

EVALUATION OF AUDIOVISUAL MATERIALS FOR USE IN ENVIRONMENTAL EDUCATION

K. A. Nihuka

(Assistant lecturer)

Institute of Continuing Education,
Open University of Tanzania

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Abstract: *This paper describes a study on evaluation of the suitability of 19 audiovisual teaching materials Titled 'Mazingira Yangu-Mazingira Yetu' for environmental education in schools, adults and continuing education in Tanzania. The objective of the materials is three fold. First is to raise public awareness and understanding of the essential linkages between environment and sustainable development. Second is to increase an informed debate and stimulate actions at all levels of society concerning environmental issues in Tanzania; and third is to promote individuals and community participation in environmental action. The evaluation involved watching all 19 cassettes and used a note book and observation guide to record information regarding the suitability of the cassettes. The findings of the study revealed the following strength; Of the 19 cassettes, 18 had stated specific objectives clearly, they address quite relevant and basic facts about environment and related interactions such as deforestation, forests conservation, charcoal making, overgrazing, overpopulation v/s environmental destructions and recycling of wastes. The environmental information provided is well coupled with relevant illustrations and appropriate music which captures attentiveness of clients and therefore learning becomes interesting. On the other hand however, the findings showed that the cassettes were over-ambitious as they attempted to cover many concepts at the end of every 30 minutes in the expense of providing detailed explanation on a particular concept. They disregard the relevance of local environmental knowledge as being part of solutions to the existing local environmental problems and they are silent on the need for detailed knowledge and skills on how to establish and maintain tree nurseries, conduct environmental impact assessment and issues of sustainable use of resources. However, the study recommends that the content of the cassettes is relevant and meets the stated expectation and therefore can be used in stimulating discussions during environmental education lessons and programmes in schools, adults and continuing education.*

Keywords: *Audiovisual, Environmental Education, Education for Environment and Sustainability and Education for Sustainable Development*

INTRODUCTION

The use of audiovisual teaching materials in the delivery of environmental education courses or lessons has been widely documented in educational literatures. This mode of delivery is important because it provides flexible approaches to meet varied learning needs and facilitates self-instruction for different individuals who learn best in different ways according to their particular learning styles, personalities, and learning needs (www.library.rcc.edu/glossaryoflibraryterms.htm). On the other hand the concept of environmental education is variedly described depending on the context and time which determine its implementation. In the 1970s', the World Conservation Union defined environmental education as the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the relationship of man, his nature and his biophysical surrounding (UNESCO 1978). This conception placed biophysical environment at the central point and environmental education was therefore organized in such a way that it teaches about problems facing the biosphere. According to Ostman (2005) environmental education was generally considered to be fact-based and students therefore received knowledge about environmental problems by leaning scientific facts and information. In such an approach, students rarely got opportunity to develop their ability to critically evaluate perspectives on environmental and developmental problems through interactive approaches.

The understanding of environmental education is today broadened by concepts such as education for environment and sustainability (EES) and education for sustainable development (ESD) which emphasize on reorienting education towards sustainable development (UNCED 1992). Environmental education is now concerns with creating a good society and consequently the optimum conditions for good health and a good standard of living. It provides students with opportunity to discuss about ecological/environmental, economical, political and social sustainability issues. According to Rio Summit Report (UNCED 1992) an effective environmental education

should deal with the dynamics of both the physical/biological and socio-economic, environment and human development. Environmental education should be integrated in all disciplines, and should employ formal and non-formal methods and effective means of communication including audiovisual teaching materials. The report emphasizes further that education, including formal education, public awareness and training should be recognized as a process by which human beings and societies can reach their fullest potential. Education is thus critical for promoting sustainable development and improving the capacity of the people to address environment and development issues. Both formal and non-formal educations are indispensable to changing people's attitudes so that they have the capacity to assess and address their sustainable development concerns. It is also critical for achieving environmental and ethical awareness, values and attitudes, skills and behaviour consistent with sustainable development for effective public participation in decision-making. In the light of education for sustainable development, environmental education prepares students to take part in a democratic society and more importantly, it provides students with an opportunity to discuss environmental and developmental issues in a democratic environment in schools (Ostman 2005). As such education for sustainable development calls for environmental education reforms in various aspects of environmental education implementation including pedagogy where approaches such as that of using audiovisual teaching materials can be used to open up discussions during environmental education lessons.

