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EFFECT OF HIV/AIDS ON ACADEMIC PERFOMANCE OF PRE-SCHOOL CHILDREN IN KIJABE LOCATION, KIAMBU COUNTY, KENYA

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ABSTRACT

The purpose of the study was to investigate the effects of HIV/AIDS on academic performance of pre-school children. Since HIV/AIDS was discovered in 1981, more than 60million people have lost their lives to the virus. According to the Joint United Nations Program on HIV/AIDS, nearly 34 million are currently living with HIV/AIDS, including nearly 3 million children under the age of 15. The sample comprised 15 teachers, 18 parents and 18 pre-school children. Data was collected by use of questionnaires, interviews and observation which was analysed using statistical package for social sciences (SPSS). The study found that children living with HIV/AIDS are faced with challenges such as absenteeism from school, school dropout, a lack of basic human needs, child labour and stigmatization. The study concluded that the most vulnerable children were those that were caring for their ailing parents and child-headed families, and that children with HIV/AIDS perform poorly in schools. The study recommends that the government of Kenya should provide free pre-school education, provide learning resources, child friendly environment and relief food to people with HIV/AIDS.

Key words: Effect, HIV/AIDS, Performance, pre-scholars

INTRODUCTION

Since HIV/AIDS was discovered in 1981, more than 60 million people have lost their lives to the virus. According to the Joint United Nations Program on HIV/AIDS (UNAIDS, 2004), nearly 34 million people are currently living with HIV/AIDS, including nearly 3 million children under the age of 15. Children who have been orphaned by AIDS are forced to leave school, engage in child labor or prostitution, suffer from depression and anger, or engage in high-risk behavior that makes them vulnerable to contracting HIV. Children who live in homes that take in orphans may see a decline in the quantity and quality of food, education, loves, nurturing and may be stigmatized. The demand for educational services declines because of reduced family resources that are available for schooling in AIDS affected households HIV\AIDS also changes the trend of school age population as it causes a rise in the number of orphans in the country who may not afford education. Many orphans live in child-headed families that lack basic human needs because of the death of parents who were the source of financial support (UNAIDS*, UNICEF, USAID, 2004).* The Human Immunodeficiency Virus [HIV] that leads to Acquired Immune Deficiency Syndrome [AIDS] is the most severe epidemic facing the entire world today. Once a person has developed AIDS, a variety of other ailments occur because the body is incapable of combating other bacteria or virus that causes diseases. HIV/AIDS epidemic also reduces the demand for education. Families that are affected will have fewer resources available for medication and school fees. Consequently, few children will be able to afford or complete schooling. Girls are likely to be affected more because they are forced out of school more than boys to take care of sick family members, or to work in order to make up for lost family income.

Over the last decade, HIV/AIDS has become the most devastating pandemic in Kenya and this has made the government declare it a national disaster. According to world vision (2000), the effect of HIV/AIDS has been felt by many countries and has had devastating effect on the development of the economy, education and agricultural sector. In the education sector, for example, learning has been negatively felt when teachers die. As a result, this affects children because they stay for some days without being taught. In other cases, children do not concentrate in class due to their parent's sickness or being stigmatized in school because of being sick (Crim, 1999).

HIV/AIDS and demand for education

Enrolment figures have declined as HIV/AIDS spread. The overall demand for general education, vocational and tertiary education has dropped. This has implication on learner participation in that most classes have no teachers, while others have large classes and this makes it difficult for the teacher to give attention to all children especially the slow learners. In addition, AIDS has reversed progress in reducing infant and child mortality, drastically affecting the actual population entering school in the most affected areas. According to UNICEF (2004) the number of young people who drop out of school has increased, and school attendance has dropped due to various HIV related phenomena affecting children such as having to cope with personal illness, caring for family member's trauma related to illness and sudden death of a member of the family. Discrimination and stigma decline financial support from parents and the need to work to earn some income affects the infected persons. The estimated 10 million orphans exacerbate such problems under 15 years of age in the African region. A few incentives should be introduced in order to attract children to come to school. Lack of essential learning resources and basic human needs result in poor performance in class. Studies have shown that parents value for education has declined as parents perceive the early death of their children as likely and thus are unwilling to spend their limited resources on education. This attitude has negative implication on children living with HIV/AIDS as most of them fail to join school. The strain of poverty also appears to push children into early employment rather than schooling in order to boost family income, especially in

families that are economically unstable. UNAIDS (2006) cited that grades in gender equity in education can be a setback for many reasons, including early marriages and pregnancies of girls as early as 13 years. The study noted that due to the infections of young girls by men, infection rates among girls as young as thirteen years have risen, hence reducing their likelihood of completing and benefiting from schooling.

HIV/AIDS children performance in Early Childhood Education

According to Kenya national AIDS control programme (World vision, 2000), high death and mortality rates of teachers, administrators and children have severely affected the supply of educational services in schools. Teaching time and quality education are more thematic in the most affected countries as both teachers and pupils are irregular due to HIV related reasons. In such schools, stopgap solutions such as group teaching may become more common ways of coping with this situation. This is because group teaching does not allow for effective child performance in the classroom. The studies further stated that schools might lack pupils as enrolment and the number of teachers fall below sustainable levels. The remaining children and teachers may need to travel long distances which could increase their vulnerability. The HIV/AIDS pandemic has highlighted the enormous disparities in the quality of education both within and between countries in respect to the teaching/learning and programme content, which together largely shape the overall learning environment. In addition, social interaction may change among children, teachers and communities due to discriminatory attitude and behaviour towards HIV/AIDS infected individuals. Furthermore, young girls may face increased risk of sexual exploitation at school and in the community especially where they are regarded as 'safe' because these children are perceived to be free from infections. This may traumatize the children or they may become pregnant and drop out of school. In addition, victimization and stigmatization of both the infected and affected are rampant in both teachers and children. Therefore, the increased morbidity of children, absenteeism of teachers and classmates, coupled with poor performance are a combination of factors that have caused havoc in education in ECDE centers, which influenced the researchers to carry out the study in order to establish the effect of HIV/AIDS on pre-School performance in early childhood development.

RESEARCH METHODOLYGY

This is a descriptive research design which used a mixed methods approach of both qualitative and quantitative technique. Data was collected from 18 parents, 18 pre –school children and 15 teachers by use of questionnaires, interviews and observation checklist. Data was analyzed using statistical package of social sciences (SPSS). Descriptive statistics such as percentages and frequencies were used to answer the research questions. Data was presented in tables, charts and graphs.

Research Objectives

The study sought to achieve the following objectives:

1. Examine the performance of children living with HIV/AIDS in E.C.E classrooms.
2. Determine factors contributing to poor performance among children living with HIV/AIDS in E.C.E classroom.
3. Establish how children living with HIV/AIDS are identified in E.C.E classrooms.
4. Investigate the intervention measures needed to improve academic performance of children living with HIV/AIDS in E.C.E classrooms.

RESEARCH FINDINGS AND DISCUSSION

Research Question 1: How is the performance of children living with HIV/AIDS in E.C.E classrooms?

The first research question intended to establish the performance of Children living with HIV/AIDS in E.C.E classrooms. The study findings show that children living with HIV/AIDS performed poorly. The majority of the teachers indicated that among CLWHs 24% (n=14) were stressed, 17% (n=10) looked traumatized, 16% (n=9) looked stigmatized and 14% (n=8) had low self esteem, and these led to their poor performance in the classroom. These results also revealed that the teachers have effective child behavior assessment skills.

Participation in In/Outdoor activities

The respondents 73% (n=11) indicated that the preschool children do not participate in both in and outdoor activities, while 27% (n=4) indicated they do. These study findings revealed a marked withdrawal among children living with HIV/AIDS (CLWHAs) which may hinder their normal development and also influence their performance. Social interaction is a problem in CLWHAs due to discriminatory attitudes and behavior towards HIV/AIDS infected individuals (Ayieko 1998). The study findings revealed that 20% (n=3) of the teachers indicated trauma as the leading factor causing inactive classroom participation. According to Achoka (2006), the HIV pandemic affects the demand for schooling, enrolment rates, performance and completion necessitated by high rate of absenteeism from classes.

Behavioral observations during classroom learning process

Table 1: Behavioral observations

Behavioral observations	Frequency	Percent
Valid interaction with others	**3**	**4**
Participation in games	**4**	**6**
Stressed	**10**	**14**
Absent minded in class	**12**	**17**
Looking sickly	**11**	**15**
Performance in class is bad	**10**	**14**
Have deficiency diseases like kwashiorkor or Marasmus	**0**	**0**
Active in role play	**5**	**7**
Traumatized	**13**	**18**
Participating in psychomotor activities	**3**	**4**
	Total: 71	**Total: 100%**

The findings in Table 1 indicate that the majority of the respondents 18% (n=13) looked traumatized, 17% (n=12) were absent minded in class due to HIV related attention deficit and trauma, 15% (n=11) looked sickly and 14% (n=10) had poor performance in class and were in stress. There was no child with marked deficiency disease like Kwashiorkor and Marasmus. 7% (n=5) were active in role play. Only 6% (n=4) participated in games and 4% (n=3) interacted with other children**.** UNICEF (2000) indicates that HIV/AIDS induces anxiety through trauma, discrimination and stigma which affect children concentration in class during the learning.

Research Question 2: What are the factors hindering performance among children living with HIV/AIDS in E.C.E classrooms?

Analysis of data from the study showed that the majority of children 28% (n=13) who were infected frequently absented themselves from preschool in order to look for medical attention or care, while 9% (n=4) assumed adult roles as heads of the households. The respondents indicated that another 26% (n=12) of the children dropped out of school in order to look for income generating resources for survival for their families and sibling. According to UNICEF (2004), the number of young people who drop out of school has increased, and school attendance has dropped due to various HIV related phenomena affecting children such as having to cope with personal illness, caring for family members (particularly girls) trauma related to illness, and sudden death in the family. The study results revealed that 15 (100%) of the teachers confirmed that these factors have effect on children's performance in class. From the sentiments of the teachers, the performance of CLWHAs was low due to factors like discrimination which left them sad and isolated.

Factors to chronic class absenteeism as per the parents' response

The study findings indicated that the most common factors that led to chronic absenteeism of CLWHAs in classroom are as stated: lack of school fees, 39% (n=7), stigmatization, lack of learning resources, and lack of proper diet 11% (n=2). However, self pity and fear was minimal 6% (n=1), maybe because preschool children are too young to understand what was happening.

Table 2: Factors contributing to poor performance as per the teachers' Response

Psychological effects	**Frequency**	**Percent**
Valid child headed families	**4**	**11**
Caring for the sick and ailing relatives	**10**	**26**
Child labor	**10**	**26**
Lack of learning resources	**12**	**32**
Lack of love	**2**	**5**
Others	**0**	**0**
	Total : 38	**Total : 100%**

The data analysis in table 2 showed that the majority of the respondents 32% (n=12) indicated that lack of learning resources was a leading factor to psychological effects in HIV/AIDS, while 26% (n=10) indicated child labor and caring for the sick and ailing relatives as the leading factor. According to Crim (1999), the effects of stigma, isolation, discrimination, and a lack of education contribute to the negative psychological impact of HIV/AIDS on people living with HIV, orphans of HIV infected parents, and other vulnerable children. All the respondents 18 (100%) stated that they had not received any complaints from their children regarding negative attitudes of the teacher and the classmates in school. This is evidence of high professional standards maintained by the preschool teachers. Also the study findings, indicated that 55.56% (n=10) of the respondents were not able to provide learning materials due to financial constraints, while 44.44 % (n=8) had the ability. This was another cause of poor performance.

Challenges facing the children while in school

The findings of the study indicated that there is a lack of learning resources in the classrooms. The respondents also cited chronic absenteeism to be rampant as children are sent away from school because of school fees and also, children absent themselves to look for the health care. A parent confirmed that the teachers encourage absenteeism by telling children to stay at home until they have recovered. Only 10% (n=2) of the respondents confirmed that stigmatization still takes place on children living with HIV/AIDS.

Research Question 3: What are the ways of identifying the HIV/AIDS vulnerable children?

From the findings of the study, all 15 (100%) of the teachers kept health records of children in the pre-schools. These findings differ with a study done by Akwara, and Otieno (1998), in a survey of children in difficult circumstances in Kenya where only 80% of pre-school teachers were found to be keeping children's health records. Out of 18 children, 33.33(n=3) were found in baby class, 46.67 % (n=8) were found in nursery, while only 4 (20%) were in pre-unit. The high number of children in nursery was an indication that most of the CLWHAs are found in nursery class, which meant that the older the children, the more vulnerable they were to HIV/AIDS that causes them to skip classes.

The research findings in Figure 1, revealed that 80.00 % (n=12) of the teachers had known the HIV status of the children through their parents, while 13.33% (n=2) had known through the doctor's records and only 6.67& (n=1) through HIV symptoms. These findings indicate that teachers and parents have a close relationship with the teachers and communicate with them on regular basis.

Provision of learning materials as per the parents

From the interview schedule with the parents, the data indicated that a majority 29 (57%) of parents were not able to provide learning resources or school fees to their children. Other parents were sick and spent most of their family resources attending to medical care hence. In addition, most of the children skip school in order to care for their sick parents or are left with their siblings as parents sought their

medical care. The study findings also revealed that 44% (n=8) of the parents had financial constraints while educating their children, 22% (n=4) indicated deterioration of physical health and the demand of medical care, while 33% (n=6) didn't state any challenge or discrimination.

Research Question 4: Which interventions measures are needed to improve academic performance of children living with HIV/AIDS in E.C.E classroom?

Table 3: Interventions supporting performance

Intervention supporting performance	**Frequency**	**Percent%**
ARVs medication	**10**	**11**
Help and health care to their ailing parents	**12**	**13**
Provision of learning resources by the government and NGOs	**13**	**14**
Bursaries from the government	**15**	**17**
Free preschool education	**13**	**14**
Introduction of feeding programmes	**17**	**17**
Provision of relief food to affected parents	**12**	**13**
Others	**0**	**0**
	Total: 90	**Total: 100%**

The data analysis in Table 3, show that free preschool education was indicated by 14% (n=13) of the respondents. This could have been attributed to the problems encountered by both teachers and children irrespective of their status. This implies that if the government could make preschool education free, most of the challenges could be eradicated. Provision of ARVs 11% (n=10), supply of relief food 13% (n=12) and school feeding programmes and government bursaries 17% (n=15) were viewed equally important in order to assist the children to have maximum participation in their learning process.

The study findings in Figure 2 revealed that 61.11% (n=11) of the parents indicated that their children were undergoing healthcare services, while 38.89% (n=7) were not. According to Achoka (2005), children born of infected parents suffer immensely. They lack proper diet, health care, proper hygiene which are essential for active performance in classroom situation. All the parents indicated that their children were already tested for HIV and that 73% (n=8) of children undergoing healthcare were on ARVs. The parents also indicated that they had discussed their children's HIV status with the teachers. These findings indicate that teachers and parents had a close relationship.

Intervention measures needed to support children's performance as per the parents

The findings of the study 53% (n=8) showed that free preschool education and school feeding programmes 25% (n=3) could solve some of the problems that children face as they went through their learning process. Relief food 13% (n=2) and ARVs 13% (n=2) scored the least because ARVs are still given freely in the hospitals.

CONCLUSION

The study revealed that the children living with HIV/AIDS do not perform well in school because of the problems that they encounter every day. The findings of the study also indicated that the most vulnerable children were those that are caring for their ailing parents and child headed families, and that if several intervention measures are put in place, the children living with HIV/AIDS can also benefit and improve their academic performance. These interventions are: giving relief food, school feeding programmes, provision of ARVs, taking care of people living with HIV/AIDS, and introduction of free pre-primary education.

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Genetic Diversity of Genetically Improved Farmed Tilapia (GIFT) Broodstocks in Sri Lanka

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Abstract

Microsatellite DNA markers were used to study molecular genetic diversity in three GIFT-derived broodstock Lines in two hatcheries in Sri Lanka. Two Lines set up as replicates from the most recent importation of the GIFT strain from World Fish Center showed no significant differences in allelic diversity, despite having been exposed to very different management practices; one Line exposed to six generations of selection for harvest weight with rotational mating practiced among eight selected groups, while the second Line kept as the original broodstock with no such management. The third Line held at a second hatchery was derived from an older GIFT importation and differed from the first and the second Lines mostly due to presence of a number of private alleles. The most likely explanation for these additional private alleles appears to be admixture with other non-GIFT tilapia stocks held in or near this hatchery.

Keywords: tilapia; hatchery management; microsatellite markers; genetic diversity; private alleles; selective breeding

Introduction

The inland fresh water fishery of Sri Lanka is essentially based on a multitude of reservoirs across the island (Amarasinghe 1998). In recent times, various attempts have been made to develop the inland fishery via fisheries enhancement strategies and land-based aquaculture ventures (Amarasinghe and Weerakoon 2009). The inland fishery in the country was developed following the introduction of the Mozambique tilapia (*Oreochromis mossambicus*) in 1952, that was later followed by an introduction of Nile tilapia (*O. niloticus*) in 1975 (De Silva 1988; Amarasinghe and Weerakoon 2009). Recent introductions of the GIFT strain an improved culture line has contributed to inland fisheries production in the country, especially for small-scale pond aquaculture.

Inland fisheries production in Sri Lanka is reported to have reached 68955 Mt in 2012 (www.naqda.gov.lk) and tilapia contribute more than 50% to this. According to the Ten Year Development Policy Framework of the Fisheries and Aquatic Resources of Sri Lanka 2007-2016 (www.fisheries.gov.lk) it is envisaged that this will increase to 74450 Mt by 2016. As the GIFT strain has been selected for fast growth rate over many generations it is considered to be good candidate for aquaculture development in Sri Lanka to help reach envisaged targets from inland fish production by 2016.

Seeds required for the inland fishery are produced solely by Aquaculture Development Centers (AQDC), managed under the National Aquaculture Development Agency (NAQDA) of the Ministry of Fisheries. According to NAQDA (www.naqda.gov.lk), Aquaculture Development Centers are the major tilapia fish breeding stations and produced approximately 24.74 million tilapia fry in 2012. Common broodstock management practices are maintained at all tilapia breeding stations and that face a high demand for supply of fry. To date, the genetic quality of broodstocks and fry used to supply the culture industry in Sri Lanka has not been assessed.

Appropriate management practices to conserve genetic diversity are very important for any captive population, since declines in genetic diversity levels can affect survival and growth of fry in aquaculture systems. Understanding the levels and patterns of genetic variation in broodstock used to produce fry therefore becomes an important requirement to guarantee fingerling quality. A decrease

in genetic diversity levels and/or a change in their genetic composition can decrease fitness in hatchery populations and this has been reported to be a common phenomena in captive populations of fish species; rainbow trout (Miller et al. 2004), Atlantic Salmon (Skaala et al. 2004), Japanese flounder (Sekino et al. 2002), turbot (Coughlan et al. 1998), common carp (Kohlmann et al. 2005) as well as tilapia culture lines (Macaranas et al. 1986; Romana-Eguia et al. 2004; McKinna et al. 2010). Small numbers of broodstock, inbreeding or outbreeding, genetic drift effects and inadvertent selection are all known to be common factors that can contribute to declines in stock quality over time.

To enhance culture performance, selective breeding of broodstocks has been practiced to improve growth rates. When sound base populations have been established and appropriate selection methods are applied, considerable improvements in culture performance are possible for most species. Appropriately designed selective breeding programs can produce genetic gains each generation for various traits in most species (Eknath and Acosta 1998; Ponzoni et al. 2011).

