Environmental education practice in natural and social sciences in primary schools in Okahandja, Namibia

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Abstract
In the twenty-first century, learning and teaching at school must prepare young people to engage in a complex and dynamic world influenced by human activities and natural phenomenon. This research is based on a study carried out in selected senior primary, Grades 4-7 schools in Okahandja, Namibia. The research sought to explore the extent to which schools implement environmental education (EE) by focusing on teachers' and learners' knowledge of environmental issues, teaching and learning strategies, skills and attitudes needed to contribute to health of the environment; learning support materials/resources, extra-mural activities and the role of stakeholders. Wickenburg (2000) affirms that for substantial learning to take place, stakeholders should be actively engaged and establish local supportive structures for EE in schools. The research design was qualitative in approach. The methodology involved data collection methods such as interviews with teachers, focus group discussions with learners and interviews with local Environmental Health Practitioner (EHP). The research, among others, concluded that teachers and learners had knowledge of factual information about environmental learning topics such as ecosystem, pollution, deforestation, etc. in Natural Science and Health Education (NSHE), and Social Studies, Grades 4-7. However, teachers had sufficient knowledge of skills and attitudes needed to contribute to the health of the environment. Teachers indicated that they used class discussion and experiential teaching methodologies to teach EE. The research also disclosed a good parental and stakeholder involvement in school activities. Teachers were confident that environmental learning in natural and social sciences contributed to change in learners' lifestyles. The role of the local Municipal Town Council in school environmental learning was also, found to be inadequate.

Keywords: *environmental education, social and natural sciences, transformative learning, learning approaches, whole school approach to learning*

Introduction

Since independence in 1990, the Namibian government has given high priority to environmental concerns. Article 95 of the National Constitution (Government of the Republic of Namibia, 1990) refers to the promotion of the welfare of the people through sustainable use of resources. Namibia has ratified a number of international agreements concerning the environment, such as the Convention on Climate Change (1992), the Biological Diversity Convention (1992), Combating Desertification (1994) and the Basel Convention (1999) (Ministry of Environment and Tourism, 2008).

Namibia's Vision 2030 (GRN, 2004) identified sustainable development as an important national development strategy. The ESD Strategy for Namibia, 2009-2014 (Ministry of Education, 2008) aims to empower citizens to generate and take positive actions to improve the environment and society. The plan of implementation of the World Summit on Sustainable Development (WSSD) at Johannesburg (South Africa) in 2002 points out that education is essential to

support sustainable development (Jickling, 2005). In 2015, Namibia also signed the Sustainable Development Goals (SDGs): The Post 2015 Agenda (2015-2030), and goal 4 focuses on quality education for all.

According to Ministry of Education (2010), basic education for the future society should focus on atmospheric, land and water pollution, and reducing pollution from urban and industrial areas, ensure that farms and natural ecosystems are productive and sustainable socially, economically and ecologically. The social and natural science curriculum content, skills and values can contribute significantly towards achieving these objectives.

National research

At national level, many research studies on environmental education issues in Namibian schools have been undertaken since 2000. For example, in his study on Namibian schools, Kanyimba (2002) concluded in general that environmental learning revolves around the integration of knowledge dimensions with lack of integration of values and attitudes including action and skill dimension of the environment. This was echoed by Haindongo (2014) who found that the teaching of Biology in Namibia concentrated on cognitive information about the ecology. She further found that educators lacked professional development support to integrate sustainability issues.

In research, investigating how geography educators were implementing enquiry-based learning through fieldwork, Simasiku (2010), found that although educators engaged learners with enquiry-based fieldwork learning activities, the findings indicated that educators faced severe limitations in terms of integrating environmental learning into the Geography curriculum.

Regional research

On a regional level, Mukoni (2013) sought to establish whether environmental education has any transformative impact on the behaviour of secondary school educators and learners towards the environment through an assessment of their actions on the immediate school and the outer surroundings in Zimbabwe. The significant finding of Mukoni's study was that what was going on in schools was merely the 'greening' of the curriculum with a factual stance at the expense of action competencies. The study carried out in six primary schools in the Empangeni district in Kwazulu-Natal by Makhoba (2009) found that educators applied selective teaching of EE topics, preferring narrative teaching methods.

