CURRICULUM REFORMS: ESSENTIAL TOOL FOR EFFECTIVE IMPLEMENTATION OF CLIMATE CHANGE ADAPTATION STRATEGIES

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ABSTRACT

Changes in the climate system are unequivocal. One of the strategies in dealing with climate change impacts is adaptation and this can be imparted through education. This paper asserts the significance of examining and reforming the current educational curriculum in developing countries so as to present climate change studies to learners at all levels. The idea requires attention of educationists, policy makers and community members to come up with a universal policy that promote climate change education as a lifelong process beginning at a tender age and continuing through all learning stages.

Key words: Climate change, education, curriculum

INTRODUCTION

Changes in the climate system are unequivocal and are to continue posing risks to human livelihoods and ecological systems (Amanchukwu et al., 2015; Matarira 2012; IPCC, 2013). Developing countries are likely to suffer greatest risks from adverse impacts of climate change due to poor resource base, low institutional capacities as well as over reliance on climate-dependent and sensitive sectors such as agriculture and forestry (Etim & Okey, 2015; Matarira, 2012, IPCC, 2013).

Climate change adaptation (CCA) reduces the impacts of climate change on human livelihoods and builds resilience while exploiting beneficial opportunities. Article 2 of the Paris Agreement (2015) emphasized the need to strengthen responses to climate change by increasing ability of communities to adapt. UNFCCC Article 6 (1992); UNESCO (2010); and Sustainable Development Goal 13 (2015) calls for the development of education and training programmes on climate change and its effects so as to have a well informed and enlightened world citizenry. The issue is how the entire world can be made aware and at what stage of human development should awareness programmes be initiated? Also how can humankind collaborate to bring about behavioural change which is essential for CCA?

Educating people from early stages of learning about climate change and its impacts is rationale in promoting responsible behaviour. The curriculum provides an educational framework which outlines the content, teaching strategies and learning experiences with expected outcomes and behavioural objectives (Lunenburg, 2011). In essence, the curriculum is an important tool in behavioural transformation and delivering climate change message to students who constitute the majority of the world population. However the current curriculum does not adequately address the issue of climate change. Hence there is need for reforms so as to improve the status quo and mainstream climate change education in the curriculum.

THE NEED FOR A CLIMATE CHANGE CURRICULUM

The science of climate change is well established and has been documented by a significant body of literature (Peer-reviewed journals, IPCC Assessment Reports

and other empirical works). This then justifies the need to incorporate the teaching of climate change in the curriculum at all learning stages.

Climate change impacts are intergenerational with projections spanning to 50 or more years using SRES emission scenarios (IPCC, 2000) and as such the curriculum should provide learners with the essential knowledge and skills on the matter as this will enable them to be able to deal with climate challenges they would encounter after completing their education.

Chakeredza et al. (2009) highlighted that education prepares an individual to become a functional member of the society. Incorporating and mainstreaming climate change in the education curriculum enable students to have a thorough understanding of the issue so as to effectively and efficiently participate in the promulgation and formulation of climate change policies. This also reduces resistance to and criticism on climate change.

In the context of Zimbabwe, analysis of the curriculum shows that climate-related issues are only taught in **Environmental Science** subject at primary level and in **Geography** and **Science** subjects at secondary level. In tertiary institutions, climate change issues are mostly taught in **Natural Sciences**. Consequently, students who do not take these subjects/ courses, lack the basic understanding and skills relevant to climate change adaptation. Therefore climate change curriculum at all levels should be inclusive not discriminatory.

There are existing education and awareness programmes facilitated by public and private organisations in learning institutions (In Zimbabwe, Environmental Management Agency and NGOs such as Practical Action and Environment Africa conducts awareness campaigns and facilitates establishment of school-based

climate change clubs). However these efforts are taken as "extra-curricular" activities and they are not examinable. This shows that climate change issues are being treated as "trivial" yet they should be core and mandatory in the education curriculum.

This paper asserts that climate change should be a lifelong process that starts at a tender age and continue through all learning stages. In addition, climate change education should be taught in compulsory subjects and explicitly included in the curriculum as a prerequisite to ensure that all students develop sufficient knowledge and skills essential for the creation of new patterns of behaviour towards the changing climate (Tbilisi declaration, Goal 3, 1977).

PROPOSALS FOR THE NEW CLIMATE CHANGE CURRICULUM

The curriculum must be directed on changing the mind-set of students towards climate change issues so as to enhance their adaptive capacities. An effective climate change curriculum should, *inter alia*, focus on socio-economic transformation and behavioural change; ensure climate change education for all; be holistic and interdisciplinary in nature; be consistent; and have clear assessment procedures for continual improvement (*see figure 1 showing proposed climate change framework*).

While acknowledging efforts by United Nations agencies such as UNICEF and UNESCO in promoting climate change education in educational institutions in developing countries through programmes such as *Environmental Education Resource Pack* (EERP), this paper is advocating that at primary and secondary levels of education, climate change education should be a subject on its own that

is examinable. In addition, climate change education at these levels should be mainstreamed and included across different compulsory subject areas so as to improve awareness of children and empower them to take charge of protecting the environment.

In tertiary institutions, the main thrust of curriculum reforms is to build professionals with appropriate knowledge and skills towards climate change issues so that they are able to participate in policy making and help their societies to adapt. This should not be a matter of the natural sciences alone as it is a cross-cutting issue that requires input of all academic disciplines. This paper is supporting the development of an ***issue-based curriculum*** (Musarurwa, 2012) since climate change is a real issue that is threatening human existence. Tertiary institutions must make use of the indigenous knowledge that the community possesses to further refine theory and contribute to the development of a body literature on climate change. This paper lobbies for the establishment of tertiary **climate change training institutions** that solely deals with climate change issues and management in developing countries. At regional level, the Pan-African University will be of great significance to this initiative.

RECOMMENDATIONS

- Set-up a task force to carry out educational assessments so as to review the content and identify gaps in education curriculum at all levels to incorporate climate change issues and produce relevant teaching material.
- Need to come up with a climate change *curriculum plan* with functions that include production of a level-specific climate change curriculum, means of

implementing the curriculum, sources of funding as well as evaluation procedures.

- The Global Partnership for Education can help to support training of teachers in climate change so that they develop relevant human capital and can interpret the content and adapts it to the local context. In addition, teachers by virtue of being implementers of the curriculum they should be involved in climate change curriculum development.
- Funding should be provided to tertiary institutions to carry out research in climate change so that there is generation of new information to be used in developing teaching resources.
- Continuously monitor, evaluate and reform the education curriculum to keep up with global trends
- Students should embark on school-based climate change projects. Innovative and participatory teaching methodologies should be utilised in teaching climate change so that it becomes interesting.

CONCLUSION

This paper outlines the need for mainstreaming climate change in the 21st century curriculum so as to strengthen people's knowledge, skills and ability to adapt. This paper emphasised the fact that climate change education should be a lifelong process starting at an early age and continuing through all learning stages so as to promote behavioural change and enhance resilience of communities.

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FIGURE 1: CLIMATE EDUCATION FRAMEWORK