

# **KENYA PRESCHOOL CURRICULUM ON ENVIRONMENTAL CONSERVATION BY YOUNG CHILDREN**

Jane C. Gatumu, Japheth Origa, Eunice Miringu  
School of Education, College of Education and External Studies, University of Nairobi

jcgatumu@yahoo.co.uk

## **ABSTRACT**

The study was done out of concern about global environmental degradation as a result of unsustainable use of available natural resources. It was based on the belief that environmental education (EE) enlightens an individual in terms of making informed decisions and responsible actions regarding utilization of the environment. More importantly, early childhood years are significant in imparting important values, attitudes and beliefs. An in-depth examination of a group of pre-school children was conducted through case study method using *ex post facto* design. The investigation was conducted through interviews and observation schedules for children aged 5-6 years, interview schedule and questionnaires for pre-school teachers, parents, school managers and curriculum developers and documentary analysis schedule. Findings indicated that the content, methods, learning/teaching activities and materials related to environmental conservation are not explicitly stated in the national pre-school syllabus. At the same time, teachers seem to lack innovativeness in terms of incorporating environmental conservation concepts in learning themes and activities. Consequently, children lack knowledge, skills and moral sense as well as a sustainable attitude regarding environmental conservation. There seemed to be no uniformity between activities done at home and those emphasized at school due to lack of collaboration between teachers and parents. Since pre-school children were not involved in local environmental issues means that they do not get the opportunity to understand their responsibilities as members of the community albeit in their own small way. The study recommends a review of the current pre-school curriculum and incorporation of appropriate concepts regarding environmental conservation and sustainable use of available natural resources.

**Keywords:** environmental conservation, sustainability ethics, natural resources, environmental education

## **NATURE OF THE PROBLEM**

There is increasing global concern regarding climate change which has resulted in many international agreements supported by scientific research. The United Nations Environmental Programme (UNEP) reports indicate that floods, drought, temperature increase and violent weather are the consequences of environmental degradation (UNEP, 2006). This has resulted from overstretching of the earth's support system through human activities that alter

sustainability of soils, atmosphere, oceans, vegetation, animal life and water supplies (Capra, 1996; Harding, 2006). Incidentally, African countries are more vulnerable to global warming and weather changes because of the high dependency on natural resources (World Bank, 2009). Nevertheless, Kenya National Environmental Management Authority (NEMA) reports indicate that destruction of forests to create room for agricultural activities and urbanization has been a major activity in Kenya (NEMA, 2009; UNEP, 2006).

Conservation and sustainability ethics focus on maintaining harmony between human beings and nature (Ogutu, 1996). According to Ogutu, ethical norms and values entrenched in taboos and prohibitions protected culture and nature. Children should be helped to practise conservation and sustainable use of natural resources so as to cultivate a perspective of environmental ethics and a new kind of responsibility for the earth. This is because early years are the most significant in shaping the personality, cultural and moral behaviour of an individual (UNESCO, 2008). Thus, acquisition of values, attitudes, skills and knowledge on conservation and maintainable of the natural resources by young children may translate to a healthy sustainable environment by future adults of tomorrow (UNICEF, 2003).

As stated by Stern (2006), human beings must start making appropriate decisions regarding the utilization of resources in the environment. It is this awareness that prompted the world leaders to recognise environmental sustainability as the seventh goal of the Millennium Development Goals (MDGs) in 2000 (UNEP, 2006). This goal is viewed as the most important in laying the foundation on which all the other MDGs can be built.

Environmental education has been embraced by the international community as a practical response in solving global environmental crisis (UNESCO, 1977). It is viewed as a new perspective in guiding patterns of behaviour and the choices that people make regarding the environment. Kenya embraced environmental education by infusing it into the formal curriculum since 1985 (Otieno, 2002).