Microsatellite DNA markers have been used widely to characterize and assess levels of genetic diversity in many fish stocks, for broodstock selection (e.g. parental assignment), for mapping economically important quantitative trait loci and in marker assisted breeding programs (Chistiakov et al. 2006). Application of microsatellite markers for genetic diversity studies in tilapia culture lines has been described by Romana-Eguia et al. (2004); Rutten et al. (2004); Hassanien and Gilbey (2005); Ha Hung et al. (2009) and Sukmanomon et al. (2012).

As such, a selective breeding program was designed for tilapia culture stocks by the World Fish Center (Ponzoni et al. 2010; Nguyen et al. 2011) and implemented by the National Aquaculture Development Authority in Sri Lanka (NAQDA) to improve the performance of the 9th generation GIFT broodstock brought to Dambulla AQDC. Following the introduction, six generations of selection were carried out between 2007 and 2011 to improve growth rate.

The objectives of the present study were to compare the levels of genetic diversity in selected and control lines of GIFT broodstock at Dambulla AQDC and to compare these to the stock at Udawalawa that originated from an earlier introduction of the 6th generation of the GIFT strain, maintained at Udawalawa where no specific genetic management program had been applied. Nine microsatellite markers (Lee et al. 2005) were used to assess the impacts of different management practices on tilapia broodstocks in Sri Lanka.

Methods and Materials

GIFT broodstocks at Dambulla and Udawalawa Hatcheries

Sri Lanka has three main tilapia hatcheries that produce fingerlings for stocking in reservoirs and seasonal tanks. The three broodstock populations sampled for the present study came from two of these hatcheries. Two populations came from Dambulla AQDC in Matale District, Central Province and the other population (UDA) came from Udawalawa AQDC at Ratnapura District, Sabaragamuwa Province inSri Lanka. The population GDAM is from 50 families of GIFT (around 25 fingerlings per family, more than one family per bag at import) from the 9th Generation of GIFT (Ponzoni et al. 2010 and Statistics Unit, NAQDA, Sri Lanka) and was brought to Sri Lanka in 2007. According to NAQDA (*Personal communications*) the selective breeding program carried out at Dambulla AQDC is as follows. Fingerlings from each bag were divided into two and each part cohort was placed into a single tank. They constitute the GDAM broodstock at Dambulla station since their original introduction. The other part cohorts from each bag were grouped to form eight different cohorts that were maintained in eight different tanks, separately: they formed the SDAM population.

All tanks including GDAM were maintained separately and basic precautionary measures were taken to keep the stock uncontaminated from external genetic (tilapia) sources. A systematic selective breeding and rotational mating scheme has been practiced among the eight SDAM cohorts since 2007. The best performing fish in terms of body weight and length from each tank (200 males and 200 females making a total of 400) in each generation were selected to become parents for the

next generation and they were bred using rotational mating (males mated to females of another cohort).The current SDAM fish are the sixth generation obtained using this stock management procedure. The UDA population was founded from an earlier generation of GIFT stock (GIFT 6th generation): 1000 fry were brought to Sri Lanka in 2004 from Thailand (further details are unknown) and have been maintained since then as a single stock.

Sampling

Sixty four and 54 fish (1:1 male and female) were sampled randomly from the GDAM and UDA stocks, respectively. The SDAM samples came from 64 individuals, representing the eight cohorts, and each cohort was represented by eight individuals (4 males and 4 females) randomly sampled within sexes.

Microsatellite analysis

A sample of caudal fin (approximately 5x1 mm) was collected from each individual fish and preserved in 100% ethanol. DNA extraction was performed using the REAL pure DNA extraction kit (Durviz, Spain) following the manufacturer's instructions. Quality and quantity of extracted DNA were determined using agarose gel electrophoresis and a Nanodrop (ND-1000) spectrophotometer (Labtech International Ltd, UK).

Nine microsatellite markers, each chosen from different linkage groups(Lee et al. 2005) were selected for the study (Table 1). Single locus PCRs were performed using a fluorescent labeled tailed primer method (Boutin-Ganache et al. 2001).Three types of tails -Godde (catcgctgattcgcacat), CAG (cagtcgggcgtcatca) and M13R (ggataacaatttcacacagg) - were used and the tail was added to the 5' end of either the reverse or forward primer. To label the PCR product, another primer containing the complimentary sequence to the tail, labeled with a fluorescent dye, was also included in the PCR reaction. Each of the tailed primers had a different fluorescent dye to allow identification of the PCR products.

Table 1 Details of the microsatellites studied and the primer sequences

Locus ID	*LG	Repeat Type	Size range (bp)	Primer sequence (5'-3')
UNH995	1	$(CA)_{14}$	184-265	F: CCAGCCCTCTGCATAAAGAC
				R: GCAGCACAACCACAGTGCTA
UNH982	3	$(GT)_{21}GC(GT)_9$	120-168	TCAATACTGTGGTCCCCTCTTT
				TCTCAGAGCGCTATCTTCCTG
UNH172	4	$(CA)_{17}$	176-246	AATGCCTTTAAATGCCTTCA
				CTTTTATAGTCGCCCTTTGTTA
UNH132	9	$(GA)_6GC(GA)_7$	125-149	ATATAAGAAACTGAGTCGGTGAG
				TGGAAATAGAGGGTGGGTGAG
UNH192	11	$(CA)_{10}$	144-190	GGAAATCCATAAGATCAGTTA
				CTTTTTCAGGATTTACTGCTAAG
UNH173	13	$(CA)_8$	123-207	CGTGAGAAAACAATGGT
				TATTGATTTTATAGCTGTCTGG
UNH138	16	$(CA)_{26}$	164-228	TTCAGCTTCATCTCTTG
				CCATTTTAACCTCTCCATCT
UNH153	18	$(CA)_9$	197-243	TCTGCTTTGCTTTTTCTCATTCT
				TACGGCACACTCCCTCCAT
UNH216	23	$(CA)_{11}$	120-186	GGGAAACTAAAGCTGAAATA
				TGCAAGGAATATCAGCA

*linkage groups

PCR was performed in a Temperature Gradient thermal cycler (Biometra, Gottingen, Germany) using the Klear Taq kit (K Bioscience, UK). Fifteen micro liter reactions were set up containing a final concentration of 1X KlearTaq buffer, 1.5mM $MgCl_2$, 200nm (each) dNTPs, 300nM labeled primer, 300nM forward/reverse primer(depending on the labeled direction of the primer), 20nM tailed primer, 0.75U KlearTaq enzyme and 20ng DNA. The PCR conditions were as follows: 95°C for 15min (initial denaturation and enzyme activation) followed by 40 cycles of 95°C for 30s, 56°C for 30s and 72°C for 1min and a final extension time of 20min at 72°C. PCR products were checked by electrophoresis in1.0% agarose gels made using 0.5X TAE buffer containing ethidium bromide (10µg/ml).

Two or three different PCR products with different fluorescent labels were multiplexed and the sizing of the products was performed using a CEQ 8800 Genetic Analysis System automated capillary sequencer (Beckman Coulter, USA). Allele sizes were analysed using CEQ 8800 software.

Data Analysis

Population genetic variability parameters, including number of alleles (A), allele frequencies per locus, allelic richness (Ar, calculated from the smallest sample size) observed and expected heterozygosities (Ho and He respectively) of each population, and Fis were estimated using FSTAT software for windows version 2.9.3(Goudet 2002).The effective number of alleles per locus (Ae) was calculated according to Ferguson (1980). Differences between populations for each parameter (A, Ae, Ar) were tested for significance using One Way Analysis of Variance in SPSS statistical package, version 17.0 (SPSS Inc., Chicago). The total number of alleles and the total number of private alleles were estimated for each locus in each tilapia strain.

GENEPOP version 4.0(Raymond and Rouset 1995a; Rousset 2008) was utilized to determine if each locus and population conformed to Hardy-Weinberg equilibrium (HWE) by testing observed and expected heterozygosities and fixation indices (Fis) (Weir and Cockerham 1984) using a Markov chain exact method (dememorisation:1000; batches:100; iterations per batch:1000) (Guo and Thompson 1992). The same program was used to test the exact probability of significant deviations from HWE (Fisher's method) for all loci and for all populations to determine genetic differentiation between each population pair (exact G test). Most loci did not conform to HWE, the program Micro-Checker version 2.2.3 (Van Oosterhout et al. 2004), was used to detect for presence of null alleles.

As the UDA population contained a comparatively higher number of private alleles than the other two populations, hierarchical cluster analysis was performed using the between groups method, Euclidean distances, standardized with Z scores (SPSS version 17) on UDA population to identify whether the individuals possessing private alleles could be separated. Only 46 individuals (from 54) were used for the analysis as the remaining ones did not have a complete allele set across all nine loci.

Results

The number of alleles per locus varied from a minimum of 3 (locus *UNH 153*) to a maximum of 12 (locus *UNH 995*) across the 3 Lines. The mean number of alleles per locus (A) was lowest in GDAM (5.8) and highest in UDA (7.7) (Table 2). Allelic richness (Ar) was also lowest in GDAM and highest in UDA. SDAM had the lowest effective number of alleles (Ae) while the other two populations had very similar values. No significant differences were evident in A, Ae or Ar among the three Lines. Private alleles were present in all three populations and UDA showed the highest number of private alleles (Table 2).

UDA and SDAM deviated significantly from HWE overall, while GDAM did not depart significantly from HWE (Table 3). GDAM only had a single locus that departed from HWE while SDAM had six (3 loci with Ho>He, and 3loci with He>Ho), and UDA had six (all with He>Ho). High Fis values for most loci in the UDA Line indicated an excess of homozygotes, Testing for null

Table 4 UDA individuals in the cluster A of the dendrogram and the number of private alleles present in them

Locus	*UNH*173	*UNH*132	*UNH* 995	*UNH* 138	*UNH* 172	Total
Sample Number	Private alleles					
	195	142, 144, 147,153,157	230, 234, 240, 253	193	192, 230, 226, 240	
UDA36	-	1	1	-	2	4
UDA 50	-	1	1	-	1	3
UDA 58	-	1	1	-	1	3
UDA 29	-	2	-	-	1	3
UDA 54	1	2	1	1	1	5
UDA 3	-	1	2	1	1	5
UDA 6	-	1	-	-	2	3
UDA 38	1	1	2	-	2	6
UDA 60	-	-	-	-	-	0
UDA 20	2	1	-	-	-	3
UDA 21	-	-	-	-	1	1
UDA 32	-	-	-	-	-	0

Discussion and Conclusions

The present study characterized molecular genetic variation in two tilapia culture lines founded from the same stock (GIFT, Generation 9) that had been subjected to very different stock management regimes ("minimal change" vs selection with rotational mating), carried out at Dambulla Aquaculture Development Center. Diversity in the two GIFT lines of Generation 9 was then compared with another hatchery line (Udawalawa) founded from an earlier 6th Generation GIFT stock. The time difference between introductions of the different GIFT generations (6 vs 9) into Sri Lanka and the present study was five and eight years respectively.

There were no significant differences in the number of alleles (A), the effective number of alleles (Ae) or allelic richness (Ar) among the three populations. The UDA Line (that had the highest values for all parameters) also had several private alleles with fairly high combined frequencies (up to 0.33 for *UNH*172, Table 2). The small number of private alleles at low frequencies in the GDAM and SDAM samples may have resulted from genetic drift and/or sampling error in these populations.

Potential reasons for private alleles being present in the UDA Line

In addition to the GIFT stock, Udawalawa AQDC maintains another non-GIFT *O. niloticus* broodstock. Water for broodstock ponds is supplied from the Udawalawa reservoir where tilapia stocks of more than a single species (*O. mossambicus*, *O. niloticus* and *O. rendalli*) are present (Chandrasoma 1986; De Silva et al. 2005). Accidental escapes and gene introgression from these sources in the hatchery could have been responsible for the private alleles observed in the UDA GIFT-derived population. The majority of loci in the UDA population showed a deficit of heterozygotes and significant deviation from HWE (Table 3). Most of the private alleles were shared by the same individuals (Table 4). This suggests recent introgression of foreign genes into the UDA Line from other tilapia stocks.

Comparison of GDAM and SDAM

GDAM, SDAM Lines were very similar with respect to *He* and all diversity measures indicating little impact of selection on diversity in the SDAM line. As indicated earlier, the SDAM Line originated from families from the original GDAM population and was selectively bred from 8 tanks over six generations across five years by methodically transferring all males from one tank to females from other tanks in each generation to achieve appropriate levels of genetic mixing among

tanks. This practice would appear to have had a positive outcome unlike some other selective breeding programs that have produced reductions of genetic diversity in hatchery reared populations over time (Sekino et al. 2002; Was and Wenne 2002). Being however, an admixed group of randomly selected individuals representing eight tank populations; it would be unlikely that the admixed stock would conform to HWE until the population had reached equilibrium following an extended period of random mating.

SDAM Line showed higher A and Ar estimates compared with the founder GDAM Line. Selective breeding carried out on the SDAM Line was directed at improving and important quantitative trait (individual growth rate) and in parallel conserving genetic diversity relative to the source population.

Comparison of this study to others

Estimates of A and Ar in the Udawalawa broodstock population (UDA) were higher than GDAM or SDAM indicating that more genetic diversity remained in this line. Sukmanomon et al. (2012) applied14 microsatellite markers (8 of which were common to those screened in the current study) to examine diversity in the UDA Line except that he screened the 9^{th} generation where Ar was lower (7.14). Potentially, the difference may have resulted from the smaller sample size examined. Studies of Rutten et al. (2004) based on 14 loci and McKinna et al. (2010) based on 4 loci also showed lower genetic diversity estimates(7.5 and 7.1) for the 9^{th} and 6^{th} generations of GIFT populations respectively than was evident in the UDA Line here, but the identity and number of loci screened were different and so direct comparison are not possible.

The three GIFT lines screened here had lower Ae estimates when compared with other GIFT (4.37) and GIFT derived populations (4.17-5.42) Sukmanomon et al. (2012).The founding size of each line and the impact that different management practices in combination with effects of selective breeding (SDAM Line), all may have contributed to the relatively low diversity estimates observed in these lines.

Significance and further studies

Molecular studies of diversity in cultured tilapia broodstocks in Sri Lanka have not being conducted since the first introduction of tilapia species to the country. Therefore comparative studies on genetic status of present and past lines is not possible. The UDA and GDAM lines do not however, show substantial loss of genetic variation which could be considered as an indication of a positive outcome from applying cautious management practices. A comparative study of relative growth performances of the GDAM and SDAM Lines is warranted however, to determine the best performing stock under production environments in Sri Lanka. This would provide a basis for development of a suitable broodstock management scheme for the culture industry.

High levels of genetic diversity in general, enhance the production of quality seed with respect to both fitness and adaptability (Taniguchi 2003). Sri Lanka mainly has culture based fishery depending largely on stocking fingerlings in reservoirs. Limited tilapia aquaculture currently takes place. Fingerlings produced from the broodstock Lines screened here appear sufficiently robust to survive and grow well in large reservoirs and seasonal tanks where they stocked. Long-term maintenance of their relative genetic quality however, remains an important issue and attention in the future should be directed at conserving diversity in the lines.

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QUALITY EDUCATION AND THE CHALLENGE OF POVERTY AND INEQUALITY REDUCTION IN THE SPACE ECONOMY OF OGONI, RIVERS STATE, NIGERIA

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Abstract
The investments in human capital formation through efficient service delivery like quality education has direct and indirect multi-benefits to individuals, their families, the society and livelihood sustainability in the aggregate. This paper examines the provision of quality education as effective strategy for spatial poverty and inequality reduction with a view to achieving sustainable rural transformation in Ogoni. The study revealed that there is lopsided distribution of educational facilities in the area based on communities' performance in the gini-coefficient result of education variables. The scenario implies that while some communities in Ogoni have evidences of improvement educationally, others are relatively experiencing various level of educational deprivations. The study thus recommends equity in the distribution of modern school facilities, employment of adequate and qualified staff in schools, provision of good working conditions, establishment of information, communication and technology centres, well equipped counseling units, and aggressive youth empowerment programmes on community basis as the panacea.

Keywords: Quality, Education, Spatial, Poverty, Inequality, Ogoni.

INTRODUCTION

Poverty is a pervasive word and often difficult to define. Poverty manifests as low income, illiteracy, premature death, early marriage, large families, malnutrition, illness and injury which lock them into unacceptably low standards of living [1]. According to UNDP, poverty is a condition characterized by severe deprivation of basic human needs including food, safe drinking water, sanitation facilities, health, shelter, education and information [2]. As a spatial phenomenon, the severity of poverty varies between people and places, and can be seen in both absolute and relative terms [3,4].

The FAO specifies 2,500 calories as the minimum necessary daily consumption level [5]. The average consumption in developing countries is however, less than 2000 calories while the advanced economies have over 3,700 calorie intakes. In Nigeria, the data available shows a gradual decrease in daily calories consumption from 2000.5 to 1875.5 between 1995 and 2004 [6] which is far below the United Nation's specification. With an annual population growth rate of 2.8[7], Okowa posits that not less than 2.6 million people annually joins the army of the poor who are living on N150.00/day, if the poverty incidence in the country remains at 70% [8]. Corroborating this submission is Adeyemo who opined that in Nigeria, the chronically ill and physically handicapped are those hit by high rate of poverty and inequality, as ill-health and low human capital cannot earn enough to buy decent food, clothing, shelter and other welfare facilities [9].

Table 1: Trends in Nigerian Poverty (1980-2004).

Geo-Political Zones	1980	1985	1992	1996	2004
North-East	35.6	54.9	54.0	70.1	65.8
North-West	37.7	52.1	36.5	77.2	71.5
North-Central	32.2	50.8	46.0	64.3	60.1
South-East	12.9	30.4	41.0	53.5	55.7
South-West	13.4	38.6	48.1	60.9	62.4
South-South	13.2	45.7	40.8	58.2	65.1
National Poverty Incidence (%)	28.1	46.3	42.7	65.6	54.4
Estimated Total Population (millions)	65.0	75.0	91.5	102.3	126.3
Population in Poverty (millions)	18.26	34.73	39.07	67.11	68.7

Source: National Bureau of Statistics [10]

From table 1, while Nigeria's poverty incidence was just 28.1% involving 18.26 million people in 1980; twenty-four years after, 68.7 million have become poor constituting 54.4% of the total population. It is a vicious circle which keeps the poor in a state of destitution and disillusionment, and can be classified into structural, economic, social, cultural and political deprivation [11]. No country can be regarded as fully developed if it cannot provide all the people with such basic needs as housing, clothing, food and basic education [12]. Worthy of note is the fact that today, poverty is central to the challenges of crime, terrorism and insecurity in the world [13]. As noted in Table I above, a reasonable notion of poverty implies that significant numbers of people are living in intolerable circumstances in which starvation remains a constant threat, sickness is a familiar companion and oppression becomes a fact of life [14]. These conditions by observation could not be described as inapplicable to Ogoni in particular and the Niger Delta in generally. Thus, addressing the challenge is the focus of this study which emphasizes efficient service provision in terms of quality education through the processes of integrated rural development planning, social inclusion and good governance. This strategy is consistent with an approach to basic needs that highlights the fact that quality education constitutes a broad-based livelihood asset of a different nature.

