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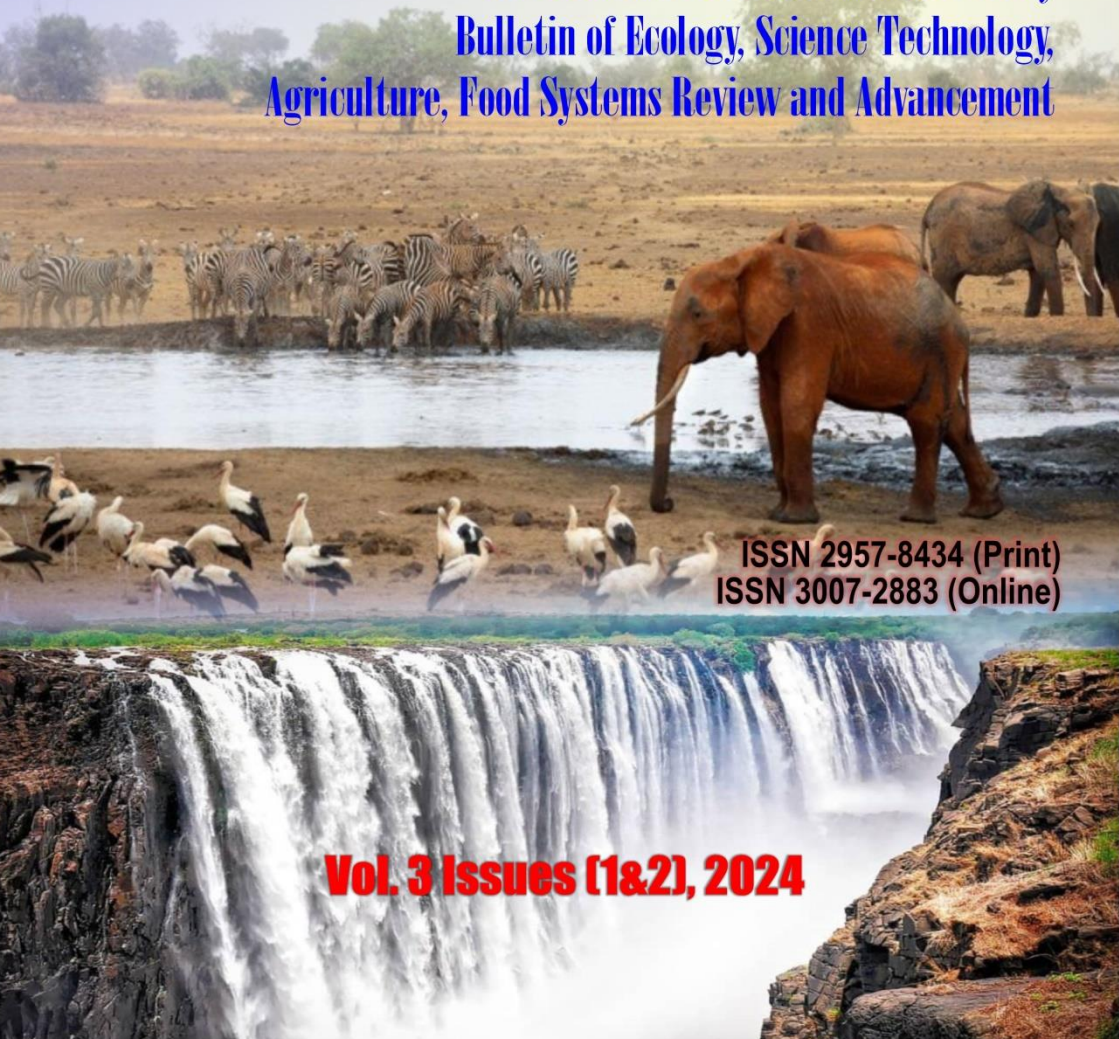
The Zimbabwe Ezekiel Guti University Bulletin of Ecology, Science Technology, Agriculture, Food Systems Review and Advancement



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The purpose of *the Oikos - The Zimbabwe Ezekiel Guti University Bulletin of Ecology, Science Technology, Agriculture and Food Systems Review and Advancement* is to provide a forum for scientific and technological solutions based on a systems approach and thinking as the bedrock of intervention.

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Natural scientists, engineering experts, technologists, multidisciplinary teams are encouraged.