Environmental education develops critical thinking, reflection and action skills (Fien, 1993). It also helps in acquisition of Problem solving and decision-making skills regarding relationship between oneself, biosphere and other people. A positive interaction with natural environment helps young children to learn through discovery and self-initiated activities (Elstgeest & Harlen 1990). At the same time, involvement in conservation projects that are issue based develops a positive attitude and enthusiasm about learning. Action Research and Community Problem-Solving (ARCPS) model of learning brings on board real local environmental concerns in which learners choose the content and skills to be learned (Knamiller, 1987). The acquired knowledge can then be used to solve immediate environmental problems that they have identified.

Similarly, Reggio Emilia approach recommends that children participate in issues that require critical thinking skills (Reggio Alliance, 2009). Reggio Emilia approach makes collaboration between children, teachers and parents is the best way of handling environmental

education with pre-school children. A case study research in Brisbane (Australia) reports how young children of two and a half to five years got involved in environmental conservation mini projects in the pre-school (UNESCO, 2008). Water conservation routine was one of the successful projects by the children in the pre-school.

In Kenya, the pre-school curriculum uses interdisciplinary approach and multidisciplinary approach. Interdisciplinary approach is adopted where EE is infused in science and social activities. This approach considers entities and situations that children are likely to interact with in the environment. The teacher is expected to be creative and innovative enough to incorporate EE concepts in the different learning activities. Clearly, the teacher should be well prepared in terms of environmental conservation content. However, a study done in the teacher training colleges indicated that the curriculum in use does not explicitly state the content of environmental conservation and that methods used in training the teachers are not effective (Kinyua, 2001). Kinyua's report recommends interdisciplinary approach to be adopted in teaching EE to avoid fragmentation of content.

The study was based on the social constructivism theory proposed by Vygotsky in 1962 (Vygotsky, 1978). He suggested that children refine their thinking or performance through interactions with adults or older peers. This theory emphasizes the importance of instruction and demonstration given to children by teachers /caregivers on how to conserve and protect the elements of nature (Elstgeest, 1990). Children can develop environmental conservation and sustainability ethics through active participation in conservation projects/activities in their respective communities.

Being an evaluation, it adopted the context, input, process and product (CIPP) model as it is systematic and wholistic in nature (Stufflebeam, Madaus & Kellagan, 2009). This model is based on a cycle of planning, structuring, implementing, reviewing and revising decisions.

## **Objectives**

The aim of the study was to establish the effectiveness of the Kenyan pre-school curriculum in promoting environmental conservation and sustainability ethics in young children. Specific objectives were: to establish the impact of pedagogical practices employed by the teachers on children's responsiveness to environmental conservation issues; impact of school community environmental conservation activities on the noticeable conservation practices the children engage in outside the school and to determine how the knowledge gained by children concerning environmental conservation has affected their moral sense regarding the environment as well as how engagement in local environmental issues has influenced their attitude towards conservation activities.

## METHODOLOGY

This research was an evaluative case study using *ex post facto* design. The target population included a variety of private and public pre-schools in Kiambaa District. Out of a total of 108 pre-schools in the District, 42 were public while 66 were private. The total number of pre-school teachers was 256 and 108 school managers while the pre-schoolers were 2,660. The population of the pre-schooler's parents included was 2,150. Stratified random sampling based on educational zones and sponsorship was used in selecting the schools to ensure representation. The sample size was centred on the time and funds available as proposed by (Ogula, 1995). Purposive sampling was used to select children of 5-6 year old in every pre-school in the population. From every pre-school, five children (5-6 years) were selected through simple random sampling making a total of 180. The researcher considered the ability of this age group to use abstract thought and capacity to communicate. Similarly, the high level of development of gross and fine motor skills makes them able to participate in conservation activities (Allen and Marotz (1989) cited in Cobb (2001)). Pre-school teachers (one from each school) and parents of the selected children were also selected purposively because of their direct relationship with the sampled children. Convenience sampling was employed to pick 14 curriculum developers who were willing to participate in the study.

Several instruments were used in order to allow triangulation and ensure reliability and objectivity of the study (Clough and Nutbrown, 2002). The questionnaires and interview schedules were pretested in two pre-schools which were not included in the study sample.