THEORETICAL FRAMEWORK

Any activity or occupation geared towards human sustenance in space in the context of poverty and inequality reduction can be conceptualized from the perspective of an informal economic sector. According to Ajakaiye & Akerele, a production unit that is operating without official regulations to govern its behaviour in input and output markets as well as in its production process is unambiguously an informal sector production [15]. This concept is sometimes referred to as the "Reserve Army Wage-Labour" and it states that rural populace particularly women are predominant in the informal sector of the economy because they lack minimum level of education required for employment in the formal sector, have flexible working hours to meet domestic responsibilities and for the fact that little capital is needed to start any business in the informal sector [16]. The concept further stressed that informal workers are unskilled in informal terms and therefore can only function economically in the capacity of mere suppliers of wage-labour to the formal sector or must live the life of rural peasant workers [17].

However, this perspective is indeed attractive for informal sector activities play significant role in poverty and inequality reduction by providing additional cash income to farming and wage-earning households. In acting as an alternative form of income earning opportunity to that offered by the formal sector, informal sector takes on not only a social security role but also resistant to inflationary erosion as prices can be adjusted automatically in response to undue inflation. This concept is considered very relevant to this study because it sees the development of any nation in all its ramifications to be strictly anchored on quality education or technological breakthrough.

The informal sector comprises numerous owner-operated activities and job opportunities offered by private individuals who purchase services generally on a short-term basis. These activities include traditional crafts, petty-trading and other retailing activities, small-scale repair services, construction works and domestic services (house maids) of various kinds. Operating outside the ambit of legal policy framework or definition, this sector is characterized by low wages, occupational instability and the absence of a social welfare system [18]. An employment opportunity within the sector is often influenced by factors like sex, age, duration in urban residence, education and social connection. Also in this sector are the ancillary occupations that are devoted directly or indirectly to the service and convenience of the people engaged in the formal/basic occupation.

For the individual, education is an important determinant of quality of life [19] and the greatest catalyst of change for sustainable development in all spheres of national life; be it economic, social, political and mental. The argument is; if education is so useful and necessary for the individual, is it meant to be an exclusive reserve for a certain class of people in the society-male? Successive administrations in Nigeria have at various stages envisaged a time frame to eliminate illiteracy. Statements like education for all by the year 2000, 2010, 2015 and 2020 [20] are borne out of government's genuine desires to wipe out illiteracy by making education one of their major points agenda. Because of the implications of education on nutrition, income, fertility and overall growth of the economy, expenditures on education often command high priority to the governments.

THE STUDY AREA

Geographically, Ogoni area in Rivers State (Niger Delta) is located between longitude $7^{o}10'$ and $7^{o}30'$E and latitude $4^{o}30'$ and $4^{o}50'$N. These latitudinal locations imply that the area lies within the tropical region with all its climatic and topographic characteristics. The total land mass is approximately $1212km^2$, occupied by 837,239 people [21]. This yielded a density of 691 persons per km^2. The area is bounded in the North by Obio/Akpor LGAs, in the South by Opobo/Nkoro, Andoni and Bonny LGAs, in the East by Akwa Ibom State and in the West by Ogu/Bolo and Okrika LGAs. Ogoniland is administratively divided into Khana, Gokana, Tai and Eleme LGAs with 131 autonomous communities. Traditionally, it comprised six kingdoms viz Nyo-Khana, Ken-Khana, Babbe, Gokana, Tai and Eleme.

The dry season coincides with the harmattan period and lasts from December to February. The dry, dusty harmattan wind which was hardly felt in the past has in recent time become notable feature of the climate consequent on ozone depletion and global warming [21, 22].

Hypothesis

There is significant deprivation in the distribution of educational facilities leading to spatial poverty and inequality among communities in Ogoni Area.

METHODOLOGY

Data used for the study were mainly collected from primary and secondary sources. While the primary data were collected through the use of structured questionnaire and field observation; the secondary data were obtained from government official publications/ documents.

The study population comprises all the 131 constituent communities located in the four local government areas of Ogoni. The target population is the households in the study area.

The stratified sampling technique was used because it ensures that all subsets in the target population are captured in the sample. In this case, all the 131 communities were tabulated with the 2006 National Population Census figures projected. To obtain the number of communities for sampling, a criterion of at least 5,000 people per community was adopted. From this, an estimate of the household population was determined. Furthermore, the Taro Yamane's formula was applied to get the number of households for sampling [23] (see equation 1 below).

$$n = \frac{N}{1+N(e)^2} \quad - \quad - \quad - \quad - \quad - \quad - \quad (1)$$

Applying equation I above in each of the strata (Khana, Gokana, Tai & Eleme), we obtain the following results:

Khana LGA = 396 households.
Gokana LGA = 395 households.
Tai LGA = 391 households.
Eleme LGA = 394 households.

Thus, a total of 1,576 households in 57 communities were selected as the operational sample size for the study.

Out of 1,576 questionnaires that were distributed, 1,336 of them were duly completed and analyzed which represented a response rate of 85%.

Method of Data Analysis

The development indicators were measured based on the chosen indicators in each of the sampled communities in Ogoni Land. In other to show the degree of deprivation, otherwise the spatial pattern of poverty and inequality or advantage in development using education variables among the communities; the Gini Index descriptive analytical technique was adopted. The Gini-coefficient index model is of the form:

$$Gx = \frac{N}{\frac{1}{2}} \Sigma|xi\ Pi| \text{ or } x - \%\ Y.05 \quad - \quad - \quad - \quad - \quad (2)$$

Where Gx = Gini coefficient
*x*i = The percentage of the value in the LGA shared by community.
Pi = The percentage of total population in LGA shared by community i.
(where population is assumed the distributional criterion).

The Gini index of concentration examines the extent of concentration of each of the selected indicators among the constituent communities and local government areas in Ogoni area. The Gini-coefficient ranges from zero to one (0 – 1) with zero representing total inequality. Thus, the gini-coefficient of spatial variation measures the performance or variation of the chosen variables among observations or cases. It also compares the percentage share of given item by the different areas against their percentage population or distribution criterion.

RESULTS AND DISCUSSION

Table 2: Education Status of Respondents

Level of Education	Frequency
No Education	450 (33.7)
Primary	398 (29.8)
Secondary	285 (21.3)
Tertiary	203 (15.2)
Total	**1336 (100.0)**

Source: Authors' Fieldwork (2014)
(NB: Figures in brackets are percentages)

Table 2 reveals that 33.7% of the respondents had no formal education, 29.8% had primary education, 21.3% had secondary education, while only 15.2% had tertiary education. This educational structure further shows that the need for manpower development in the study area is not only necessary but urgent. This is certain in view of the fact that it leads to seeking for low level or temporary jobs available only in the informal sector of the economy which offer no advancement.

Table 3: Respondents' Perception on the impact of Poverty in the Study Area.

Effects of Poverty	Frequency
Increased number of crime/insecurity	115 (8.6)
Increased Inter/Intra Community Conflicts	92 (6.9)
Increased Prostitution	99 (7.4)
Increased Number of Unemployed Persons	581 (43.5)
Increased rural-Urban Migration	99 (7.4)
Increased Untimely Death	112 (8.2)
Increased Hunger & Malnutrition	238 (17.8)
Total	**1336 (100.0)**

Source: Authors' Fieldwork (2014)
(NB: Figures in brackets are percentages)

Table 3 above indicates that the dominant effects of poverty in Ogoni area include mass unemployment, hunger and malnutrition, insecurity of life and properties with 43.5%, 17.8% and 8.6% respectively.

Table 4: Gini-Coefficient on Education variables in Ogoni Area.

S/N	Variables	Development Indicators	Gini-Coefficient	Rank
	Education			
1.		Number of Primary school /'000 Population	120.96	1
2.		Number of secondary school /'000 Population	62.18	5
3.		Number of Primary school teachers /'000 Population	57.09	6
4.		Number of secondary school teachers /'000 Population	96.91	2
5.		Primary school Enrolment.	62.64	4
6.		Secondary school Enrolment.	64.03	3

Table 4 above indicates that the high gini values obtained on education variables in Ogoni area vary spatially among the communities. To appreciate this observation, the gini-coefficient was computed for each community. To achieve a categorization of communities into distinct groups, the rating scale below was used viz: 0.00 – 0.39 (Highly-Deprived), 0.40 – 0.69 (Deprived), 0.70 – 0.99 (Privileged), 1.00 and above (Highly-Privileged) Communities respectively.

Table 5: Summary of Communities' Performance on Education Variables of Inequality in Ogoni Area

LGA	Highly Deprived	Deprived	Privileged	Highly Privileged
Khana	5	8	5	11
Gokana	–	3	2	6
Tai	1	1	–	7
Eleme	2	1	1	4
Total	**8 (14.0%)**	**13 (22.9%)**	**8 (14.0%)**	**28 (49.1%)**

Table 5 above reveals that 28 communities (49.1%) emerged as highly-privileged, 13 communities (22.9%) emerged as deprived, while 8 communities (14.0%) each are both highly-deprived and privileged.

Conclusion

The persistence of spatial poverty and inequality consequent on quality education deprivation in Ogoni area has been made clear; using both the gini-coefficient analytical technique on education variables and responses obtained from field work through structured questionnaire.

It should be noted that a literate as well as educated labour force is essential for the effective transfer of advanced technology from the developed to developing countries. Quality education is therefore a weapon for excellence against inequality, squalor and poverty.

Recommendations

The study recommends that quality education should be made accessible, affordable and effective in the area to ensure sustainable poverty reduction index through the following ways:

1. Equity in the distribution of modern school facilities,
2. Employment of adequate and qualified staff in schools with good working conditions,
3. Establishment of information communication and technology centres, multi-media services with internet connectivity and counseling units.
4. Creation of sustainable employment opportunities and aggressive youth empowerment programmes on community basis.

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PROMOTING EVERGREEN AGRICULTURE AMONG SECONDARY SCHOOLS IN ARID AND SEMI-ARID LANDS OF KENYA

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Abstract

Pastoralism has been a major source of livelihood for most of the families in Arid and Semi Arid Lands (ASALs). Studies have shown that the range land available to support enough livestock that can provide sufficiently for ASAL livelihoods is on a decline trend (Mortimore, 2013). This land is characterized by severe degradation threatening human, crop and livestock survival. Besides, during prolonged drought, pastoralists have been reported to incur huge looses at times amounting to hundred percent. Evergreen agriculture which combines conservation agriculture and agroforestry would play a critical role in reclaiming back these lands as well as making them agriculturally productive. Agroforestry diversifies and sustains production for increased social, economic and environmental benefits on plots of land of any size. Agricultural extension officers and a few Non-Governmental Organisations (NGOs) have done commendable work in promoting evergreen agriculture among ASAL communities. However, the education sector through the curriculum implementers in secondary schools has a role to play in promoting evergreen agriculture. The Kenya secondary school agriculture curriculum has content on conservation agriculture and agroforestry which if properly implemented would equip learners with conservation and agroforestry knowledge, skills and attitudes necessary to make ASAL schools ever green.

Introduction

Agriculture has wide-ranging global impacts which extend to economic growth, poverty reduction, food security, livelihoods, rural development and the environment (Meijerink & Roza 2010). In Kenya it is the backbone of the economy. Kenyan agricultural sector contributes directly about 24 percent of Gross Domestic Products [GDP] and about 19 percent of the formal wage employment (Lewa & Ndungu, 2012). An estimated 60 per cent of all households in the country are engaged in farming activities and 84 percent of rural households keep livestock. The sector also indirectly contributes a further 27 percent to the country's GDP through linkages with agro-based industries. According to Ministry of Planning and National Development (2007), agriculture is key to national food security and is expected to play a critical economic role as Kenya envisages its transformation into a rapidly industrializing, middle-income nation by the year 2030. Most of the farming is done in the high and medium potential areas which only accounts for less than 17 percent of Kenya's land mass while the rest of the land is classified as Arid and Semi Arid Lands [ASALs] and considered less productive (Ministry of State for Development of Northern Kenya and other Arid Lands, 2011).

In Kenya livestock in the ASALs contribute 50% to agriculture GDP and have an estimated value of 60 billion shillings whose annual trade is estimated to be worth 6.0 billion shillings in a year (UN, 2011). Although most communities in arid lands are predominantly pastoralists the Vision 2030 development strategy for Northern Kenya and other dry areas acknowledges the need for diversification through crop production (Ministry of State for Development of Northern Kenya and other Arid Lands, 2011). Kenyan ASALs have 9.2 million hectares of land which has the potential for crop production if put under dry land agriculture (DLA). Thus enhancing knowledge and skills on DLA is of great importance in realization of vision 2030 of becoming a middle level economy earner. This knowledge and skills need to be inculcated among the youth as early as possible the reason it's necessary to practice some of the DLA practices like agroforestry in secondary schools.

ASALs are focused because they are characterized by low rainfall, water scarcity, land degradation and high temperatures making them less agriculturally productive (Bogdanski, 2012). In addition they are experiencing high population growth rates outstripping food production leading to food insecurity. This also increases the demand for wood fuel, fodder, timber, other non-timber products and environmental services making them vulnerable to land degradation (Mowo, Dobie, Hadgu & Kalinganire, 2010). Their productivity can be enhanced by promoting agroforestry practices aimed at making the areas evergreen. The Kenya secondary school agriculture curriculum has agroforestry as one of the topics to be covered in the four years course (Kenya Institute of Education [KIE], 2002). Agroforestry involves the growing of trees and practicing agriculture at the same time in the same piece of land. Evergreen agriculture is being advocated because of the role trees can play in rejuvenating degraded ASALs. The benefits associated with evergreen agriculture include maintaining vegetative soil cover, nutrient supply through biological nitrogen fixation and nutrient cycling, enhancing soil structure and water infiltration and provision of food, fuel and fiber. Other benefits include supply of medicinal herbs for both humans and livestock, supply of fodder and shade, carbon sequestration and conservation of above and below ground biodiversity. Communities in the ASALs also rely on tree products as one of their major source of income (Akinnifesi, Ajayi, Sileshi, Kadzere & Akinnifesi, 2012). A study by Assefa and Abebe (2011), established that trees and shrubs were used by many pastoralists to fill the gap of seasonal food shortage with 40 percent being consumed during famine. However, besides the secondary school agriculture curriculum having content on conservation agriculture and agroforestry, its impact in reclaiming ASAL areas in Kenya is far from being felt.

Literature Review

Dry lands occupy 41 percent of the earth's land surface globally and are home to 35 percent of the worlds' population (Mortimore, 2009). They are more extensive in Africa where they account for more than two-thirds of African land mass and support a population of over 400 million people. In sub-Sahara Africa, they cover about 40 percent of the region and are home to more than 206 million while in Eastern Africa, they cover close to 81 percent of the total land mass (Chauvin, Mulangu & Porto, 2012). In addition, poverty levels have been established to be extremely high and the average Human Development Index of countries in sub-Sahara Africa with large dry land areas was is low as 0.35 (Batana, 2010). In Kenya the situation is not any different with 23 out of the 47 counties in the country being ASALs. Some of these ASAL counties have time and again dependent on the government for relief food for their inability to produce sufficient for their population. However, these ASALs can be rehabilitated into agriculturally productive areas through evergreen agriculture as done in Tanzania and parts of west Pokot in Kenya.

A paper by Mowo, *et al*. (2010) indicated that 1920's Shinyanga woodland in Tanzania was cleared as a way of controlling tsetse flies which were causing huge losses in livestock and transmitted sleeping sickness in man. This made the land habitable and productive but only for a short while. Increasing population of both human and livestock put enormous pressure on land resources. Like in many other unproductive areas, agricultural production was then characterized by very little conservation, limited use of fertilizers and poor livestock management. By the 1980s Shinyanga had become 'the desert of Tanzania' and the rural population was confronted with declining crop and livestock yields, long distances in search of wood fuel and water and increasing levels of poverty and food insecurity. Degradation of Shinyanga desert drew concern from the Tanzanian government for rehabilitation. However, their effort did not bear any fruit from 1984 to 2004 until ICRAF took over. Through participatory agroforestry ICRAF employed a wide range of agroforestry technologies ranging from planting of woodlots, fodder banks and use of nitrogen fixing trees.

This resulted into one of the most successful land rehabilitation in Tanzania and the eastern Africa region boasting of rehabilitating more than 500,000 hectares. The result of this rehabilitation were the benefits reported by farmers including increased fodder availability reflected by the improvement in milk production from 7 to 11 litres per cow per day, reduced time to collecting firewood and fetching water, increased availability of building materials, improved biodiversity and increased incomes from sales of different tree products. Extensive ground cover in the enclosed area helps in improving soil fertility and reducing soil erosion by wind and water.

The Vi-agroforestry an International Non Governmental Organisation (NGO) has rehabilitated the degraded arid west Pokot through agroforestry science with the aim of increasing food and energy security as well as wealth creation. At the initial stages the NGO met resistance from the community and hence resolved to establish their demonstration plots in institutions like schools and hospitals. The idea impressed the community and the members then started approaching the NGO for help on how to establish the same in their farms. Massive adoption of the agroforestry science introduced has led to individualization of land tenure, reduced nomadism improved animal health and increased school enrolment.

Figure 1: Land transformation in west Pokot through agroforestry science

In Kenya, nearly 10 million people live in the ASALs which constitute about 84 percent of the country's land and experience permanent threat of drought and famine (UN, 2011). They are also characterized by massive land degradation due to human and livestock population pressure. Promoting an evergreen environment in the ASALs will be of great help not only in reclaiming the land but also improving the

lands productivity. Learning institutions especially secondary schools can be used for piloting the agroforestry projects before the idea can be extended to the larger ASAL community. Engaging agriculture students and those in agriculture and environment related clubs actively in these projects would equip them with appropriate skills for problem solving in ASAL areas. Secondary schools are better learning institution targets because it is at this learning level where many learners are engaged in the agriculture related subject. A study by Nguma (2011) revealed that such students become good ambassadors of the same projects back in their community by carrying out some of the activities they do at school in their homes. Evergreen schools are likely to produce school leavers who are environment sensitive hence help in reclaiming the ASALs through agroforestry practices. One of the agriculture topics covered in secondary school syllabus is agroforestry. Adopting evergreen agriculture in schools would be an essential way of reinforcing practical teaching and learning of the topic. This would go a long way in enabling agriculture students and the school fraternity to realize the benefits of agroforestry.

Schools being learning centers are an essential component in agricultural information dissemination because they offer a conducive environment for learning by doing which boosts interest and enhances retention. Issa (2013) acknowledges that information is the vital resource which provides impetus for a nation's social, cultural, political and economic development. Participatory curriculum implementation promotes innovation and creativity which leads to acquisition of skills for life (Konyango & Asienyo, 2015). Participatory curriculum implementation uses active methods of teaching which fosters critical and creative thinking as well as collaborative problem solving which are very crucial in agricultural education (Olatoye & Adekayo, 2010). Such methods are very appropriate when teaching agricultural practices that promote agroforestry and conservation agriculture if our ASAL secondary schools are to embrace evergreen agriculture. These methods include; problem based, context based, student centered, demonstration, project, tutorial, seminars, fieldwork, inquiry method, discussion and computer based instruction (Ali & Muhammad, 2012; Okogu, 2011; Olatoye & Adekayo, 2010; Wootoyitidde, 2010). The study done by Olatoye and Adekayo (2010), indicated that project based method was gaining popularity for it challenges students to learn how to learn and work cooperatively in groups to seek solutions to the real world. There is need for teachers and students to embrace the project based method in making our schools evergreen agriculture learning centers. Active involvement of learners in agricultural activities through project exposes them to long lasting experiences and assists them think critically enhancing learning and retention. Carrying out agroforestry and conservation agriculture practices aimed at evergreen agriculture in secondary schools would give learners skills they would apply to promote evergreen schools in ASALs.

