

RESEARCH PROPOSAL

INTEGRATION OF ENVIRONMENTAL EDUCATION  
INTO THE SECONDARY SCHOOL CURRICULUM IN  
KENYA: STRATEGIES AND CONSTRAINTS

BY

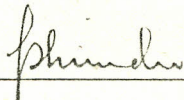
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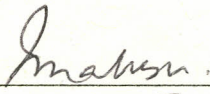
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## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Problem:

Environmental problems at the global regional and local levels have been escalating at such a rapid rate during the last few decades that they have emerged as a major concern of the international community particularly of educational planners and curriculum developers. Many of the resources that sustain life and wealth are being overused and abused. The basic needs of all people are not being met. Each day about 35,000 people die of starvation most of them children (UNEP, 1989). Each day millions of tons of topsoil are lost to erosion. One-fourth of the world's freshwater run-off is made unusable by human-generated pollution (ibid).

These environmental problems are many and exist in all countries and at every stage of economic development but often arise in different forms from one country to another and vary in nature of magnitude and complexity.

In most developing countries, poverty is the main cause of environmental problems evidenced by rural and urban poverty, poor housing, slums, poor sanitation,

deficiency diseases, soil erosion, wildlife destruction, deforestation and other problems. Deforestation represents one of the greatest dangers. It has been responsible for a large number of floods, for the erosion of productive land and even for the decline of hydro-electric potential. It has also resulted in the destruction of plants and animal species in some cases irreversibly destabilizing the ecosystems on which human life and the genetic wealth of the biosphere depend.

The industrialized countries are also faced by many environmental problems. For instance, industrial pollution is still a major threat to the quality of the environment. Acid rain caused by the emission of sulphur particles into the air has destroyed large tracts of forests. In Europe, impairment of the ozone layer by chlorofluorocarbons and generally the increased pollution represent unprecedented threats to the quality of life on our planet.

Aquatic environments continue to be polluted by industrial discharge and household waste, industrial accidents have brought a great deal of injury, disease and even death and done a lot of harm to the environment.

All these problems unquestionably result from socio-economic situations and inappropriate human

behaviour patterns such as poverty, population explosion and squandering of natural resources: Education therefore being the fundamental means of integration and of social and cultural change should play a greater role in making individuals more aware, more responsible and functionally better prepared to cope with the changes of preserving the quality of the environment.

The need for environmental education was recognized by the united nations community at the United Nations Conference on the human environment (Stockholm, June 1982) which recommended that environmental education be integrated into the whole system of formal education at all levels to provide the necessary knowledge understanding, values and skills needed by the general public and many occupational groups for their participation in devising solutions to environmental problems.

Kenya has since then made great efforts in creating awareness amongst her people about the need for protecting the environment. There have been many international bodies, governmental organizations and community bodies which have made significant contributions to the management of environmental problems and to creating this awareness. These various bodies have co-operated in many ways to foster the development and implementation of action programmes on environmental

matters of common concern through co-operative programmes such as seminars, workshops, inservice courses and harambee projects.

All these efforts have been in line with the government's policy on the environment to secure for all Kenyans a quality of environment adequate for their good health and well being and to conserve it for the future generations.

The National Environment Secretariat is one of the Kenya government departments concerned about the environment. This body considers environmental education to be a most powerful tool for the preservation of the environment. In its varied dimension, the secretariat has established an environmental education department which works in close collaboration with educational institutions such as Kenya Institute of Education, Kenyatta University, Kenya Science Teachers College, Kenya Technical Teachers College and Education centers of the Kenya National Museum and Wildlife Clubs of Kenya. All these groups are represented on various environmental education sub-committee which meet periodically to discuss matters concerning the environment and to co-ordinate their respective activities.

The objectives of the environmental education section of the secretariat are to: identify environmental education needs in Kenya and to recommend

strategies for action; stimulate and support programmes of environmental education in Kenya; co-ordinate environmental activities whenever the need may arise; develop an awareness among the youth and the adults on the wise use of our natural resources; and to encourage action programmes and community participation in solving environmental problems.

There are also many international agencies and non-governmental organizations which are concerned about the environment. Some of these include the United Nations Environmental Programme, Kenya Energy and Environment Organization, Environment liason centre and UNESCO.

Out-of-school Youth Programmes have also been established and are too concerned about the environment. For example, the Young Farmers Clubs, Wildlife Clubs and 4-K Clubs. The 4-K clubs are mainly for young people in primary schools and those who are out-of-school but of primary age. The main aim of the clubs have been to develop interest and creativity in farming, to equip members with skills useful in farming and to help them adjust more easily to their new environment when they leave school.

Women organizations such as Young Women Christian Association (YWCA), National Council of Women (NCW) and other local women groups in the rural areas have

also been extensively involved in environmental protection activities. Adult programmes co-ordinated by the Board of Adult Education have also been involved a great deal in environmental issues.

All these examples signal the efforts that the Kenyan people have put towards the safeguarding of the environment. Education therefore being the most powerful tool of change must play a decisive role in these efforts of preserving our environment. Education must make an impact upon school children throughout the long time of school attendance and do so purposefully. It is through proper education that people's attitudes towards the environment will be shaped.

## 1.2 Statement of the Problem:

The fast pace of development and rapidly expanding population have led to the degradation of the environment through an alarming destruction of the natural resources. This has raised a lot of concern both at global and regional levels as is shown by the many international and local conferences on the human environment.