Interview schedule for pre-schoolers was used to elicit data on their knowledge and skills on conservation of the environment. The questions also sought to find out the level of moral sense and attitude regarding conservation and sustainable use of the environment. An observation schedule was also constructed to include conservation activities and behaviours related to care, respect and concern for the environment. It also contained items with issues and activities regarding cleanliness, garbage collection and disposal. An ordinal scale of measurement was used to classify the behaviour of children in terms of their knowledge, responsiveness, attitude, as well as moral sense towards the conservation activities.

A teacher's interview schedule which had 12 items sought to know their knowledge on conservation methods and the activities they use with the pre-school children. The methods and activities were classified as suitable or unsuitable for imparting knowledge and skills to the young children. The teacher's questionnaire included 15 semi-structured items to elicit data on the teacher's opinion on the content of environmental concepts in the pre-school curriculum. An ordinal scale of measurement was used to classify their different views.

Similarly, a questionnaire for parents having 15 items targeted their opinion regarding the ability of their children to acquire knowledge, skills and moral sense regarding the environment. The items were also aimed at finding out whether they participated in conservation activities at home.

The questionnaire for school managers contained seven semi-structured questions which tried to get data on their opinion on issues concerning the local environment and the response of the community to environmental conservation. In the same way, views of curriculum developers were collected using a questionnaire with seven semi-structured questions. The items were meant to elicit data on their views regarding content, methods, activities and teaching/learning materials for early childhood environmental education (ECEE) in the pre-school curriculum. A documentary analysis form was also used to facilitate analysis of schemes of work, lesson plan, record of work and children's work books. The documents were useful in finding out whether environmental conservation content was included during planning as well as teaching/learning. Data from all the instruments was categorised according to the study objectives.

## **FINDINGS AND DISCUSSION**

Figure 1 shows the methods used by the teachers in teaching environmental education. When asked to cite the most common methods that they used 46% (N=36) of the teachers mentioned lecture (telling), 22.2% cited demonstration, 19.4% news telling, practical work was cited by only 11.1% and educational trips by 5.6%. This demonstrated the fact that teachers lacked proper knowledge on the appropriate methods for teaching environmental education. When asked to comment on the pre-school syllabus, 77% of the teachers stated that it was not explicit on the objectives, content, teaching/learning methods, materials and activities while 23% were not sure. Evidently, the documents analysed in the study did not contain environmental conservation content. Clearly the teachers also lacked creativity and innovativeness in terms of using appropriate methods. Consequently, the children did not participate effectively in environmental conservation activities.

Similarly, the activities selected for the children did not provide practical experiences. The most common activities selected included watering of plants which was cited by 44.4% (N=36) of the teachers, collecting of litter mentioned by 22.2%, sweeping of the compound given by 33.3%. Project work involving conservation of resources like water and soil, tree planting and others were among those mentioned by 0.1% of the teachers. On the choice of teaching/learning materials, only 13.9% of the teachers mentioned use of resources in the environment. The popular materials selected by 30.5% of the teachers were wall charts which do not support practical work. The findings seemed to suggest that teachers were not conversant with the idea of using the environment to facilitate exploration and discovery. This means that children's interaction with concrete environment as well as active participation in learning is minimal.

