CLIMATE CHANGE EDUCATION IN THE ERA OF SUSTAINABLE DEVELOPMENT: WHAT CAN UNIVERSITIES DO?

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ABSTRACT

Climate change is a topical issue. It presents problems in different dimensions and hence solving such problems needs a collaborative effort of all sectors of society. Universities are some of the institutions well positioned to solve problems related to climate change by virtue of them being generators of knowledge. They need a curriculum relevant to the changing nature of climate, so that they retain such relevance over time. Thus, this paper explores the concept of community engagement that is central to the universities involvement in climate change education. Communities are not only geographical, but also virtual and university – community engagement could take various forms thereby widening the university's influence. This paper discusses the possibility of adopting the issues based curriculum as a way of ensuring that Climate change is integrated, infused or mainstreamed into the University curriculum. However, it also recognises the need of universities to benefit from their relationship with communities through the adaptation of indigenous knowledge.

Keywords: Climate change; Education; Higher Education; Education for Sustainable Development; Curriculum

INTRODUCTION

The concept climate change remains one of the most talked about and at the same time meaning different things to different people. The IPCC views it as any change in climate over time, whether as a result of natural variability or human activity. The UNFCCC's view is more comprehensive since climate change is regarded as "change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods. Thus it is worthwhile to note that Climate change is fluid or is in a constant state of flux. It is a process that can be abrupt or long term. However although the earth's climate continues to vary for whatever reason, human society has always been trying to cope with such a phenomenon that is ever is a constant state of change.

"Climate change poses a risk to development and achievement of the Millennium Development Goals. It affects livelihoods, health and economic development. This implies that a country's adaptation response should be formulated as part of broader policies for development, including areas not directly related to climate change" (UNDP-UNEP 2011). This is because poor people are highly vulnerable to external shocks, such as droughts or floods that can damage or destroy crops, livestock, and homes. Poverty alleviation helps increase resilience to those shocks, for example by enabling investment in better land management to improve soils and helps mitigate against the adverse impacts of extreme weather events (UNDP-UNEP2011). Climate change has

social, economic and environmental impacts on human societies hence often enough; research into the impact of climate change has seen Universities getting involved. Since Universities are part of society, and they are there to serve Society, then "Universities and Communities should collaborate to fulfil the fundamental goal of knowledge creation, through the mutually beneficial exchange of knowledge and resources" (Carnegie Foundation, 2006 in Clayton 2008).

The University in and for the Community

Bloom et al (2005) in Yanda (2010) points out that higher education's ultimate goal is to provide solutions to development challenges and in Southern Africa, higher education is well placed to contribute to this process by virtue of its ability to create awareness through research and training. This makes it better placed in creating an awareness in climate change impacts and adaptation potentials. Since their evolution, Universities have assumed a tripartite function; teaching, research and community engagement, all of equal importance. The three are like cog wheels that rely on each other to turn and keep society in motion. Although teaching and research feed into each other, there has always been a danger of falling short to engage community and hence that translates to lack of relevance of higher education to society. It is only recently that community engagement is now regarded as the core goal of higher education (Mathews 2010). The same author argues that community engagement is more than just application of expert knowledge of University researchers, but that researchers and community members need to engage in a symbiotic relationship in which both will benefit. This is supported by Klein et al (2011) who affirm that community engagement is a mutually beneficial and integrated interaction between students, staff and their communities. This defines the relationship between modern university teaching and academic research. Yet as noted by Robertson and Bond (2005) the gap between the two has always been widening as research and teaching have been treated as separate entities. Hence universities have mistakenly been viewed as 'ivory towers' that is, isolated entities that are elitist in nature and disconnected from the places in which they are situated. (Klein et al 2011). Thus engaged scholarship remains the only viable option. Maybe this is a result of the fact that "community engagement is interpreted in different ways by different institutions and in different parts of the world." (Matthews 2010:4)

Another problem has been the myopic view of what a community is. In most cases, the concept community has always been associated with a geographical entity such as a country, village or city. Thus community engagement is always seen as giving back something to the geographical area or society in which the University is situated. However, Universities also serve virtual communities that exist as mental spaces. These communities can be formal or informal. Good examples are professional organisations representing Town Planners, Farmers unions, Industrialists, opinion leaders and so forth. They can also be communities based on interest such as conservationists. As long as these organizations are served by Universities, the University will be fulfilling its core mandate of community engagement.