In response to these escalating environmental problems, the Kenya government has made special efforts to address the issue. This is demonstrated by the vast amounts of capital that have been invested towards

conserving the environment and the existence of an array of institutions both governmental and non-governmental involved in environmental protection and natural resource management. Several strategies to tackle environmental problems have been considered and one of these strategies has been to use the school as a key means to educate the people on the need for environmental protection and conservation (UNESCO, 1980, p. 19). Environmental education aims at providing learners with knowledge, values, (attitudes), commitment and skills needed to protect and improve the environment. Generally, environmental education is expected to create new patterns of behaviour among individuals, groups and society as a whole towards the environment.

However, dispite this wise consideration to use the school to provide knowledge, attitudes and skills needed for the protection of the environment, ques- Brook  
tions still arise as to the extent to which the school  
has played this role. For instance, to what extent has the current school curriculum incorporated environmental education themes for the purpose of creating environmental protection awareness among the learners? Does it have well trained personnel to handle the subject? Does it have enough resources both physical and human to administer this function? This is what the present study focuses on. Precisely

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the study examines what environmental education themes have been incorporated into the secondary school curriculum and the effort of the schools themselves in providing learners with the knowledge and skills needed for the protection of the environment.

### 1.3 Purpose of the Study

The purpose of this study is to examine the extent to which environmental education has been integrated into the secondary school curriculum. The focus of the research is to look at the strategy that has been laid to incorporate environmental education into the secondary school curriculum and the constraints that have been experienced.

The following are the specific objectives of the study:

1. To find out strategies laid down to ensure the incorporation of environmental education into the secondary school curriculum.
2. To analyse the secondary school curriculum to determine what elements of environmental education have been infused into the existing school curriculum.
3. To determine whether the secondary school teachers have been prepared to teach environmental education.

4. To find out whether the schools have enough resources to enable the teaching of environmental education.
5. To find out the attitudes of both pupils and teachers towards environmental education.
6. To find out the constraints that have been experienced in integrating environmental education into the secondary school curriculum.

#### 1.4 Research Questions:

The investigation of this problem is guided by the following research questions.

1. What strategies have been laid to integrate environmental education into the secondary school curriculum?
2. What components of environmental education have been incorporated into the secondary school curriculum?
3. How have the secondary school teachers been prepared to handle environmental education in secondary schools?
4. What resources are available to enable the effective teaching of environmental education?

5. What are the attitudes of both teachers and students towards environmental education?
6. What constraints have been experienced in integrating environmental education into the school curriculum?

### 1.5. Study Assumptions

A basic assumption of this study is that the Kenya population has not been adequately sensitized about the need for environmental conservation and that sound environmental protection awareness is lacking among the majority of the people. The study also assumes that education has a major role to play in creating this awareness but has failed to do so. Closely related to this assumption is that environmental education has not been successfully incorporated into the existing school curriculum. It is further assumed that the successful integration of environmental education into the school curriculum has been hindered by the following:- Lack of relevant training of teachers in environmental education, lack of resources in schools, lack of enough time to cover the school syllabus and poor attitudes of both teachers and students towards environmental education.

Lastly, it is assumed that although a lot of effort has been made to educate the Kenyan people about environmental conservation, no clear and viable strategies

have been laid to ensure a systematic incorporation of environmental education into the school curriculum.

### 1.6 Significance of the Study:

The results of this study will help identify the relative importance of teacher and school characteristics as related to the adoption of environmental themes in the classroom. The relative importance of the limiting factors such as instructional materials, funds, time to develop the curriculum, training of teachers and so on will be determined. This information will assist educators responsible in planning, designing and implementing environmental programmes.

Results will also prove valuable in the design of future pre-service and in-service teacher training programmes by identifying areas where future teacher development is needed. Improved training programmes will help motivate teachers to teach environmental themes and equip them with more knowledge thereby improving the quality of education.

The results of this study will in particular be significant to the curriculum developers as it will suggest ways of improving the teaching of environmental education in secondary schools and also in the pre-service and in-service of secondary school teachers.

The study will also articulate others interested in environmental issues to look into other problems and hence help in bringing new knowledge to existence.

Overall, the provision of improved curriculum materials and human resources will increase the diffusion rate of environmental education by making it easier for teachers to incorporate environmental themes into the schools.

#### 1.7 Scope and Limitations of the Study:

The researcher would have wished to administer the present research in more districts to draw a more representative sample of the districts in Kenya. However, because of certain limiting factors, this will not be possible and hence, only three districts will be involved. These include Murang'a, Kajiado and Nairobi districts.

One of the limiting factors of this study is funds. The money available for this research work is not adequate and therefore only a small sample of districts and schools will be selected.

Time is also another limiting factor. The research work has to be completed within the set time and therefore the researcher may not be able to cover all that she may have wished to.

These two limiting factors explain why the research work is limited to only three districts in Kenya.