It is therefore argued by Iozz (1989a) that the use of cassettes in environmental education is essentially powerful at developing environmental attitudes and values among learners. According to him the media are powerful sources for influencing environmental attitudes and values pointing specifically to Television and Films which, he believes they provide promising medium for environmental education as students learn by acquiring information through several senses. It was from this realization and the influence by school teachers on their desire and interest to use cassettes in enriching their environment-related lesson that this study was designed

The objective of this study was therefore to evaluate the suitability of '*Mazingira Yangu-Mazingira Yetu*' cassettes on environmental education for adults and continuing

education. These cassettes which were developed by a Dar es salaam-based Non-Governmental Organization called '*Agenda for Environment and Responsible development*' and written in Kiswahili language, were evaluated against their stated objectives which included to raise public awareness and understanding of the essential linkages between environment and sustainable development, increase an informed debate and stimulate actions at all levels of society concerning environmental issues in Tanzania and promote participation of individuals and community in environmental action. They were also evaluated for their suitability for use by school teachers in schools. The results of this evaluation study are hoped to inform not only the producer of the materials for future development of similar cassettes but also relevant to school teachers, environmental educators and continuing education especially when deciding on whether, when and how to use these materials with particular clients.

RATIONALE FOR THE STUDY

The rationale for this study emanated from the discussion with a group of school teachers who had seen and watched the cassettes in one of the local Television stations. The teachers had shown an interest of using such cassettes in their environment – related lessons in their schools but were unclear of the suitability of such cassettes for use in their contexts. They had therefore discussed the idea with the author during the 2007 Teaching Practice Supervision. This triggered the need to embark in this study on '*Evaluation of Mazingira Yangu - Mazingira Yetu Audiovisual Materials for use in Environmental Education*'.

OBJECTIVES OF THE STUDY

The broad objective of this study was to analyse the suitability of the '*Mazingira Yangu-Mazingira Yetu*' cassettes on environmental education for secondary schools students, adults and continuing education. It involved determining strengths, weaknesses, and relevance and make suggestions on how to improve and use the cassettes for different clients. Specifically, the study sought to:

- determine the kind of content contained in the cassettes, organization of presentations and the quality of pictures

- determine strength and weaknesses of the cassettes and
- determine relevance of such cassettes for use by targeted audience

METHODOLOGY

Sample

Sampling was unnecessary in this study since the watching of all 19 cassettes was possible in order to fairly comment on the suitability of each one cassette for use in schools, adults and continuing education programmes. Thus all 19 cassettes were watched and notes recorded in a note book and observation guide.

Instrument for Data Collection

Note book and observation guides were used in this study. In the observation guide, information regarding individual cassettes that were watched was recorded. The guide had three items. The first item gathered information related to *organization of the presentations, content of each cassette, pictures and quality of the presentations*. The second item was meant to record points of strength in the presentations across all cassettes and the third item collected information on weaknesses of the presentations. The note book was used for writing down more ideas that could not be recorded in the observation guide.

Procedure used in Evaluating the Audiovisual Materials

In an endeavour to study and evaluate the cassettes on environmental education the author had to watch all the cassettes. Each cassette lasted for 30 minutes and each was observed separately. Where necessary particular cassettes were re-winded and watched several times so that relevant information about the cassette is well captured in the note book and observation guide. A total of 19 cassettes were therefore watched for a period of three weeks.

FINDINGS AND DISCUSSION

ORGANIZATION OF PRESENTATIONS

Regarding organization of presentations, 18 '*Mazingira Yangu-Mazingira Yetu*' cassettes on environmental education had a common pattern of organizing the presentations. They began with a statement of a specific objective to be achieved at the end of the presentation. Only one cassette which is Habitat (*Makazi*) did not consider including statement of a specific objectives in its presentation.

After a statement of specific objective, a description of a concept under presentation, coupled with some pictorial illustrations related to the concept was done. Then the actual presentation of some human practices known to cause environmental problems are illustratively addressed. The cassettes presented and narrated some specific scenarios of overgrazing (for example in the programme on *Misitu*), Wild animals (for example in *Urithi wetu*), population and habitat (in *wakimbizi na makazi*), fire and environment (in *moto*) and so on and so forth.

At the end of the presentation some solutions appropriate to the discussed environmental problems could be suggested. Suggestions about alternative human activities or practices which are environmentally friendly were also delivered. Such alternative practices included reforestation (for example in *Wakimbizi, Makazi, Wanawake, and kilimo*), modern mining practices (for example in *madini*), and improvement of sewage disposal systems (for example in *Viwanda, Makazi, Chozi la Afya*).