Curriculum for climate change education

Climate change is inevitable and any society will experience climate change at one point or another. It brings with it a lot of risks and vulnerabilities and hence the need to mitigate and adapt. Since the major of society is development, it also follows that Universities would become relevant in society if they focus on Education for Sustainable Development (ESD). Sustainable development is incomplete without climate change mitigation and adaptation. This is the reason

why Colby et al., (2003) are convinced of using community – university engagement to develop social and cultural capital to ensure social and environmental justice through the use of effective citizenship education. Societies can reduce risks of damages from climate change through both mitigation and adaptation. Adaptation reduces the consequences of the magnitude of climate change by reducing society's sensitivity to climate change and increasing society's resilience to adverse effects. On the other hand mitigation primarily aims at reducing the risks associated with high levels of climate change and unacceptably high adaptation costs. Even though, the community still has to understand that both mitigation and adaptation have their own costs and these are hardly included in the education curriculum at any level including tertiary level (Swart and Raes 2007).Therefore the determination of society's risks and its cost to reduce them depends on how successful any society can be with mitigation and adaptation (Wilbanks 2003). In the final analysis the outcome of partnerships (between universities and the community) should be knowledge co-generation, and not knowledge transfer or any relationship that implies the transmission of information from 'expert' academics to 'lay' community members (Klein et al 2011).

Figure 1
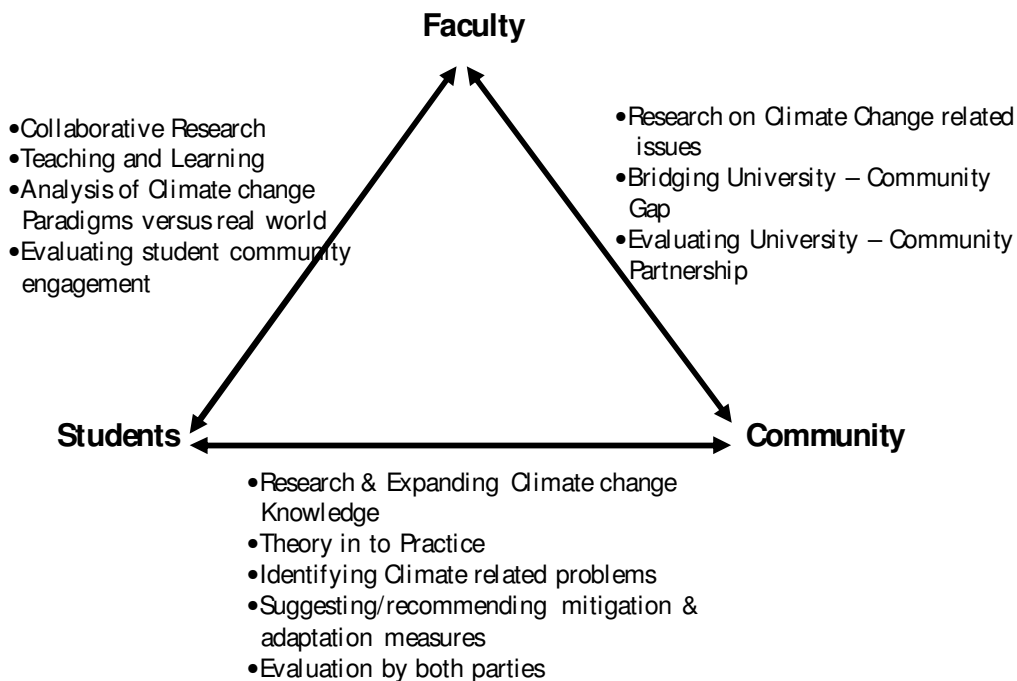
Going back to the idea that the concept community also refers to virtual communities, it also implies that University – Community engagement can take various forms as long as the University remains relevant to the society it operates from. Engagement can include service-based community projects, volunteer work, work-based learning, fieldwork activities, research collaborations, applied research, technical assistance, service learning, policy analysis, seminars and other exchanges of information. Figure explores the tripartite relation involving teaching students, guiding their research activities and solving problems pertaining to the local community. At any time, the stakeholders involved are linked to the other two within the triad and thus ensuring maximum exchange of ideas. Various communities have different views on the

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impact of climate change and hence different views on adaptation and mitigation strategies. The climate related challenges facing these communities provide the working areas through which the two entities could interact. Thus beside putting the theory into practice, students and staff can also take time to learn from the community to further guide and refine theory. Cyclic investigation involving identification of problems, suggesting solutions, trying them, evaluating and retrying becomes the norm.

A scenario of how a university can engage the community in issues involving climate change is summarised in Table 1. Climate change issues are varied and affect all sectors of society ranging from agriculture, health, tourism, power and so forth. Thus climate change has technical and socio – economic dimensions. Whilst floods could ensure a constant supply of water for power generation, they could be expensive for the communities affected and environmentally, there is the destuction of flora and fauna.