### 1.8 Definition of Terms

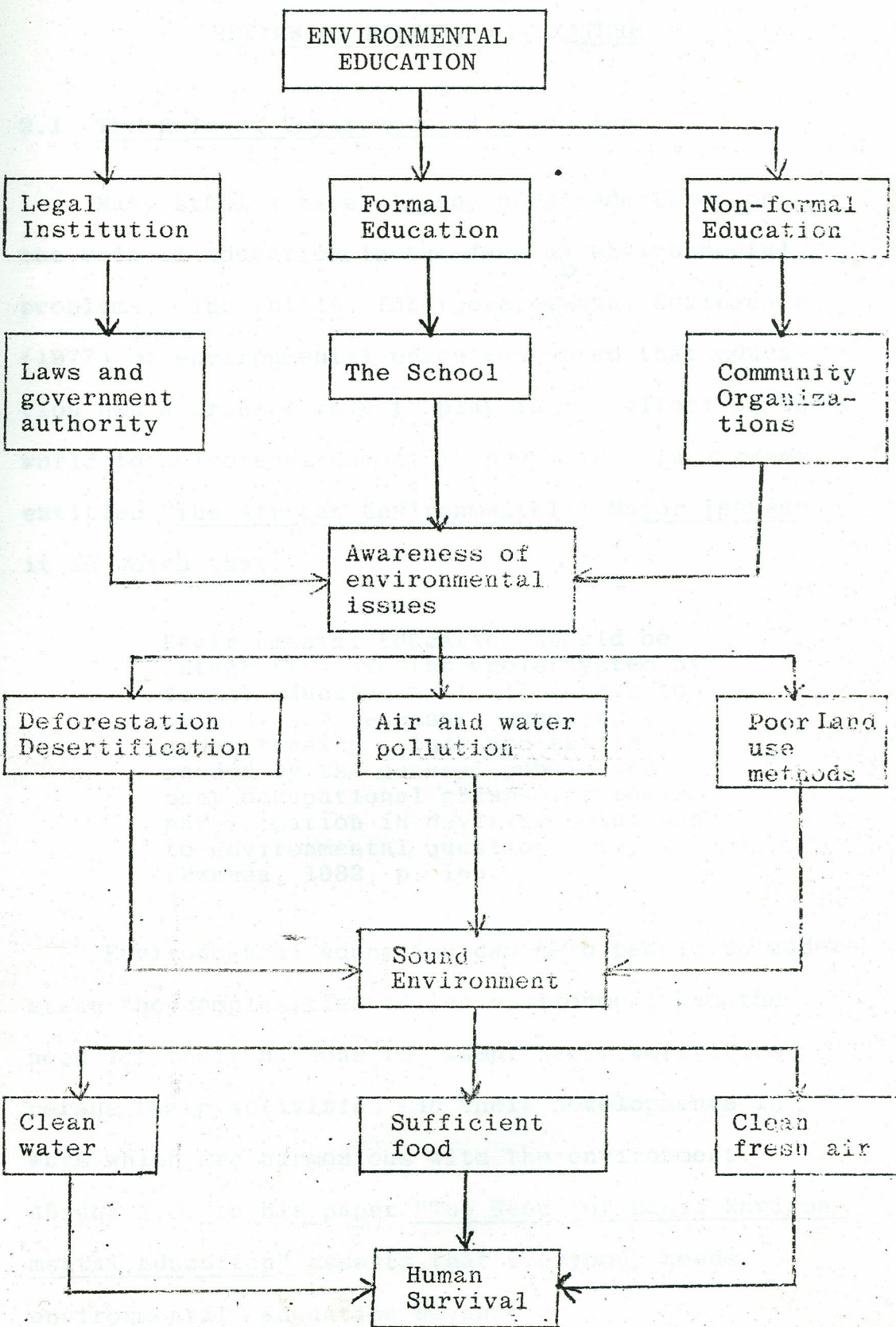
The following are definitions of terms in the context of this study:

1. Curriculum: The entire programme of school work, everything that the learners and their teachers do in any educational institution to achieve certain set goals and objectives.
2. Environment: The aggregate of the surrounding things, that is the living and non-living things and the conditions that influence the life of an organism or population including human.
3. Environmental Education: Programme and activities that increase the level of awareness understanding and appreciation of the environment as a totality and its interactions with human activities.
4. Integration: This is the incorporation of a new educational element into an already existing curriculum.

## 1.9 Conceptual Framework

The following conceptual framework is an indication of the place of Environmental Education in our society today. Precisely, the framework indicates that environmental education can be integrated into the society through government authority, formal and non-formal education programmes. Such education would help in creating environmental protection awareness. This awareness would help in reducing threats to human survival. These are such as desertification, deforestation, poor land use methods air and water pollution. Once the society has learned how to conserve and properly manage the environment, then it means that basic needs of human beings would be met. Without catering for these needs, it would be impossible for the human beings to survive on the planet. These basic needs are such as availability of sufficient food, clean sufficient water and clean fresh air. Hence through proper integration of environmental education, it would be possible for the normal existence of human beings on the planet earth.

A CONCEPTUAL FRAMEWORK INDICATING  
A NEED FOR ENVIRONMENTAL EDUCATION



Source: Researcher's Design.

REVIEW OF RELATED LITERATURE

2.1 The Role of Environmental Education:

Many studies have already been undertaken on the role of education in the face of environmental problems. The Tbilisi Intergovernmental Conference (1977) on environmental education noted that education had a crucial role to play in the effort of the world to solve environmental problems. In a paper entitled "The African Environmental: Major Issues" it is noted that:

Environmental Education should be integrated into the whole system of formal education at all levels to provide the necessary knowledge, understanding values and skills needed by the general public and many occupational groups for their participation in devising solutions to environmental questions .....

(Mwanza, 1982, p. 16).

Environmental education can help people to understand the complexities of the environment and the need for their nations to adopt their activities, pursue their activities and their developments in ways which are harmonious with the environment.