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Unpacking climate-related Indigenous Knowledge integrated in the Advanced Level Geography curriculum

MACHAYA TRUST[1] LINAKE MANTHEKELENG[2] NSUBUGA YVONE[3]

Abstract

This article critically investigates the specific types of indigenous knowledge (IK) that teachers in selected schools in Gwanda District, Zimbabwe, integrate into climate change education (CCE) to teach Advanced Level Geography. The study adopted a qualitative approach embedded in a case study design. Convenient and purposeful sampling was used to select the two schools investigated, and the study participants consisted of one Geography district inspector and four Advanced Level geography teachers. The study reveal that the current curriculum superficially addresses the integration of IK with no specific IK linked to specific Geography areas. The article reveal the following major types of indigenous knowledge that were found to be integrated in climate change education in the two selected school: Observation of vegetation characteristics (type, shape, spacing, shedding on and off of leaves), Beliefs about celestial bodies (e.g. the sun, the moon and the stars) Beliefs about animals, birds and insects' behaviour and nature conservation practices. It was also reveal that teachers depend mainly on what they read in literature and what learners know about from their own home backgrounds. It was also reveal that there is lack of effective use of local area IK resource

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persons to assist teachers and learners within schools. This article recommends practical familiarisation of learners with local area IK in addition to what they read in literature. Furthermore, the education ministry must facilitate the provision of resource persons to help teachers with knowledge and additional literature on IK integration into the geography curriculum. This would help with more types of indigenous knowledge being integrated into climate change education in schools, and thus promote the heritage-based Education 5.0.

Keywords: *climate change education; climate change; indigenous knowledge; curriculum integration and heritage-based Education 5.0*

INTRODUCTION

Chapter 36 of Agenda 21, the blue print for sustainable development that came out of the 1992 Rio Summit, and various other succeeding global environmental treaties, have acknowledged education as an indispensable stratagem for addressing the world's environmental crises including climate change. Climate Change Education (CCE) is thus an education effort that seeks to safeguard that persons and societies appreciate the essential values of Earth's climate system and the effects of climate change (CC) to make informed and accountable decisions with regard to activities that may disturb climate and adaptation to CC. Current debates in education, including CCE, now include how indigenous knowledge (IK) can be effectively integrated to improve teaching and learning (UNESCO, 2015; O'Donoghue, Shava and Ngcoza, 2016). Kugara *et al* (2022) view IK as knowledge generated by a people in a particular societal context. Earlier, UNESCO (2017) argued that IK is the information and know-how amassed across generations, and transformed by each new generation, that guide human societies in their numerous exchanges with their surroundings. However, for a long time, the importance of IK in enhancing education quality and relevance is neglected (*ibid*.).

The integration of IK into the school curricula nurtures and expands learners' identities, preparing them for living in both the indigenous and the scientific worlds (Naido, 2021). It also gives a sense of stewardship to the environment for the indigenous people (IPCC, 2020) who become encouraged to actively participate in addressing CC issues as a result (Hiwasaki, Luna, Syamsidik and Shaw, 2014).

To date, indigenous knowledge (IK) has attracted an extensive sense of attention from researchers and education policy makers as a means of counteracting the hegemony of western knowledge systems, and improving the quality and relevance of curriculum content and pedagogical practice in developing countries (Dei, 2011; O'Donoghue *et al* (2016). IK is regarded as encompassing all forms of knowledge, technologies, know-how skills, practices and beliefs that enable communities to achieve stable sustainable livelihoods in their environment (Tanyanyiwa, 2019). Therefore, there is much support for the integration of IK into school curricula, especially into all forms of EE including CCE (O'Donoghue *et al*, 2016).

Whilst Zimbabwe lacks a specific legislation for the inclusion of IK in education System (Mpofu, 2004), several government policy issues and ideologies are consistent with the intent of inclusive education. An example is the Zimbabwe education Act (Education Act, 1996 and 2006) both that call for the inclusion of local knowledge in environmental issues. This has led to an increased literature on the inclusion of IK in Agriculture, Biology and Mathematics (Meyiwa, Letsekha, and Wiebesiek, 2013). Environmental Education (including CCE) was silent in school curriculum in Zimbabwe, before and soon after independence (UNESCO, 2001). When Zimbabwe gained membership in various international organisations especially the United Nations and its agencies such as UNESCO and UNICEF, there came the need for school curriculum reforms (UNESCO, 2001).