The audiovisual materials address current issues on how poor farming methods and farm extensions affect the environment leading to deforestation. Also presented, is how poverty brings about environmental problems such as deforestation, charcoal making, and the problem of street vendors. Moreover, the cassettes address issues of overgrazing, forest fires, charcoal making, population and habitats, poor sewerage systems, pollution, deforestation and the like (for example in *Kilimo 1*). It is to be noted that despite of the fact that this kind of presentation does not develop environmentally responsible behaviours among learners as claimed by Orlando and Marther (2000), the content and delivery approach (which is quite participatory) is an important factor for sustainable future development.

CONTENT COVERAGE AND QUALITY OF PICTURES AND PRESENTATIONS

The findings show that the content covered in the cassettes is generally appropriate and relevant for not only the adults and continuing education but also for school students at all levels. The materials cover concepts which seem to provide learners with factual information for a broader knowledge. Such concepts include deforestation, forests conservation, charcoal making, overgrazing, overpopulation v/s environmental destructions, recycling of wastes and many more. More importantly, the cassettes demonstrate the interrelatedness of poverty, environmental problems, politics and society. It is on the basis of this knowledge that children's future environmental attitudes, concerns and values may be built on and grow.

The presented pictures are very illustrative and visible enough for a person to grasp meanings associated with them (for example the pictures in *Chozila Afya, Urithi wetu, Viwanda* and *Moto*). The presentation appears appropriate for students, adults and community in general because it starts with an introduction where, a brief description / definition of phenomena are given followed by a presentation of a particular environmental problem.

STRENGTH OF THE AUDIOVISUAL MATERIALS

A closer evaluation of the cassettes identified two different strengths. First they had covered and presented some important and basic facts about environment, and the human-environment interactions, which are detrimental to the environment. These contents included deforestation and related effects, forests, how to conserve forests, nature trail, Overpopulation v/s Environment, charcoal making, overgrazing, effects of industrial effluents on environment, recycling of wastes, Ozone layer destruction and greenhouse effects.

Second the narration of environment-related information is well coupled to relevant illustrations and appropriate music. This captures attentiveness of the clients thus learning becomes not only fun but interesting. They also provide skills such as construction of less-fuel consuming stoves, how to harvest rainwater, recycling of wastes and many others. This is essential because the knowledge and skills can directly be applied in one's daily life to solve certain day-to-day problems thereby minimizing environmental problems.

WEAKNESSES OF THE AUDIOVISUAL MATERIALS

Despite the fact that the videotape materials have presented and covered relevant aspects of environmental education like those discussed in earlier sections, the cassettes had the following weaknesses: A cassette on Habitat (*Makazi*) did not consider to begin by stating clearly its specific objectives at the beginning of presentation. Presentations in all the cassettes had focused more on provision of information about environment and related problems at the expense of providing detained discussions. The organization of presentations on the other hand seemed not to develop environmental values / attitudes among the clients in more depth and scope (Orlando and Marther 2000). According to Davenport and Ndangalasi (2001) awareness that Orchids are diminishing in Kitulo National Park does not convince enough people to harvest fewer Orchids. Many factors other than awareness influence responsible environmental behaviour one of which being a proper organization of presentations. However, the cassettes formed a significant background in terms of knowledge and information on environmental issues. There is also lack of comprehensive information on how to establish and nurture tree nurseries. The cassettes do not put emphases on the essence of local technologies as a promising strategy in conservation and protection of the environment as emphasized in the National Environmental Education and Communication Strategy for 2005 – 2009 (URT: 2004) . The issue of environmental impact assessment is just mentioned and very briefly described. Overlapping of information across materials was also noted as a weakness.

Generally, the presentations in the cassettes have assumed the existence of some amount of knowledge and awareness about environmental issues on the part of the target groups.

On the other hand it believed on the destructive nature of mankind on the environment and therefore the cassettes had taken a social reconstruction approach, where the presentations seemed to focus more on reconstructing and changing the prevailing environmentally harsh-mankind practices to more environmentally sound practices. They also cover a large content at the end of every 30 minutes in the expense of a detailed elaboration of concepts. It is important to cover a little information which is easy to follow and comprehend.