Findings by Napoli and Raymond (2004) established that students have a tendency of focusing their study on the things that are assessed and graded. Assessing and rewarding individual students in such projects would reinforce the learning of agroforestry practices which would promote evergreen agriculture in schools and by extension in the community. Within a secondary school set up the target are the youth who make up the futures' human resource not only in agriculture but also in all the other economic activities. Therefore promoting evergreen agriculture in secondary schools will help bring up youths who are conscious of their environment. To promote this, agriculture teachers need to form a team with the relevant club patrons in the school as well as extension officers in the surrounding. This will lead to a strong linkage between the school and the surrounding community boosting the schools' role as a learning institution and an information dissemination agent. For sustainability and relevance of this project both in schools and the surrounding community teachers involved and the extension agents need regular training and motivation (Doan, Roggenbaum & Lazear, 2012).

Theoretical Analysis and Application

Kolb's (1984) experiential learning guides this study. He defined experiential learning as the process in which knowledge is created through the transformation of experience. It focuses on "doing" in addition to the "hearing" and "seeing" that occur in traditional learning (Rizk, 2011). Additionally, experiential learning is participative, interactive and applied allowing contact with the environment. It involves active participation of the learner and learning takes place on the affective, behavioral as well as on the cognitive dimensions. Thus if the content on agroforestry in secondary school curriculum could be learned experientially, schools especially those in ASALs could be evergreen. This could improve the environment and the schools could experience all the benefits associated with agroforestry.

This study is also guided by the functional curriculum theory by Obonya (2004). The theory posits that the purpose of education is to acquire skills of adapting to that environment and acting to influence it thereby contributing to its development. According to Obonya, the learner's environment should determine the way education is carried out, including what is taught and how it is taught and learned. The bottom line of secondary school agriculture was to equip learners with agricultural skills they could use for self reliance. A study by Lawal and Wahab (2011), found out that education remained the most effective instrument through which the society can be transformed. Education equips human resources with the needed knowledge, skills and competencies which would make them functional and contribute to the all round development of the nation. This theory informs the study in that; agroforestry is a critical measure in transforming ASAL areas. Proper implementation of agroforestry skills and techniques will lead to evergreen ASAL areas as enhancing their productivity and overall development.

The endogenous growth theory which sees education as a process that changes the production technology itself (Kwabena, Paddison & Mitiku, 2006) guides this study as well. In this model, education is seen as a subject to increasing returns so it could overcome the growth reducing effect of diminishing returns to physical capital. In their study they found out that an economy that made an economic choice of devoting more of its resources to accumulating knowledge had a permanently higher growth rate. Additionally, Monteils (2012), indicated that production of knowledge by education induced a self sustained economic growth. This theory will inform the study in that through proper secondary school agriculture curriculum implementation learners will be able to acquire skills on conservation agriculture and agroforestry which can be used in promoting evergreen ASAL secondary schools. Secondary school agriculture teachers' emphasis on agroforestry will go a long way in transforming the dry and dusty ASAL schools into cool evergreen schools.

Conclusion

Promoting evergreen agriculture in ASAL secondary schools calls for practical implementation of secondary school agriculture curriculum with emphasis on the conservation agriculture and agroforestry. Setting up agroforestry tree nurseries within the school compound and transplanting them will equip learners with appropriate knowledge, skills and techniques they can apply to promote agroforestry even out of school. Growing different agroforestry trees will make learners realize the benefits of agroforestry among them; land transformation, source of fruits, wood fuel, timber, fodder, aesthetic value as well as creating a cool microclimate within the school environment. Through agroforestry, ICRAF has reclaimed Shinyanga desert into a productive agricultural land while Vi-agroforestry has improved the arid West Pokot and immense benefits have been realized including enhanced food security. Similarly giving agroforestry the attention it deserves right from our secondary schools could help make a

difference in ASALs in the near future. This is because we will be producing environment sensitive youths who are likely to promote agroforestry practices even after school.

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Eco-philosophy of Buddhism and Early Buddhist Art response to environmental degradation

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Since the industrial revolution there has been an immense eco – crisis
All over the world. In the development of economic activities, all people plan according to the norms of modern technology without being concerned about traditional ethical values and lifestyles. However our immoral behavior and technology have brought about a deplorable problem, namely, eco – crisis. Waterways, forests and animals are being gradually destroyed. In the process of vanquishing nature, man himself has placed himself in danger of losing his own humanity[1] . In this context, we can see the issue of environmental conservation discussed by ecologists. Although the offer of a scientific solution for conservation of nature, the problem remains. Our understanding is to consider the Buddhist teaching and artistic work is very important to come up with a solution to deal with this matter. The Buddha in this matter had explained three major factors about the destruction of nature. These factors which are hidden in the mind, namely, craving (rāga), hate (dosa) and delusion (moha) can be removed by aesthetic attitude towards nature . Although the Buddha rejected drawings of male and female figures because those made mental pollution, he permitted decoration in the rooms of monasteries with the aspect of beauty.

As people relate to nature by these three characters so there is much harm and damage to water, plants, animals, air, food and other items on earth. Yet we are not clever enough to see the interrelation between our behavior and the environment. Hence we have failed to suggest a solution to this crisis. The continuity of process of immoral behavior breaks the balance of nature and its ecosystem. The theory of causality or dependent origination explained by the Buddha has noted the strong harmony between man and world. Anything happening in the world directly influences man. On the other hand, whatever activity done by man also affects nature. The Buddhist theory of action explains as to how an impure mind brings evil results, but pure mind brings about good results[2]. If our behavior is unsatisfactory, together with it, world also changes in some way and brings about bad results on us. For example air pollution, water pollution and deforestation are three damages brought out by human immorality. It is painfully selfish to change nature to find physical property for our sensual pleasure. We damage nature in the process of finding new resources. We harm plants, animals and natural resources such as air. Excessive craving for material property not only causes to pollute but also to exhaust natural resources. Buddha's teaching shows, long ago four times, there were food crises in the history of human civilization, primarily based on the immoral behavior of mankind[3].

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[1] Journal of Environmental Planning and Management.2007. University of New custle. P. 65.

[2] *Majjhima nikāya* vol. 111. 1959. . Cullakamma Vibhaṅga sutta.London. PTS.p.248.

[3] *Dighanikāya*. Aggañña sutta. vol.111.1921..London.p.PTS. p.80

Craving

Due to longing for gaining material wealth, greediness and struggle have rapidly grown in the mind of the present man. This is a conspicuous cause led to the destruction of earth's natural resource - base. Once the Buddha explained

that at the beginning of the world, beings consumed solid food that was on the surface of the earth beings consumed solid food that was on the surface of the earth. As a result of their greediness, food got extinguished from the earth. Subsequently, they began to consume mushrooms. In the same way they got used to taste mushrooms which disappeared from the earth. Next beings used a kind of creepers called Badālatā. Again grew their taste and greediness and creepers disappeared[4]. At this stage all beings converged and had a conversation about the food problem. They saw a new kind of crop which grew naturally that belonged to a family of paddy. They consumed it and craving also grew. Soon, natural crops were also sterilized and beings had to cultivate again under self-cultivation. While everyone shared the land, the concept of common property degenerated. When private economy sprang up, people had to rely on weaponry and laws to safeguard their property. But showing a historical event in the economic function of earliest man, the Buddha exposited as to how the attitude of craving is harmful to the natural resource – base[5].

Hate

Throughout human history men were involved in a struggle to share property. During Buddha's time, his own relatives who belonged to two clans named Sākya and Koliya declared war upon each other. The dispute over sharing water in the Rohini river to their field was the source of this struggle. The Buddha came to the battlefield and advised them pointing the fact that human life is more valuable than water. In north India, during this period, king Pasenadi Kosala and King Bimbisārawere often involved in war and Buddha

explained the value of human life more than land. Even today endless war is entwined with gaining ownership of natural resources. War in any form brings pollution and much damage to water, air, living beings, plants and land owing to spreading of atomic poison. The Buddha has emphasized the fact that destruction of human environment due to growth of hate and greediness[6].

Delusion

Ignorance about reality of nature and about ourselves is called delusion. Because of ignorance we fail to understand actions that harm the environment. So we damage it. Our unwholesome actions and wrong decisions cause to upset the eco- balance of the world. As the theory of causality or cause and effect relationship in Buddhism everyone is part of nature. Therefore as we are unable to know how ignorant behavior changes the environment, a reasonable solution to the eco- crisis is not found. It is the immoral behavior of the rulers and the subjects alike which brings about eco-problems according to Lord Buddha's explanation. If rulers are unjust their courtiers are also unjust. When courtiers are unjust, subjects follow them and virtue is degenerated in the country. As a result of this immoral behavior, climate changes and crops go dry. Finally people face drought and famine[7]. That weather changes affect cultivation and health of subjects. Eels where in the Buddhist texts, it is mentioned that if the ruler is wicked the moon and sun appear irregularly. Then day and night

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[4] *Dighanikāya*. Aggañña sutta. vol.111.1921..London.p.PTS. p.80

[5] ibid

[6] *A□guttara nikāya*. Vol.iv. 1965. Saptasuriuggama.London.PTS.

[7] *Dghanikāya□□akathā Tīkā.* Cakkavattisihanada Sutta Va□□anā. Vol.111.1970. London.PTS

become shorter. It overturns the seasons.When imbalance of seasons is about wind blows wrongly.[8]. Rain does not fall and crops do not ripe**.** The people who eat such unripe fruit and crops have short life. They will be ugly and sick.

Briefly, the Buddhist solution of the eco-crisis is associated with practice of good behavior and an ethical attitude towards nature. At this point, we have to emphasize our own behavior which brings destruction to nature. Therefore the life style of modern men ought to be of mutual friendship with nature. Moreover, we have a number of examples given by the Buddha and His disciples themselves. That is, they spent a natural life with nature with a few requirements. The resource-base was not depleted by them.

All the important events of Lord Buddha's life have a close relationship with nature. He was born under a tree and attained enlightenment under a tree. He passed away under a tree. Naturally, Lord Buddha loved and made aesthetic concepts pertaining to nature but also advised His followers to spend free life as a bird or a bee who suck honey in flowers without harming it. This advice notes the significance of cultivation of spiritual benevolence and gratitude for natural gifts. Therefore, Lord Buddha practiced gratitude by honoring the Bo tree which gave Him shade when sitting under that tree. He it is said spent a week with his eyes opens gazing at the tree where he attained enlightenment without even winking.

Elsewhere the Master has said that a person who is intelligent never breaks even a branch of a tree under which he had rested [9]. Cutting down trees and plants for religious rituals and ceremonies was condemned by Lord Buddha[10]. Putting polluted things in to nature unwittingly was also condemned. Lord Buddha discourages even throwing hot water on to grass. Besides, spitting as well as putting excreta in to nature is discouraged.

Among the natural resources, domestic and wild life are also valuable gifts. In our modern economy, animals become extinct in large numbers from our earth. In fact, our violent behavior directly forces to remove them from earth. The bio-structure of the world has been destroyed by our selfish economic activity. As a matter of fact, such Buddhist teachings loving kindness and compassion are characteristic of conserving the animal world.

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[8] ibid

[9] Cowell.E.B. 1957. *The Jataka or Stories of the Buddha's former births*. Mahā Vānija Jātakaya.London.PTS.

[10]. *Dīgha nikāya*.vol. 1. 1949. Brahmajala sutta..London.PTS

Felicity

It is very important to improve aesthetic views in our mind to control environment because that is able to remove craving, hate, and delusion. Here Buddhism properly promotes felicity for both our religious and secular lives. Obviously elder monks, according to scriptures were overjoyed with the surrounding promenade and dwelling place. There natural aesthetic dwelling was based to end their secular pressure and also to achieve the ecstasy with transcendental goal which they aimed[11]. Wildering, wreaths, plants, waterways and lakes represented in early Buddhist art recollect the Thera Gāta or hymns of the elders.

The average poet looks at nature and derives inspiration mostly by the sentiments it evokes in his own heart, he becomes emotionally involved with nature. For instance, he may compare the sun's rays passing over the mountain tops to the blush on a sensitive face; he may see a tear in a dew drop, the lips of his beloved in a rose petal etc. They appreciate nature's beauty for its own sake and derive joy unsullied by sensuous associations and self – projected ideas. The poems sung by elders *Mahākassapa* in the following words can be compared with natural back grounds represented in early Buddhist art.

Those upland glades delightful to the soul.
Where the *Kāveri* spreads its wildering wreaths.
Where sound the trumpet-calls of elephant
Those are the hills where my soul delights.

Those rocky heights with hue of dark blue clouds
Where lies embossed many a shining lake-
Of crystal-clear. Cool waters. And whose slopes
The herds of Indra cover and bedeck
Those are the hills where in my soul delights.
Now crimson glow the trees. Dear and cast
Their ancient foliage in quest of fruit
Like crests of flame they shine radiant
And rich in hope, great hero. Is the hour.

We have another significant life style from ancient china. Presented by Loa Tzu who was a famous thinker. According to Loa Tzu the man who overwhelm gives trouble to all. Therefore man should be humble as water flowing through the landscape. Similarly man ought to live following nature.
Water takes its way on spacious slopes, valley and so forth[12]. Similarly, human life pattern is to be built according to environment. These ancient advices not only guide us for the improvement of the aesthetic concept but also for controlling our unbalanced habit by an unassuming life pattern. Accordingly,, if we are in search of a genuine solution, it is necessary that we reform the present in mental virtue ourselves.

View of aesthetic and life style of the Buddha and his disciples were based on the origin of Buddhist art[13]. So vision, respect for moral values of the Buddha and disciples affected origin of art.

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11. See .Norman.K.R.Trans. 1969. *The Elders Verses*. London.PTS

12. Ronan and Needham,1978. *The Shorter Science and Civilization in China*. Cambridge University press..p.98.

13 See. Wzwalf.1985. *Buddhist Art an Faith*. Oxford University press.

Buddhist art has developed eco-Philosophy in the South Asian people over two thousand and five hundred years. If we want to protect the environment, we can cultivate aesthetic attitude with moral and spiritual dimension using artistic creations as a visual subject. However regarding environmental conservation early Buddhist art is a very important media which represent all facts which we have mentioned above. It contains felicity ethics and eco philosophy of the early Buddhists who lived in ancient India.

Lord Buddha allowed drawing and painting on the walls of monasteries which represent natural beauty. At that time the group of six monks had a bold design made with figures of women, figures of men in a dwelling. The Buddha said: monks, you should not have a bold design made with figures of women, figures of men. Whoever should have one made it is an offence of wrong-doing. I allowed monks, wreath-work, creeper-work, swordfish teeth, and the five strips of cloth design[14]. Buddhist art provides the entire essential element for a relationship to the natural world characterized by respect humility care and compassion.

Necessity of Buddhist art during the Maurya period

Subjects such as literature, art and philosophy represent the nature of common Philosophy of the time they existed. On the other hand, such subjects manipulated the behavior of human philosophy and human thoughts themselves led to emerge those subject materials. It is a great help that could obtain from art to develop attitudes and intellectual freedom.

There are a variety of attitudes built upon the same theme. Oriental artists knew this well.The wall paintings and sculpture have been used has a practical media in the formation of oriental Philosophy. These have been started as religious art products including the Buddhist teaching so it avoids the craving hate and delusion. It is useful to examine such eco-Philosophy revealed in early Buddhist art.

In sculpture found in Sānchi, Bodgaya, Bhārhut, Mathura, Gandhāra, Amarāwati and paintings of Sri Lanka each represents a philosophy that have sentimental perception of nature and gratitude towards it's faith and innocence. It could be perceived that the art creations which revealed deep relationship between the religious virtue and the environment have been used to build up a certain Philosophy. Buddhist art has come into practice after the emergence of Maurya culture. Thereafter, art became a strong media to feed attitudes in countries where Buddhism spread.

Artistic creations of the Maurya civilization belong to two periods, namely Maurya and Sunga. It could be identified that the creations produced in this era as an experiment and strategy to create new philosophy among the public. Some teachings in its inscriptions established by the king Asoka to develop environmental ethical attitudes were concerned with the establishment of environmental philosophy. When compared to the views and opinions presented in the inscriptions with the objective of art developed under this civilization, one important aspect is clear. The facts we are going to describe have been proven with the facts explained by Indian historians about the contemporary folk life.

According to the historians, at the time of 3, 2,1st century B.C. the Maurya and Sunga periods have developed economically with the increase of the commercial community[15]. There are many evidences that this development was accompanied with depletion of natural resources and an eco - crisis and the need to create awareness among the people. Megasthenes explains seven castes (war□as) among the group of people in that period only the farmers have been named as one. A large

[14] Horner . I. B.Trans..1963.*The Book of Discipline*. Vol.V. London.PTSp. 213.

[15] Rawlinson.H.G. 1943. *India. A Short Cultural History*. London. The Cresset press .p.22

segment of population were farmers and new lands had been grabbed for farming activities. Thus forests had been cleared. Settlements had been established in new lands. The government spent funds to build reservoirs, tanks, wells and dams blocking rivers for the purpose of providing water to farming. Among the government revenue the main item was to give away lands for cultivation. Also the commercial economy led to clear forests. Cotton and silk cloths were exported to Rome from India. Valuable timber such as sandal wood and *diospyros positifolia, chloroxylon swiet enica, vateria acuminate* to South coast of Persia was supplied. Many professions emerged around the timber industry. There were different grades of carpenters. As one responsibility of bureaucratic officers they supervised timber cutters. Timber logs were used for household work on a large scale. In addition, forests were cleared to hunt animals. War walls and bunkers were constructed out of timber[16]. The castle wall around the city of Pātaliputra was nine and half miles in length. It comprised of 570 balconies and 64 entrances. The wall was a timber made fence. Also, the two storied and three storied houses in the city were made of Timber. Palaces and houses were decorated using timber works such as volutes. It appears that their activities were controlled by the officers in charge of forests. Though Dr. Rawlinson indicates that the jungles were larger in extent than today, Romila Thapar accepts that there was a scarcity of timber[17] . There was another opinion that these jungles disappeared gradually.

There has been a segment of population and their main occupation was animal husbandry. During the period of King Chandragupta, those who engaged in animal farming and hunting as an occupation was considered to be third class. They were Gopālas or cattle farmers, Ajapālas and hunters. Their other activities were to catch and tame jungle beasts and killing violent animals like lions. A section of the forest had been separated for hunting. There were particular officers who supervised cattle farming, jungle animals were used to a large extent. Hunting wild animals was popularized as a hobby. Ox - fighting, race of horse and bulls and use of elephants as power were carried out. Scale of ivory and art creations of ivory were developed to a high standard. There was a separate grade of ivory art makers in Wedisa. Ivory was sent to the west. Carved ivory was also sent along with them. In the region of Roman emperor one evident fact to prove that ivory was sent to Rome in the form of a slate with a goddess or a woman devil among the Hurkulanium ruins. Among the commercial goods sent to Rome, there were lots of turtle shells, animal like lion, elephant, tiger, monkey, parrot, peacock, reptile and tortoise were sent to Rome[18]. It is shown in Indika of Megasthenes that such animals have been used for various activities domestically[19]. When King Chandragupta went out they carried buffaloes, leopards, tamed lions and birds put in cages. This could have been a strategy specially to defend the king. It was a clear fact that officers had been appointed to minimize disasters, to take care in the forest industry, to kill animals and supervise them. But the responsibility depended upon the people who used them. Inscriptions of King Asoka and art creations of this time are based on ordinary people.