Abidha N.O. in his paper "The Need for Basic Environmental Education" asserts that everybody needs environmental education because

Everyone is in the environment of the other, nobody can have his own environment. We need environmental education so that our actions do not 'spoil' the environment for others .... " (Abidha, 1987, p. 5).

He goes on to say that every individual must participate in improving the state of the environment.

"Even by planting a tree every year, everybody can contribute to the improvement of the environment..." (Ibid, p. 8).

He however quickly notes that

.... prior to such action, basic education pertaining to the management of the environment is very much needed. It is only through such education that people are much critically aware of environmental problems. Such awareness in turn will lead to necessary action ... " (Ibid, p. 8).

Environmental education is seen as the way of developing an awareness of the environment and a sense of responsibility for its protection. It is hence the most effective vehicle for persuading the human race to adopt a national attitude towards the natural environment and to avoid the deterioration of the human race as a result of unwise exploitation and misuse of nature (Otiende, J.E 1991).

In the Sessional Paper on environment and sustainable development 1989, it is noted that:

Ignorance, lack of knowledge, understanding of environmental issues have been leading causes of environmental degradation. Public awareness and sensitivity to environmental issues is a key factor for achieving a lasting solution to sustainable development (Republic of Kenya, 1989, p. 57).

In his opening address during the National Symposium on environmental education at Kenyatta Conference Center in 1979, Towett the then Minister of Education mentioned the failure of measures to protect the environment and suggested the cause of failure:

Strict policies and legislation for the preservation and improvement of the environment in many countries has failed to achieve the desired effect. This is partly due to the fact that the role of education is often neglected. (Republic of Kenya, 1979, p. 12).

President Moi of Kenya (1982) also sees effective programme of information and education as the prerequisite to effective environmental management.

The ultimate achievement in this context of sound environment management will only be achieved when appropriate values are instilled into the minds of people. Towards this goal, we must rapidly introduce more effective programme of information and education (Nation 2nd June, 1982, p. 16).


Geddes in 1989 tried to show the connection between quality of environment and quality of education.

He explained that environmental awareness makes a student to learn better and develop creative attitude towards the surrounding.

The international community agrees that the goal of environmental education should be:

"...to develop a world population that is aware of and concerned about the environment and its associated problems and which has the knowledge skills, attitudes, motivations and commitment to work individually and collectively towards solutions of current environmental problems and the prevention of new ones.  
(UNESCO, 1981, p. 84).

Precisely, environmental education is the key to sound environmental conservation awareness. It is the only means by which people can acquire knowledge, values and skills necessary for environmental protection. It is by noting this crucial role of environmental education that the Tbilisi Conference of 1972 made this recommendation:



It is recommended that the secretary - General, the organizations of the United Nations System especially the United Nations educational organization and the other international agencies concerned should after consultation and agreement take the necessary steps to establish an international programme in environmental education, interdisciplinary in approach, in school and out of school encompassing all levels of education and directed towards the general public in particular, the ordinary

citizen living in rural and urban areas, youth and adult alike with a view of educating him as to the simple steps he might take within his means to manage and control his environment (Ibid, p. 76).

Since this conference, considerable progress has been made in the development of environmental education in many countries as is going to be discussed in the next section.

## 2.2 Environmental Education and the School Curriculum

In recent years many countries have redoubled their efforts to foster the development of environmental education. This is because of the growing interest taken in environmental problems and in the role that should be played by education in solving and preventing them. Differing considerably in intensity and nature from one country to another, these efforts are focused in various ways in all or some of the following aspects: inclusion of environmental topics in traditional subjects, training the personnel required for development of environmental education and developing of teaching materials.

The Tbilisi Conference had this to say about environmental education.

Environmental education should not just be one more subject to add to the existing programme but should be incorporated into programmes intended for all learners whatever their age ... this task requires the application of new concepts new methods and new techniques as part of an overall effort stressing the social role of educational institutions and the establishment of a new relationship between all those engaged in the education process (UNESCO, 1980, p. 35)

School syllabuses of instruction text books, teachers guides, supplementary teaching methods, teacher education courses and published reports in many countries contain some elements of environmental education. For instance, in the Malaysian school curriculum, environmental education is not treated as a separate subject but environmental education concepts are infused into already existing subjects. Increasing concern with environment - linked subjects has created a need for re-orienting teachers through in-service and pre-service teacher education programmes. The teaching of environmental education concepts in the school syllabuses are dealt with in the teacher education curriculum in those subject areas. In-service courses conducted at the national and regional level are directed towards re-orienting teachers to give them the competencies to teach the new content. (UNESCO, 1980).

Environmental education is not new to Kenya's education system. Many disciplines taught (Before the Stockholm Conference 1972) at primary and tertiary levels contained elements of environmental education as is stated in the Kenya Country Position Paper at Tbilisi Conference (1977):

Environmental Education was being taught in Kenyan primary, secondary and tertiary levels before 1972's Stockholm Conference. The courses were being offered as integrate part of subjects as Geography, General Science, Biological Science etc. (Republic of Kenya 1977, p. 24)

Although environmental education was taught in schools, it was not given much emphasis. The manner in which it was taught did not sensitize or motivate the youth in schools and the public at large about the need to care for the environment (Republic of Kenya, 1972). Saitoti (1979) attributes the failure to:

1. Lack of interdisciplinary approach in various subjects taught in schools where the subjects are taught in isolation.
2. Teachers having a limited knowledge due to their inadequate training in the field.
3. Wrong approach especially in educating the masses. (Nation, July, 1979, p. 8).