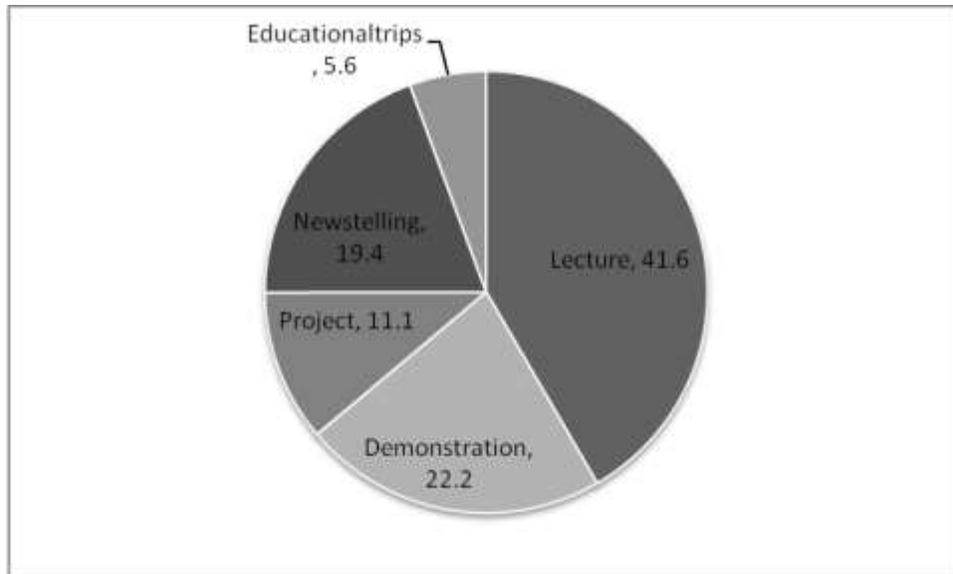


Figure 1: Different Teaching Methods Used by The Pre-School Teachers

Figure 2 shows the level of response by the children to different conservation activities. Figure 2 indicates that 62% (N=180) of the children responded to health practices, while garbage collection and disposal was well accepted by 48%. Environmental aesthetics seemed to interest 51% of the children while only 34% were concerned about conservation of resources. High responsiveness to health practices and aesthetics was attributed to the influence of parents and teachers at home and school. Children are keen on observing what the adults do and are good at imitating (Baumrind, 1978). Low responsiveness to conservation of resources may be attributed to ineffective pedagogical practices leading to lack of knowledge.

Similarly, environmental conservation activities of the school community did not seem to have a strong impact on the activities children did at home. According to reports from parents and teachers, there seems to be no collaboration in guiding the children on environmental conservation activities. Some of the activities are more emphasized at school than they are at home.