Table 1

Researching and teaching	Climate change related issues	Engaging the communities (*Technical, Socio – Economic dimensions*)
Nature of climate Change – e.g. Global warming) Adaption strategies Mitigation strategies	• Droughts and Floods • desertification • Loss of biodiversity • Inadequate clean/fresh water • Increase in the incidence of diseases/ expanding of disease belts – Malaria, cholera, • Declining food production – food shortages, rising prices, malnutrition, political instability etc • Power crisis – generation versus benefits - HEP & Thermal.	• Awareness campaigns • Community projects – dam building, irrigation, using alternative energy, immunisation • Scientific research on developing high yielding and resilient crops and animals • Capacity development • Publishing – in both scientific journals and local media • Collaborative generation of Adaptive strategies

Universities need to move away from cognitve based generation of knowledge to projects based application of knowledge like what happens in the USA. This would allow various University departments, faculties and students to engage in worthwhile research, apply their knowledge and solve problems within a given time frame. Engaging in community projects would attract funds internally and externally and would allow the institutions to document what really works within a given context or situation. This echoes what Makungwa (2010:78) says "the curricula, content, delivery methods, administrative procedures and institutional settings of the higher education must change and be directed towards teaching to change the mindesets of students. Climate change, being a complex problem, requires captivating thinking, which the higher education institutions must instil in their students, inorder to unveil the climate change problem. The current education system does not adequately provide such critical systems thinking" The Southern African region is drought prone and thus a continuous effort to develop drought resilient and high yielding varieties for varying degrees of aridity must be an ongoing effort. The region is also palgued with problems like dwindling power generation and increased power consumption, upsurge of resistant malaria strains, increased population versus decreasing food supplies, loss of biodiversity and all these have a climate change footprint. A projects based curriculum should be based on current issues and hence Universities should develop Issues based curricula.

Issues Based Curriculum

An issues based curriculum enables changes to be made on the curriculum inline with changing needs and circumstances of the society. In other words there is no need of some planned permanent curriculum, used by educators one year after another. The common practice in most African Universities at present is that studies are cognitive and content based.

Figure 2
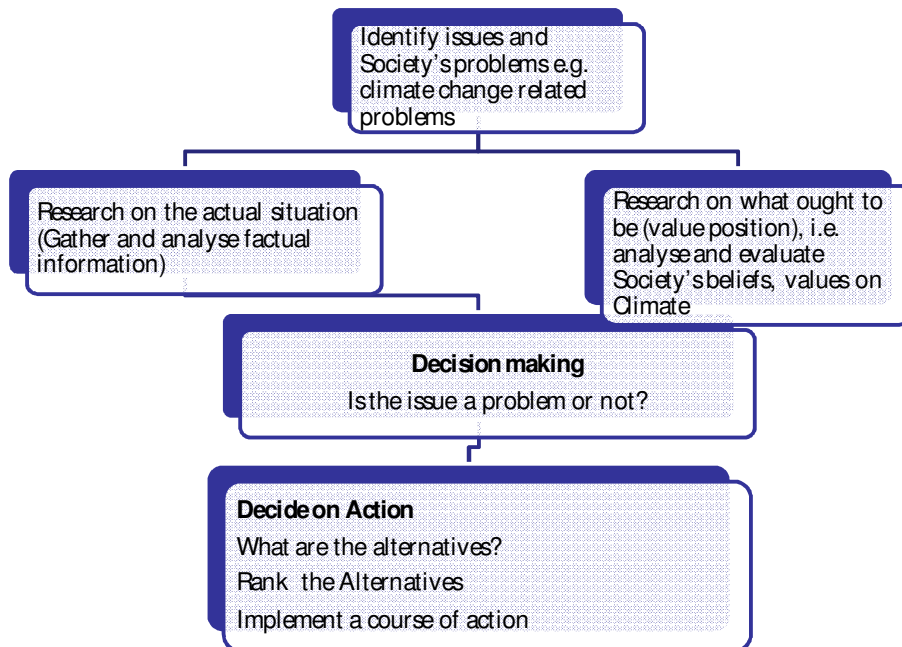
This makes application of knowledge to be overlooked and hence education remains irrelevant to the needs of society and communities at large. An issues based curriculum would allow University education to respond to needs of communities, to be problem solving oriented and aso benefit from the Indigenous Knowledge Systems (IKS) that many communities possess.

