Education, National Teachers Institute and Universities) lack the necessary infrastructure and personnel to implement climate change education curriculum. The products of these institutions therefore lack capacity and capabilities to solve the emerging global problems arising from climate change. This may be a complete negation of the national policy on Education.

The goals of Teacher Education as contained in National Policy on Education (2004) placed emphasis on effective teacher preparation. Thus the policy seeks to produce:

- (a) Highly motivated and efficient teachers,
- (b) Teachers with intellectual and professional competences that enable them perform of their duties adequately and
- (c) Make them adaptable to changing situations in their environment.

The goals of Teacher Education as highlighted imply that the products of our teacher preparatory institutions are supposed to be properly equipped in methodology; skills and knowledge that would enable them confront problems of climate change in every ramification. It therefore means that any Teacher Education programme that lacks the necessary concepts, theories and practical techniques which are aimed at equipping the products with appropriate skills and abilities for solving societal problems contradicts the objective of education.

The question one may ask is whether climate change is fully integrated in teacher preparation programmes in Nigeria in line with the National Philosophy of Education. This paper attempts to present effective teacher preparation strategy for climate change curriculum implementation. It also identified problems confronting effective teacher preparation towards climate change education in Nigeria.

Climate Change Concept

A search for a proper concept of climate change begins with understanding of the meaning of the word "climate". Igu and Ogba (2010) define climate as the regular pattern of weather condition based on the perimeter of temperature, humidity, rainfall and other

meteorological events over a given period of time. Similarly, Offorma (2010) merely views climate as the average weather condition of a place over a given period of time. Inherently, the definitions provided above are convergent in meaning. Climate change relates simply to a clearcut departure from the regular cycle or regime sustained over a reasonable period of time spanning over 10 years to even a millennium (Kellog & Kellog 1975). Two sources of climate change are recognized, namely Natural Sources and Man made sources. The current phenomenon of climate change is predominately based on human activities. This change may be described as anthropogenic climate change or global warming (Ibiang, Ina, Upla and Ushie 2010). Anyadike (2009) views climate change as a condition of atmospheric change which continues in one direction at a rapid rate for a considerable length of time. Igu (2010) defines climate change as a change attributed directly or indirectly to human activities that alter the composition of the global atmosphere over a comparable time period.

The mechanism of climate change is complex on the basis of its precursors and impact scale. There is an interconnection between climate change, global warming, ozone layer depletion and phenomenon of EL NINO Southern Oscillation (ENSO). Indeed there seems to be an overriding impression regarding climate change purely in the context of global warming.

Ibiang, Upla, Ina, Ushie (2010) have viewed the interconnection between climate change and global warming based on the phenomenon of Green House Effect. "Green House Effect" is caused by green house gases that act as regulators of short wave ultra violet radiation (UVR) and long wave terrestrial or infrared radiation (IR). Principal green house gases include carbon oxide (CO_2), Sulphur oxide, Nitrous Oxides (NO_2), Methane (CH_4) and Chlorofluorocarbon (IPCC, 2007). These gases re-circulate large quantities of atmospheric terrestrial radiation leading to increased heat build-up, now called global warming. Anthropogenic activities such as industries, agriculture, lumbering, urbanization, mining etc are all contributing to increased Green house Gases (GHG) accumulation, hence, warming effects.

Stratospheric ozone depletion presents another problem in climate change concept. The ozone layer acts as a screen to direct transmission of UVR to the lower atmosphere and which is derived from various industries, bush burning, gas flaring and other domestic sources. The chlorine component of this compound has a direct effect on the ozone (O_3) in the atmosphere. This leads to the creation of holes or atmospheric windows in the ozone layer, as detected around Arctic Circle and Antarctic regions. This phenomenon has resulted in increased temperature of the polar region, leading to warmer climates, melting of ice sheets and increased sea levels. The frequent occurrence of coastal flooding in different parts of the world is a manifestation of this trend. The indicators of climate change are the melting of cap ice in the polar region, rise in sea level and extremities in climate events such as rain-storms, heat waves, prolonged droughts, delayed on-set and off set of rainfall etc. These events have created impacts on the society.

Sea level rise has resulted in the flooding of some coastal areas and wetlands, and the invasion of estuaries and river basins by ocean salt waters, thereby causing fresh water plants and animals to retreat. Invasion of Estuaries by ocean water may alter the coastal ecology of the affected areas, leaving the inhabitants without means of livelihood. Many people

including fishermen and farmers may be rendered jobless. This has some socio-economic implications. Frequent flooding destroys lives and property, including farmlands. This may trigger displacement of people from their homes, thus creating refuge problems in the neighboring regions. Flooding may also cause some health hazards as the water may be contaminated.