Although studies on the integration of IK into various school subjects are common in literature, those that focus on the specific types of IK integrated into CCE within localised communities remain relatively limited. Universities in Zimbabwe have adopted the Education 5.0 mantra with special interest in the heritage-based education. This being so, studies that have looked at how the feeder institutions lie high school have so far integrated this philosophy are limited. Moreover, the Zimbabwe Advanced Level Geography curriculum contains CC related topics such as Climatology, Hazardous Environment and Arid and Semi-Arid Environments (ZIMSEC A-Level Syllabus, 2013-2017; Government of Zimbabwe, 2014:59). Unfortunately, the Zimbabwe School Examinations Council (ZIMSEC) is silent on the specific IK that must be taught to address such syllabus requirements. The specific experiences of schools within localised community settings need to be further explored to understand how different schools address the requisite syllabus needs. Accordingly, the purpose of this study was to investigate the integration of indigenous knowledge (IK) into Climate Change Education (CCE) in the Advanced Level Geography Curriculum at selected high schools in the Gwanda North District of Zimbabwe. The specific objective was to investigate the types of IK that are being integrated into the Advanced level Geography curriculum.

STUDY DESIGN AND METHODOLOGY

The study utilised a predominantly qualitative design that was grounded in interpretive ontology. The interpretive approach yielded insights and understanding of behaviour, explain actions from the participants' perspective and was not dominated by statistical aspersions (Simui, 2018; Scotland, 2012). It was specifically about the experiences by the practitioners the advanced level Geography teachers. The use of a qualitative approach helped to generate in-depth understanding of human behaviour and the reasons that govern such behaviour (Almalki, 2016). Convenience and purposeful sampling

were used to select the study sites and the study participants, respectively. Two high schools coded School A and School B, were selected out of the six high schools within Gwanda North District. Four Advanced Level Geography teachers (two from each school), and the Gwanda North District Inspector for Geography coded as (R1). The participating teachers were coded T1, T2, T3, and T4. The small sample size of five participants gave the researcher a thorough study rather than a general examination.

A multiple-phase approach was adopted to fully understand the incorporation of IK in the teaching and learning of Geography. Figure 1 shows the methodical approach that was used to appreciate the use of IK by teachers.

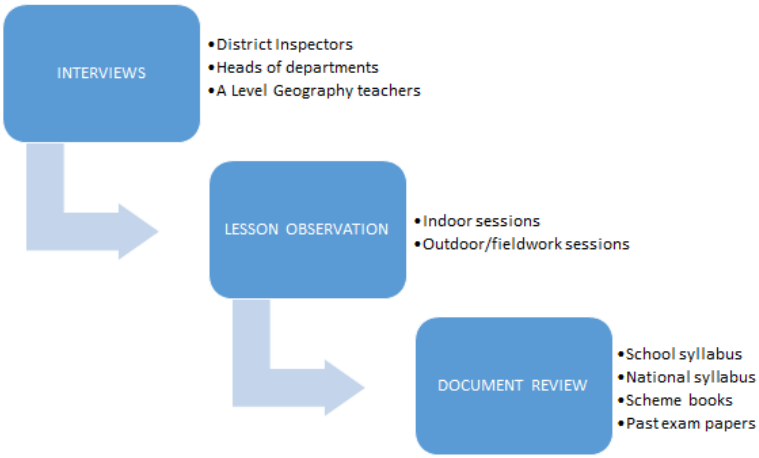

Figure 1. Fieldwork methodical approach used to study the implementation of IK in teaching and learning of A Level Geography

The use of interpretive methods such as interviews, lesson observations and document analysis helped to generate rich descriptions of the participants' experiences regarding the integration

of IK into CCE. To analyse primary and secondary documents helped to situate the content taught by the teachers against the national curriculum needs. The analysis of past exam papers also helped to deduce whether there was a need for teachers to do so based on the examination requirements. To analyse the data, an inductive approach based on Denscombe (2007) was used. The approach predominantly required in-depth reading of raw data to develop concepts and themes through interpretations made from the raw data as to allow research results to arise from recurrent, dominant, or significant themes innate to the raw data, without the restrictions imposed by structured methodologies.

FINDINGS

The views and perspectives of interviewed teachers were synthesised using a thematic content analysis and summarised as shown in table 1.