Art creations during the Sunga period which followed the Maurya period have further focused on the life of ordinary people. The inscriptions and art that have a religious bearing go to build up a new thinking of the surroundings where people lived.

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[16] Romila Thaper. 1961. *Asoka and the Decline of the Mauryas*. Oxford University press.p 43.

[17] Romila Thapar. 1961.*History of India* .England. Penguin Books Lte. p.7.

[18] Narandra krushnasinha. Anil Chandra banarji.*India*. 1966. Printed By Sri Lanka Government. p.77

[19] Rolinsan.1973..p.59

A considerable number of inscriptions of King Asoka gave clues to establish the ethical system in the community towards trees and animals. Girnar inscription ordered to abstain from slaughtering of animals. He notices that no *Yāga* should be performed by killing a living animal. Earlier thousands of animals had been killed daily for meat. But today only two peacocks and a deer are killed. Here after these three too should not be killed [2.] The king advised the citizens and he too observed it. Asoka had paid attention to every being but it was impossible to show all in the inscriptions. Because of this, he named several animals representing the inland, water and the sky. He mentioned that the following animals named by me should not be killed. They are parrots, magpies, swans land lizards. Black faced monkeys, unicorns; white pigeons, village pigeons and all animals should not be used for work or killed for meat. Cows, goats and sheep if they are pregnant and feeding calves should not be killed[20]. To abstain from peeling barks of trees where creatures live and to avoid burning them. Not to burn the forest or to kill animals in vain[21]. One living animal should not be killed for another's meal[22].Days were declared prohibiting killing of animals. Fishing is prohibited on the three days in four months. Full moon day fishing and selling should not be done.

In the above mentioned days killing should not be done of any being in elephant forests and killing grounds. Skinning of ox must not be done in half moon day and full moon day[23]. This is true of other animals such as goats, sheep, and pigs skinning during the above mentioned days, skinning of bulls and horses should not be done too[24]. Building up nonviolent attitude towards animals is not a religious necessity. It is not a difficult aspect to manipulate economic activities. Rules and regulations depended on one's religious philosophy. He mentioned that the killing of animals had taken place for centuries, killing animals and torturing beings have been developing from the past. Because of this fact he realized not to kill living beings for food[25]. Ancient kings were involved in *Viharayatra* in hunting deer and other sport[26]. The king thought of the sympathetic perception created in the mind while not killing animals against the mental satisfaction gained. As a minimum he has seem to it that the good deed of not torturing animals was followed. It was not sufficient that developing attitudes to protect animals practically. He followed a special way to do that, by separating forest land for elephants, developed veterinary clinics. Plants and trees were grown for the benefit of animal [27]. One aspect was to provide them with a shelter. In this respect gardens were established and trees were planted along the sides of roads. The government directed common people to grow trees. It was interpreted as a good deed in religion. Stories like mansion (*Vimāna Vatthu*) can be considered with the back ground of this period. Vimāna vatthu explained that it is a great deed to grow mango trees . maintain gardens and built temples.

Certain Jataka stories must have been written on the basis of this period. These texts often explain how one should venerate trees and plants. It is further revealed from Asoka's inscriptions

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[20]Rdhakumud Mookerji. 1962. *Asoka*. Delhi. Motilal Banarsidass .Delhi.
Asokan Rock edicts. Girnar inscription 1

[21]do. Girnar v

[22]do. Girnar iv

[23]do. Girnar 111

[24]. do. Girnar ix

[25]Girnar ix

[26]Girnar 1

[27]Girnar 11

how religion and Dhamma made values to direct people to grow trees. It was prepared to grow medicinal plants where those did not exist for the benefit of people and animals. Where roots and fruits did not exist, they were brought and planted. Trees were planted for the benefit of man and animal with the wish that shelter be provided to human beings. Banyan trees were planted and mango gardens were established under the guidance of the state policy of Asoka[28].

Of the discussion we made around this background Buddhist art has developed especially with another aspect. Utility of art revealed in this period asa special element of the imperial culture. There was a vast cultural backwardness because of the war carried out to establish the Magadha Empire. Art could be used as one media to re-establish human thinking about the living and nonliving ecosystem and social ethics that have been surpassed. Ancient Buddhist art products that we come across have been directed to a new thinking that was needed at that time. These art creations blended with aesthetic feelings to love nature and gratification towards it so that it could be named as folk art that has nurtured thinking.One aspect was to provide them with a shelter. In this respect gardens were established and trees were planted along the sides of roads.The origin of Indian art is the faith towards nature. It can be examined with the thought of A.L. Basham. He said that the Indian art brightened while perceiving satisfaction of the world[29]. These artistic works must have been created with live feelings of body components and as a system that developed to perceive the living of the world. Basham interpreted that it reflects the universal *Āthma* or soul as integrity of all components. There is no doubt to reject remains of early Buddhist art of India representing all things in the universal spirit.

A.L. Bashamagrees with reference to ancient art of India and he mentioned that nearly all the artistic remains of ancient India are of a religious nature, which was at least made for religious purposes[30]. Secular art certainly existed for literature shows that the king dwelt in sumptuous palaces, decorated with lovely wall paintings and sculptures. Though all these have vanished, much has been said and written about Indian arts since then. European attitude began to doubt the established canons of the 19th century and looked to Asia and Africa for fresh aesthetic experience. Since then most authorities on the subject, Indian and European alike have stressed the religious and mystical aspect of Indian art. While admitting the realism and earthliness of the earliest sculpture.

Most critics have read the truth of Vedānta or Buddhist scriptures into the artistic remains of our period and have interpreted them as expressions of deep religious experience. Sermons in stone on the oneness of all things in the universal spirit. As A. L. Basham expressed that ancient Indian religious art differs strikingly from religious literature. Coomaraswamy mentions that usual inspiration of Indian art is not so much a ceaseless quest for the absolute as adelight in the world as the artist found it a sensual vitality and a feeling of growth and movement as regular and organic as the growth of living things upon the earth[31].

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[28] do. Girnar 11.

[29] Basham. A.L. 1954.*The Wonder That was India*. New York. Grove press. p. 346.

[30] ibid p .334

[31] Coomaraswamy.A.K. 1927. *History of Indian and Indonesian Art*. London. p .91,92.

Eco- philosophy of Early Buddhist art

Art and Architecture of the Maurya and Sungaperiod processed connected with natural beauty representing animal and botanical style. For instance we have the early capitals or reproduced by Percy Brown and they show attitudes of natural beauty of the Buddhist[32]. Each pillar was decorated with a complicated group of horses, elephants, lions, lotus, floral and foliate designs of the pillars clearly resembling the motifs of the pillars in the mansions of heaven which were created by merit that had been collected in the previous life such as planted trees and made gardens in this world. This is true for eco-philosophy of Buddhist art and that is a network of environmental components those interrelated with each other based on the cause and relationship. The individual sees the things surrounding him where he stands on. Those may be things near or far away. Life organs touch them. Then he views his surroundings. Early Buddhists were often close to nature. Environmental attitudes disclosed in art products have come naturally with his philosophy of life. The murals of Ajantha bear aesthetic and religious messages consisting echo-philosophy. Here even more vividly than at Sānchi in Bhārhut we witness the whole life of ancient Buddhist with natural beauty and spiritual message towards nature, gardens, ponds, rivers, wild life like beasts and birds. In fact many masterpieces of Ajantha show that everything in the world is beauty. Many Bodhisatvas have conveyed their message that compassion is not indifferent to sorrow all creatures in the universe undergo and it was practised by early Buddhists themselves.

Similarly, in Sri Lanka there seems to be echo-philosophy contained in the wall-paintings of early temples. Notably they represent gardens and wild animals in nature. Especially rock art of Dambulla temple represent the pond of Anavatapta surrounded by plants and wild life. In India some beautiful figures are sacred objects. The figure of *Yakshā*and *Yakshi* in the rails and gateways of Sānchi and Bhārhut show fecundity of nature that belongs to nature worship. Different motifs of *Makaras* symbolize fecundity of nature. Indeed all these types of art are the work of spiritually happy people from delighted nature. On word it matured. Early Buddhist art signifies the balance between man and his outer world. The cult of tree is also linked with nature worship and elsewhere men and women, elephants, lions, bulls, peacocks, birds, snakes, deer and mythical animal worship the tree. This represents their love and gratitude towards delightful nature. Similarly, most depicting scenes from Jataka stories have eco-philosophies.

Artistic works represented in sculptures of Sānchi, Bhārhut, Mathura and Gandhāra is close to nature. The sculpture of trees and man in performances has made in circle or squares yet these seem as one echo system. The pendent of Sānchi Bhārhut and the stone wall around it is contained with a set of art products that show interrelated nature of religious doctrine and natural beauty. The living environment represented there was composed of animal sculptures like elephants, horses, lion, goats, dogs, monkeys, peacocks, parrots, crows, reptiles, fish, swans,turtle and watery beings are reflected in the living environment. The living beings that lived on the land, trees and water could be considered as a sample of living echo system of the art which distinguished behavioral patterns of various animals. Heinrich Zimmer made a statement and it has been correct so far. His opinion is That their creations are of a high standard when compared to the figures of animals elsewhere in the world because the artists who created these had the knowledge of the jungle and behavioral patterns of animals[33]. Some investigation into the eastern gate of Sānchi, in the side of the middle lintel reveals that the Buddha once appeared with an animal when he lived in the Parileyya forest. No doubt the Buddha Sākyamuni who is supposed to be seated on an empty throne, since the tree which

[32]See. Percy Brown.1942. *Indian architecture: Buddhist and Hindu*.Bombay.

published by D. B. Taraporevala sons & Co. Ltd. y

[33]Heinrich Zimmer.1955. *The Art of Indian Asia*. Volume 2. Pantheon Books. p. 67

shelters it is a holy Fig – tree, exactly similar to the one which decorates the left projection of the upper lintel. On the other hand, the Blessed One was always in the jungle, in the sole companionship of the beasts assembled to pay him homage and belonging as much to the kingdom of fantasy as to the kingdom of nature. First of all there are four lions guarding his throne, two seen in full face and two in profile, then buffaloes and antelopes observed and rendered in a marvelous manner and further more birds some with and without crests bearing flowers and fruits in their beaks. Side by side with these real animals we see dream - monsters on the right bulls with human faces and forgetting their natural enmity in the contemplation of the Blessed One - a great polysepalous serpent by the side of an enormous vulture Garuda whose ears are adorned with earrings; on the left Tibetan dogs with mane and claws are visible. This represents the situation after Buddha left his community when there was the great internal quarrel at Kosambi.

The way the nonliving environment has been drawn apart from the living environment shows the higher attitudes towards the trees and plants made by early Buddhists. Drawings and crafts included trees like Mango , Banana, Asoka, Sal, Banyan Bo and Lotus ,Universal creeper, bunch of flowers and crafts with various grasses and plants in botanical style. These are composed of natural leaves, flowers and fruits.

Another distinguishing element shown in the sculpture is those attitudes made to the water environment. It is drawn as an eco-system in those rivers tanks ponds in the surrounding area and beings living in the water.It is one aspect of the themes of Jataka stories that to minimize disasters made to the surrounding environment by man because of his harmful behavior and to create a new environmental thinking taking into account art. It appears that the man trees and animal represented in Sānchi and Bhārhut sculptures as feelings of the domestic environment. It could be agreed with C. Shivaram Murthi' s opinion that the sculptures and drawings of Ajanta showing the figures of hermits living with animals and reflected friendly attitude towards each other are showing love towards nature[34]. He interpreted it as pure love focused on the environment. Elephant is a friend of man in many ways. So also are the horses and oxen. It is a known fact that wild beasts love man when tamed. In the sculpture of Bhārhut it is shown in Ghata Jatakawhere a man is giving something to a monkey. Flock of monkeys perching on trees is looking at the scene without fear. In a sculpture of Śunga period Ārāma Dūsak Jataka story shows us how to manage the garden. At another time a gardener wishing to take his holiday has put the monkeys who haunt his garden in charge of watering the plants. In fact they set about it with pitchers; but on a suggestion of their king who by nature prefers to do things methodically and does not intend his water to be wasted they begin by pulling up every shrub in the nursery, so as measure the length of its roots to decide on theexact quantity of water which it will require. It is represented in the Sānchi gateway wild animals and people worship the tree respectfully. Where the Jataka stories like Bhaisa jataka, Latukika Jataka, Vessantara Jataka, Chaddanta Jataka, Mahākapi Jataka, Rurumiga Jataka, Kurungamiga Jataka and Campeyya Jataka have representations which reveal the behaviour of man link with animals. They too fear the punishment of death and love life. Rurumiga Jataka explains the need of giving life to the animals where deer has saved a man who fell to a river, but yet he tried to kill the animal. Sculpture explains the Chaddantha Jataka presenting the morality of generosity of elephants.

The Bhārhut sculpture of Kurungamiga Jataka carved in a rail in a medallion obviously represents wild life with a forest and water environment. There are deer, woodpeckers, fish and tortoise and antelopes united by friendship, living together on the shores of a lake in the depths of the woods[35]. Another medallion contains no less than three episodes. At the bottom the tender hearted

[34] Sivarama Murti.C.1974. *Birds and Animals in Indian Sculpture* .New Delhi. p. 18.

[35] Kala S.C. 1951. *Bhārhut Vedika*. Allahabad. Published by Municipal Museum. P. 34.

stag Rūru saves the son of the merchant who was going to drown himself in the Ganges and brings him on his back to the bank where one of his roes is stooping to drink at the river. At the top on the right is the king of Benares guided by the young merchant who is evidently acting as his informant is preparing with bent bow to kill the great rare stag the object of his desire as hunter. But the words addressed to him the latter quickly cause the weapons to drop from his hand, and we find him again in the center edifying conversation with the wonderful animal. Whilst the treacherous informer seems to be hiding behind the royal person. We know from the source that the stag was the Bodhisatta; many times Bodhisattva was born as a stag or other wild animal and such stories tells us that kind attitudes should be shown to wild life because according to the doctrine of rebirth all living beings were our friends or cousins in the previous life. More original and much better preserved is the other Jataka of Mahākapi. At that time the Bodhisatta was in the Himalayas, king of 80 000 monkeys and he took them to feed upon a gigantic mango tree in which the fruit were delicious but the branches which unfortunately spread over the Ganges. In spite of the precautions detailed by the foreseeing wisdom of the great monkey a ripened fruit hidden by a nest of ants, escapes the investigation of his animal's falls into the stream of water and is caught in the nests which surround the bathing place of the king of Benares. The latter finds it so much to his taste that in order to procure others like it, he does not hesitate.

When he had obtained information from the wood ranger who was sent to follow the river to its source until he arrived at the wonderful tree. At night the monkeys gathered together as usual; but the king of Benares has the tree surrounded by his archers, with fixed arrows only waiting the day to begin the slaughter. There is alarm in the camp Bandar-log as folk tale has it. Their leader reassures them and promises to save their lives. With a gigantic spring, of which he alone is capable he clears a hundred bow lengths as far as the opposite bank of the river there cuts a long rattan the one end which he fixes to a tree on this bank while he attaches the other to his foot and with another spring return to his own people .But a wire he has cut is a little too short and it is only by stretching out his hands that he can reach the branches of the tree. Nevertheless, the 80 000 monkeys pass over this improvised bridge and descended in safety on the other side of the river. This latter is: as usual, indicated by sinuous lines in which a tortoise and some fish are swimming. But already two men of the court of the king of Benares are holding by the four corners a stripped coverlet into which the Bodhisatta exhausted with fatigue has only to let him to fall when the last of his subject has been saved. At the bottom we find him sitting in conversation with his human colleague who is amazed at his vigour, his ingenuity and his devotion to his people. Between a people whom we see only the bust and the hands respectfully joined together is if we may judge from the absence of a turban, a man of low caste. Apparently that one of the wood rangers who guided the royal caravan towards the Himalaya. However better part of the sculpture always belongs to the living beings. In fact it not only represents incarnation of Bodhisatta but also love and compassion to animal life. The sculpture that explains Kukkuta Bilāla Jataka shows how animals observe will for their own security.

Sculpture of Campeyya Jataka in Nāgarjunikonda elucidates how people and cattle behave freely. Those animal sculptures in Yakshā and God who appeared to have originated in worshipping the nature are considered to be sacred. In Buddhist sculpture animal figures have been used meaningfully. Bodhisatta himself has been born as animals in his previous births. Man also will be reborn as animals according to the Karma. There is a close relationship between man and animals according to the doctrine of rebirth believed by Buddhists. Hence various animals in Jataka stories appear with different incarnations of the Bodhisatta . In Buddhist eco - philosophy they play a most honorable part of nature[36]. Animals are relatives of man and friends in previous births such a view accompanied in articulated Jataka stories on the living environment.

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[36]Ramachandrarao .P.R. 1956. *The Art of Nagarjunikonda*. Printed in India. p. 32.

For instance the story of Caddanta Jataka representing in the art of Bhārhut, Amarāvati, Gandhāra and Ajanta obviously express the eco-philosophy of early Buddhist art. The medallion of Bhārhut on the left the hunter having put down his bow and arrow set about cutting the elephant's tusks with a crude saw. The case is the same in Gandhāra and at Amarāvati where in addition we see representing the episode of the hunter hiding in a ditch in order to wound the elephant in the stomach with an arrow. The Caddanta Jataka in the wall painting of Ajanta depicts harmonious and peaceful co-existence between man the natural world such as water plants animals and eco system depend on each other. The Rūrumiga Jataka curved in the Sānchi gateway represents eco philosophic insight into the inner connections and thorough going inter dependence of all conditioned things[37]. The fresco of cave No. X of Ajanta shows the huge six tusked elephant lying down and a hunter trying in cutting down the six tusks.

Artistic and gratitude attitude concerning the trees, animals and water is a remarkable feature in early sculptures. Lumbini (*Vateria acuminata)* garden represented in Gandhāra sculpture and representation of Buddha's death at Upavattana Sala (*Vateria acuminata)* garden is the attractive sculpture belonging to the Gandhāra School. With Sal branches in either side of Buddha's body and the sculpture that shows Jetavana Pūja are crafts that show tree worshipping was accompanied with a flag above protected by a house in order to honour the tree. Around the tree structure held an umbrella was sacred symbol of early Buddhism. Usually when Lord Buddha represented where they need they symbolized Him in a tree figure. In the Bas relief at Bhārhut a list of seven Buddhas and their respective Bodhisattas are shown in tree symbols. Here they are in order in which they are presented going from right to left of the spectator.