RELEVANCE OF THE AUDIOVISUAL MATERIALS

Despite the weaknesses discussed in earlier section, the audiovisual materials in this study were quite relevant in different ways. The fact that they were written in Kiswahili and contained context relevant examples in the presentations, the materials are considered relevant for Tanzanian context. Specifically the content seemed quite appropriate and useful for a varied range of clients. Some materials appear relevant for all groups of clients such as school children, adults and general public as shown in Table 1 and 2. On the other hand, other materials were appropriate to all groups (look for example in Table 1).

For Schools

It was found during this study that the contents of cassettes with Titles like *Wanawake, Makazi, Makazi chepe, Urithi wetu and Chози la Afya 1 and 2* were very relevant and useful for school students. This is because of the kind of information and activities they contain. They had contained activities which included how to build less-fuel consuming stoves, how to harvest rain water, how to care for tree nurseries and so on may be emulated in school environmental clubs or by interested general community. The cassettes summarized in Table 1 can as well be used as resources by school teachers to enrich the teaching and learning of different concepts as outlined in the Ordinary and Advanced level syllabi for Biology, Geography, Development Studies and Civics. Such concepts and levels include: *Health and diseases, Classification (Biodiversity)* (Form I &V), *Gaseous Exchange in organisms and Respiration* (Form II &V), *Nervous system, Excretion in humans and Blood sugar regulation and diabetes* (Form III &V), *The*

environment for example balance of nature, human population growth and control, natural resources, conservation and improvement, and environmental degradation (Form IV & VI) as shown in Table 1) to help easy concept formation by learners. Teachers can organize their lessons in a way that they consider the use of appropriate cassette programme and expose students to natural environment by properly guiding them using appropriate guiding questions and field visits as suggested in Nihuka (2004).

This approach may help learners' comprehend and correctly perceive the physical, biological, social, cultural and aesthetical dimensions of the environment and related problems (Osaki 1999).

Table 1. Suggested Audiovisual Materials for Teaching of particular Topics in Biology Lessons

Forms	Topics	Suggested Cassettes for us in Schools
I & V	Health and diseases, Classification (Biodiversity)	Chozi la Afya 1 & 2, Urithi wetu and Makazi chepe.
I & V	Gaseous Exchange in organisms, Respiration.	Chozi la Afya 1 and Kilimo 1.
I & V	Nervous system, Excretion in humans, Blood sugar regulation and diabetes	Viwanda and Kilimo 1,
IV & VI	The Environment e.g. balances of nature, human population growth and control, natural resources, conservation and improvement, environmental degradation.	Makazi chepe, Ziwa Victoria, Chozi la Afya 1 &2, Kilimo 1, Viwanda, Moto, Urithi wetu, Misitu, Wakimbizi, Ardhi 1 & 2, Umasikini, Wafugaji, Jangwa na Madini.

Source: Computation from the watched Audiovisual Materials

For Adults and Continuing Education Programmes

On the other hand other cassettes were found to be more useful and relevant for adult and general public through continuing education as summarized in Table 2. Such cassettes include *Kilimo, Umasikini, Misitu, Wafugaji, madini, and Moto*. These materials presented the day-to-day common human practices / activities that are detrimental to

environment such as mining, lumbering, animal grazing, charcoal making, and forest fires. This information is relevant to adults and the general public at large because they get to understand about environmental problems associated with their practices and perhaps take measures to reverse the malpractices and improve the health state of the environment. The content of the cassettes in this category can therefore be used by continuing education staff in institutions like Open University of Tanzania and elsewhere, as resources for

life-long learning for the Tanzanian community. According to the National Environmental Education and Communication Strategy (URT 2004), environmental education is conceived as a life long process where the whole Tanzanian society acquires knowledge and develop ethics and become environmentally aware, conscious, responsive and relevant skills in identifying, managing, monitoring, evaluating and solving environmental issues and problems. In this case the cassettes are considered relevant.

Table 2. Useful concept from the audiovisual materials for different clients

Title of Cassettes	Useful concepts for different clients	
	For School Sstudents	For Adults and Continuing Education Programme
Wanawake	How to harvest rainwater, Construction of less fuel-consuming stoves, Deforestation Forest fires.	Outdoor businesses, Deforestation, Forest fires.
Makazi chepe, Ziwa Victoria	Coral reefs destruction, Aquatic birds, Fish, Water bodies, Wet lands, Tourism, Nature trail	Water bodies
Chozi la Afya 1	Air pollution, Pesticides and environment, Malaria	Air pollution, pesticides and environment, Malaria.
Chozi la Afya 2	Health problems due to dirty environment e.g cancer, Pesticides	Health problems due to dirty environment e.g

