

PREPARATION OF TEACHERS IN TEACHER EDUCATION

*Njuguna J. Mwangi, Moi University,
email: njugus.m@gmail.com, Phone No. 0727655491*

Abstract

In the introduction of this paper, it evaluates the current situation in teacher education, which currently has been in a state of uncertainty and turmoil due to the current state of poor performance in majority of schools. The situation has deteriorated due to increased poor performance in most schools. Sadly, teachers carry all the blame on poor performance and hence pressurizing them to remedy the situation. The only possible way out is to upgrade teachers education so that prospective teachers possess adequate skills and innovative strategies to incorporate in teaching and learning activities. Neither the learning institutions providing teacher education nor the government seems to prioritize teacher education. Moreover, teaching mission and purpose is not valued in many institutions. In the subsequent chapter that forms the body of the research paper, focuses on ideologies and strategies that ought to be inaugurated in teacher education for sustainable development in education. To start with, the paper focuses on the need of teacher education institutions to prioritize need for effective teaching and

having qualified teachers in the institutions should be open to the society and stakeholders in teacher education to bring reforms in the system. In addition, the paper

points out the need for emphasis of teacher education by learning institution and the government. The resources allocated for teacher education should be targeted to teacher education instead of generalizing it to education sector. Moreover, teacher education institutions and schools ought to collaborate in order to facilitate teacher education. Therefore, universities and teacher training

institutes will be a major stakeholder in schools, a strategy that will blend teacher education with innovations. Furthermore, due to emergence of new ideas, like in other faculties, education sector should not lag behind in providing teachers with new ideologies that will enhance innovations in education. In its conclusion, the paper recommends for reforms in teacher education where they should be undergo Teachers' Quality Preparedness Program.

This program is stratified to enhance circumstances in education and improve the situation regardless of the situation. This will be a perfect approach that will improve our education system to meet international education standards.

Introduction

Sustainable development refers to “the developments that meet the needs of the present, without compromising the ability of the future generations to meet their own needs.” Therefore education for sustainable requires preparing prospective teachers

with knowledge and skills to implement sustainability curriculum and practices in classrooms. According to Makrakis and Kostoulas-Makrakis (2012), teachers are ideally positioned to give students an active voice and promote responsible citizenry, therefore situating teacher education for sustainability as an ideal intervention point for transformative change. Unfortunately, Kenyan education programs and teacher training programs focus on declarative knowledge (Cutts, Saltz, and Elser, 2008), while neglecting the social components of and Ots, 2008).

The research presented in this article explicitly focused on behaviour change as an intended outcome of sustainability education. Lukk et al., (2008) argues that the sustainability in teachers' education depends on decisions made by individuals and groups regarding behaviours in an attempt to target behaviour change as a part of sustainability initiatives. Although teacher education for sustainable development has been a relatively new field, education has behaviour change, that is, comprises of health, drug, and anti-violence programmes. Furthermore, environmental education programmes have attempted to foster environmentally responsible behaviours for decades (Arbuthnot, 1977; Hungerford and Volk

O'Connor, 2000). The field of environmental precedence for targeting behaviour change through education as well as insights into successful pedagogical approaches.

A re-orientation of teaching and learning practices towards transformative pedagogy is often called as the most needed to make an impact on people's lifestyles and behaviours and help build a sustainable future (Sterling, 2001). Transformative and critical constructivist learning inherent in radical views of sustainable education is a shift of consciousness that can

Problem Statement

It has been a widespread belief by educational economists that education plays a significant role in accelerating development. Education has a significant role in greater equality of opportunity, availability of skilled human power,

decline in population growth, long life, better health outcomes, low crime rates, national unity and political stability. This has made governments and individuals to invest immensely in education. In the Kenyan education sector, the government has made policies in the past, formulated long lasting objectives, introducing reforms to improve education sector and intensively invested in the sector. However, there has been relatively less development in Kenya compared to other nations. Many scholars have argued that provision of quality education leads to both social and economic development in a country. Therefore, a general question is posed to Kenyan case whether education provided is of high quality or something else ought to be done to improve the situation.