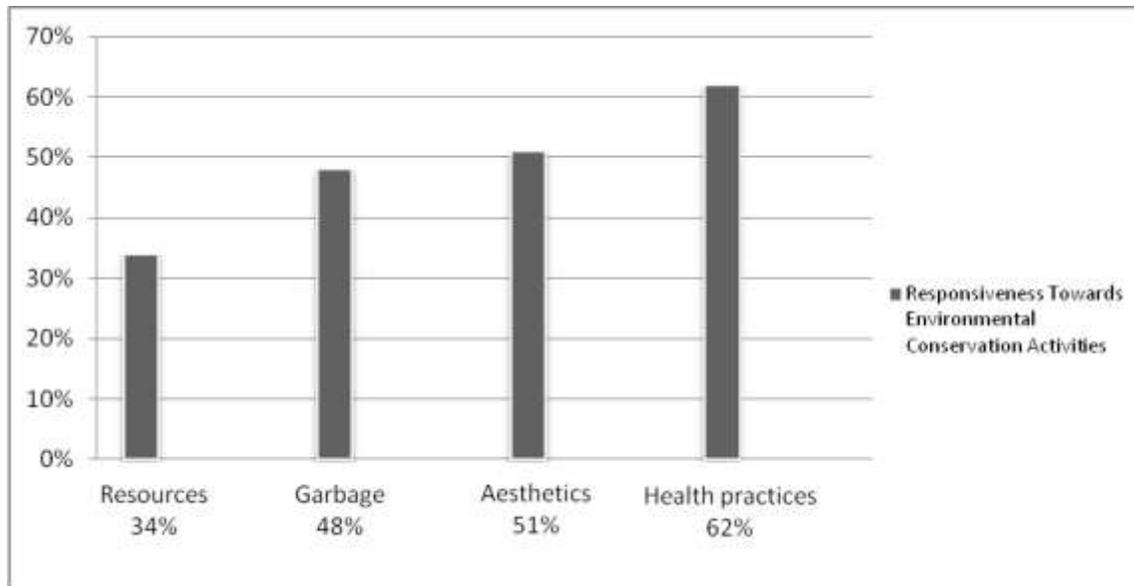


Figure 2: Responsiveness Towards Environmental Conservation Activities

Figure 3 shows conservation activities done at school and at home as reported by teachers and parents. From Figure 3, conservation of water is more emphasised at school as reported by 91.6% (N=36) of the teachers than at home as reported by 36.0% (N=180) of the parents. Tendering of flowers appeared to happen more at home as conveyed by 49.0% of the parents than at school as only 11.1% of the teachers used it. A few children cited instances where they have participated in planting and watering flowers with their parents at home. Others have planted trees at home with their parents but not at school. It is worth noting that 50% of the pre-schools did not have flower beds or vegetable gardens. Soil conservation was therefore uncommon and only carried out as demonstrations indoors by a small percentage of 19.4 % of the teachers. Lack of a garden denies children the opportunity to come into contact with the beauty of nature. Parents did not report activities related to soil conservation. Though 80.5% of the children were involved in collecting of litter and cleaning of the compound at school, activities were not well planned and not routinely carried out. This is because the bigger children in primary school or workers in the school did it. Furthermore, disposal of garbage was only emphasised by 36.1 % of the teachers as the job was left for the workers in the school. At home, garbage disposal was reported by 28.3 % of the parents. Similarly, 19.4% of the parents testified having involved children in tendering of trees while only 16.6% of the teachers did. Conservation of electricity seemed to be more important at home as reported by 34.4% of the parents than at school where only 19.4 % of the teachers emphasised it.

Parental involvement in school environmental activities was minimal. A closer look at the contribution of parents reviewed that only 5.55% of the pre-schools reported active participation of parents in environmental activities. While 11.1% of the pre-schools reported parents' participation in terms of funding the activities, 13.8% said that they provided plant seedlings and

other materials. Teachers in the private pre-schools felt that parents would not entertain the idea of participating as they paid for all services. They also reckoned that parents were not available as most of them are in wage employment as reported by 41.6% (N=36) of the pre-schools. It was noted that parent's/teacher's partnership was weak. This may have contributed to lack of uniformity in training the children. In Reggio Emilia approach, teachers and parents work in collaboration with the children creating a community of inquiry between adults and children (Reggio Emilia, 2009). Children should view the world as coherent whole as proposed by Brown, (1994). This means that home/school activities must be harmonized to enable children understand the importance of environmental conservation. This may help them develop care and respect for the environment.