Extremities of climate have exposed some areas, especially those bordering semi arid regions to drought, desertification, desert encroachment and rain storms (Oladipo 2010). Some other regions, especially those within tropical climate, experience frequent rainfall/rain storms leading to accelerated erosion, landslide, mud-flow, soil leaching and other forms of environmental degradation. The implications of these impacts are multi-faceted and include, increased poverty, malnutrition, outbreak of new disease among the vulnerable populations, displacement and new hardship, i.e., refuge problems and its associated problems, food security problems, endangering the flora and fauna, national crises as a result of dissatisfaction among the populace, etc. These impacts have posed sufficient threat to the achievement of the Millennium Development Goals (MDGs), particularly those relating to the elimination of poverty, hunger and promotion of environmental sustainability. The impacts have put a lot of stress on individual families and nations. It is highlighted that drought affected areas of sub-saharan Africa expanded by 60,90million hectares within dry land zones as a result of climate change (Attoh, 2010). This would undermine efforts towards rural poverty and disease control. Climate change could cause new disease patterns to emerge which could challenge efforts towards diseases eradication (Pender, 2008).

The concept of climate change is recent in Nigeria School curriculum and as such has not provided opportunities for learners to acquire skills and techniques that will enable them contend with the risk arising from it induced disasters. The populace knows little or nothing on risk management, emergency management, rehabilitation, adaptation and mitigation. In most cases only the para-military personnel are equipped and relied upon in times of emergencies. Our state of preparedness towards disaster management is still very low. This situation queries the efficacy of the teacher preparation strategies towards climate change challenges in our society.

Global warming, vis-à-vis climate change has the potential of inducing natural and man-made disasters that can expose the human population to many hazards, thus, putting man at risk in the face of the disaster. However, some of the disasters can always be predicted and controlled if the early warning signals are known. The successful management of climate change disasters hinges on well articulated teacher preparation programme that is focused on the dynamics of climate change, its causes, impacts, mitigation, and adaptation strategies. Such a curriculum should emphasize integrated approach to climate change education.

Problems of Teacher Preparation for Climate Change

Teacher preparation toward curriculum implementation in Nigeria is institution based. The institutions recognized for providing professional training leading to the award of teacher qualifications are the university's Faculty of Education, Institute of Education, the National Teachers Institute and Colleges of Education. The aim of these institutions is to produce ideal men who are educated as enshrined in the Nigerian philosophy of education vis-à-vis

the national policy on Education. To achieve this, education has to be functional and relevant to the needs and aspirations of both the individual and the society. The effectiveness of teacher preparation is determined by the quality of its products and relevance Udofot (2005).

Teacher preparation in Nigeria has long been plagued with an array of problems (Akande, 1984). Faniran (1980), in assessing problems confronting teacher education, identified inadequate staffing in quality and quantity as a major problem of teacher preparation. It is established that most schools have inadequate teachers, especially in the sciences. In other instances unqualified teachers are recruited to teach students irrespective of their areas of specialization or professional background. This situation tends to produce half baked teachers who lack professional skills and subject content mastery to teach the subject. Enoh (2013) argued that the prevalence of incompetent teachers in all strata of the school system renders our school huge wastelands which can never bring about the full realization of human potential of those entrusted to the teachers.

The conviction and commitment of teacher have further aggravated the problem of teacher preparation (Omojuwa, 2005). Many teachers upon graduation from school do not up-date their knowledge in current trends and professional skills. They become outdated because of limited interactions with their professional colleagues which would have been achieved through conferences, workshops, seminars etc (Abegunde, 1988). Some do not venture into using the library but rather, keep recycling the notes they had from during their university or college days even when such facts are outdated. This group of teachers would not be abreast with changing trends, new techniques and methodologies in the subject-matter. They rather, adopt defective and out-dated teaching methods which would hinder effective teacher preparation (Omojuwa, 2005).

The training of professional teachers by the regular institutions tend to be limited in content as student-teachers are exposed only to a few compulsory courses in their teaching subjects while other courses are electives. This limits the scope and content coverage of student-teachers' teaching subject. This system of training, ill prepares the student-teachers towards effective subject content delivery (Enoh, 2013). Professional teachers (that is) those with B.Ed degrees tend to offer more courses in education than in the teaching subject as such have difficulties in teaching all the topics outlined in the syllabus, thus their content coverage is always poor. They avoid teaching difficult and new concepts, especially, those that were not taught in school like climate change or global warming. This greatly compromised the quality of Teacher Education in Nigeria.