	v/s cancer, Rivers and Wastes.	cancer, Agricultural chemicals/pesticides v/s cancer, Rivers and Wastes.
Kilimo 1	Poor agriculture and its effects on health, Deforestation, Charcoal making,	Outdoor business, Poor agriculture and its effects on health, Deforestation, Charcoal making,
Viwanda	Effects of industrial effluents on environment, America v/s Kyoto protocol, Recycling of wastes, Ozone layer destruction, Greenhouse effects.	Effects of industrial effluents on environment, America v/s Kyoto protocol, Recycling of wastes, Ozone layer destruction, Greenhouse effects.
Fire	Fire v/s environment.	Fire v/s environment.
Urithi wetu	Wildlife (birds, mammals, snakes, reptiles), Sustainable conservation and its importance to the community.	Wildlife (birds, mammals, snakes, reptiles), Sustainable conservation and its importance to the community.
Misitu, Wakimbizi, Makazi, Ardhi 1&2	Deforestation and related effects, Importance of forests, How to conserve forests, Nature trail, Overpopulation v/s Environment, Charcoal business, Overgrazing.	Deforestation and related effects, Importance of forests, How to conserve forests, Nature trail, Overpopulation v/s Environment, Charcoal business, Overgrazing.
Umasikini, Wafugaji, Jangwa, Madini.	Deforestation, Desertification, Soil erosion.	Deforestation, Desertification,

		Soil erosion.
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Source: Computation from the watched Audiovisual Materials

SUGGESTIONS FOR IMPROVEMENT AND ON HOW TO USE THE CASSETTES FOR ENVIRONMENTAL EDUCATION

Given an opportunity to develop audiovisual materials, the author would do it in the following way: First, earlier statement of the objective is necessary for all the cassettes in this regard. This makes the audience aware of what is the presentation about, and so able to follow the narration/ illustrations appropriately. Second, the organization of the materials should be such that, they first present what characterizes a healthy environment/ecosystem and what benefits does one acquires from natural resources in such healthy ecosystems. At this stage, the uses of natural resources may not necessarily be sustainable, but may be as described by Hardin (1968) in the “tragedy of the commons”- leading to exhaustion of environmental resources. Next, materials should present the information, which show a degraded environment and the kind of consequences humans, other organisms and entire ecosystem experience as a result of such destructions. Here, all the materials and illustrations should be tailored towards conscientizing the community about the effects and consequences of their daily practices on the environment and development of environmental values, attitudes and concerns about environment. Last, the materials should suggest what should be done to reverse the situation. At this stage, the issue of environmental impact assessment (EIA) has to be addressed in more details than done in the current cassettes especially as related to the establishment of projects. Concrete examples of projects, which had done EIA before their establishment has to be illustratively cited. Presentation of concrete cases, which practice how to start tree nursery, construction of less-fuel consuming stoves, recycling of wastes e.t.c appears extremely relevant here. Indigenous environmental knowledge of farming like those suggested by DaSilva (1995), and Bakobi (1997) are also to be emphasized.

As pointed in earlier sections, the content in the cassettes is relevant for adults, continuing education programmes and also schools students. In schools for example, teachers can use the cassettes during lesson introduction where students are given

opportunity to watch the programmes after which they can seat in groups and reflect on what they had watched under the help of the teacher. Students may wish to discuss on what appropriate actions can be taken to address particular environmental problems and where necessary can implement their ideas in the school context. For adults and continuing education, the cassettes are also relevant and suitable for raising their awareness and understanding of the essential linkages between environment and sustainable development. They help to increase an informed debate although they do not guarantee that those who watch them will take appropriate actions at all levels of society concerning environmental issues in their contexts.

CONCLUSION

The focus of environmental education has been changing over time from looking on just the biophysical to much more broad view that looks on the interlink ages that exist between biophysical, economic, social and political considerations for sustainable development. It is argued in this paper that for environmental education discussions to become fun and interesting, the use of audiovisual teaching materials is of paramount importance. The results of the evaluation have shown that the cassettes are relevant for school teachers, environmental educators and continuing education especially when deciding on whether, when and how to use these materials with particular clients. It has been demonstrated in this study that the content of the cassettes is generally relevant and meets the stated expectation. Issues such deforestation, forests conservation, charcoal making, overgrazing, overpopulation v/s environmental destructions and recycling of wastes addressed in the cassettes are quite relevant and useful in stimulating discussions during environmental education lessons and programmes.

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