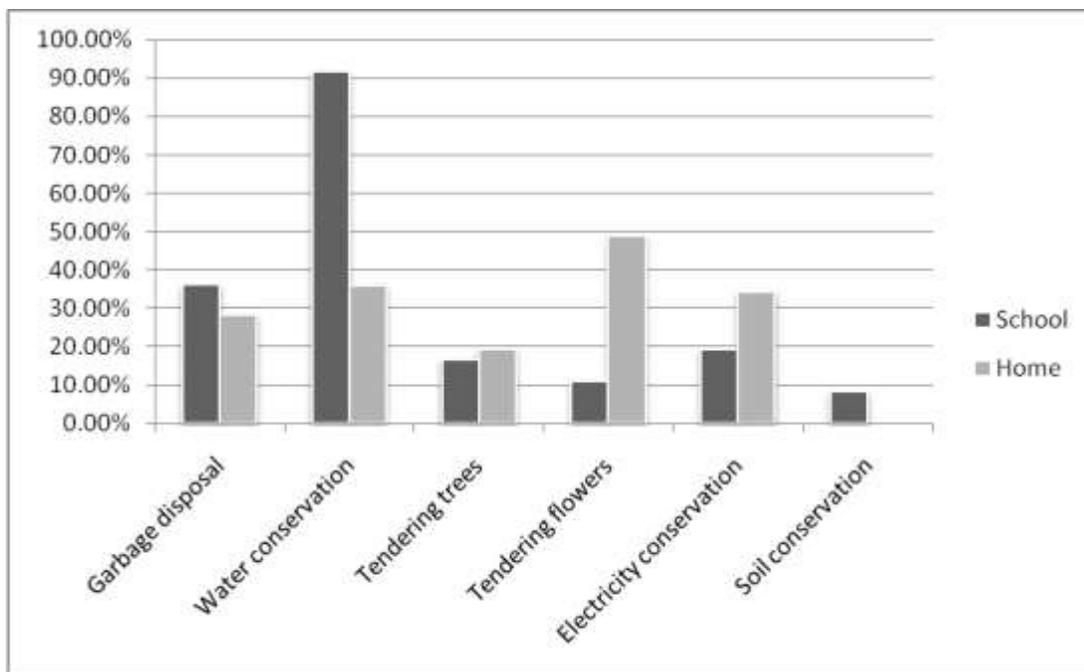


Figure 3: Conservation Activities by Children at Home and School

Figure 4 shows relationship between knowledge and moral sense regarding various conservation activities. From Figure 4, 59.6% of the pre-school children seemed to have knowledge regarding health practices like cleaning after eating and washing-up after visiting the toilet while 63.5% had moral sense on the same. The high rating of knowledge and moral sense on health practices is a good indication of uniformity in routine training of the children by the teachers and parents. Similarly, 46.3% of the children understood environmental aesthetics and 54.6% exhibited a lot of care and respect for flowers and other things that made the environment beautiful. Knowledge as well as moral sense on garbage disposal was demonstrated by 44.7% of the children. However, only 36.1% of the children had knowledge on conservation of resources whereas 39.8% displayed moral sense.

It was interesting to note that the participants considered the young children capable of acquiring knowledge and moral sense regarding the environment. For example, 80.5% of the teachers and 71.6% of the managers affirmed that it is possible for the children to attain knowledge. However, only 58% of the teachers and 68% of the school managers thought they can develop moral sense. Parents on the other hand seemed to underrate the ability of the children to acquire environmental conservation knowledge with only 24% confirming it. Nevertheless, 76.2% of the parents viewed children have remarkable ability to imitate their parent's 'good' practices. This gives them the capacity to develop moral sense. Similarly, 57.2% of the curriculum developers argued that pre-school children can attain knowledge on environmental activities while only 42.8% viewed them as capable of developing moral sense. However, little or no opportunity seemed to be accorded to the children so as to understand environmental conservation and sustainable use of resources.

Involvement in actual projects using Action Research and Community Problem- Solving (ARCPS) model as recommended by Knamiller (1987), would make it easier for them to understand environmental conservation concepts. This model requires the children and their teachers to identify a problem and explore ways of solving it. Conservation of water could be a worthwhile project for the school communities to undertake especially in Kiambaa district where water problem is critical. Such a venture would have a lot of meaning to the pre-school children as they may have experienced scarcity of water at home and school. With assistance from the teachers, the children may acquire the necessary knowledge to conserve the available water. This may stimulate their thinking and problem solving skills to handle the issue in future. This is in line with suggestions of Vygotsky that children get to understand a problem through social interaction with more experienced peers or adults (Vygotsky, 1978). In the case of Kiambaa pre-schoolers, it was noted that despite lack of operational project, the children seemed to be careful in the way they used the available water with 91.6% of the children showing concern about wastage of water. As indicated in figure 4, knowledge on environmental conservation activities depended on social interaction between pre-school children and the adults. An important feature was the fact that acquisition of moral sense seemed to be dependent on understanding the environmental issue. The fact that children were concerned about water wastage suggested that they probably have observed or possibly have been involved in preservation of water at home or school.

Involving children in local environmental issues should create in them a positive attitude towards communal conservation activities. This is because they would understand the relationship between themselves and the local environment as they participate in the activities.