1. Buddha, Vipassi – *Bignonia suaveolens* – Pātali tree
2. Buddha,Sikhi – *Mangitera* – Pundarika tree
3. Buddha,Vessabhu – *Shorea robusta* – Sāla tree
4. Buddha, Kakusadha – *Acacia sirissa* – Cirsha tree
5. Buddha, Konāgama – *Ficus glomerata* – Udumbara tree
6. Buddha, Kāssapa – *Ficus indica* – Nygrodha tree
7. Buddha, Gotama – *Ficus religiosa*– Asvattha tree

Many sculptures represent the Buddha who is supposed to be seated on the empty thrones since the tree which sheltered him was a holy figure exactly similar to the one which is decorated. The Blessed One is evidently far in the jungle in the sole companionship of beasts assembled to pay him homage and belonging as much to the kingdom of fantasy as to the kingdom of nature. There are lion, antelope, buffalo, camel, crocodile, deer, dog elephant, swan, horse, monkey, quail,parrot, peacock, stag,tortoise, unicorn, woodpecker, animals gathered around the scared tree.

The crafts drawn to indicate religious occasions with angels and young prince and princes could not be considered as primitive cults. These are a variety of things provided by a tree such as food, clothes, medicine, shelter and houses for beings. It is the duty of a man to salute a tree having known its uses. Worshipping trees show the attitude that people should have towards the trees. If we examine a craft art that presents tree worshipping in Bhārhut, we see that there is a beggar humbly worshipping a tree. Having a prosperous appearance to God of the tree offers water can in one hand and a dish of food in the other. It is created not as a God but the whole tree itself is respected as a God. The two hands come from the stem of the tree looks as if two branches give fruits to feed living beings. The fruits creeper and flowers hanging from the tree reveal the early Buddhist use of products of trees and sentimental satisfaction depicted about the environment.

[37] Marshall and Foucher. 1940. *Monument of Sānchi*. Volume.1. India. P.41

It is a remarkable feature in ancient religious belief that considered qualities of the environment with motherly attitudes; prosperity of the nature is considered as the mother. Among early Buddhist art these are sacred things such as tree Gods, devils, those used in ceremonies to bring prosperity. Lady devil figure like Sālabhañja appeared in the sculptures of Bhārhut and Sānchi , it is considered to be a symbol of prosperity. Also the figure of Capricorns, devils, perfected pot, conch and spreading creepers such as universal scroll sculpture were represented as symbols of prosperity. In another piece of sculpture in the same place their figure originates from the faith of water or cult of water. We find other symbols in the sculpture of Bhārhut that regarding the management of natural resources. We must collect resources little by little as a bee that sucks nectar from the flower without injuring it. As a bee gathers nectar from the flower without injuring its colour or fragrance similar to the sage who goes on his alms – round in the village[38]. This advice of Lord Buddha is represented in the Bhārhut art symbolically a recluse meditates close to a scroll bearing flowers and fruits around it there are bees who abstracted nectar from it[39].

Though Buddhism is a religion which forms man's thinking towards the other world it does not reject its relation to nature. Aesthetic attitudes towards nature gratification, faith will lead to mental satisfaction; mental leisure that is needed for eternal paths have been elaborated in Pali literature because of which reason environmental thinking contained in Buddhist art has practical value as well as a religious ideology.

Beauty of the nature is a visual object that can be used to practice concentration and a way of gaining ultimate truth about Buddhists expect in their religious life. Man is not separated from nature. He is an element of nature. We are unable to see anything if there is no light of the sun. So life of being depends on air, water and food given by nature. Once Buddha showed his gratitude towards the Bo tree which gave him shade for enlightenment. In conclusion it is evident that the Buddha promoted people to build a great eco philosophy as an ethical concept towards nature.

Early Buddhist Art and response to environmental degradation

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Human behavior

Since the industrial revolution there has been an immense eco – crisis
All over the world. In the development of economic activities, all people plan according to the norms of modern technology without being concerned about traditional ethical values and lifestyles. However our immoral behavior and technology have brought about a deplorable problem, namely, eco – crisis. Waterways, forests and animals are being gradually destroyed. In the process of vanquishing nature, man himself has placed himself in danger of losing his own humanity[40] . In this context, we can see the issue of environmental conservation discussed by ecologists. Although the offer of a scientific solution for conservation of nature, the problem remains. Our understanding is to consider the Buddhist teaching and artistic work is very important to come up with a solution to deal with this matter. The Buddha in this matter had explained three major factors about the destruction of nature. These factors which are hidden in the mind, namely, craving (rāga), hate (dosa) and delusion (moha) can be removed by aesthetic attitude towards nature . Although the Buddha rejected

[38] Acharya Buddharakkhita.Trans, 1985. *The Dhammapada.*Kandy,Sri Lanka. Buddhist Publication Society.p.10

[39] Havell.E.B. 1920. *The ideal of Indian art*. London. P. 36

[40] Journal of Environmental Planning and Management.2007. University of New custle. P. 65.

drawings of male and female figures because those made mental pollution, he permitted decoration in the rooms of monasteries with the aspect of beauty.

As people relate to nature by these three characters so there is much harm and damage to water, plants, animals, air, food and other items on earth. Yet we are not clever enough to see the interrelation between our behavior and the environment. Hence we have failed to suggest a solution to this crisis. The continuity of process of immoral behavior breaks the balance of nature and its ecosystem. The theory of causality or dependent origination explained by the Buddha has noted the strong harmony between man and world. Anything happening in the world directly influences man. On the other hand, whatever activity done by man also affects nature. The Buddhist theory of action explains as to how an impure mind brings evil results, but pure mind brings about good results[41]. If our behavior is unsatisfactory, together with it, world also changes in some way and brings about bad results on us. For example air pollution, water pollution and deforestation are three damages brought out by human immorality. It is painfully selfish to change nature to find physical property for our sensual pleasure. We damage nature in the process of finding new resources. We harm plants, animals and natural resources such as air. Excessive craving for material property not only causes to pollute but also to exhaust natural resources. Buddha's teaching shows, long ago four times, there were food crises in the history of human civilization, primarily based on the immoral behavior of mankind[42].

Craving

Due to longing for gaining material wealth, greediness and struggle have rapidly grown in the mind of the present man. This is a conspicuous cause led to the destruction of earth's natural resource - base. Once the Buddha explained

that at the beginning of the world, beings consumed solid food that was on the surface of the earth beings consumed solid food that was on the surface of the earth. As a result of their greediness, food got extinguished from the earth. Subsequently, they began to consume mushrooms. In the same way they got used to taste mushrooms which disappeared from the earth. Next beings used a kind of creepers called Badālatā. Again grew their taste and greediness and creepers disappeared[43]. At this stage all beings converged and had a conversation about the food problem. They saw a new kind of crop which grew naturally that belonged to a family of paddy. They consumed it and craving also grew. Soon, natural crops were also sterilized and beings had to cultivate again under self-cultivation. While everyone shared the land, the concept of common property degenerated. When private economy sprang up, people had to rely on weaponry and laws to safeguard their property. But showing a historical event in the economic function of earliest man, the Buddha exposited as to how the attitude of craving is harmful to the natural resource – base[44].

Hate

Throughout human history men were involved in a struggle to share property. During Buddha's time, his own relatives who belonged to two clans named Sākya and Koliya declared war upon each other. The dispute over sharing water in the Rohini river to their field was the source of this struggle. The Buddha came to the battlefield and advised them pointing the fact that human life

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[41] *Majjhima nikāya* vol. 111. 1959. . Cullakamma Vibha□ga sutta.London. PTS.p.248.

[42] *Dighanikāya*. Aggañña sutta. vol.111.1921..London.p.PTS. p.80

[43] *Dighanikāya*. Aggañña sutta. vol.111.1921..London.p.PTS. p.80

[44] ibid

is more valuable than water. In north India, during this period, king Pasenadi Kosala and King Bimbisārawere often involved in war and Buddha
explained the value of human life more than land. Even today endless war is entwined with gaining ownership of natural resources. War in any form brings pollution and much damage to water, air, living beings, plants and land owing to spreading of atomic poison. The Buddha has emphasized the fact that destruction of human environment due to growth of hate and greediness[45].

Delusion

Ignorance about reality of nature and about ourselves is called delusion. Because of ignorance we fail to understand actions that harm the environment. So we damage it. Our unwholesome actions and wrong decisions cause to upset the eco- balance of the world. As the theory of causality or cause and effect relationship in Buddhism everyone is part of nature. Therefore as we are unable to know how ignorant behavior changes the environment, a reasonable solution to the eco- crisis is not found. It is the immoral behavior of the rulers and the subjects alike which brings about eco-problems according to Lord Buddha's explanation. If rulers are unjust their courtiers are also unjust. When courtiers are unjust, subjects follow them and virtue is degenerated in the country. As a result of this immoral behavior, climate changes and crops go dry. Finally people face drought and famine[46]. That weather changes affect cultivation and health of subjects. Eels where in the Buddhist texts, it is mentioned that if the ruler is wicked the moon and sun appear irregularly. Then day and night become shorter. It overturns the seasons.When imbalance of seasons is about wind blows wrongly.[47.]. Rain does not fall and crops do not ripe**.** The people who eat such unripe fruit and crops have short life. They will be ugly and sick.

Briefly, the Buddhist solution of the eco-crisis is associated with practice of good behavior and an ethical attitude towards nature. At this point, we have to emphasize our own behavior which brings destruction to nature. Therefore the life style of modern men ought to be of mutual friendship with nature. Moreover, we have a number of examples given by the Buddha and His disciples themselves. That is, they spent a natural life with nature with a few requirements. The resource-base was not depleted by them.

All the important events of Lord Buddha's life have a close relationship with nature. He was born under a tree and attained enlightenment under a tree. He passed away under a tree. Naturally, Lord Buddha loved and made aesthetic concepts pertaining to nature but also advised His followers to spend free life as a bird or a bee who suck honey in flowers without harming it. This advice notes the significance of cultivation of spiritual benevolence and gratitude for natural gifts. Therefore, Lord Buddha practiced gratitude by honoring the Bo tree which gave Him shade when sitting under that tree. He it is said spent a week with his eyes opens gazing at the tree where he attained enlightenment without even winking.

Elsewhere the Master has said that a person who is intelligent never breaks even a branch of a tree under which he had rested [48.] Cutting down trees and plants for religious rituals and ceremonies was condemned by Lord Buddha[49.] Putting polluted things in to nature unwittingly was also

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[45] *A□guttara nikāya.* Vol.iv. 1965. Saptasuriuggama.London.PTS.

[46] *Dghanikāya□□akathā Tīkā.* Cakkavattisihanada Sutta Va□□anā. Vol.111.1970. London. PTS

[47] ibid

[48] Cowell.E.B. 1957. *The Jataka or Stories of the Buddha's former births*. Mahā Vānija Jātakaya.London.PTS.

[49]. *Dīgha nikāya*.vol. 1. 1949. Brahmajala sutta..London.PTS

condemned. Lord Buddha discourages even throwing hot water on to grass. Besides, spitting as well as putting excreta in to nature is discouraged.

Among the natural resources, domestic and wild life are also valuable gifts. In our modern economy, animals become extinct in large numbers from our earth. In fact, our violent behavior directly forces to remove them from earth. The bio-structure of the world has been destroyed by our selfish economic activity. As a matter of fact, such Buddhist teachings loving kindness and compassion are characteristic of conserving the animal world.

Felicity

It is very important to improve aesthetic views in our mind to control environment because that is able to remove craving, hate, and delusion. Here Buddhism properly promotes felicity for both our religious and secular lives. Obviously elder monks, according to scriptures were overjoyed with the surrounding promenade and dwelling place. There natural aesthetic dwelling was based to end their secular pressure and also to achieve the ecstasy with transcendental goal which they aimed[50]. Wildering, wreaths, plants, waterways and lakes represented in early Buddhist art recollect the Thera Gāta or hymns of the elders.

The average poet looks at nature and derives inspiration mostly by the sentiments it evokes in his own heart, he becomes emotionally involved with nature. For instance, he may compare the sun's rays passing over the mountain tops to the blush on a sensitive face; he may see a tear in a dew drop, the lips of his beloved in a rose petal etc. They appreciate nature's beauty for its own sake and derive joy unsullied by sensuous associations and self – projected ideas. The poems sung by elders *Mahākassapa* in the following words can be compared with natural back grounds represented in early Buddhist art.

Those upland glades delightful to the soul.
Where the *Kāveri* spreads its wildering wreaths.
Where sound the trumpet-calls of elephant
Those are the hills where my soul delights.

Those rocky heights with hue of dark blue clouds
Where lies embossed many a shining lake-
Of crystal-clear. Cool waters. And whose slopes
The herds of Indra cover and bedeck
Those are the hills where in my soul delights.
Now crimson glow the trees. Dear and cast
Their ancient foliage in quest of fruit
Like crests of flame they shine radiant
And rich in hope, great hero. Is the hour.

We have another significant life style from ancient china. Presented by Loa Tzu who was a famous thinker. According to Loa Tzu the man who overwhelm gives trouble to all. Therefore man should be humble as water flowing through the landscape. Similarly man ought to live following nature.

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50. See .Norman.K.R.Trans. 1969. *The Elders Verses*. London.PTS

Water takes its way on spacious slopes, valley and so forth[51]. Similarly, human life pattern is to be built according to environment. These ancient advices not only guide us for the improvement of the aesthetic concept but also for controlling our unbalanced habit by an unassuming life pattern. Accordingly,, if we are in search of a genuine solution, it is necessary that we reform the present in mental virtue ourselves.

View of aesthetic and life style of the Buddha and his disciples were based on the origin of Buddhist art[52]. So vision, respect for moral values of the Buddha and disciples affected origin of art. Buddhist art has developed eco-Philosophy in the South Asian people over two thousand and five hundred years. If we want to protect the environment, we can cultivate aesthetic attitude with moral and spiritual dimension using artistic creations as a visual subject. However regarding environmental conservation early Buddhist art is a very important media which represent all facts which we have mentioned above. It contains felicity ethics and eco philosophy of the early Buddhists who lived in ancient India.

Lord Buddha allowed drawing and painting on the walls of monasteries which represent natural beauty. At that time the group of six monks had a bold design made with figures of women, figures of men in a dwelling. The Buddha said: monks, you should not have a bold design made with figures of women, figures of men. Whoever should have one made it is an offence of wrong-doing. I allowed monks, wreath-work, creeper-work, swordfish teeth, and the five strips of cloth design[53]. Buddhist art provides the entire essential element for a relationship to the natural world characterized by respect humility care and compassion.

Necessity of Buddhist art during the Maurya period

Subjects such as literature, art and philosophy represent the nature of common Philosophy of the time they existed. On the other hand, such subjects manipulated the behavior of human philosophy and human thoughts themselves led to emerge those subject materials. It is a great help that could obtain from art to develop attitudes and intellectual freedom.

There are a variety of attitudes built upon the same theme. Oriental artists knew this well.The wall paintings and sculpture have been used has a practical media in the formation of oriental Philosophy. These have been started as religious art products including the Buddhist teaching so it avoids the craving hate and delusion. It is useful to examine such eco-Philosophy revealed in early Buddhist art.

In sculpture found in Sānchi, Bodgaya, Bhārhut, Mathura, Gandhāra, Amarāwati and paintings of Sri Lanka each represents a philosophy that have sentimental perception of nature and gratitude towards it's faith and innocence. It could be perceived that the art creations which revealed deep relationship between the religious virtue and the environment have been used to build up a certain Philosophy. Buddhist art has come into practice after the emergence of Maurya culture. Thereafter, art became a strong media to feed attitudes in countries where Buddhism spread.

Artistic creations of the Maurya civilization belong to two periods, namely Maurya and Sunga. It could be identified that the creations produced in this era as an experiment and strategy to create new philosophy among the public. Some teachings in its inscriptions established by the king Asoka to develop environmental ethical attitudes were concerned with the establishment of

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51. Ronan and Needham,1978. *The Shorter Science and Civilization in China.* Cambridge University press..p.98.

52 See. Wzwalf.1985. *Buddhist Art an Faith.* Oxford University press.

53Horner . I. B.Trans..1963.*The Book of Discipline*. Vol.V. London.PTSp. 213.

environmental philosophy. When compared to the views and opinions presented in the inscriptions with the objective of art developed under this civilization, one important aspect is clear. The facts we are going to describe have been proven with the facts explained by Indian historians about the contemporary folk life.

According to the historians, at the time of 3, 2,1st century B.C. the Maurya and Sunga periods have developed economically with the increase of the commercial community[54]. There are many evidences that this development was accompanied with depletion of natural resources and an eco - crisis and the need to create awareness among the people. Megasthenes explains seven castes (war□as) among the group of people in that period only the farmers have been named as one. A large segment of population were farmers and new lands had been grabbed for farming activities. Thus forests had been cleared. Settlements had been established in new lands. The government spent funds to build reservoirs, tanks, wells and dams blocking rivers for the purpose of providing water to farming. Among the government revenue the main item was to give away lands for cultivation. Also the commercial economy led to clear forests. Cotton and silk cloths were exported to Rome from India. Valuable timber such as sandal wood and *diospyros positifolia, chloroxylon swiet enica, vateria acuminate* to South coast of Persia was supplied. Many professions emerged around the timber industry. There were different grades of carpenters. As one responsibility of bureaucratic officers they supervised timber cutters. Timber logs were used for household work on a large scale. In addition, forests were cleared to hunt animals. War walls and bunkers were constructed out of timber[55]. The castle wall around the city of Pātaliputra was nine and half miles in length. It comprised of 570 balconies and 64 entrances. The wall was a timber made fence. Also, the two storied and three storied houses in the city were made of Timber. Palaces and houses were decorated using timber works such as volutes. It appears that their activities were controlled by the officers in charge of forests. Though Dr. Rawlinson indicates that the jungles were larger in extent than today, Romila Thapar accepts that there was a scarcity of timber[56] . There was another opinion that these jungles disappeared gradually.

There has been a segment of population and their main occupation was animal husbandry. During the period of King Chandragupta, those who engaged in animal farming and hunting as an occupation was considered to be third class. They were Gopālas or cattle farmers, Ajapālas and hunters. Their other activities were to catch and tame jungle beasts and killing violent animals like lions. A section of the forest had been separated for hunting. There were particular officers who supervised cattle farming, jungle animals were used to a large extent. Hunting wild animals was popularized as a hobby. Ox - fighting, race of horse and bulls and use of elephants as power were carried out. Scale of ivory and art creations of ivory were developed to a high standard. There was a separate grade of ivory art makers in Wedisa. Ivory was sent to the west. Carved ivory was also sent along with them. In the region of Roman emperor one evident fact to prove that ivory was sent to Rome in the form of a slate with a goddess or a woman devil among the Hurkulanium ruins. Among the commercial goods sent to Rome, there were lots of turtle shells, animal like lion, elephant, tiger, monkey, parrot, peacock, reptile and tortoise were sent to Rome[57]. It is shown in Indika of Megasthenes that such animals have been used for various activities domestically[58]. When King

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[54] Rawlinson.H.G. 1943. *India. A Short Cultural History*. London. The Cresset press .p.22

[55] Romila Thaper. 1961. *Asoka and the Decline of the Mauryas*. Oxford University press.p 43.

[56] Romila Thapar. 1961.*History of India* .England. Penguin Books Lte. p.7.

[57] Narandra krushnasinha. Anil Chandra banarji.*India*. 1966. Printed By Sri Lanka Government. p.77

[58] Rolinsan.1973..p.59

Chandragupta went out they carried buffaloes, leopards, tamed lions and birds put in cages. This could have been a strategy specially to defend the king. It was a clear fact that officers had been appointed to minimize disasters, to take care in the forest industry, to kill animals and supervise them. But the responsibility depended upon the people who used them. Inscriptions of King Asoka and art creations of this time are based on ordinary people.