The government of Kenya emphasized on education expansion that took place during the post-independence period and was complimented by an increasing priority accorded to programmes of quality improvement in education and have been closely linked to Kenya's evolutionary, reformative and developmental process since independence, according to Eshiwani, curriculum reforms played a pivotal role in directing the expected quality of development in Kenya. Major innovations were introduced in the curriculum namely: the new mathematics, agricultural, industrial and science education Project for Africa (SEPA), the SPP Nuffield-based Primary approach among others. These curriculum efforts unfortunately

did not bring about desired quality in the education system. They failed to respond to the problems of low quality curriculum materials, irrelevant content and inappropriate instructional approaches and contributed decimally development.

Close examination of educational reviews that have been undertaken in Kenya in the post-colonial period also indicate that they have operated under the framework of the country's national goals. The goals of Kenyan education enunciate an answer to the question earlier posed on the purpose or function of Kenyan education today. By any standards Kenyan educational goals and objectives as formulated in numerous reports and commissions are of high quality. If this is so, how comes they have not brought much development to Kenya over the years as earlier envisaged? Apparently, the quality of educational goals and objectives is not reflected in educational practice theory and practice. A cursory glance at schooling in Kenya today shows that educational practice suffers ch the diploma disease four decades ago (Anderson, 2012). Both the formal curriculum and its objectives are intentionally subverted in order to give way to an entirely new curriculum, an informal curriculum, overtly meant to guarantee success in examination.

The sole criterion of educational quality, it appears, is high performance in national examinations. Whatever various education commissions and reports have stated about the importance of attitudes and values of practical skills and an all-round development is conveniently forgotten and is rather crudely replaced by a very opportunistic theory of education. As a result, we may speak of two distinct educational theories, one idealistic and another opportunistic, existing side by side. But only the second is put into practice, the first remains for bureaucratic and political purposes. Given the predominance of this instrumental theory of education, and its subsequent practice, we cannot fail to observe a number of problems. One most noticeable is that the widely acclaimed (informal) theory of education and the practice thereof has given rise to false expectations. Due to this educational approach, presently schooling in Kenya is taken to be kind of ritual through which learners must honourably pass if they are to succeed in life. Schools are widely used as chief means of sifting each generation into those who get the prize jobs and those who don't (Anderson, 2012). This selective

function tends to dominate, if not obliterate, the school's basic function of providing education that is supposed to lead to societal development.

It is important to note that in post-independence Kenya there has been a lot of political interference in the education reform process and the larger educational policy making. Some of the educational initiatives that illustrate political interference in Kenya's education sector include presidential decrees on: Harambee school system, free education, school milk programme, quota system, 8-4-4 system of education, model schools, the National Youth Service and higher education. Many of these initiatives according to Amutabi were introduced with little or no input from various relevant stakeholders and were undertaken as responses to certain pressures and crises to wade off public concern. It is no wonder then that many of their reports were discarded immediately the crises waned (Anderson, 2012).

Because of political interference in the education process, policy environment has been characterized by lack of popular consultation, with decrees, circulars and political rhetoric replacing policy-making apparatus. The education sector has been the most affected in this regard. This over the years has initiated uneasy relationship between the political establishment and various educational stakeholders in Kenya and has had a negative impact on policy formulation and implementation of educational programs (Anderson, 2012). It is a trend that requires re-thinking if education has to spearhead national development.

Despite heavy investment in education by the government and various players, the corresponding educational indicators in school participation and achievement have been on the decline signifying limited returns on investment. Some of the critical challenges facing the education system include: declining enrolment and participation rates; low transition rates; declining gross enrolment rates at the secondary school; widening gender and regional disparities particularly in the Arid and Semi-Arid Lands (ASAL); declining quality and relevance of education; the rise in the costs of education and training; under-enrolment of the handicapped and gifted students; inefficiency, poor govern structures and institutions.