Conceptual framework

According to Pillbeam, Winter, Oelofse, and Zukulu (2000), the purpose of studying natural and social sciences in schools is to enable learners to explain processes, spatial patterns, make well informed judgements about changing environments and think critically and creatively about what it means to live sustainably. The broad curriculum policy advocates that upon completion of senior primary, learners should be able to relate the implication of scientific understanding to personal and social health, and the sustainable use of resources for future generations (Ministry of Education, 2010).

In southern Africa, there has been a shift in conceptualisation of 'environment' from ecology to include aspects of social, economic, political and biophysical (Ministry of Education, 2005). Ballantyne and Oelofse (1998) define EE as an education process dealing with the interrelationships among the natural world and its man-made surroundings; is experience based; is interdisciplinary in its approach; and is a continuous, lifelong process that provides the citizenry with basic knowledge and skills necessary to individually and collectively encourage positive actions for achieving and maintaining a sustainable balance between man and the environment.

One way to become environmentally literate was first suggested by an Australian educator, John Fien. He noted that this would involve: Learning ABOUT, IN/THROUGH or FOR environment. What are implications for this to a school life or learning in general?

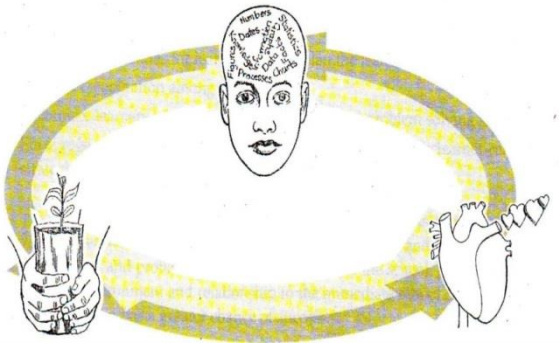
- Learning ABOUT the environment involves developing a sound base of knowledge with understanding so that learners can make sense of environmental issues. Knowledge with understanding about the environment enables learners to

critically evaluate issues and situations in light of the informed understanding (Palmer, 2003; Schnack & Jensen, 1997).

- Learning IN or THROUGH the environment provides experiences that play an essential part in learning, whether on school ground, in a city street, a beach, a park, farm or forest (Schnack & Jensen, 1997). Learners identify and explore environmental challenges. This approach provides opportunities to learn out – doors and enable learners to develop skills for data gathering such as observation, sketching, measuring, interpreting, photography, interviewing, including social skills such as cooperation and appreciation (Palmer, 2003; Schnack & Jensen, 1997).

- Learning FOR the environment involves developing informed concerns about and encouraging a sensitive use of the environment now, and in the future. The aim is to promote willingness to adopt life styles that are compatible with the wise use of natural resources (Schnack & Jensen, 1997). Education for environment may be located within the socially-critical traditions in education because of its concern for social critique and reconstruction.

The diagram below summarises three main areas of environmental learning.



Developing sensitivities and skills IN or THROUGH the environment.

The skills required to become 'active' and take appropriate action to address environmental issues.

Fostering values and attitudes that commit us to acting FOR the environment.

The values and attitudes that motivate and commit us to take action to change and improve the environment we live, learn and work in.

Figure 1: Adapted from Ministry of Education (2005, p. 11)

Wickenburg (2000) suggests that environmental behaviour is associated with components such as personality factors (attitudes, locus of control, efficacy perception, personal responsibility); knowledge of issues, knowledge of action strategies and action skills; intention to act; and situational factors (constraints and opportunities). Bornman (1997) argues that traditional philosophies (perennialism and existentialist) of education were replaced by contemporary philosophies such as progressivism and reconstruction. The emphasis is a shift from knowledge and information to problem solving and functioning in one's social environment. Wickenburg (2000) affirms that for substantial learning to take place, stakeholders should work actively and establish local supportive structures for EE in schools. Meanwhile, Duhn (2011) and Elliot (2010) believe that engagement of young children in environmental learning has been recognised as a key element in cultivating a potentially life-long disposition of care for the environment. It is argued that environmental issues are best learnt if they are relevant to the needs of the community; involve learner participation through encounter – dialogue and reflection

framework of action (Elliot, 2010). Meanwhile, UNESCO (2012) reminds us that education should increase capabilities to transform learners' vision into reality through motivation, justification and social support.

Research problem

Little is known about the extent to which Grades 4-7 Natural and Social Sciences (NSHE and Social Studies in particular) are contributing to environmental learning in senior primary schools in the Namibian curriculum. Despite the integration of EE in the Namibian basic education curriculum in 2005, questions remain regarding the extent to which environmental learning is organized and practiced at a school level. This means there is a lack of insight into learners' and teachers' knowledge of EE, learning processes, strategies and the extent to which the local environment and stakeholders are serving as resources. Teachers are expected to deal with practical issues and create an opportunity for learners to develop sustained environmentally responsive knowledge, skills and attitudes.