Table 1. Typology and attributes of IK used by Geography teachers at Advanced Level

IK Typology	Syllabus Segment	Explanatory Narratives
Beliefs about celestial bodies (e.g. the sun, the moon and the stars)	Climatology	The approaching rains can be predicted by a pool of clouds that surrounds the moon. In contrast, when the moon is full, traditionally we do not expect rain in the following couple of days or even weeks.
	Diseases	When the moon blocks the sun or the opposite (solar eclipse and the moon eclipse). It is believed that this scenario brings disease (blindness) to the community or worse bad omen, such as floods and drought.
	Weather prediction	The high intensity of the sun during the rainy season is used to predict whether the rains are coming or not. The stronger the intensity of the sun, the higher chances of the rain and vice versa.
	Weather prediction	If trees show some new leaves, it is a clear sign that rains are approaching. People can foretell whether rains be abundant in

Observation of vegetation characteristics		that particular year by observing the amount of fruits some types of trees have. For example, if trees like *muchakata (Parinari mobola)* bear many fruits, it is a sign of drought.
	Hydrology (water quality and quantity)	When surveying for water (dowsing), the elders use wet sticks of certain trees to indicate where there is water and as such would dig a well. The faster the stick bends, the shallower the depth of water. The presence of certain trees like the Fig tree, indicates the abundance of underground water storage.
Beliefs about animals, birds and insects behaviour	Weather prediction	When such animals as Antelope, Zebras reduce the number of calves that they give birth to, it shows the scarcity of pasture resulting from less rain. Likewise, humans must brace for impending dry weather conditions.
	Weather prediction	The presence of, plus the sounds made by certain birds [e.g. the secretive Secretary bird (Hwaya)] and certain animals signal the likelihood of heavy rains.
	Agriculture and season forecasting	Certain migratory only visit when the rains are above normal, that helps farmers on what crops to plant and also when to plant. When ants carry and stock their food, it is a sign to the farmer that a shortage of food is impending. White flying ants coming out of the holes signifies the onset of the rain season hence the time for planting.
Traditional sustainable farming practices.	Climate-smart agriculture	The adoption of mixed farming, intercropping, and zero tillage in managing their environment and to combat the effects of climate change in food production.
		The digging of holes during the dry season to conserve water, and the use of organic manure sustains crops during dry phases of the season.
		Animals such as the lion, elephant, zebra, buffalo, leopard, hyena, and crocodile are used as totems. One is not allowed to eat their totem, leading to the conservation of animal species that are

Nature conservation practices	Climate change mitigation and adaptation	threatened with extinction in the backdrop of climate change.
		Taboos form part of the environmental conservation initiative. Mountains such as Nyanga in Manicaland Province are sacred hence one is not supposed to go further up the mountain lest the person disappear. The use of cosmetics at sacred pools attracts retribution from river mermaids hence should be avoided, thus conserving water resources.
		Abominable behaviours such as unsanctioned sexual activities, forest religious activities like Christian baptism, tourism activities like photo shooting, disclosure of information of religious sites, and desecration of sacred places that are contrary to local cultural beliefs are a cultural endangerment. These should be avoided.

The study brings to the fore the fact that at the two schools that were investigated, traditional beliefs about the sun, moon and stars were integrated into CCE during Advanced Level Geography lessons. For example, Teacher 1 noted:

> When facilitating a topic on Climatology to the form fives, specifically on weather conditions and rainfall, I usually refer my learners to our traditional beliefs about observation of the celestial objects like the sun, the moon and the stars. The approaching rains can be predicted by a pool of clouds that surrounds the moon. In contrast, when the moon is full, traditionally we do not expect rains in the following couple of days or even weeks.

Teacher T2 had this to say:

> When teaching the form five IKS and diseases, I describe to the learners the situation where the moon blocks the sun or the opposite (solar eclipse and the moon eclipse). It is believed that this scenario brings disease (blindness) to the community or worse bad omen, such as floods and drought.

Teacher T3 explained:

> In teaching form five learners on weather prediction, I have always made reference to the intensity of the sun during the rainy season. Traditionally this can also be used to predict whether the rains are coming or not. I explain that we grew up knowing that the stronger the intensity of the sun, the higher chances of the rains. On the other hand, if the sun is less intense, traditionally, we expect no rains.

The analysis of Document D1 (T2's notes) also reveal reference to the traditional use of the position of celestial bodies to predict changes in weather patterns. It was stated thus:

> The terrestrial objects include: the sun, the moon and the stars. A mere look for example at the moon at night can reveal that rains are close. The approaching rains can be predicted by a pool of clouds that surrounds the moon.