In order to address these challenges, this paper contends that teachers' education ought to be enhanced. Enhancement of teachers' education is

perceived as a vital aspect in initiating innovation to learners who ought to give back to the society. They should be able to apply their general skills of work planning and organising, consulting and assisting, teaching, managing, administrating, researching, working out and implementing innovations. Moreover, teacher education ought to propel teachers to be researchers in order to enhance their skills in planning, action, observation and reflection (Lewin, 1946/1948; K

Kemmis and McTaggart, 1982). Research experience among teachers education should confirms opportunit of research activities among prospective teachers creating a personal view

on sustainable self-development and

2007). This indicates an opportunity to apply the structure of participatory action research for developing an organizational scheme for students' independent professional activity formation

Therefore, paper intends to propel sustainable development through enhancing teachers' education. This will make Kenya a global competitive and prosperous country with high quality life that complies with set goals of education. Improving teachers' education is a perfect strategy to transform Kenya into a newly – industrializing, middle income country providing a high quality of life to all its citizens in a clean and secure environment. However, there has been little emphasis on the role of education in enabling Kenya become a medium size industrialized nation. In order to achieve sustainable development in Kenya, the role of education in the development require

Objectives

In order to have a comprehensive coverage of teachers' education system in Kenya, the objectives of this paper are:

- Analyse the extent to which to which teachers' education in Kenya prepares prospective teachers to be innovative. That is, how teachers are prepared in the teaching career in areas such as solving issues emanating from the students or in their profession.
- Find out the effectiveness and eff students' motivation.
- Determined students' improved performance in their academics as well as coming up with innovations in their area of their studies.

- Assess quality of teachers' education in Kenya through teachers' ability to transform society using education gained in training institutes.

Literature review

Introduction

There are two major forces shaping and driving education in the last two decades. These are the shift from instructivism to constructivism and the quest for re-orienting teacher education for sustainability. UNESCO (2005), as the lead agency spearheading the United Nations Decade of Education for Sustainable Development for Sustainable Development as the promotion of values and ethics through education at different levels to make an impact on people's lifestyles and behaviours and help build a sustainable future. Education for sustainable development is more than just environmental education; it encompasses values and attitudinal changes, as well as environmental, economic and socio-cultural perspectives. However, discourse over the meaning of sustainability uncovers its complexity, multidimensionality and contextual relevance. Two contrasting meanings often debated refer to mainstream and radical paradigms (Webster, 2001; Huckle, 2006). The dominant or mainstream meaning of the term represents a reformist orientation and seeks to balance economic growth with social welfare and environmental protection. It obscures the need to develop the economy or society within ecological limits and fosters reductionist rather than holistic or systemic thinking. The radical view in contrast generates economic welfare and social justice within ecological limits. Although these two paradigms simplify the complex, multidimensional and contextual relevance surrounding debates on sustainable development, they do help to see the different pedagogical perspectives underpinned by each one. The radical view of sustainable development asks for an education that integrates reflective, systemic, e transformative thinking, while the reformist view is being framed within the instructivist and moderate constructivist pedagogy.

Theoretical Orientation

Teacher education for sustainable development is an essential aspect of changing social environment, inconsistency and even discrepancy of

political decisions that reduce teachers' motivation, feeling of safety and confidence about the sustainability survey, this has a negative impact on graduates' desire to work in the teacher's specialty. The main reasons are students' unconvincing attitude towards the correspondence between the chosen profession and their interests, concerns about insufficient independent pedagogical activity, as well as the high level of work quality and responsibility demanded from a teacher combined with the low prestige of the profession.

The issues related to knowledge-based society and sustainable education are especially essential in teacher training. They determine an objective need to explore the opportunities how students can realise independent professional activity during their pedagogical practice in the context of responsibility, professional knowledge and skills, as well as self-awareness improvement. Special attention should be paid to a purposefully organized student-oriented pedagogical process that brings studies closer to professional activity.

Theoretical Framework

Transformative learning theory

Transformative learning refers to transforming a problematic frame of reference to make it more dependable by generating opinions and interactions that are more justifiable. It refers to the process 'by which perspectives, habits of mind, mind-sets

transform are taken for granted in order to make them more inclusive' (Mezirow, 2000). Therefore, transformative learning involves generating a frame of reference that is more inclusive and dependable and how it implies on expanded consciousness and contextual reality of the learning situation. In this, Mezirow's view of transformative learning echoes others' similar views. In particular, it has some resonance with Freire's (1972) concept of conscientization within critical pedagogy discourse and emancipatory education circles. Both

Mezirow's and Freire's work are relevant for Transformative Learning that re-examines premises of thought, feelings and actions. It is a shift of consciousness that

dramatically and permanently alters our way of being in the world. Such a shift involves our understanding of ourselves and our self-location: our

relationships with other humans and with the natural world (Morrell and O'Connor, 2002).