The successful implementation of environmental learning requires a re-orientation in the approaches to teaching and learning if teachers were to spearhead the process of change. Guidelines for teaching strategies and methods which emphasise learner empowerment in the process of learning and continuous assessment tasks are explained in the curriculum documents. Although learning support materials on environmental learning were produced and distributed to schools, it was important to understand how these materials had impacted on teachers and learners' perception of their environment, teaching and the learning process.

The research purpose

Based on the research problem, the purpose of the research was to determine how the social and natural science curriculum empower learners to become strongly engaged in their learning and to think critically about issues; and develop sustainable living practices. The paper assessed:

- the level of knowledge for environmental learning among senior primary school teachers and learners;
- the skills and values senior primary learners need in order to address environmental issues and concerns;
- various environmental related teaching and learning strategies applied in schools;
- the level of stakeholder support for environmental learning; and
- ways to strengthen environmental learning in schools.

Methodology

Research design and method

The research design is a qualitative approach. This study involved a number of detailed interviews and focus group discussions (qualitative) to obtain deeper explanation of information. The qualitative researchers do not narrowly focus on a specific question, but ponder the theoretical-philosophical paradigm in an inquisitive, open-ended process as they adopt a perspective (Neuman, 2006). This suggests that the research is in an interactive process in which steps blend into each other and a later step may stimulate reconsideration of a previous one. Qualitative research conforms to the constructivist view which holds that there are multiple versions of reality. The meaning is socially constructed during the process and it is conceived that there are multiple versions of truth and reality.

According to Merriam and Tisdell (2015) and Bogdan and Biklen (2007), the qualitative research methods look for patterns in the lives, actions and words of the people in the context of the study. Each participant in the study has brought a set of ideas, circumstances and perspectives to the study providing a variety of versions of the experiences from the schools. Bless, Higson-Smith, and Kagee (2006) and Miles, Huberman, and Saldana (2014) profess that the qualitative work and linguistic symbols are relied upon to provide meaning to the data. The researcher in this study wanted to understand the meaning people attach to their everyday lives and practices. The researcher found meaning as he analysed the data. The researcher must provide evidence of rich, detailed and textured descriptions to allow readers of the research to make connections between the ideas and their own experiences. This research, which is based on phenomenological study, draws from the experiences of teachers, learners and an

Environmental Health Practitioner (EHP) for a town under study.

Data collection

In order to gather data, multiple data collection instruments for teachers, learners and an EHP were used. Bogdan & Biklen (2007) claim, that qualitative data collection is more spontaneous and is in its natural environment or context. The instruments for this study were qualitative. The findings and analysis of the data were the result of triangulating the data from all instruments. According to Neuman (2006), triangulating data from the various instruments could be used to 'confirm' the findings and thus enhance their validity. In this study triangulation consists of data which comes from three perspectives: teachers, learners and an EHP. Neuman (2006) and Gay, Mills, and Airisian (2006) indicate that a pilot study makes it possible to do preliminary checks on the validity and reliability of questions. Instruments in this study were trial tested at a local school to determine if participants understood questions and amendments were made accordingly.

Sampling

The research population in this study were teachers for Social Studies and Natural Science and Health Education Grades 4-7, learners and local EE officials. In support, Neuman (2006) and Ruane (2005) highlight that the primary purpose of sampling is to collect specific cases that can clarify and deepen understanding so that the researcher learns about the processes of social life. The study was conducted in Okahandja town. Three (3) primary schools participated in the interviews and focus group discussions. Schools were chosen using the following criteria according to predominant social economic class of the local community in which they were located: lower income (informal settlement), middle income (former '*lokasie*' [township]), and the upper class.

Purposeful sampling method was used to target all teachers for Natural Science and Health Education, and Social Studies Grades 4-7 in all three participating primary schools. Teachers assisted in the identification of six learners at each school who participated in the focus group discussions while the EHP official who participated in the interview was the only participant with rich work-related practical experience on environmental education in the Town Council.