Dearth of instructional materials and textbooks have been highlighted as a problem in teacher preparation towards curriculum implementation in climate change in particular (Udofot, 2005). Institutions that prepare teachers lack the necessary instructional materials that would enhance teaching and learning. The institutions lack libraries, laboratories, weather stations, and equipment including maps, charts and models that would promote effective teaching and learning. In such situations, teaching/learning become so abstract and boring. This could lead students to memorize facts with a view to passing examinations.

A system that places undue emphasis on examination may not promote functional education as enshrined in the National Policy on Education. The negative effect of this approach is that the products of this system would not be able to use the teaching materials or equipment they did not use while in school (Udofot, 2005). The inability to use some equipment, could pose problems when conducting practical and fieldwork that are aimed at equipping the students with appropriate skills.

Another major problem confronting effective teacher preparation is the undue emphasis on the acquisition of certificates to the detriment of quality education. Educational system that places undue emphasis on certificate acquisition would produce teachers who may not have mastery in subject content and professional skills necessary for lesson presentation (Omojuwa, 2005). This nature of teachers cannot give what they do not have. They only succeed in mis-informing the students. Thus, they damage the students rather than guide them to develop skills and competencies required for tackling societal problems.

Oladipa (2010) and Okunrotifa (1977) identified curriculum development as one of the problems of teacher preparation. The curriculum for teacher preparation may be too elaborate and confusing as to what should be taught, to whom, by whom and to what effect? The curriculum may emphasize topics that have no direct bearing with the students' immediate environment (Agbunde, 1988). Where what is taught in school cannot be visualized by the learner, teaching becomes so abstract and frustrating for students to understand the concepts and their application in everyday living. It therefore becomes difficult to translate what is learnt into actual life challenges.

An overview of Nigeria teacher preparation towards climate change highlights the following problems; poor teacher preparation, poor curriculum coverage and implementation in climate change, inadequate provision of facilities (laboratories, undue emphasis on acquisition, of certificates etc. the reversal of this trend may improve teacher preparation toward climate change.

Teacher Preparation strategy for Climate Curriculum

Climate change is a very recent educational issue begging for curriculum response in Nigeria. This issue is crucial because its resolution will go a long way in moving the nation forward. In this millennium, education is seen as playing a significant role in developing the needed human resources as key to tapping maximally from the changes and challenges brought by globalization. This means that education must be repositioned to prepare personnel with requisite competencies, skills, tools, techniques that will be of value to the society as well as facilitate effective and efficient performance of the arduous task of nurturing tomorrow's citizens toward technology driven economy (Obanya and Fadoju, 2008). In view of the climate change, this paper posits that in-service education and re-training of teachers, viewed from the perspective of teacher quality is one major strategy in teacher preparation for climate change education. This will likely, bring immense improvement in the quality of teachers (Siddi, 2008).

One fundamental question which needs an answer is; what quality of teachers do Nigerian Secondary Schools need for climate change curriculum? To answer his question, Mkpa (2000) states that for a successful climate change curriculum, the nation needs teachers who are capable of demonstrating the highest level of professional competence in all criteria for efficiency and effectiveness. He outlines four qualities that must be exhibited by climate change teachers to include:

- i. Demonstrable competences in the application of appropriate skills to cater for learners needs.
- ii. Moral decency in his relationship with students, staff and community
- iii. Innovative and receptive towards exploring and applying new ideas in teaching and
- iv. willingness to work with other stakeholders in the education.

The implication of these attributes for Teacher Education and effective teacher preparation is as highlighted by the Federal Government Policy Statement that "... no education system may rise above its teachers. The statement of Wu, Kaul and Sanker (2005) that effective teacher preparation is indispensable to the successful implementation of climate change curriculum, underscores the teachers role in this respect.

Furthermore, there is need to regularly up-date the knowledge and tools of teaching through re-training of teachers as being emphasized by the federal and state governments. Suffice it to say that as this approach begins to gather momentum and wide acceptability, it would in no small way; re-invigorate interest in the concept, philosophy and purpose of in-service education and re-training of teachers as a strategy towards effective teacher preparation. This strategy will improve the teachers' quality and performance.

What is In-Service Training?

In-service training has to do with such activities the teacher undertakes after his initial training and induction aimed at refreshing his professional knowledge and competence, likely needed for the discharge of his professional responsibilities. Siddique (2008) offers a very comprehensive meaning of in-service education and training thus: "All education and training which is received by teachers and other related personnel after joining an educational institution that further develops their knowledge and understanding in allied disciplines; enables them to play various roles effectively and meet their changing needs, aspirations and the demands of the systems".