Moreover, transformative learning involves a changing understanding of power relations, of body awareness, of the possibility of alternative approaches to living, and a 'sense of possibilities for social justice, peace and personal joy' (Morrell and O'Connor 2002). Importantly then, transformative learning implies both an inner and outer dimension, a shift in consciousness to embrace an extended sense of relationality.

Similarly, Reason (1995) suggests that it 'implies an experience of self much more fully in transaction with others and with the environment, a participatory self or participatory mind'. This is a useful concept in the idea that there are 'level of knowing' (Sterling, 2003), which is based on a systems view of thought. This helps illuminate the point that learning can involve and affect different levels of consciousness.

This model of nesting systems suggests that deeper perceptions and conceptions inform, influence and h and they, in turn, affect more everyday thoughts and actions. A second

point arising from this model is th may not be consciously recognised. Our assumptions are operative, but may lay largely unexamined. To give an illustration, Lawton (1989) suggests that:

Every statement that a teacher makes in a classroom is value-laden, connected with ideas about the purpose of education, probably connected with more general values and beliefs, and maybe with the purpose of life. So, it is with educational planners and curriculum developers, whether they realise it or not. (Lawton, 1989)

This model is valid both at the level of individual knowing and collective or cultural knowing. One of the important implications of this model is that it raises questions about learning. Whilst the word 'learning' tends to be used with the assumption that discussants generally share the same perception of what it means, therefore, it raises an important and often missed dimension: that we can learn at different levels of knowing and meaning.

Transformative learning is normally taken to mean learning which touches our deeper levels of knowing and meaning, and, by so doing,

then influences our more immediate perception, and action. At this point, it will be helpful to look at

Gregory Bateson's work on learning, which does much to clarify what transformative learning can imply. An illuminative theory was developed by Bateson from Whitehead and Russell's theory of logical types, and concerns levels of change and learning. Bateson distinguished three orders of learning and change, corresponding with increases in learning capacity, and these have been adopted variously by learning and change theorists, particularly in the field change (Argyris and Schön, 1996; Iso

First-order change refers to doing 'more of the same', that is, change within particular boundaries and without examining or changing the assumptions or values that inform what you are doing or thinking. In this sort of learning, meaning is assumed or given and relates primarily to the external objective world. Second change in thinking or in what you are doing as a result of examining

assumptions and values, and is about understanding the inner or subjective world. In this sort of learning, meaning is recognised and negotiated amongst those involved. Other terms which theorists use and which distinguish between these two levels are, respectively: basic learning and learning about learning; learning and meta-learning; and cognition and meta-cognition. This two-level model sounds very simple, but it makes a very important distinction and has some group interested in anything more distinction it is possible to see that most learning promoted in formal education in schools and higher educ being content-led and externally focussed, and often delivered through

transmissive pedagogies within a consensually accepted framework of values and purposes. It is concerned fundamentally with 'information transfer' – learning about things – and does not normally challenge the assumptions or beliefs of the learner. This is maintenance learning – adjustments or adaptations are made to keep things stable in the face of change; what Clark (1989) calls 'change within changelessness'. This is not of itself a 'bad thing' and may be perfectly valid in many teaching and learning situations; however, if the need for transformative learning is recognised by progressive education order teaching and learning is an obstacle to deeper change.