Data analysis

Analysis of data involves organising, breaking down, synthesising, searching for patterns and discovering new information (Bogdan & Biklen, 2007; Neuman, 2006). Qualitative researchers analyse data inductively by categorizing and organizing the data into patterns that produce a descriptive and narrative synthesis. In this study, transcripts of interviews were typed out and thoughts and ideas of each participant separately numbered. The statements of each participant were categorized. Statements were under headings specifying the ideas expressed and coded with respect to the themes. All data, once coded for each participant, were placed in a category depending on key words and phrases reflecting the content of the statement. Checks for triangulation of content among participants were performed along with an in-depth review of the researcher's decision, points and observations. Neuman (2006) defines triangulation as a strategy of looking at something from multiple points of view to improve accuracy. Finally, the data was analysed comprehensively by viewing the conclusions reached in a critical manner that openly confronted alternative interpretations.

Ethical considerations

The researcher had a duty not to put participants in a situation where they might be at risk of harm as a result of participation. Neuman (2006) and Bogdan and Beklin (2007) note that the researchers should protect the privacy and identity of participants. To that end, the researcher took the following specific steps to ensure that participants' privacy and rights were protected:

- informed consent was assured by allowing respondents sufficient knowledge and comprehension of the purpose and intentions of the study;
- protection of respondents was guaranteed through anonymity of participants in the study; and
- adherence to the actual audio recordings by either paraphrasing or using actual excerpts from these recordings supported the credibility.

Results and discussion

Knowledge and understanding of environmental learning

Ministry of Education (2010) and Palmer (2003) indicate that learners should develop knowledge with understanding in relation to the bio-physical and ecological processes in the environment; the impact of human activities; the environmental interdependence of living and non-living systems; how humans live and livelihoods are dependent on the environment particularly in context of limited resources and the danger of over-exploitation. The results from the teachers interviewed revealed that in NSHE they taught learners about ecosystems – the living and non-living things and how they interact. Environmental issues related to water dominated the teaching in senior primary phase. In addition, teachers had knowledge and taught about other environmental issues such as air and soil pollution, global warming, biodiversity in general and endangered plant and animal species in particular. In Social Studies Grade 7, they also taught about deforestation, natural disasters such as floods, drought, earthquakes, and primary health care issues including HIV and AIDS. One Grade 7 teacher from school B indicated how she/he taught HIV and AIDS which is a social aspect of the environment as follows:

I taught learners about HIV/AIDS in which we discussed about HIV transmission, how we could protect ourselves and, things we could do without infecting one another with HIV (e.g. hugging, swimming, eating together); and things which could lead to infections (sharing the use of needle/blade, unsafe sex, mother to baby) - myth and facts about HIV/AIDS. I also taught learners about other opportunistic infectious diseases such as Tuberculosis. Learners were also taught about nutrition e.g. balanced diets and food groups.

All teachers indicated to have acquired knowledge of environmental issues from schools and colleges of education they attended. They however, indicated that their knowledge for cross-curricular integration was inadequate. On the other hand, learners understood the environment as their surrounding which included air, water, land and the community in general. They revealed that their environment is damaged by pollution e.g. littering of plastic, papers, bottles and iron scraps which may harm animals and make the environment look unattractive. Learners persistently claimed that cutting down of trees was a serious problem irrespective of where schools were located. Reference was made to veld-fires, sewage water flowing from drains and human defecating in the open (bush) due to lack of latrines or flush toilets. Learners successfully illustrated the negative impacts of human activities on the natural environment. Asked on ways learners thought people were destroying the environment, one learner from school C explained as follows:

People were destroying our environment by cutting down of trees for firewood and building materials. People made the environment untidy with plastics, empty bottles and papers. People burned hips of rubbish causing air pollution which could lead people to get sick. Killing of wild animals was another problem.

Interestingly, learners from participating schools revealed the environmental problems prevalent near their schools by predominantly making references to pollution created by the mushrooming of shebeens (alcohol selling outlets) and burning of waste. A learner from school A illustrated the point as follows:

The most environmental problem was shebeens/ bars which made noise pollution and learners could not study or prepare properly for their school work.

Another learner from the school added that*: Sewage water from drainage pipes were flowing all over the place causing smelling stagnant water which may cause diseases.*

Skills and attitudes

It is argued by the Ministry of Education (2005), that NSHE and Social Studies should nurture skills for observation, investigation, experimentation and innovation. It goes on to elaborate that learners should achieve environmental literacy and show an appreciation for and knowledge of a range of environmental issues, perspectives and positions; and be taught how to think through an issue using critical-thinking skills. Generally, the results from data analysis of

interviews indicated that teachers understood the skills and attitudes which learners required in order to contribute to the health of the environment. Four (4) out of ten (10) teachers indicated that learners needed to have the foundational knowledge of environmental issues. Secondly, learners should have practical ability of how to keep the environment clean. One teacher from school A explained what skills and attitudes learners needed to have in order to contribute to the health of the environment as follows:

Learners should be able to have listening skills so that they could understand the impact of human on the environment from teachers, elders and the media. They should practice and implement what they learned and be able to appreciate the importance of all living and non-living things in the ecosystem.