A variety of researchers have undertaken studies to examine the incorporation of environmental education into the school's curricula. For instance, Manguriu (1987) did examine the incorporation of environmental education in primary schools in Murang'a district. The purpose of his study was to assess the extent to which environmental education themes are incorporated into the primary school curriculum. His findings revealed that a multi-disciplinary approach to teaching environmental education was used and that most environmental education themes were incorporated in subjects like agriculture, combined course (Geography, History and civics) Science and Home Science syllabuses. Some topics on environmental education were found to be incorporated in more than one discipline.

He also found out that teachers in Murang'a district had positive attitudes towards the environment and environmental studies. The teachers were aware of the state of the environment in the district and were concerned that education should play a vital role of imparting environmental awareness in the pupils and developing skills, values and attitudes among them.

Some of the constraints in incorporating environmental education to schools that Manguriu identified were such as shortage of reference books for

both teachers and pupils, lack of training of teachers and financial problems.

Smyth J.C. (1978) in his paper Environmental Education in Scotland: Prospects and Problems"

has identified the following as major constraints in an effort by the Scottish people to introduce environmental education into the Scottish schools:

1. The definition of environmental education because of its comprehensive nature and other features separating it from traditional subjects.
2. Its place in the curriculum following the above.
3. Its acceptability in the predominately urban industrial homeland of the school population.
4. Lack of integrated support material appropriate to the needs of the teachers and learners (Smyth, 1978, p. 120).

He particularly notes that introducing environmental education in schools in his country has posed a major constraint because of

Difficulties arising from the examination system to which schools are deeply rooted (Smyth, 1978, p.120).

Lack of adequate instructional materials is an important factor in limiting environmental education (Pettus and Schwaab 1979). Johnson (1966) sampled 1,541 pieces of environmental education materials in California U.S.A. and reported that the majority of environmental education materials overshoot the readability levels of the intended audiences and were of insufficient depth of coverage.

Another study of state-adopted textbooks in California schools, U.S.A. was conducted by Gwinn (1967). He reported that:

Newly adopted textbooks were pitifully weak in their offerings for environmental education (Gwinn , 1967, p. 140).

Man caused problems which result in environmental deterioration were universally omitted from the texts.

Inadequate training of teachers in environmental education has been considered a major variable affecting the incorporation of environmental themes into the school curricula. Elementary school principles in Indiana (Jonkawski 1975) and in New York (Kenyon 1965) U.S.A., listed inadequate preparation of teachers as the primary factor limiting the quality of environmental education. A variety of educators have concluded that teacher training in environmental concepts should be implemented to ensure effective

programmes (Sherman, 1950, Gwinn, 1967).

A UNEP-UNESCO sponsored survey carried out in several countries to determine the extent to which environmental education has been incorporated into the school curriculum had this to say about the constraints faced in the effort of incorporating environmental education into the school curricula in developing countries:

A problem which concerns developing countries is that the concepts and materials on environmental education have been developed mostly in the industrialized countries which make their transfer to other cultural and environmental situations difficult. Since environmental education is to a great extent concerned with the problems of one's own environment the implication of a curriculum designed for an industrialized country will not suit the needs of a developing country (UNEP-UNESCO Report, 1985, p. 135).

All these studies signal the great effort that is being made to educate the human population on the need for environmental conservation. Many words have been spoken in conferences seminars, workshops and symposia organised at national, regional and international levels to discuss environmental problems and the incorporation of environmental studies into the existing education curricula. What remains is an action towards that direction according to Potter (1977):

"... I must stress that I believe that not only words but actions will be required if environmental education is to be established universally and at all levels" (Potter, 1977, p. 48).

Like all sound educational innovation, environmental education in Kenya requires serious planned assessment and evaluation in order to provide planners, curriculum developers, trainers, policy makers and other educators with necessary information for making effective and viable decisions about environmental education at all levels (Köech, 1986). The present study therefore, is aimed at examining the extent to which environmental education has been incorporated into the secondary school curriculum in Kenya.

## CHAPTER THREE

### METHODOLOGY AND DESIGN OF THE STUDY.

The study examines the integration of environmental education into the secondary school curriculum. The research work is to be conducted in three selected districts in Kenya. These include Murang'a, Nairobi and Kajiado. Murang'a district is located in Central Province and borders Nyeri, Kiambu, Nyandarua, Kirinyaga and Embu districts. Kajiado district on the other hand is located in the Rift Valley province and borders Tanzania to the South-West, Taita Taveta to the South-East, Machakos to the East and Nairobi to the North East. Nairobi is the capital city of Kenya and it borders Kiambu, Machakos and Kajiado districts.

Murang'a district has been chosen to represent high agro-ecological districts while Kajiado has been selected to represent low agro-ecological regions. Nairobi on the other hand represents urban areas which have their own unique environmental characteristics. Other factors considered in choosing these districts include amount of funds available for the research and familiarity of the districts in order to avoid wastage of time.

### 3.1 Population of the Study

The population target of this study include:

1. Secondary school students in the selected districts.
2. Teachers in these schools who teach environment - related subjects. These include Geography, Chemistry, Biology, Agriculture and Home-science teachers.
3. Curriculum developers from Kenya Institute of Education.
4. Environmentalists from KENGO and UNEP.