Second-order learning is more challenging and involves critically examining of learners and learning organisation, and if necessary changing, their beliefs, values and assumptions. Therefore, this learning experience can be said to be deeper. It is more the learner because it is challenge critically on learning and change that it generates an awareness and understanding that goes beyond that

level. Because of this, such learning is likely to be more permanent. In shorthand, and applied to organisation is often said to be about doing things better, that is, it is often concerned

with efficiency and effectiveness, to the institution. But it does not question the 'things', the activities and

the assumptions which lead to those activities. Second-order change – by contrast – is concerned with doing better things, that is, it raises questions of purpose and values; it asks 'ef

Such change involves bringing the assumptions to light that underlie first order learning, and critically values and ethics. It is important to state that some theorists use the term 'transformative learning' to describe experiences which might be said

to be equivalent to second order learning. For example, Cranton (2009) suggests that 'Exposure to alternatives encourages students to critically question their assumptions, beliefs, and values, and when this leads to a shift in the way they see themselves or things in the world, they have engaged in transformative learning.'

However, Bateson's model distinguished a third learning level, which may be said to be epistemic learning; that is, it involves a shift of epistemology or operative way of knowing and thinking that frames people's perception of, and interaction with, the world. This entails 'thinking about and evaluating the foundations of thought itself' (Bawden and Packham, 1993); the experience of seeing our worldview rather than seeing *with* our worldview so that we can be more open to and draw upon other views and possibilities. The case for transformative learning is that learning within paradigm does not change the paradigm, whereas learning that facilitates a fundamental recognition of paradigm and enables paradigmatic

reconstruction is by definition a third order change, is consistent with O'Sullivan's view of transformative

learning as a dramatic shift of consciousness. Similarly, many

commentators see this as involving perceptual change and coming to a transpersonal ethical and participative sensibility. In brief, an expansion of consciousness and a more relational or ecological way of seeing arises, inspiring different sets of values and practices. Indeed, it is important to state that, according to Bateson's theory and others' theories derived from the Bateson model, learning levels are seen as nested systems with higher order learning affecting levels below. Thus second order or meta-learning experience changes thinking whilst epistemic learning causes change in domains. Put more simply, as Fear et al. argue (2006), transformations in

the way things are done depend on transformations in the way things are understood – in the worldview or perspective assumptions that condition those understandings. Fear et al., (2006), suggest, while critical thinking and reflection is an essential prerequisite to occur, it is not by itself sufficient for sustainable and responsible action.

Empirical Review

A re-orientation of teaching and learning practices towards transformative pedagogy is often called as the most needed to make an impact on people's lifestyles and behaviours and help build a sustainable future (Sterling, 2001). Transformative and critical constructivist learning inherent in radical views of sustainable education is a shift of consciousness that can change one's unsustainable way of thinking, being and acting. Such a shift involves an understanding of one's self in the world; of relationships with other humans and the natural world; of the relations of power; of alternative approaches to living; and of the possibilities for social justice, peace and personal joy (O'Sullivan, 2003). A critical constructivist perspective of learning incorporates not only the notion of "social negotiation" which "recognises that thoughts, beliefs, perceptions and existing knowledge through interacting with other learners and with the world also an emancipatory conception of knowledge construction (Makrakis, 2004). In teaching and learning, the critical and emancipatory conception of knowledge construction underlies "Reflexivity involves more than reflection also involves reflecting on the broader shaping influences, asking questions

lies behind our understanding that (2005). It is a very powerful and useful principle that we should apply most of the time to the way we teach. Such a kind of transformative teaching practice is less evident in pedagogical frameworks to integrate curriculum, teaching and learning in ways that promote a radical view of ESD. Curricula are also usually decontextualised, focusing on knowledge for students (Makrakis and Kostoulas-Makrakis, 2005). These discrepancies seem to be not only an outcome of trends in curriculum development and teaching practice, but also of the misleading conception of constructivism as a homogeneous philosophy (Dancy and Henderson, 2007; Barak and Shakhman, 2008).