With the clarification of the meaning of in-service education and training Siddiqui (2008) highlighted the importance of in-service training for teachers as follows:

- I. Indispensable and integral component of the entire process of teacher education.
- ii. Enhancing teacher's personal and professional needs and development.
- iii. Leads to effective teacher preparation and maximum pupil's growth and achievement
- iv. Widens teacher's scope of teaching and rekindles a positive attitude towards change
- v. Exposes the teacher to collaborative engagements to interactions that promote innovation and adoption of best practices in line with global trend.

Whereas, climate change curriculum is a new demand on education, the level of consciousness of practicing teachers on climate change will correspondingly rise as their professional competence and effectiveness is also up-dated in line with global trend and development. Against this rationale, in-service training for climate change will provide a platform for updating teacher's knowledge and competence in climate change as well as change in the long set habit of always doing it the "old school way" regardless of the changing world (Siddique, 2008).

Purpose of in-Service Training

The purpose of in-service training as a strategy for teacher preparation for climate change education will therefore include:

- i. To provide teachers with adequate professional training and skills on climate change so as to make teaching more effective.
- ii. Keep teacher abreast on new developments in curricular and pedagogy
- iii. To develop in teachers, skills and technique in information management and dissemination on climate change, disaster/risk reduction management and also expose them to ways of mitigating the effects.
- iv. To develop in teacher the right attitudes, character and competencies to respond to emerging national goals and programmes on the causes, and consequences of climate change especially in vulnerable flood prone areas like plains or low lying areas.
- v. To acquire basic skills and strategies that will create awareness in aim students, preparatory to their teaching career.

It must be re-iterated here that the aim of in-service training is to enhance professional as well as personal development of teachers. It is also premised on the recognition that the teacher is the wheelbase around which any educational system survives; as such he must be sensitized enough on the concept, impacts, causes and methods of mitigating the impact of climate change. As we examine in-service strategy for teacher preparation for climate change, the question one may ask is how is our teacher education programme tailored to produce the quality of teachers of our dream? Mkpa (2000) outlined four curricular issues from this question can be answered. They are:

- i. the limited place and position of NCE teachers in terms of performance, and with the new UBE, confined to the primary and at most junior secondary school teaching.
- ii. The controversy between possession of BA/B.Sc Education and BA/B.Sc plus PGDE as a more appropriate teacher programme certificate.
- iii. The debate between full-time and part-time/holiday programmes, etc

In applying the above to climate change, it is necessary to widen the scope and content of teacher preparation to give the teacher broad professional knowledge and subject content coverage. This according to Obanya (2004) will be achieved by either continuing with or phasing out the BA/B.Sc or B.Ed Teacher Education programme completely or relocating the programme from the Universities to Colleges of Education or National Teacher Institute in the same way the Lawyers and Medical Doctors undergo professional training in Nigerian Law School and the Teaching hospitals respectively. In other words teacher training

institutions should be repositioned so as to re-engineer Teacher Education to “attract the best brains” to the teaching profession as is the case in other professions. This will also take care of the wear and tear, which the education system usually experience (Onasanya 2012. Obanya 2004 and Mkpá 2000).

Conclusion

Our teacher preparatory institutions are not properly equipped towards preparing students to cope with emerging global problems in climate change. The products of these institutions are therefore not adequately equipped to face these emerging challenges. There is therefore need for effective teacher preparation strategies to be formulated. This can be achieved through constant retraining programmes that would update teachers in current methodologies, skills and techniques aimed at addressing societal problems in line with global trends.

Recommendation

Climate change has devastating consequences on the environment and socio-economic lives of people all over the globe. Its challenges call for its inclusion in the national education curriculum. It is however, noteworthy that the successful implantation of any curriculum depends on the quality of teachers. This implies that effective teacher preparation strategy is a *sin-quo-non* to the implementation of climate change curriculum in schools.

Presently, our teacher preparation institutions seem to lack the necessary facilities and personnel to implement climate change education curriculum. The products of these institutions are often times not adequately prepared to face the challenge posed by climate change. This could be attributed to the fact that climate change is a new concept that was not taught in schools; hence, “old school” teachers may lack the abilities and knowledge to handle the subject matter. In view of the identified problems confronting teacher preparation toward climate change curriculum implementation, this paper recommends the introduction of re-training programmes for teachers on climate change. This could be through workshops, seminars and conferences. The provision of instructional aids relating to climate change, its causes, impacts, mitigation, rehabilitation, risk management etc to the teacher preparatory institutions. This would go a long way to producing manpower to handle and transmit knowledge and skills required for tackling problems arising from climate maladies. Review of some subjects curriculum to include components of climate change. School subject like Geography, Economics, Integrated Science, Social Studies, Physics and Biology should have sub-themes in climate change. This would promote integrated approach in implementing climate change curriculum in Nigeria.

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