The study is directed to secondary schools because this is where we have the youth population who are a majority and also the most active group of the Kenyan population (Ominde, S.N., 1988). Moreover, while there have been similar-related studies directed to primary schools (Manguriu, 1987) no such study has been carried out in secondary schools. I therefore, feel that there is a great need to find out about environmental education in secondary schools because this is where we have the youth who very soon will comprise the tomorrow's decision makers of the country.

The secondary school teachers teaching environment related subjects have been selected on the basis that they are in a better position as curriculum implementors to tell some of the difficulties they experience in dealing with the subject under study. They also as professionals have a lot to offer to this study in terms of how best environmental education can be improved and instituted in the secondary school's curriculum.

The group of the curriculum developers and environmentalists is also essential in this study. It is hoped that they will be able to give professional information about the best strategy that can be laid to ensure proper integration of environmental education into the school curriculum.

### **3.2 Sampling Procedure**

From each district six secondary schools will be selected to participate in the research. The schools selected will be representative of both private and public schools. Hence four public schools and two private schools will be randomly selected from each district. In total 18 secondary schools will comprise the sample of the schools. The researcher is interested in both private and public schools because we have cases of private schools using a different curriculum from that used in public schools.

Random sampling will be used in the selection of these schools. The name of public and private schools in each district will be written on pieces of paper. All the names of the public schools will be put in one box and those of the private schools in another separate box. The researcher will then mix the pieces of paper in the boxes and then pick one piece of paper from each box at random. The names of the schools picked will therefore comprise the sample. This random method will be suitable in that all the schools will have an equal chance of being selected.

Due to limited funds, only one class from each school will participate. This class will again be selected using the same random method used in the selection of the schools. Five teachers from each school will participate in the research. The teachers to participate in this research will be those who teach environment-related subjects. These include Geography, Chemistry, Biology, Agriculture and Home-science. Since there may be many teachers teaching these subjects, only one from each subject area will be randomly selected to participate in the research.

Two curriculum developers from Kenya Institute of Education and two specialists in Environmental Education from UNEP and KENGO will randomly be selected from those institutions to participate in the research.

### 3.3. Data Gathering Instruments

Five main instruments will be used in gathering the data sought. These include:

1. Questionnaires for teachers
2. Interview schedules for curriculum developers and environmental education specialists.
3. Attitude scales for students.
4. Content analysis of secondary school curriculum.

#### Questionnaires

The questions will consist of a few demographic questions considered relevant to the data being sought. The questions will be constructed to elicit responses that will try to answer the raised questions.

The reliability of this instrument will be checked by looking at the consistency of questionnaire responses and interview responses of a few teachers. The relevance of the responses will be established by checking the responses against expectations.

### Interview Schedules

These will be administered to the professional group only. The questions to be asked will mainly be geared towards getting data relevant to the facts being sought. The reliability of this instrument will be checked by looking at the consistency of the interview responses during the pilot stage.

### Attitudes Scales

These will be administered to the students and teachers of the respective schools. This will be done purposely to determine the pupils attitude towards environmental education which may be a main factor to consider when integrating environmental education into the school curriculum.

The reliability of this instrument will be determined by looking at the consistency of the responses.

### Content Analysis

This will mainly be carried out to determine how much of environmental education themes have been integrated into the secondary school curriculum and how much is really expected to be in the curriculum. This will be done by examining the secondary school curriculum and comparing what is the curriculum with what the text books have.

### 3.4 Piloting Phase

The instruments will be pilot-tested using 3 schools. This process will be carried out within the area of study for the purpose of gaining confidence with instruments before they are finally administered.

### 3.5 Data Collection Procedure

The researcher will first of all visit the district education officers to get a permit to go on with the research and also get any essential information and assistance that may be needed.

The researcher will also make appointments with the respondents in order not to inconvenience them or go unexpectedly only not to find them.

The respondents will then be shown how to fill the questionnaires or assisted in filling them. This will be done by research assistants after which they will collect the filled questionnaires to be collected from them on agreed dates and venues.

### 3.6 Data Analysis

Simple descriptive statistics will be used to analyse the data collected. These will include frequencies, percentage and mean.

The researcher will use computer which is easier and faster in analyzing data collected.

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## INTERVIEW SCHEDULE

### CURRICULUM DEVELOPERS

Thank you very much for accepting to respond to my interview questions.

1. Name: \_\_\_\_\_
2. What is your highest professional qualification?  
\_\_\_\_\_
3. What is your subject area?  
\_\_\_\_\_
4. For how long have you worked as a curriculum developer?  
\_\_\_\_\_
5. Environmental Education has been considered as one of the main strategy of solving the escalating environmental problems. What is your opinion about this?  
\_\_\_\_\_  
\_\_\_\_\_
6. Do you have environmental education in the secondary school curriculum?  
\_\_\_\_\_
7. When did you first introduce environmental education into secondary schools and how was this done?

.....  
.....

8. (a) What environmental themes did you integrate into the school curriculum?

.....  
.....

(b) Do you think that these themes of Environmental Education that you have incorporated into schools are enough in creating Environmental conservation awareness?

.....  
.....

9.(a) After integrating environmental education into secondary schools did you train teachers to specifically teach the subject?

.....  
.....

(b) How many teachers have you trained since then?

.....  
.....

10. (a) How about in-servicing the teachers? Have you been doing this to enable them teach effectively?