In this study, reference was also made to celestial bodies and weather patterns in the assessment tasks that were set during the Geography lessons at the two schools. For example, one assignment task that was given to learners during Lesson observation LO2 stated:

> With reference to examples, assess the effectiveness of the use of terrestrial bodies in predicting weather.

At school B, as part of the Continuous Assessment Learning Area (CALA) learners were asked to:

> Compare and contrast the traditional and scientific methods of predicting weather in trying to adapt to CC effects.

Nevertheless, the article laments the failure by schools to utilise local area IKS whilst they dwell too much emphasis on what they read in literature. Reports from the interviewed school heads and education inspectors indicated that there are elderly persons in local communities who are rich with IK that falls within the context in which schools are located. However, the majority of the interviewed teachers reiterated that their failure to do so was linked to a broad

range of reasons that had to do with time constraints, limited financial resources and timetable challenges.

DISCUSSION

The use of IK by teachers in Gwanda District is not a new phenomenon. IK infusion by teachers is reported and hailed in many other studies. Manyanhaire and Chitura (2015) point out that before the arrival of modern scientific methods, rural communities relied on some types of faunas, birds, insects and floras to detect and react to changes in the atmospheric condition. However, with the coming of modernisation, these traditional methods of weather forecasting have increasingly been ignored (Risiro, Mashoko, Tshuma and Rurinda, 2012). The IIPFCC (2017) recognizes the need to strengthen knowledge, technologies, practices and efforts of local communities in addressing and responding to CC. As a result, IK is attracting increasing attention from researchers and policy makers in several places across the globe to alleviate the effects of CC in different ways.

The value of incorporating IK into formal education systems is advocated worldwide by scholars, national governments and leading global educational and environmental organisations such as UNESCO, and the IUCN (UNESCO, 2006). The fourth assessment of the Intergovernmental Panel on Climate Change (2007) prompted enhanced emphasis on CC adaptation, that goes along with improved attention on impacts and responses at the local, subnational and national levels, and on the involvement of IK. The integration provides a vital foundation for community-based CC adaptation strategies (Theodory, 2014; Hiwasaki, Luna, Syamsidik and Shaw, 2014; Raygorodetsky, 2011), thus helping to link the outside community with the school (Kagodo, 2009). Through the use of their IK, learners and local communities are able to interpret and respond to the impacts of CC in ingenious ways.

While indigenous knowledge systems were fused by teachers in a variety of syllabus sections, there are a wide range of other teaching and learning areas in which these were not utilised. Other findings have shown that contemporary EE / CCE processes in many of South Africa's schools are decontextualised, leading to learners being exposed mainly to the scientific worldview of the school curriculum (Shava, 2005). It is further observed that the addition of IK in education is mainly found in the Sciences (Van Damme and Neluvhalani, 2004; Asafo-Adjei, 2004). Whereas in the last few years, there is an explosion of interest in IK among environmental educators within Southern Africa, "not much that is tangible has materialized, and as yet, little is translated into curriculum perspectives and learning support material" (O'Donoghue and Neluvhalani, 2002: 123). This calls for a need to broaden the implementation of IK across all curriculum sections.

CONCLUSION AND RECOMMENDATIONS

The study investigated the types of IK that are integrated into CCE in the Advanced Level Geography curriculum and revealed five different types of IK. These fall into typologies based on beliefs about celestial bodies; observation of vegetation condition; beliefs about animals, birds and insects' behaviour; nature conservation practices and traditional sustainable farming practices. Teachers and learners mainly use IK from their places of origin and from literature. There is a limited utilisation of local community member representatives as resource persons to provide locally-based IK. Accordingly, the article makes the following recommendations:

- Geography educators should make use of local area IK resource persons to ensure that local area IK is pragmatically respected;
- Schools and the education ministries at large should create incentives for teachers to create space for the harnessing of IK for the benefit of learners;

- District and school-based inspectors should ensure that fieldwork plans stated by teachers in their schemes of work are practically executed.

REFERENCES

Almalki, S. (2016). Integrating Quantitative and Qualitative Data in Mixed Methods Research: Challenges and Benefits. *Journals of Education and Learning,* 5(3), 288-296.

Dei, G.J.S., 2011. Education and socialization in Ghana. *Creative Education, 2*(02), 96-105.