Art creations during the Sunga period which followed the Maurya period have further focused on the life of ordinary people. The inscriptions and art that have a religious bearing go to build up a new thinking of the surroundings where people lived.

A considerable number of inscriptions of King Asoka gave clues to establish the ethical system in the community towards trees and animals. Girnar inscription ordered to abstain from slaughtering of animals. He notices that no *Yāga* should be performed by killing a living animal. Earlier thousands of animals had been killed daily for meat. But today only two peacocks and a deer are killed. Here after these three too should not be killed [2.] The king advised the citizens and he too observed it. Asoka had paid attention to every being but it was impossible to show all in the inscriptions. Because of this, he named several animals representing the inland, water and the sky. He mentioned that the following animals named by me should not be killed. They are parrots, magpies, swans land lizards. Black faced monkeys, unicorns; white pigeons, village pigeons and all animals should not be used for work or killed for meat. Cows, goats and sheep if they are pregnant and feeding calves should not be killed[59]. To abstain from peeling barks of trees where creatures live and to avoid burning them. Not to burn the forest or to kill animals in vain[60]. One living animal should not be killed for another's meal[61].Days were declared prohibiting killing of animals. Fishing is prohibited on the three days in four months. Full moon day fishing and selling should not be done.

In the above mentioned days killing should not be done of any being in elephant forests and killing grounds. Skinning of ox must not be done in half moon day and full moon day[62]. This is true of other animals such as goats, sheep, and pigs skinning during the above mentioned days, skinning of bulls and horses should not be done too[63]. Building up nonviolent attitude towards animals is not a religious necessity. It is not a difficult aspect to manipulate economic activities. Rules and regulations depended on one's religious philosophy. He mentioned that the killing of animals had taken place for centuries, killing animals and torturing beings have been developing from the past. Because of this fact he realized not to kill living beings for food[64]. Ancient kings were involved in *Viharayatra* in hunting deer and other sport[65]. The king thought of the sympathetic perception created in the mind while not killing animals against the mental satisfaction gained. As a minimum

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[59]Rdhakumud Mookerji. 1962. *Asoka*. Delhi. Motilal Banarsidass .Delhi.
Asokan Rock edicts. Girnar inscription 1

[60]do. Girnar v

[61]do. Girnar iv

[62]do. Girnar 111

[63]. do. Girnar ix

[64]Girnar ix

[65]Girnar 1

he has seem to it that the good deed of not torturing animals was followed. It was not sufficient that developing attitudes to protect animals practically. He followed a special way to do that, by separating forest land for elephants, developed veterinary clinics. Plants and trees were grown for the benefit of animal [66]. One aspect was to provide them with a shelter. In this respect gardens were established and trees were planted along the sides of roads. The government directed common people to grow trees. It was interpreted as a good deed in religion. Stories like mansion (*Vimāna Vatthu*) can be considered with the back ground of this period. Vimāna vatthu explained that it is a great deed to grow mango trees . maintain gardens and built temples.

Certain Jataka stories must have been written on the basis of this period. These texts often explain how one should venerate trees and plants. It is further revealed from Asoka's inscriptions how religion and Dhamma made values to direct people to grow trees. It was prepared to grow medicinal plants where those did not exist for the benefit of people and animals. Where roots and fruits did not exist, they were brought and planted. Trees were planted for the benefit of man and animal with the wish that shelter be provided to human beings. Banyan trees were planted and mango gardens were established under the guidance of the state policy of Asoka[67].

Of the discussion we made around this background Buddhist art has developed especially with another aspect. Utility of art revealed in this period asa special element of the imperial culture. There was a vast cultural backwardness because of the war carried out to establish the Magadha Empire. Art could be used as one media to re-establish human thinking about the living and nonliving ecosystem and social ethics that have been surpassed. Ancient Buddhist art products that we come across have been directed to a new thinking that was needed at that time. These art creations blended with aesthetic feelings to love nature and gratification towards it so that it could be named as folk art that has nurtured thinking. One aspect was to provide them with a shelter. In this respect gardens were established and trees were planted along the sides of roads.The origin of Indian art is the faith towards nature. It can be examined with the thought of A.L. Basham. He said that the Indian art brightened while perceiving satisfaction of the world[68]. These artistic works must have been created with live feelings of body components and as a system that developed to perceive the living of the world. Basham interpreted that it reflects the universal *Āthma* or soul as integrity of all components. There is no doubt to reject remains of early Buddhist art of India representing all things in the universal spirit.

A.L. Bashamagrees with reference to ancient art of India and he mentioned that nearly all the artistic remains of ancient India are of a religious nature, which was at least made for religious purposes[69]. Secular art certainly existed for literature shows that the king dwelt in sumptuous palaces, decorated with lovely wall paintings and sculptures. Though all these have vanished, much has been said and written about Indian arts since then. European attitude began to doubt the established canons of the 19th century and looked to Asia and Africa for fresh aesthetic experience. Since then most authorities on the subject, Indian and European alike have stressed the religious and mystical aspect of Indian art. While admitting the realism and earthliness of the earliest sculpture.

Most critics have read the truth of Vedānta or Buddhist scriptures into the artistic remains of our period and have interpreted them as expressions of deep religious experience. Sermons in stone on the oneness of all things in the universal spirit. As A. L. Basham expressed that ancient Indian

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[66] Girnar 11

[67] do. Girnar 11.

[68] Basham. A.L. 1954.*The Wonder That was India*. New York. Grove press. p. 346.

[69] ibid p .334

religious art differs strikingly from religious literature. Coomaraswamy mentions that usual inspiration of Indian art is not so much a ceaseless quest for the absolute as adelight in the world as the artist found it a sensual vitality and a feeling of growth and movement as regular and organic as the growth of living things upon the earth[70].

Eco- philosophy of Early Buddhist art

Art and Architecture of the Maurya and Sungaperiod processed connected with natural beauty representing animal and botanical style. For instance we have the early capitals or reproduced by Percy Brown and they show attitudes of natural beauty of the Buddhist[71]. Each pillar was decorated with a complicated group of horses, elephants, lions, lotus, floral and foliate designs of the pillars clearly resembling the motifs of the pillars in the mansions of heaven which were created by merit that had been collected in the previous life such as planted trees and made gardens in this world. This is true for eco-philosophy of Buddhist art and that is a network of environmental components those interrelated with each other based on the cause and relationship. The individual sees the things surrounding him where he stands on. Those may be things near or far away. Life organs touch them. Then he views his surroundings. Early Buddhists were often close to nature. Environmental attitudes disclosed in art products have come naturally with his philosophy of life. The murals of Ajantha bear aesthetic and religious messages consisting echo-philosophy. Here even more vividly than at Sānchi in Bhārhut we witness the whole life of ancient Buddhist with natural beauty and spiritual message towards nature, gardens, ponds, rivers, wild life like beasts and birds. In fact many masterpieces of Ajantha show that everything in the world is beauty. Many Bodhisatvas have conveyed their message that compassion is not indifferent to sorrow all creatures in the universe undergo and it was practised by early Buddhists themselves.

Similarly, in Sri Lanka there seems to be echo-philosophy contained in the wall-paintings of early temples. Notably they represent gardens and wild animals in nature. Especially rock art of Dambulla temple represent the pond of Anavatapta surrounded by plants and wild life. In India some beautiful figures are sacred objects. The figure of *Yakshā*and *Yakshi* in the rails and gateways of Sānchi and Bhārhut show fecundity of nature that belongs to nature worship. Different motifs of *Makaras* symbolize fecundity of nature. Indeed all these types of art are the work of spiritually happy people from delighted nature. On word it matured. Early Buddhist art signifies the balance between man and his outer world. The cult of tree is also linked with nature worship and elsewhere men and women, elephants, lions, bulls, peacocks, birds, snakes, deer and mythical animal worship the tree. This represents their love and gratitude towards delightful nature. Similarly, most depicting scenes from Jataka stories have eco-philosophies.

Artistic works represented in sculptures of Sānchi, Bhārhut, Mathura and Gandhāra is close to nature. The sculpture of trees and man in performances has made in circle or squares yet these seem as one echo system. The pendent of Sānchi Bhārhut and the stone wall around it is contained with a set of art products that show interrelated nature of religious doctrine and natural beauty. The living environment represented there was composed of animal sculptures like elephants, horses, lion, goats, dogs, monkeys, peacocks, parrots, crows, reptiles, fish, swans,turtle and watery beings are reflected in the living environment. The living beings that lived on the land, trees and water could be

[70]Coomaraswamy.A.K. 1927. *History of Indian and Indonesian Art*. London. p .91,92.

[71]See. Percy Brown.1942. *Indian architecture: Buddhist and Hindu*.Bombay.

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considered as a sample of living echo system of the art which distinguished behavioral patterns of various animals. Heinrich Zimmer made a statement and it has been correct so far. His opinion is That their creations are of a high standard when compared to the figures of animals elsewhere in the world because the artists who created these had the knowledge of the jungle and behavioral patterns of animals[72]. Some investigation into the eastern gate of Sānchi, in the side of the middle lintel reveals that the Buddha once appeared with an animal when he lived in the Parileyya forest. No doubt the Buddha Sākyamuni who is supposed to be seated on an empty throne, since the tree which shelters it is a holy Fig – tree, exactly similar to the one which decorates the left projection of the upper lintel. On the other hand, the Blessed One was always in the jungle, in the sole companionship of the beasts assembled to pay him homage and belonging as much to the kingdom of fantasy as to the kingdom of nature. First of all there are four lions guarding his throne, two seen in full face and two in profile, then buffaloes and antelopes observed and rendered in a marvelous manner and further more birds some with and without crests bearing flowers and fruits in their beaks. Side by side with these real animals we see dream - monsters on the right bulls with human faces and forgetting their natural enmity in the contemplation of the Blessed One - a great polysepalous serpent by the side of an enormous vulture Garuda whose ears are adorned with earrings; on the left Tibetan dogs with mane and claws are visible. This represents the situation after Buddha left his community when there was the great internal quarrel at Kosambi.

The way the nonliving environment has been drawn apart from the living environment shows the higher attitudes towards the trees and plants made by early Buddhists. Drawings and crafts included trees like Mango , Banana, Asoka, Sal, Banyan Bo and Lotus ,Universal creeper, bunch of flowers and crafts with various grasses and plants in botanical style. These are composed of natural leaves, flowers and fruits.

Another distinguishing element shown in the sculpture is those attitudes made to the water environment. It is drawn as an eco-system in those rivers tanks ponds in the surrounding area and beings living in the water.It is one aspect of the themes of Jataka stories that to minimize disasters made to the surrounding environment by man because of his harmful behavior and to create a new environmental thinking taking into account art. It appears that the man trees and animal represented in Sānchi and Bhārhut sculptures as feelings of the domestic environment. It could be agreed with C. Shivaram Murthi' s opinion that the sculptures and drawings of Ajanta showing the figures of hermits living with animals and reflected friendly attitude towards each other are showing love towards nature[73]. He interpreted it as pure love focused on the environment. Elephant is a friend of man in many ways. So also are the horses and oxen. It is a known fact that wild beasts love man when tamed. In the sculpture of Bhārhut it is shown in Ghata Jatakawhere a man is giving something to a monkey. Flock of monkeys perching on trees is looking at the scene without fear. In a sculpture of Śunga period Ārāma Dūsak Jataka story shows us how to manage the garden. At another time a gardener wishing to take his holiday has put the monkeys who haunt his garden in charge of watering the plants. In fact they set about it with pitchers; but on a suggestion of their king who by nature prefers to do things methodically and does not intend his water to be wasted they begin by pulling up every shrub in the nursery, so as measure the length of its roots to decide on theexact quantity of water which it will require. It is represented in the Sānchi gateway wild animals and people worship the tree respectfully. Where the Jataka stories like Bhaisa jataka, Latukika Jataka, Vessantara Jataka, Chaddanta Jataka, Mahākapi Jataka, Rurumiga Jataka, Kurungamiga Jataka and Campeyya Jataka have representations which reveal the behaviour of man link with animals. They too fear the punishment of death and love life. Rurumiga Jataka explains the need of giving life to the

[72]Heinrich Zimmer.1955. *The Art of Indian Asia*. Volume 2. Pantheon Books. p. 67
[73]Sivarama Murti.C.1974. *Birds and Animals in Indian Sculpture* .New Delhi. p. 18.

animals where deer has saved a man who fell to a river, but yet he tried to kill the animal. Sculpture explains the Chaddantha Jataka presenting the morality of generosity of elephants.

The Bhārhut sculpture of Kurungamiga Jataka carved in a rail in a medallion obviously represents wild life with a forest and water environment. There are deer, woodpeckers, fish and tortoise and antelopes united by friendship, living together on the shores of a lake in the depths of the woods[74]. Another medallion contains no less than three episodes. At the bottom the tender hearted stag Rūru saves the son of the merchant who was going to drown himself in the Ganges and brings him on his back to the bank where one of his roes is stooping to drink at the river. At the top on the right is the king of Benares guided by the young merchant who is evidently acting as his informant is preparing with bent bow to kill the great rare stag the object of his desire as hunter. But the words addressed to him the latter quickly cause the weapons to drop from his hand, and we find him again in the center edifying conversation with the wonderful animal. Whilst the treacherous informer seems to be hiding behind the royal person. We know from the source that the stag was the Bodhisatta; many times Bodhisattva was born as a stag or other wild animal and such stories tells us that kind attitudes should be shown to wild life because according to the doctrine of rebirth all living beings were our friends or cousins in the previous life. More original and much better preserved is the other Jataka of Mahākapi. At that time the Bodhisatta was in the Himalayas, king of 80 000 monkeys and he took them to feed upon a gigantic mango tree in which the fruit were delicious but the branches which unfortunately spread over the Ganges. In spite of the precautions detailed by the foreseeing wisdom of the great monkey a ripened fruit hidden by a nest of ants, escapes the investigation of his animal's falls into the stream of water and is caught in the nests which surround the bathing place of the king of Benares. The latter finds it so much to his taste that in order to procure others like it, he does not hesitate.

When he had obtained information from the wood ranger who was sent to follow the river to its source until he arrived at the wonderful tree. At night the monkeys gathered together as usual; but the king of Benares has the tree surrounded by his archers, with fixed arrows only waiting the day to begin the slaughter. There is alarm in the camp Bandar-log as folk tale has it. Their leader reassures them and promises to save their lives. With a gigantic spring, of which he alone is capable he clears a hundred bow lengths as far as the opposite bank of the river there cuts a long rattan the one end which he fixes to a tree on this bank while he attaches the other to his foot and with another spring return to his own people .But a wire he has cut is a little too short and it is only by stretching out his hands that he can reach the branches of the tree. Nevertheless, the 80 000 monkeys pass over this improvised bridge and descended in safety on the other side of the river. This latter is: as usual, indicated by sinuous lines in which a tortoise and some fish are swimming. But already two men of the court of the king of Benares are holding by the four corners a stripped coverlet into which the Bodhisatta exhausted with fatigue has only to let him to fall when the last of his subject has been saved. At the bottom we find him sitting in conversation with his human colleague who is amazed at his vigour, his ingenuity and his devotion to his people. Between a people whom we see only the bust and the hands respectfully joined together is if we may judge from the absence of a turban, a man of low caste. Apparently that one of the wood rangers who guided the royal caravan towards the Himalaya. However better part of the sculpture always belongs to the living beings. In fact it not only represents incarnation of Bodhisatta but also love and compassion to animal life. The sculpture that explains Kukkuta Bilāla Jataka shows how animals observe will for their own security.

Sculpture of Campeyya Jataka in Nāgarjunikonda elucidates how people and cattle behave freely. Those animal sculptures in Yakshā and God who appeared to have originated in worshipping the nature are considered to be sacred. In Buddhist sculpture animal figures have been used

[74] Kala S.C. 1951. *Bhārhut Vedika.* Allahabad. Published by Municipal Museum. P. 34.

meaningfully. Bodhisatta himself has been born as animals in his previous births. Man also will be reborn as animals according to the Karma. There is a close relationship between man and animals according to the doctrine of rebirth believed by Buddhists. Hence various animals in Jataka stories appear with different incarnations of the Bodhisatta . In Buddhist eco - philosophy they play a most honorable part of nature[75]. Animals are relatives of man and friends in previous births such a view accompanied in articulated Jataka stories on the living environment.

For instance the story of Caddanta Jataka representing in the art of Bhārhut, Amarāvati, Gandhāra and Ajanta obviously express the eco-philosophy of early Buddhist art. The medallion of Bhārhut on the left the hunter having put down his bow and arrow set about cutting the elephant's tusks with a crude saw. The case is the same in Gandhāra and at Amarāvati where in addition we see representing the episode of the hunter hiding in a ditch in order to wound the elephant in the stomach with an arrow. The Caddanta Jataka in the wall painting of Ajanta depicts harmonious and peaceful co-existence between man the natural world such as water plants animals and eco system depend on each other. The Rūrumiga Jataka curved in the Sānchi gateway represents eco philosophic insight into the inner connections and thorough going inter dependence of all conditioned things[76]. The fresco of cave No. X of Ajanta shows the huge six tusked elephant lying down and a hunter trying in cutting down the six tusks.

Artistic and gratitude attitude concerning the trees, animals and water is a remarkable feature in early sculptures. Lumbini (*Vateria acuminata)* garden represented in Gandhāra sculpture and representation of Buddha's death at Upavattana Sala (*Vateria acuminata)* garden is the attractive sculpture belonging to the Gandhāra School. With Sal branches in either side of Buddha's body and the sculpture that shows Jetavana Pūja are crafts that show tree worshipping was accompanied with a flag above protected by a house in order to honour the tree. Around the tree structure held an umbrella was sacred symbol of early Buddhism. Usually when Lord Buddha represented where they need they symbolized Him in a tree figure. In the Bas relief at Bhārhut a list of seven Buddhas and their respective Bodhisattas are shown in tree symbols. Here they are in order in which they are presented going from right to left of the spectator.

1. Buddha, Vipassi – *Bignonia suaveolens* – Pātali tree
2. Buddha,Sikhi – *Mangitera* – Pundarika tree
3. Buddha,Vessabhu – *Shorea robusta* – Sāla tree
4. Buddha, Kakusadha – *Acacia sirissa* – Cirsha tree
5. Buddha, Konāgama – *Ficus glomerata* – Udumbara tree
6. Buddha, Kāssapa – *Ficus indica* – Nygrodha tree
7. Buddha, Gotama – *Ficus religiosa*– Asvattha tree

Many sculptures represent the Buddha who is supposed to be seated on the empty thrones since the tree which sheltered him was a holy figure exactly similar to the one which is decorated. The Blessed One is evidently far in the jungle in the sole companionship of beasts assembled to pay him homage and belonging as much to the kingdom of fantasy as to the kingdom of nature. There are lion, antelope, buffalo, camel, crocodile, deer, dog elephant, swan, horse, monkey, quail,parrot, peacock, stag,tortoise, unicorn, woodpecker, animals gathered around the scared tree.

The crafts drawn to indicate religious occasions with angels and young prince and princes could not be considered as primitive cults. These are a variety of things provided by a tree such as food, clothes, medicine, shelter and houses for beings. It is the duty of a man to salute a tree having

[75]Ramachandrarao .P.R. 1956. *The Art of Nagarjunikonda*. Printed in India. p. 32.