A teacher from school B echoed as follows:
Learners should have practical ability of how to keep the environment clean, practice what they were taught e.g. planting of trees, using water sustainably (not to waste) and taking care of other resources.

The last teacher from school C summarized change in learners' attitudes after classroom instructions as follows:

When I taught learners on health issues related to body hygiene, I noticed that some of them learnt something and reflected a change in the ways they cleaned themselves including their clothes. There was a change in mind sets.

Teaching and learning

The extent to which teachers use adapted teaching strategies determines the successful implementation of environmental learning in schools. Learners should engage in educational processes based on democratic principles, promoting higher level of thinking and leading to actions. Various learning approaches suggesting learners' autonomy, innovation and active participation can be utilised in the context of a school or learning environment and goals to be achieved. These include teaching methods such as experiential learning, co-operative learning, problem solving, and value clarification methods (Olusegun, 2006).

The result of the interviews with a sample of teachers indicated that they used class discussion and experiential learning in which learners were involved in practical activities. One teacher described how he/she taught environmental issues using models as teaching aids as follows:

I used models and practical demonstrations e.g. on water purification by using sand soil filters and cleaning of water by boiling. When learners were learning soil erosion, I dug a hole around the school ground to indicate for learners to observe basic layers of the soil and we visited one of the local ephemeral rivers so that learners could see gullies for themselves.

Five (5) out of ten (10) teachers interviewed indicated to use information communications technology such as DVDs in classes and one teacher explained as follows:

I taught environmental related topics such as water pollution by making learners to observe on DvDs or analysed the posters with learners involved in group discussions based on an environmental topic and sources.

Large class size was cited as a challenge to implement learner-centred teaching approaches. Sitting arrangements (limited space) did not facilitate the use of group work. Only a limited number of teachers (3 out of 10) described teaching methods related to value clarification methods and problem solving.

The use of outdoor activities

The NSHE and Social Studies curriculum requires learners to do outdoor activities in order to observe, investigate and experiment. Outdoor activities provide learners with valuable experience in getting closer to nature and sensitising them on environmental issues in a systematic manner (Olusegun, 2006). Learning can be enhanced by concepts such as 'whole school approach' to learning where learners, teachers, local government and community members are brought together (UNESCO, 2014). This is in line with the framework for Agenda 21 which advocates partnership and where learners are encouraged to be involved in sustainable development at local level.

The results of the empirical study revealed that 6 out of 10 teachers used outdoor learning activities in which environmental experts from stakeholders on conservation, for example were used to guide learners and facilitate learning in the field. When asked on outdoor activities which learners carried out, one learner from school B explained as follows:

We used to participate in the Local Authority (Town Council) organised clean up campaigns. As learners we were taught and reminded of using the water resource and papers at school in a careful way.

The third school did not indicate exposing learners to outdoor activities except learner participation in cleaning campaigns which were 'not organised' learning opportunities.

Learning support materials and resources

The result of interviews with teachers indicated that they had fewer learning support materials to teach environmental issues. The school libraries and the internet service were sources for more environmental information for teachers. Two (2) teachers from one school reported to involve learners in construction of models used as teaching aids. One of the teachers explained as follows:

We requested learners to bring certain objects or models from home, for example, learners brought charcoal stoves to school for exhibition to enable other learners to observe what they learned from the textbook. Learners were once involved in construction of solar stoves using recommended material and demonstrated how it could be used for cooking or heating of water.

Extra-curricular activities and community support

Extra-curricular activities are aimed at supporting learning in a relaxed and informal atmosphere through out-of-school programmes. The concept for 'whole school approach' to learning provides opportunity to integrate environmental issues into daily aspects of school life (UNESCO, 2014; Ministry of Education, 2005).

The results of the interview with teachers from two participating schools indicated involvement in cultural activities using cultural groups and the learners were involved in the 'Window of Hope' and 'Girls and Goals' programmes for learners on life skills and HIV and AIDS education.