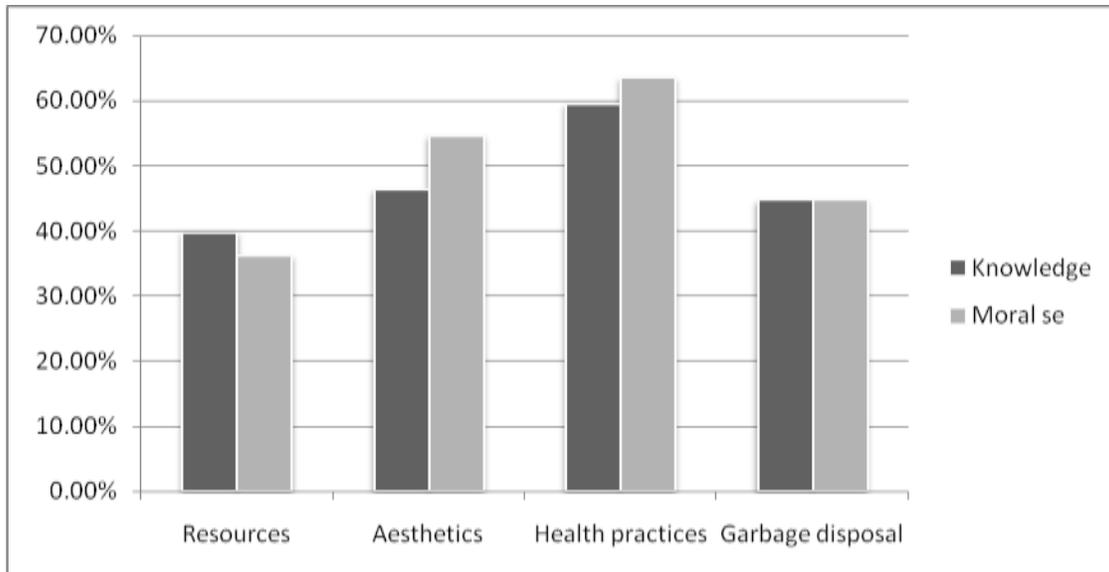


Figure 4: Relationship between Knowledge and Moral Sense in Different Conservation Activities

Figure 5 shows comparison between willingness and enthusiasm by the children to carryout conservation activities at home and school. On interviewing children on their willingness to participate in environmental conservation activities, there was a difference in attitude between their home environments and the local environment. 50% of the children were eager to collect litter at home but only 30.5% would agree to do it at the local market. For activities such as sweeping, watering flowers and planting trees, the pre-school children responded differently to home and local environment. Sweeping was acceptable to 47.2% at home and 13.9% at the local market while 52.7% were eager to water flowers at home but only 25% would do it at the local market. When asked about tree planting, 27.7% supposed they could do it at home and only 13.9 would agree to do it at the local market. Some children argued that the activities were tiring while others feared working at the local market because it was loaded with rotten smelly fruits and vegetables. Others reckoned that the local market is a place that is inhabited by destitute children chokoras and would be afraid of mingling with them. There was a strong indication that the children may have been involved at home but not in the local environmental activities. They have not been sensitised on communal responsibility for the environment.

The teachers were quick to provide reasons for not involving the children in local environmental issues. 60% of the teachers argued that the children were too young to participate while 5% alleged that it would be too risky to involve them. They reasoned that monitoring children outside the school compound is difficult and they may get injured. Another 5% of the teachers reckoned that the parents would not allow their children to get involved as they may view it as punishment. The argument of 30% of the teachers was that it was not necessary to involve them as their contribution would be too small to have any impact on the environment. This was indicative of the fact that teachers lacked proper understanding that exposing children to the local

community environmental problems helps to stimulate the intellectual curiosity and interest in reasoning. This could help them develop analytical and critical thinking skills to stimulate problem-solving actions. Participation of children in local environmental issues ought to be viewed as important in acquisition of positive attitude towards conservation activities.