The view that constructivism is synonymous with approaches to teaching that are learner-centred based on the utilisation of previous knowledge is misleading. Constructivism may take many forms, even within one type. Broadly, constructivist pedagogy is one based on the principles of neo-positivist and interpretive pedagogy and the other on critical and emancipatory pedagogy. Emancipatory constructivism is best seen as a reaction to positivistic and interpretive conceptions of knowledge construction. Such an orientation merges knowledge with transformative action, which is highly needed for learning-based change, which in turn is considered essential for reorienting curricula and teaching methods to education for sustainability. It is time to explore across disciplines, sectors and cultures, seeking other models that might help us to engage in deep change towards sustainability (Wheeler, 2007). There is also a continuing pressure for curriculum changes involving broad-scale, cross-disciplinary reorganization to facilitate education for sustainability (Fien, 2002a, 2002b; Fien, 2003; Tilbury and Wortman, 2004). This article presents a case study that aims to enhance pre-service teachers' learning through the introduction of ESD teaching methods in an under-graduate level teaching methods course and attempts to answer the following questions.

How can we enable teachers to experience emancipatory education for sustainability knowledge construction? In other words, how can we enable teachers to deconstruct and reconstruct their personal theories and practices of teaching in more emancipatory ways? How can we construct a pedagogical environment in which teachers can experience the power

of constructing critical knowledge addressing issues of education for sustainability?

Towards a Theory of Sustainable Development

Current scientific discussions on start from more or less well-established disciplinary perspectives. A comprehensive and really trans-disciplinary view is mostly lacking and

therefore theoretical requirements of a paradigmatic concept of sustainable development are rarely fulfilled. Fr development can be seen as a macro-process (of the global system)

consisting of an unlimited number of micro-processes (of subsystems).

Both scales differ in their dynamic characteristics: the macro-process of sustainable development is by def unsustainability (originated by humankind) toward those of sustainability

(this, however, is not obligatory for each micro-process). The micro-processes fit given specific environ highly dynamic and even catastrophic scale. This means that although the micro-processes may be unsustainable

themselves, their results can contribute to sustainability on a higher scale.

This idea, well known in ecosystem research, has so far been widely neglected in discussions in other fi

Methodology

This research was conducted through a comprehensive literature review on education for sustainable environment. The information was collated from a checklist distributed to ESD stakeholders; an Internet and journals review of ESD activities in Kenya; site visits to RCEs, and Civil Society Organizations and the UN (UNESCO and UNEP). A draft report was circulated to stakeholder for input and a validation workshop was held, where the findings were presented an used to finalise this report.

The Status of ESD in Kenya

A wide range of ESD activities are taking place on the ground and are being led by the government, civil society organizations as well as indigenous communities. These activities are raising awareness, providing capacities and skills, and empowering people and communities to create more sustainable futures. In order to critically review the status of ESD

implementation in Kenya, it is imperative to use the ESD Implementation strategy as a mirror. The seven strategies are discussed as a gauge of the depth of activity implementation. An analysis is given at the end of each strategy.

Advocacy and vision building

The advocacy and vision building strategy advocates for an aggressive awareness campaigns for understanding root causes of unsustainable outcomes in social, environmental, cultural and economic ventures of development. The strategy also calls for awareness creation on the Kenyan population for living and working sustainably. On vision-building, the strategy roots for awareness to ref consciousness of individual actions and how they affect social interaction and production in the endeavour of development. To achieve nation-wide advocacy and vision building, the strategy prescribed three main activities.

Sensitize the public

The government, the private sector and civil society organizations working on ESD have strived to raise public awareness on sustainability and environmental issues using various media. The creation of RCEs have also help in sensitization of the public through a series of sensitization workshops supported by NEMA. There have been a number of workshops mainly in the form of training of trainers.

Produce materials for sensitization

A number of sensitization materials have also been produced. These include; the publication of ESD tool kits, periodic ESD newsletters, posters, brochures and factsheets, which are distributed for free to learners, teachers and other education-relevant stakeholders. With both technical and financial support fro Kit' has been developed.

Conduct awareness campaigns

Awareness creation has been mainly through national and international days. In 2010 NEMA carried public awareness campaigns World Wetlands Celebration at Naivasha, World Water day Celebrations at Mombasa, World Meteorological Day celebrations, Word Environment day held in the rift valley. UNEP is supporting the World Environment Day activities

in Kenya, which creates awareness on sustainable development issues. A number of civil society organizations have also sensitized the public, mainly through workshops. For example, Chanuka Express is an ESD mobile outreach programme, promoting sustainable development among youth. UNESCO supported the training of ESD Media Training Kit as a boot to awareness creation through media.