[76] Marshall and Foucher. 1940. *Monument of Sānchi*. Volume.1. India. P.41

known its uses. Worshipping trees show the attitude that people should have towards the trees. If we examine a craft art that presents tree worshipping in Bhārhut, we see that there is a beggar humbly worshipping a tree. Having a prosperous appearance to God of the tree offers water can in one hand and a dish of food in the other. It is created not as a God but the whole tree itself is respected as a God. The two hands come from the stem of the tree looks as if two branches give fruits to feed living beings. The fruits creeper and flowers hanging from the tree reveal the early Buddhist use of products of trees and sentimental satisfaction depicted about the environment.

It is a remarkable feature in ancient religious belief that considered qualities of the environment with motherly attitudes; prosperity of the nature is considered as the mother. Among early Buddhist art these are sacred things such as tree Gods, devils, those used in ceremonies to bring prosperity. Lady devil figure like Sālabhañja appeared in the sculptures of Bhārhut and Sānchi , it is considered to be a symbol of prosperity. Also the figure of Capricorns, devils, perfected pot, conch and spreading creepers such as universal scroll sculpture were represented as symbols of prosperity. In another piece of sculpture in the same place their figure originates from the faith of water or cult of water. We find other symbols in the sculpture of Bhārhut that regarding the management of natural resources. We must collect resources little by little as a bee that sucks nectar from the flower without injuring it. As a bee gathers nectar from the flower without injuring its colour or fragrance similar to the sage who goes on his alms – round in the village[77]. This advice of Lord Buddha is represented in the Bhārhut art symbolically a recluse meditates close to a scroll bearing flowers and fruits around it there are bees who abstracted nectar from it[78].

Though Buddhism is a religion which forms man's thinking towards the other world it does not reject its relation to nature. Aesthetic attitudes towards nature gratification, faith will lead to mental satisfaction; mental leisure that is needed for eternal paths have been elaborated in Pali literature because of which reason environmental thinking contained in Buddhist art has practical value as well as a religious ideology.

Beauty of the nature is a visual object that can be used to practice concentration and a way of gaining ultimate truth about Buddhists expect in their religious life. Man is not separated from nature. He is an element of nature. We are unable to see anything if there is no light of the sun. So life of being depends on air, water and food given by nature. Once Buddha showed his gratitude towards the Bo tree which gave him shade for enlightenment. In conclusion it is evident that the Buddha promoted people to build a great eco philosophy as an ethical concept towards nature.

[77] Acharya Buddharakkhita.Trans, 1985. *The Dhammapada*.Kandy,Sri Lanka. Buddhist Publication Society.p.10

[78] Havell.E.B. 1920. *The ideal of Indian art*. London. P. 36

MULTICULTURAL EDUCATION AS A MECHANISM FOR PROMOTING POSITIVE ETHNICITY IN KENYA

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Abstract

Since the world has become a global village, the need for better understanding and communication among peoples from different cultures is crucial. Common markets, resource shortages, ethnic conflicts, nuclear proliferations, natural disasters, environmental problems, terrorism, epidemics and religious intorelance need the intervention of all nations in the world. Globally, culture is one of the most conspicuous differences that exist among people. Culture defines personal, interpersonal, and societal development of relationships. Education, on the other hand, is an entity that has been used immensely in promoting cultural diversity. Cross-cultural diversity in education is a major dynamic in ensuring positive ethnicity. Negative ethnicity has been a major contributing factor towards the promotion of conflict and destruction of human relationship. In Africa, genocides, civil wars, and hatreds have been propagated by negative ethnicity. In Kenya, negative ethnicity has been instrumental towards social, political, religious, and economic friction. In order to minimize negative ethnicity, multicultural education is used as a tool for encouraging appreciation of cultural diversity in Kenya.

Key Words: Culture, multicultural education, ethnicity

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Introduction

The current society has experienced varying dynamism in culture. Culture has become one of the most shared aspect of the society. Globalization and advancement of technology have heightened the interaction among the people throughout the world. The major area that has been enormously impacted by the cultural dynamism is education. Currently, education has experienced various dynamisms in terms of the necessity to learn other cultures, enhancing diversity, and increasing interaction through understanding and communication. This phenomena in the current education system has warranted the introduction and maintenance of a diversified society of learners. The learners are required to appreciate and maintain relationships with their peers in the education sector. In this phenomena, education can be understood as a cultural transition that results from socialization and enculturation in both the formal and informal learning contexts. Education influences an individual's thinking and behavioral tendencies towards maintaining social cohesion. Therefore, education has become a major tool for cross-cultural learning in the current society. Cross cultural education has enabled the appreciation of the dynamic differences in the people from different backgrounds. The backgrounds can exist in terms of ethnicity, culture, and upbringing.

Culture can be defined as a common aspect of meaning, rules, and customs that apply to a given group of people. It is not conceived as an independent aspect, but a culmination of values that define the people in a unified unavoidable way. Most of the times, culture is learned through phenomena and universal specifications that surround cultural specificities. The specificities are usually defined in terms of genetic and environmental factors that are relevant to the process of learning and development. Multicultural education can therefore be defined as a mixture of cultures that allow the student to be notified of his or her own culture, as well as the culture of other people[1]. Therefore, understanding the role of cross-cultural education in Kenya is one of the major mechanisms for enhancing positive ethnicity in Kenya.

Globally, there has been rising concerns on the differentiation of people in terms of their cultural backgrounds. The ethnic and cultural differentiations usually occur when part of the global population consider themselves superior to others. This cultural differentiation has led to the emergence of civil wars, conflicts, economic deterioration, and sustained rise of social problems. In most countries, social identity has been furnished by the group or tribe of the people. These countries are reluctant to embrace positive cultural identification in order to promote unity and nationalization. During the World War II (1939-1945), there was a rising strife between the Jews and the Christians in the world. The claim that one of the groups was superior to the other was a clear indication of the deterioration of the cultural concept of the society. This led to the massive massacre of innocent people on the basis of their beliefs. In the USA, there were rising cases of segregation of the African Americans and other minority groups. Earlier, the minority groups were segregated and labelled as aliens. This led to the rise of the civil unrest that rocked USA before the 18th century. In Europe, Britain experienced political changes arising from negative ethnicity. At that time, the British population was either Briton or Scottish. However, in the 18th century, this identity which was based on the cultural differences that existed between the two groups changed.

In Africa, negative ethnicity has been evident through political, economic and social perspectives. Negative ethnicity has made the African governments captives on the basis of favoritism. Ethnic orientations have been a major factor that has caused deaths and civil wars in these societies. For example, in 1994, ethnic genocides led to the death of about one million people in Rwanda, because of the ethnic group superiority complex. In Sudan, there has been a loss of two million people due to ethnic differences. Other countries that have been the subjects of these negative ethnicities are Uganda,

Nigeria, Liberia, Sierra Leone, and the Democratic Republic of Congo. The ethnic differences are precipitated by the escapist mentality of blaming each other and prejudice against a given community or groups. At some instances, the ethnic and cultural issues have been linked to the 17th- 18th century invasion of Africa for slaves. As a result, the communities in Africa decided to live in isolation, suspicion, and mistrust of each other. This factor is still strongly evident in the African systems of government. Most of the times, the political renditions and offices are decided on the basis of group affiliations. The leaders of Africa, mostly depend on the majority population strategy in getting the leadership roles. In the end, the society is usually molded as a tool of the superiority complex. The complex is eventually evident in economic development, education, and other structures of the societies. This causes conflict between the antagonistic communities who view each other as enemies[2]. For example, the 2007 general elections in Kenya led to the loss of lives of innocent people on the basis of political and tribal affiliations. Other African countries such as Uganda, Sudan, Democratic Republic of Congo, and Somalia have experienced the same problem. The introduction of multicultural education would encourage ethnic and cultural torelation in societies.

Negative Ethnicity in Kenya

In Kenya, negative ethnicity has been a major problem that requires intervention. Like other African countries, Kenya is made up of people from different cultures, tribes, religions, races, colors, and social backgrounds. These people from different backgrounds have alienated themselves in terms of tribe, political affiliation, and socio-economic status. The problem is compounded with the fact that Kenya has 42 tribes that are distributed among the 47 counties. The tribes have differentiated themselves on the ideology that some of the ethnic groups are superior to others, and therefore deserve a greater share of the resources. On the other hand, the minority groups are considered to be inferior, thus deserving less share. This claim has led to the rise of antagonism between communities with an ultimate goal of eliminating each other politically, culturally, and eventually physically. Without the restoration and incorporation of sanity, Kenya stands to suffer vehemently in the hands of negative ethnicities. Ostensibly, the ethnic survival is not defined by the ethnic elites, but it opens avenues for exploitation by other categories of elites.

The origin of negative ethnicity in Kenya can be traced back to the precolonial and post-colonial era. The settlers arrived in Kenya with the aim of promoting economic imperialism. However, the eventual impact was the grabbing of land and support of communities that collaborated with them. Though there existed conflicts between the Kenyan tribes, the settlers heightened the mistrust between the Kenyan tribes. After independence in 1963, Kenya was regarded as the most stable country in the region. After the transition to multiparty democracy in the 1990s, the reputation of Kenya changed due to the rise of the simmering rivalries between ethnic groups. For example, in 1992, Kenya experienced one of the most profound inter-ethnic conflict in Nyanza, Coast, Western, and the Rift Valley Provinces. The problem was related to politics, ethnicity, and governance. In the 1997 and 2007 general elections, the image of Kenya was further tainted by the negative publicity it accrued from the post-election violence. The violence was linked to the ethnic as well as socio-economic differences among the people living in those provinces. The impacts of the negative ethnicity included the loss of lives, property, and eviction of people from their homes. The conflict predisposed the people to a life of fear and distrust, which is being experienced in Kenya today.

Education is one of the areas that has been greatly affected by the negative ethnicity in Kenya. The distribution of education, land, economic resources, and social resources have been greatly undermined by negative ethnicity[3]. For example, institutions of higher learning have become areas of major interest in terms of distribution and balances.. The distribution of public universities has been affected by the

imbalance in the regional concentrations as some regions lack public institutions. The population of the public institutions of higher learning is also founded on the principle of regional background. That means that these institutions are located in certain areas, while other areas are devoid of any institution. Available data from the ministry of education indicate that the patterns of enrollment in educational institutions are dependent on the colonial development policy that promoted regional imbalances. This phenomena has potentiated the differences in the regional access to education. Communities that come from regions with high resource endowment such as Nairobi, benefit from the proximity to these facilities, while regions such as Turkana, Mandera, Marsabit, and Lodwar do not have such facilities and have to travel to other provinces in search of them Therefore, these regional imbalances are instrumental in promoting negative ethnicity. Another negative ethnicity is founded on the performance of students at the different levels of education. Social inequalities have affected academic performance among the students. The students from rich backgrounds have a higher probability of attaining education to post-graduate levels. The regional imbalances in economic endowments has increased the likelihood of children from the less endowed backgrounds dropping out of school. This situation has further magnified the ethnic aspect of impunity in Kenya. At the local level, most of the institutions enroll students from the locality. The students from regions without such facilities may not access education and if they do, they face challenges in terms of coping and amalgamation into the diverse group. Therefore, cross cultural education is an instrument that can be effective towards the introduction of positive ethnicity in Kenya.

Multicultural education and Positive ethnicity

Multicultural education is a mechanism that allows the student to mix with students from his culture or other cultures. The aim of this system of education is to enrich the relationship that exists between cultural communities through sharing, learning, listening, and being open to change. This system is an intentional system of community building that incorporates two or more cultures. The learning allows for the acknowledgement of the cultures without the collective transformation of the student. The major aim of the program is to provide learning and exposure to different cultures, without forcing change of the student's culture. The strategy involves formal learning, apprenticeship, and informal learning. The formal learning is predetermined through the number of years a student takes in school, the curriculum, teaching, and the organization of the education system. In Kenya, there are 42 tribes whose cultures are distinct. The use of the cross-cultural education offers an opportunity for learning about different cultures that are shared by the students. The ability of these students to learn the aspect of cultural diversity forms the quagmire of combating negative ethnicity in Kenya in order to enhance national cohesion among the different communities.

According to the National Cohesion and Integration Commission (NCIC), national cohesion and integration can be defined as a process of installing and enabling Kenyan citizens to have a feeling of belonging, shared challenges and opportunities, and common enterprise. Cohesion encompasses unity, freedom, equality, democracy, peace, the rule of law, and social justice. The system identifies different cultural, social, and educational identities. In cross-cultural education, institutions are established on the basis of promoting equality of opportunity for all students in the country. The system also accepts students from outside Kenya through exchange programs or regular and part-time enrollment. Cross-cultural education can be used as a way of sojourning learning among different cultural groups. This learning encompasses the formal, informal, and an apprenticeship form of learning. Informal learning is mainly formulated towards the institution of personality dynamics in the students. The personality dynamics arise from the contact with different cultural groups in their education tenure. They can become acquainted with the other culture, hence leading to their understanding of the counterpart's culture. The eventual impact involves the appreciation and trust of the other culture.[4] For example, a

student exposed to the other culture may be devoid of the prejudices that are mostly assumed in the community. The long-term effect of such an acquaintance will make the student accept the differences between communities. Therefore, the eventual impact of such a system encourages positive ethnicity among these students.

Multicultural education is also instrumental in the symbiotic transfer of learning. Education is an exchange of ideas between two groups of people. Cross cultural education unites students from different cultures, who interact with each other. They become classmates, friends, and share the common goal of success. Interaction between the groups allows them to learn from each other, through the common activities, and common errands they undertake. When the students get back to their cultures, they can apply part of what they learn from their friends, and eventually transfer some of these attitudinal changes to the people in their community. The impact of such relationship is the peaceful coexistence between students from different communities; thus appreciation of different cultures is promoted, and this in turn enhances promotion of cultural unity.[5] In the Kenyan situation, the prejudgments on the basis of culture and ones background is suppressed and peaceful coexistence is promoted, hence encouraging positive ethnicity. The opportunities of cross-cultural education allow for a strategic placement of the social status of the students. Education attracts people from higher and lower strata of the society. It also attracts the students from both the prejudiced superior and inferior cultures, marginalized cultures, and external cultures in Kenya. The education institutions provide an equal forum of interrelationship among students. The social amenities are equally available to all students despite their origin. All students conform to a given set of rules and expectations as they aim towards success despite the differences in their abilities. At the same time, the parents and guardians from different cultures have the common goal of witnessing the success of their children and this collective promotion of a similar goal of success provides the cross-cultural strategy for social change. Acceptance by other people become evident when the segments of the society come together and become a part of multiculturism. The individuals do not change their culture, but their evaluation of other cultures changes. The appreciation of the interpersonal differences in culture promotes a unified society and the negative ethnicity of hatred and blame is minimized or eliminated altogether.

Multicultural Education and the Kenyan Constitution

In Kenya the National Cohesion and Integration Commission (NCIC) Diversity and Ethnic Adult Service (2011) found that over 50 per cent of Kenya's ethnic groups are marginally represented in the civil service. Some 23 ethnic groups have less than one per cent presence in the civil service. County governments are under a constitutional and legal obligation to promote national values including harmonious relations and respect for diversity by addressing the problem of exclusion, discrimination and marginalization. Kenyan laws in their totality place duties of equality, non-discrimination, equity, fairness, transparency, accountability, diversity and meritocracy on the county governments. In addition, specific stipulations protect non-dominant groups and groups that have been the subject of historical exclusion, discrimination and marginalization. This legal framework places an obligation on county governments to actualise these rights. County governments are expected to apply minimal legal criteria on the one hand and in addition to actualise the specified standards and principles in a manner that accords with the purpose and spirit of the constitution and the goal of building a cohesive society. The National Cohesion and Integration Commission (NCIC) calls upon the leadership of each county government to acknowledge and demonstrate their support for these minimum standards, guiding principles and their objectives. The National Cohesion and Integration act prohibits discrimination on the basis of ethnicity in the public sector, including county public service. It further sets a threshold

which bars all public authorities, including county governments, from having a maximum of one third (1/3) of the staff from the same ethnic group.[6] The County Governments Act provides that, in selecting candidates for appointment, The County Public Service Board shall consider the need to assure that at least thirty per cent (30%) of the vacant posts at entry level are filled by candidates who are not from the dominant ethnic community in the county. It is important to clarify that this provision is a minimum threshold and does not aim to protect the majority or "dominant ethnic community" by ring-fencing seventy per cent of the positions in the county public service for them. It instead aims to protect the minorities or the marginalized groups by guaranteeing their inclusion in public service.

What does equality and freedom from discrimination entail? Article 10 and 27 of the Kenyan constituition specifies that individuals or groups may not be discriminated against. This means that they cannot be handled differently because of their characteristics such as language, religion, culture, national or social origin, gender, caste, birth, descent or any other status. This requires that a person or a group of persons may not be treated less (or more) favourably than another person (on grounds of ethnicity, religion, etc.) or group of persons in a similar or comparable situation. One of the most confusing aspects of non-discrimination is that it does not always prohibit institutions from treating people differently, and in some cases requires that they do so. This is because the principles of non-discrimination and equality interact with each other. For example, the historic and long-term discrimination against persons with disabilities as a group has led to people with disabilities not to enjoy full equality with other people. To remedy this, the government has taken measures known as "affirmative action" whose objective is to achieve equality, and they often do so by treating people with disabilities in a way that accords them some comparative advantage such as reserving two seats for them in the senate. Although such actions effectively treat people differently, they are not considered "discrimination", because the goal is to overcome disadvantages and achieve equality. Article 27 of the constitution further specifies that the County governments shall ensure and demonstrate inclusiveness and diversity in the process of recruitment and appointment of public servants. What does incluseveness and diversity entail? A key object of devolution is to foster national unity by recognizing diversity. A key guiding principle in public service is the requirement for representation of Kenya's diverse communities. This is not based merely on tolerance, but rather on respect and value for diversity.[7] The absence of diversity can result in disproportionate representation or exclusion in public service and this will negatively affect cohesion and integration. Lack of diversity can be a factor contributing to mistrust between different groups and is thus a barrier to building cohesion. While the Kenyan courts have recognized the importance of diversity, indicating that it entails a balancing act between competence, competitiveness and achieving the ethnic and regional diversity, they also indicated the progressive realization of this principle. In the interest of the nation and in full recognition of the responsibility and obligation of county governments, they should demonstrate the efforts made in this regard.

Conclusion

In todays age of globalization and the accompanying rapid social transformation, nations meet new opportunities and face complex challenges of ethnic diversity. A great number of people have been forced to move to other countries in order to escape poverty or wars in their countries and in the hope of finding a better life. Global migration affects political, and cultural global landscape as it links countries of origin and countries of destination. This movement both enriches and distablilizes the demographic dynamics of destinations societies. As a result, ethnic tensions and conflicts continue to flare-up in societies around the world. The experience of ethnic conflicts in the world, and Kenya in particular, has made institutions of learning put emphasis on multicultural education. Multicultural education can be viewed as a tool for enhancing positive ethnicity in Kenya. The socio-cultural challenges that are faced

in Kenya arise from the ethnic identities of the people. The ethnic groups view themselves as either superior or inferior. The alienation of this bias in the minds of the people is essential towards the achievement of national cohesion and integration. The education system is instrumental in ensuring that the society is founded on a foundation of mutual respect, interrelationship, and appreciation. Multicultural education encompasses the formal, informal, and the apprenticeship ways of learning. This strategy is essential in curbing socio-cultural challenges such as negative ethnicity, ethnocentrism, illiteracy levels, and the deterioration of morals and values.

Endnotes

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