Denscombe, M. (2007). UK Health Policy and 'Underage'smokers: The Case for Smoking Cessation Services. *Health policy, 80(1), pp.69-76.*

Hiwasaki, L., Luna, E., Syamsidik. and Shaw, R. (2014). *Local and Indigenous Knowledge for Community Resilience: Hydro-meteorological Disaster Risk Reduction and Climate Change Adaptation in Coastal and Small Island Communities.* Jakarta, UNESCO.

IPCC.(2007). *IPCC (Intergovernmental Panel on Climate Change). 2007. Climate change 2007: The physical science basis: summary for policy makers.* [Online] Available at: http://www.ipcc.ch Accessed on 3 June 2010.

Kagodo, A. M. (2009). Integrating Appropriate IK in Aeography Lesson in Secondary Schools of Uganda.. *Current Research Journal of Social Sciences,* 1(3), 117-122.

Manyanhaire, I. O. AND Chitura, M. (2015). Integrating Indigenous Knowledge Systems into Climate Change Interpretation: Perspectives Relevant to Zimbabwe.. *Greener Journal of Educational Research,* 5(2), 027-036.

Meyiwa, T. and Letsekha, L. (2013). Masihambisane, Lesson Learnt Using Participatory Knowledge Research Approaches in a School-based Collaborative Project of the Eastern Cape. *South African Journal of Education, 33*(4), 1-10.

Mpofu, E. (2004). Learning through Inclusive Education: Practices with Students with Disabilities in Sub-Saharan Africa. In: C. de la Rey, L. Schwartz, & N. Duncan (eds.), Psychology: An introduction. *Journal of Psychology,* 361-371.

Naido. (2021). Integrating Indigenous Knowledge and Culturally Based Activities in South African Mathematics Classroom. *African Journal of Teacher Education, 10*(2), 17-36.

O'Donoghue, R., Shava, S. and Ngcoza, K. (2016). *Researching Learning at the Nexus of Re-appropriated Heritage Practices and the Science Curriculum: Paper Presented at the 24th Annual Conference of the Southern African Association for Research in Mathematics, Science and Technology Education (SAARMSTE).* Pretoria, Tswane University of Technology.

Risiro, J., Tshuma, T. D. and Basikiti, A. (2013). Indigenous Knowledge Systems and Environment Management. A Case Study of Zaka District, Masvingo Province, Zimbabwe. *International Journal of Academic Research in Progressive Education and Development., 2*(1), 65-71.

Shava, S. (2005). Research on Indigenous Knowledge and Its Application: A Case of Wild Food Plants of Zimbabwe. *Southern African Journal of Environmental Education,* 2273-2286.

Simui, F. (2018). *Lived Experiences of Students with Visual Impairments at Sim University In Zambia: A Hermeneutic Phenomenological Approach. PhD Dissertation.* s.l.: The University of Zambia..

Theodory, F. T. (2014). *Indigenous Knowledge as Base of Climate Change Adaptation: Perspectives from Communities Living Along the Ngono River Basin, Tanzania..* Boern: University of Boern.

UNESCO (2001). *Universal Declaration on Cultural Delivery..* [Online] Available at: http://www.refworld.org/docid/435cbcd64.html. Accessed on 1 March 2017.

UNESCO. (2006). *Strategy of Education for Sustainable Development in Sub-Saharan Africa.* UNESCO/BREDA., UNESCO Regional Office for Education in Africa.

UNESCO. (2015). *Education for all 2000-2015: Achievements and Challenges.* [Online] Available at: http://unesdoc.unesco.org/images/0023/002322/232205e.pdf. Accessed on 1 March 2017.

UNESCO. (2017). *1925-2015: A Ninety- year Quest for Excellence in Education. In progress Reflection March 2016, No 2. On Current and Critical Issues in Curriculum and Learning. What makes a Quality Curriculum? IBE- UNESCO/ 2016/WP/CD, June 2017.* s.l.:UNESCO.

Van Damme, L. S. and Neluvhalani, E. F. (2004). Indigenous Knowledge in Environmental Education Process: Perspectives on a Growing Research Arena. *Environmental Education Research, 10*, 353-370.

ZIMSEC. (2013). *Advanced Level Geography Syllabus 2013-2017,* Mount Pleasant, Government Printers.

ZIMSEC. 2015. *ZIMSEC Advanced Level Syllabus, 2015-2022* , Harare: Government of Zimbabwe.