.....

(b) How often have you been in-servicing them?

11. (a) What books have you so far availed in schools for use in environmental education teaching?

.....  
.....

(b) What books are these?

.....  
.....

(c) Are there specific books for teachers and textbooks for the students?

.....  
.....

12. (a) After introducing Environmental Education into secondary schools, have you been going round schools to find out about the state of the subject in schools.

(b) If yes, what problems have you seen in schools that may delay proper integration of environmental education in schools.

.....  
.....

(c) If No, why haven't you been doing this.

.....  
.....

13. (a) Apart from these problems that exist in schools, what other constraints have you had in incorporating environmental education into secondary schools.

(b) How have you been solving these problems?  
.....

14. Are there any new strategies that you may have come up with that would help in instituting environmental education into schools?  
.....  
.....

INTERVIEW SCHEDULE FOR ENVIRONMENTAL  
EDUCATION SPECIALISTS

Thank you very much for accepting to respond to my interview questions.

1. Name: .....  
Institution: .....
2. What is your highest professional qualification? .....
3. Do you deal with Environmental issues?  
Which ones? .....
4. For how long have you worked in this institution?  
.....
5. Environmental Education has been considered as one of the main strategy of solving the escalating environmental problems. What is your opinion about this?  
.....  
.....
6. (a) As environmentalists, do you have a set of environmental themes that you think must go into the school curriculum as part of Environmental Education?  
.....  
.....

(b) Which themes are these?  
.....

(c) Do you think that these themes would be effective in creating environmental conservation awareness amongst the secondary school pupils?

7. In the Kenyan education system, we do not have a subject called environmental education, but we do have elements of environmental education infused in related subjects such as Geography. What is your opinion about this approach?  
.....  
.....

8. Do you have any association with the Kenya Institute of Education which is the Centre for Curriculum Development? .....

9. (a) I am sure you have a list of many books on Environmental Education. Which ones of these would you suggest for use in teaching environmental education in secondary schools?  
.....  
.....

(b) Do you avail these books in school libraries?  
.....

10. What other materials do you think schools should have for effective teaching of environmental education?
11. (a) Do you hold seminars, workshops or in-service courses for teachers in secondary schools? .....
- (b) If yes, how often do you do this?  
.....  
.....
- (c) If No, why don't you do this  
.....  
.....
12. Generally, what constraints have you experienced in the effort of promoting environmental education in schools and how have you encountered them?  
.....  
.....
13. In conclusion, what suggestions would you offer in relation to improvement of environmental education in secondary schools.  
.....  
.....

Kenyatta University,  
P.O. Box 43844;  
NAIROBI.

24th March, 1993

Dear Sir/Madam,

REF: ENVIRONMENTAL EDUCATION IN SECONDARY SCHOOLS  
IN KENYA

I am carrying out an Education research in secondary schools in Kenya; and your school has been selected for this purpose. The aim of the research is to examine the incorporation of Environmental Education into the secondary school curriculum. On completion of the project recommendations for future improvement will be made. All the data collected will be used strictly for statistical purposes and will be confidential. You are kindly requested to answer questions in the questionnaire provided correctly and honestly.

For the purpose of this research, Environmental Education involve issues such as soil erosion, deforestation, population, explosion and its consequences; air, land and water pollution; problems of solid waste in town and others.

Thank you very much for your kind cooperation.

Name of the teacher (optional).

\_\_\_\_\_  
Name of secondary school \_\_\_\_\_

\_\_\_\_\_  
P.O. Box \_\_\_\_\_

J.K. MBWESA  
(RESEARCHER)

QUESTIONNAIRE FOR TEACHERS

Thank you very much for accepting to respond to this questionnaire. There are two parts in this questionnaire in which you will find 36 questions. Please read them carefully before answering.

All your responses are for statistical use only.

PART 1

1. Name of school .....
- District: ..... Division: .....
2. Your sex: Male ..... (b) Female .....
3. Your marital status:
  - (a) Single ..... (b) Married .....
4. Your age:
  - (a) 20 - 25 years
  - (b) 26 - 30 years
  - (c) 31 - 35 years
  - (d) 36 - 40 years
  - (e) Over 40 years
5. Your highest academic qualification (mark the one applicable)
  - (a) Form IV
  - (b) Form VI
  - (c) Graduate
  - (d) Other (specify) .....
  - .....

6. Your highest professional qualification
- (a) S1 (e) Masters  
 (b) ARTS (f) Ph.D  
 (c) Diploma (g) Other (specify) .....  
 (d) Graduate .....
7. (i) When did you become a secondary school teacher? .....
- (ii) What is your subject area?  
 .....
8. When did you start teaching environmental education? .....
9. Have you been trained on how to teach environmental education.
- Yes  No
10. Have you attended any seminar or inservice course on environmental education?
- Yes  No
11. Do you involve students in your class in identifying environmental problems in the school compound or surrounding area.
- Yes  No

12.(a) Do you conduct field trips such as visits to developmental projects sites, exhibition and other environmental education supportive learning activities?

Yes  No

(b) If No, please explain why. ....  
.....

(c) If yes, which activities are these?  
.....  
.....

13. (i) Have you involved students in your class(es) in environmental conservation activities like tree planting,, soil conservation in school compound or surrounding areas?

Yes  No

(ii) if no, please explain why.  
.....  
.....

14. (a) In teaching environmental education, which reference book(s) do you use?