Analysis

In general the Kenyan populace are now more aware of sustainable development issues than during the beginning of the UN ESD decade. However, the advocacy and vision building activities implemented so far are not as prescribed in the strategy, where advocacy is to be central at all levels and by all stakeholders. The opportunity of making advocacy an educational process for thinking critically of the current and future circumstances has been missed. There is some evidence that primary stakeholders are maintaining some dialogue on ESD issues. However, there is lack of evidence for a common agenda and in lobbying for particular issues of sustainable development through responsible media and other learning processes committed to encouraging informed and active citizenry. While media is instrumental in any advocacy work, there is no evidence inofinvolvingaffirmativemedia. action

Consultation and ownership

The consultation and ownership strategy puts emphasis on consultation and participation in the formulation and planning processes of local and national initiatives and activities among stakeholders as a pre-requisite for ownership. The strategy prescribes consultation to include:

- Transparent and timely dispensations of information on policy proposals and budgetary provisions by the various sectors.
- Processes to solicit inputs from stakeholders into local, regional and national plans and initiatives.
- Legislative affirmation and commit
- Public awareness campaigns that invite feedback to the process and other ESD initiatives.
- Commissioning of research.

Two main activities have been proposed as a means of implementing the strategy;

Hold consultation meetings

There have been a number of consultation meetings both at national and RCE level. The consultation at national level led to the development of the implementation strategy and a draft national policy. At the RCE level, there is evidence that consultations with partners are an on-going process. See the RCE section for examples.

Draft policy discussion papers and MOUs

A number of consultations have led to the formulation of ESD policies, for example, JKUAT, and Pwani Universities have developed institution based ESD policies. There are also drafts for Kenya Institute of Education (KIE) and RCE Nyanza. Through consultation, a number of partnerships have been formed. However, their formations is loose, more often than not based on individuals and have no written MOUs. NEMA in collaboration with the Ministry of Environment and Mineral Resources has developed a draft National ESD Policy. The draft has been validated by stakeholders and is awaiting cabinet approval.

Conclusion

Scholars have identified a number of factors related to the possibility of campus-based research projects. It certainly appears that a large number of students are willing to be involved in practical on-site sustainability projects. The students constitute a vast repository of energy to carry out such projects. Among the constraints are those issues that would divert our attention and energy from such projects. These include an increasing preoccupation with basic skills testing at school level and regimes, for instance, league tabling that might replace teacher collaboration with competition.

One major constraint as far as students are concerned is time. As the students pointed out, the projects also need time and energy on the part of staff for their coordination. Staff knowledge and expertise also need to be called on to evaluate the merit of projects, both in the planning and in the assessment stages. Many of the projects need a budget, as they would require materials.

Occupational health and safety issues need to be considered as well. None of these issues is insurmountable and most currently exist in relation to one or another aspect of academics' work, such as asses trips. The budget issue could be just aesthetically, fiscally (a reduction and student morale and „ownership“, in a context where environmental concerns are assuming a higher profi

This paper have shed light on the f espoused views and, to a certain extent, the second one, in terms of espoused in-service views – many of the students observed the potential for these projects as preparation for school teaching. Undertaking these projects will expose these espoused views to the stark light of practical reality. A longitudinal study with students who undertake such projects will test the theory further and investigate effects on their subsequent teaching with regard to school-based projects, as well as their attitudes towards sustainability.

Recommendations

The following recommendations require stronger collaboration amongst researchers, NGOs, UN agencies, governments, networks, and civil society across the education and sustainable development communities to strengthen the evidence base on the most effective sustainable development measures through education and their impact at individual, school, and society levels:

- The development of a standardized framework of objectives, knowledge, skills, and measurable outcomes of learning for sustainable development is essential in order to evaluate what works and use that information to revise strategies and raise global awareness about what can and should be done through education to ensure sustainable development.
- Moreover, rigorous, evidence-based research on education as an effective tool for sustainable development, consumption, and lifestyles is needed. Moreover, the location of evidence-based research should be varied; most evidence-based studies have been carried out in Europe, and to a lesser extent the United States and Australia. In addition, more longitudinal studies are needed to

determine a correlation between positive behavior change and exposure to sustainable lifestyles and consumption education programs and activities. Future research should focus on what specific tools produce positive e and diverse settings.