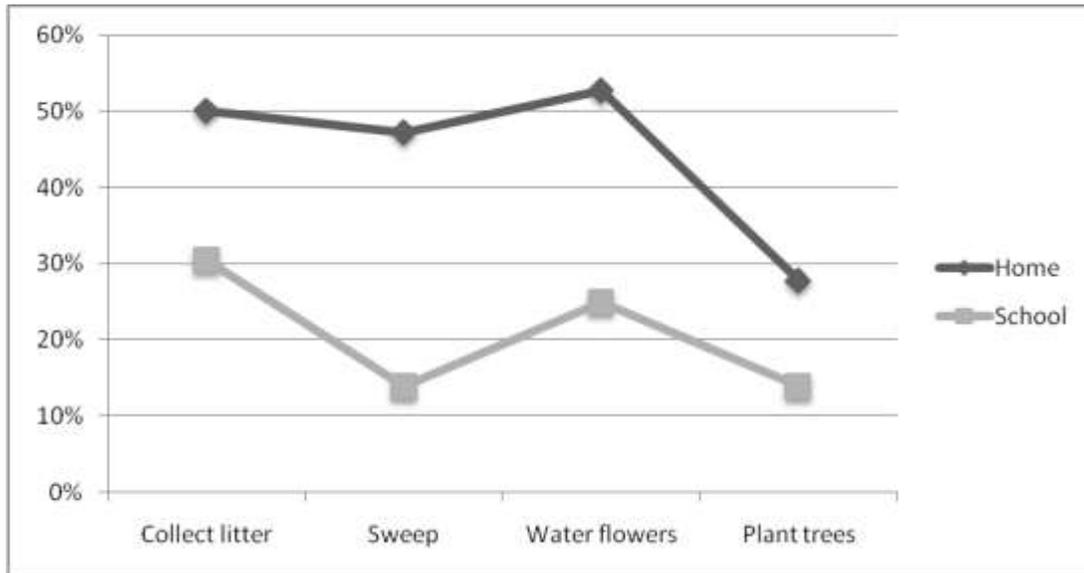


Figure 5: Willingness to Participate in Various Conservation Activities

## CONCLUSIONS AND RECOMMENDATIONS

The findings have the implication that the pedagogical practices adopted by the pre-school teachers were deficient in terms of presentation of environmental conservation content. A justification for this may be that the pre-school curriculum is not explicit regarding the content, methods, activities and materials to be used. Similarly, teachers did not exhibit creativity and innovativeness as to include environmental conservation concepts in the learning themes and activities. Evidently, the children do not get the opportunity to develop knowledge and skills on environmental conservation and sustainability. Subsequently, their responsiveness to activities regarding caring and protecting the environment is not satisfactory. It is therefore inevitable for curriculum developers to review the present Kenyan pre-school curriculum so as to include explicit content, methods, learning/teaching activities and materials for environmental conservation. This would help the pre-school teachers in their planning so as to include the necessary concepts and activities for conservation of the environment.

It can also be noted that there was lack of collaboration between teachers and parents in guiding the children as activities done at school by the children were different from those emphasis

at home. This has led to failure in routine development regarding different environmental issues. Parents were also not actively involved in the existing school environmental conservation activities. This means that there are no specific activities that the children were engaged in under the guidance of both the parents and teachers. Moreover, none of the pre-schools had a defined programme for environmental conservation activities. This situation can be improved by having a structured environmental conservation activity schedule for pre-schoolers designed by the ministry of education. Such a schedule may be incorporated into the existing programme. Including environmental conservation content during planning for daily events would ensure that pre-schoolers get the opportunity to actively participate in a variety of activities together with their parents and teachers. This would provide them with knowledge and skills on conservation methods and help them develop moral sense regarding the environment.

The importance of formative years for grounding values, attitudes as well as ethical and cultural standards of behaviour was well understood by the parents and teachers. However cognition is paramount in ensuring such rounded growth and development. Lack of emphasis on participation of children in environmental conservation activities denies them the opportunity to develop critical thinking and problem-solving skills. The ministry of education should organize refresher courses for the teacher trainers and pre-school teachers already in the field to enable them understand environmental conservation content. This would enable them prepare relevant activities and materials for the pre-school teachers and children which in turn would provide them with adequate knowledge about environmental conservation.

Learning in the pre-schools was more or less through expository approach which denies children the opportunity for observation and discovery. Field trips and project work are viewed as waste of 'valuable' time by the teachers. This is because they must maintain a high level of academic 'achievement' as is encouraged by the current education system which is examination based. Lack of involvement in local environmental issues denies them children the opportunity to understand their role in protecting the environment outside their home or school. This contributed to their lack of the proper attitude towards conservation activities in the local community. The MOE may consider changing the system of education so as to encourage practically oriented programmes. A culture of inquiry, experimentation, critical thinking and problem solving is what the future generation requires for future environmental conservation and sustainable use of natural resources.

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