- (a) .....
- (b) .....
- (c) .....

15. (i) Do students use the same text book(s)?

Yes  No

(ii) If no, please give the titles of the books the students use in learning environmental studies.

- (a) .....
- (b) .....
- (c) .....

16. Do you get information on environmental issues from other sources apart from the textbooks mentioned above?

Yes  No

(b) If yes, please name these sources.

- (a) .....
- (b) .....
- (c) .....
- (d) .....

17. What other resources are available in the school to enable you in the teaching of environmental education. ....  
.....  
.....

18. (a) Do clubs such as wildlife, young farmers, 4-k, scouts and guides which play important role in imparting environmental awareness in students exist in your school?

Yes  No

(b) If yes, please name the existing clubs.

- (a) .....
(b) .....
(c) .....

19. (i) From your observation do you think

(a) Environmental education is adequately incorporated into the secondary school curriculum?

Yes  No

(ii) If no, give some of the topics you would like to be included in the curriculum.

- (a) .....
(b) .....
(c) .....

20. Mention some of the problems you face while teaching environmental studies.

- (a) .....
(b) .....
(c) .....

(d) .....

(e) .....

21. Write down some of the recommendations you would like to suggest in reference to maintaining environmental quality through environmental education.

a) .....

b) .....

c) .....

d) .....

PART B

Put a tick (✓) into the appropriate parentheses to the right to indicate whether you; strongly agree, agree, disagree or strongly disagree with the statements to the left.

Neutral

Item	Statement	Strongly Agree	Agree	Disagree	Strongly disagree
1	Our environment is being destroyed by soil erosion deforestation, pollution and other environmental problems.				
2	All citizens should be concerned about environmental problems				
3	Environmental Education is an essential subject in secondary schools				

ITEM	STATEMENT	STRONGLY AGREE	AGREE	DIS- AGREE	STRONGLY DISAGREE
4	Environmental education has no value to secondary school pupils.				
5	Environmental education learnt in secondary schools would enable school leavers to protect the environment.				
6	Though environmental education has been part of the secondary school curriculum most school leavers have continued to destroy the environment.				
7	Most of the pupils are interested in environmental education activities.				
8	Environmental education should be optional to students.				
9	Environmental education should be made compulsory for all pupils.				
10	Majority of pupils find environmental education boring				

## ENVIRONMENTAL EDUCATION ATTITUDE

QUESTIONNAIRE FOR STUDENTS

Put a tick into the appropriate parenthesis to the right to indicate whether you strongly agree, disagree or strongly disagree with the statements to the left.

ITEM	STATEMENT	STRONGLY AGREE	AGREE	DIS- AGREE	STRONG- LY
1	Our environment is being destroyed by soil erosion deforestation, pollution and other environmental problems.				
2	All the youth should be concerned about these problems.				
3	Environmental education is an essential subject in the schools.				
4	Environmental education has no value to secondary school pupils				
5	Environmental education should enable us to protect the environment after leaving school.				
6	Environmental education offers very little to enable us protect the environment.				

ITEM	STATEMENT	STRONGLY AGREE	AGREE	DIS- AGREE	STRONGLY DISAGREE
7	Environmental education is a very interesting subject.				
8	Environmental education activities are boring				
9	Environmental education should be optional to students.				
10	Environmental education should be made compulsory to all secondary school pupils.				
11	The secondary school is too loaded to accommodate environmental education as a separate subject.				
12	Environmental education should be given more emphasis in secondary schools				
13	Students enjoy environmental oriented activities organised by the school from time to time e.g. tree planting, collecting rubbish etc.				
14	Students are always willing to participate in environmental activities.				

ITEM	STATEMENT	STRONGLY AGREE	AGREE	DIS- AGREE	STRONGLY DISAGREE
15	Students should be rewarded for their participation in environmental activities.				
16	The school curriculum has adequate content on environmental education				
17	Environmental education should have its own separate syllabus in the secondary school curriculum				

RESEARCH EXPENDITURE BUDGET (ESTIMATION)

1.	Writing and reproduction of research proposal	
	1. Secretarial Services	1,600.00
	2. Photocopying services 11 copies each 120	1,300.00
	3. 4 Reams of typing paper each 150	600.00
	4. Transport and subsistence	2,000.00
	Sub- Total	5 500 00
2.	<u>Field Work</u>	
	<u>Stationery</u>	
	1 packet of stencils paper each 200	200.00
	5 reams of duplicating paper each 200	1,000.00
	3 tubes of duplicating ink each 100	300.00
	1 packet of staples each 150	150.00
	Production of research instruments	1,000.00
	Transport	6,000.00
	Subsistence	5,000.00
	5 research assistants each 300	1,500.00
	Total	15,150.00
3.	<u>Typing and Reproduction of Thesis</u>	
	2 reams of fullscaps each 2.50	500.00
	Typing services	4,000.00
	Photocopy services 7 copies each 200	1,400.00
	Binding	400.00
	Sub Total	6,300.00
	Grand Total	26,350.00

TIME SCHEDULETIME:

- December 1992 - Presentation and submission  
of proposal.
- Finalizing of all administrative  
issues of the research.
- January 1993 - Collection of Data for the study.
- February 1993 - Assembling of all completed  
instruments for data analysis.
- April/May and  
June 1993 - Writing the Thesis drafts.
- July/August/  
September - Reproduction and submission  
of Thesis.

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