One teacher explained their extra-curricular activities as follows:

Learners competed in Science Fairs where they presented their innovative ideas on environmental topics. The Cheetah Conservation project from the Regional capital (Otjiwarongo) also used to take learners to the centre and taught them how human should live with predators like cheetah. The Ministry of Environment through forestry involved learners in tree planting activities during special days such as Arbor Day.

This suggests that schools were involved in extra-curricular activities of social dimension in nature. Collaboration between stakeholders (parents, Non-Governmental Organisations [NGOs] and the school) is paramount in expanding the delivery of environmental learning and it is conceived that cross-curricular programmes are better conducted with the local community. Overall, the results of interviews with teachers indicated better parental involvement across participating schools. This is supported by results of learners' focus group discussion referring to cleaning campaigns.

Changes in learners' lifestyles, attitudes and behaviours

Environmental learning is rooted in the understanding that learning should lead to sustained change in learners' mind-sets and meaning perspectives (Elliot, 2010). However the results from teachers' interviews indicated a conflicting picture. Two schools (located among the lower and middle income communities) observed moderate change in learners' lifestyles or attitudes as a result of environmental learning related lessons but teachers from the school located among the higher income communities reported major changes in learners' life styles and attitudes. One teacher from school B explained his/her observed change in learners' lifestyles as follows:

We have noticed how learners changed their lifestyles in ways they take care of the plants

and flowers at school. It means they understood the importance of plants. Learners also used cups we provided rather than drinking directly from the tap and the papers flying around the school were reduced because we emphasised on the use of dustbins.

During focus group discussion, learners indicated basic actions such as cleaning of yards, hand washing, etc. as ways they help improve the health of the environment at home.

The role of the local Environmental Health Officer (EHP) from the Town Council

The concept for 'whole school approach' to learning provides opportunities for stakeholders and local experts on environmental issues to participate in education of young people (Wickenburg, 2000).

The results of the empirical study with learners and teachers confirmed that the Town Council used to organise clean-up campaigns. Based on evidence from teachers, learners and the EHP, one can conclusively suggest that the role of the Town Council in local schools seemed to be limited to cleaning of the township. When asked how the office of the EHP in the town council promoted environmental education, the EHP officer explained as follows:

The schools fall under the Government Ministries. We were only responsible for solid waste management in town. The health inspectors were the ones responsible to inspect schools. The Town Council however, used to organise clean-up campaigns where schools participate.

Conclusion and recommendations

This research has contributed to a better understanding of teachers' and learners' knowledge and understanding of environmental concepts such as ecosystems, natural resources, pollution, erosion, deforestation, overgrazing, water cycle, community and sexual health, and how they teach to facilitate the development of skills and attitudes. Although the educators are overall confident that they know enough about environmental education issues and how to teach it, the study showed that there were some limitations in their actual knowledge and teaching skills. The majority of teachers (6 out of 10 teachers) indicated the use of local context and outdoor learning activities. Seven (7) out of ten (10) teachers considered their teaching as contributing to changes in learners' behaviours and actions. Stakeholder support through EHP can play a role to improve teachers' ability to let EE take place in a conducive way in the Social and Natural Sciences curriculum in Namibia. From this research, educators should:

- teach learners to view the environment in a holistic way focusing on all dimensions of environmental learning such as the biophysical, social, political and economic aspects. Learners should have basic understanding of the availability and use of resources at local level such as electricity, water, plants, etc.:

- encourage learners to be involved willingly in activities with actions which benefit their own health, others and the environment and show appreciation of nature, biodiversity and multi-cultural nature of our society;

- strengthen the use of investigation and modelling on school ground to expose learners to basic scientific methods in which they collect, analyse, interpret and present data on topics related to water use or litter;

- use the school site and local community to engage learners in authentic sustainability learning. These activities should be action-oriented, with learners exploring and designing responses to sustainability challenges of school and community significance (e.g. energy and water). Furthermore, an enthusiastic key person or group of persons is needed:

- utilise World and National Special Days related to the environment e.g. the Day of Biodiversity, World Heritage Day, World Environment Day, etc. These could be integrated in the school calendars;

- establish the learning environment promoting transformation. This involves

activities in which learners have equal opportunities to assume various roles, can become critically reflective, empathetic, good listeners and synthesise from different points of views; and

- strengthen the role of the local Environmental and Health Officer from the Town Council. The role should be diversified to include education and awareness programmes for communities including schools. A signal from the highest political level in the municipalities is needed.

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