Figure 2 shows an issues based approach curriculum process. At the helm of the process are societal needs which, in the case of climate change would include identification of climate change related problems in society. Solving the problem is a product of research where the University researchers have to compare what ought to be vis-a-vis the actual situation on the ground. This calls for collaborative research between the university and society and hence the need of developing project driven curricula achievable within a given time frame and evaluated by both Universities and Communities. Climate related problems require an interdisciplinary approach since the problems are beyond the scope of any one discipline at University or sector in society (Hopkinson, Hughes and Layer 2008) It is possible that once a decision has been made to solve a climate related problem, several solutions are considered and the most effective course of action being adopted.

The Issues Based Curriculum is advantageous in the sense that it makes climate change education more relevant by addressing environmental and social concerns. It enables universities to shift from content to development of skills for example analysis, judgement, decision making & problem solving etc. Furthermore, since universities are focusing on issues, the curriculum can shift in response to the fluid nature of climate change. It ensures that the knowledge generated at institutions of higher learning is relevant and totally geared towards solving societal problems, some of which, if not most, are climate related.

CONCLUSION

Although universities are well placed to play a crucial role in ESD, particularly in climate change education, they still face some challenges. Makungwa (2010) notes that the current community engagement and collaborations are not sufficient to address the complexity of the climate change problem. Accelerated efforts and new forms of engagements and collabotions are required if SADC is to win the battle against climate change. Most of all, university researchers have to change their mindset so that they also tape the indigenous knowledge available in their comminities as well. This alone could as well create confidence in the local community and collaboration and ownership of climate change efforts. Probably the most biggest challenge hindering the teaching of climate change education, and may continue so for the fore seeable future is lack of expertise in climate change issues. Mazvimavi (2010) highlights that most of the teaching staff in universities trained before climate change became a recognisable problem that needed to be dealt with university teaching. Mazvimavi (2010) adds that the teaching of climate change issues, in some cases percieved to be the responsibility of meteorogists and climatologists. However, dispite all these problems, universities have a big role to play in climate change education. Climate change is a real problem that needs concrete and practical soultions from society, and universities are that arm of society that can generate solutions to solve its own problems. Universities will remain relevant as long as they focus on problem solving. This then justifies the use of the issues based curriculum to ensure that climate change issues are always on the agenda.

REFERENCES

Bednarz, S. W., Chalkley, B., Fletcher, S., Hay, I., Heron, E. L., Mohan, A. & Trafford, J. (2008): Community engagement for student learning in Geography, *Journal of Geography in Higher Education*, 32 (1), 87-100

Clayton, P. H. (2008) 4th Annual Symposium on Service Learning and Civic Engagement, Western Carolina University, June 2008 online
http://www.curricularengagement.com/resources/defs_re_engagement.pdf

Hopkinson, P. Hughes, P. and Layer, G. (2008) 'Sustainable graduates: linking formal, informal and campus curricula to embed education for sustainable development in the student learning experience', *Environmental Education Research*, 14: 4, 435 — 454

IPCC. (2001) *Climate Change 2001: Impacts, Adaptation and Vulnerability*. Cambridge UK: Cambridge University Press

Klein, P., Munazza, F., McEwen, L., Moser, S.C., Schmidt, D., Zupan, S., (2011): Dismantling the ivory tower: engaging geographers in University – community partnerships, *Journal of Geography in Higher Education*, 35(3), 425-444

Makungwa, S., (2010). Adaptation, agriculture and food security. *Climate change, adaptation and higher education: securing our future. SARUA leadership dialogue series* 2 (4), 68 – 79

Mazvimavi, D., (2010) Climate change, water availability and supply. *Climate change, adaptation and higher education: securing our future. SARUA leadership dialogue series* 2 (4), 81 – 100

Matthews, S., (2010) Teaching and researching Africa in an 'Engaged' Way: The Possibilities and Limitations of 'Community Engagement' *JHEA/RESA* 8 (1), 1 – 21

Robertson, J. and Bond, C., (2005). The research/teaching relation: a view from the 'edge' *Higher Education*, Vol. 50, No. 3 pp. 509-535

Swart, R, & Raes, F. (2007): Making integration of adaptation and mitigation work: mainstreaming into sustainable development policies?, *Climate Policy*, 7 (4), 288-303

Wilbanks, T.J., Kane, S.M., Leiby,P. N., Perlack, R. D., Settle, C., Shogren, J. F. & Smith, J. B. (2003): Possible responses to global climate change: integrating mitigation and adaptation, environment: *Science and Policy for Sustainable Development*, 45 (5) 28-38

Yanda, P., Z. (2010) Climate change impacts, vulnerability and adaptation in Southern Africa. *Climate change, adaptation and higher education: securing our future. SARUA leadership dialogue series* 2 (4), 11 – 29