- A myriad of education for sustainable development resource guides and policy toolkits exist; their use needs to be tracked and educational outcomes evaluated.

References

- Anderson, A. 2012. "Climate Change Education for Mitigation and Adaptation. *Journal of Education for Sustainable Development*.
- Argyris, C. and Schön, D. New, York: 1996. *Organis*
Addison Wesley.
- Bawden, R. and Packham, R., 1993. Systemic praxis in the education of the agricultural systems practitioner, *Systems Practice*, vol.6, pp.7-19.
- Cheong, I., 2005. Educating pre-service teachers for a sustainable environment. *Asia-Pacific Journal*(1),p. of *Teac* 97–110.
- Clark, M., 1989. *Ariadne's Thread – The Search for New Ways of Thinking*. Basingstoke, Macmillan.
- Dale, A., and Newman, L., 2005. Sustainable development, education and literacy. *International Journal of Sustainability in Higher Education*, 6(4), p. 351–362.
- Fear, F., Rosaen, C., Bawden, R. and Foster-Fishman, P., 2006. *Coming to Critical Engagement*. Maryland: University Press of America, Lanham.
- Freire, P., 1972. *Pedagogy of the Oppressed*. Harmondsworth: Penguin.
- Hill, S., Wilson, S., and Watson, K., 2004. Learning ecology: A new approach to learning and transforming ecological consciousness: experiences from social ecology in Australia. In E. Sullivan & M. Taylor (Eds.), *Learning toward an ecological consciousness: Selected transformative practices* (pp. 47–64). New York: Palgrave Macmillan.
- Ison, R. and Stowell, F., 2000. *Systems Practice for Managing Complexity, Systems Practice for Managing Complexity Network*, [Online]. Available at: <www.Firstpages.com/ukss/spmc> (Accessed: December 2010).
- Lawton, D., 1989. *Education, Culture and the National Curriculum*. London: Hodder & Stoughton.

- Mezirow, J. Taylor, E., and associates (2009). *Transformative learning in practice: Insights from community, workplace and higher education*. San Francisco: Jossey Bass.
- Mezirow, J., 2000. *Learning as Transformation: critical perspectives on a theory in progress*. San Francisco: Jossey Bass.
- Moore, J., 2005. Barriers and pathways to creating sustainability education programs: Policy, rhetoric and reality. *Environmental Education Research*, 11(5), p. 537–555.
- Morrell, A., and O'Connor, M., 2000. *Expanding the Boundaries of Transformative Learning: essays on theory and praxis*. New York: Palgrave Macmillan.
- Pearson, S., Honeywood, S., and O'Toole, M., 2005. Not yet learning for sustainability: The challenge of environmental education in a university. *International Research in Geography and Environmental Education*, 14(3), p. 173–186.
- Ramsden, P., 1992. *Learning to teach in higher education*. New York: Routledge.
- Reason, P., 1999. *Participation: consciousness and constitutions, paper for American Academy of Management Conference*, May 3-6 1995, CARPP, University of Bath.
- Scott, W., and Gough, S., 2007. Universities and sustainable development: The necessity for barriers to change. *Perspectives: Policy and Practice in Higher Education*, 11(4), p. 107–115.
- Sterling, S., 2003. *Whole Systems Thinking as a Basis for Paradigm Change in Education: explorations in the context of sustainability (PhD thesis)*. Bath: Centre for Research in Education and the Environment, University of Bath.
- Summers, M., Childs, A., and Corney, G., 2005. Education for sustainable development in initial teacher training: Issues for interdisciplinary collaboration. *Environmental Education Research*, 11(5), p. 623–647.
- UNESCO., 2004. *United Nations decade of education for a sustainable future: Draft international implementation scheme*. Paris: UNESCO.

Williams, M., 2004. Foreword, in: *See Change: learning and education for sustainability*, Wellington, New Zealand: Parliamentary Commission for the Environment.
