



Mainstreaming Environmental Education in the School and Teacher Education Curriculum in Zambia

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ABSTRACT

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Environmental Education (EE) as a subject or field of specialization is still in its infancy in the curriculum both at teacher training and school teaching levels in Zambia. The curriculum at both levels does not provide coverage on EE as the subject is treated as a cross-cutting issue. At primary and secondary school levels there are very few experts trained in EE as a discipline. Since EE is integrated in subject teaching, issues affecting the environment are taught at the discretion of a teacher. Teaching EE is still a challenge on the part of teachers in schools in Zambia. Pupils' understanding of EE in sampled schools was still at very low ebb. There were variations in responses between pupils coming from the low, middle and high social class areas on issues of the environment. As the Ministry of Education in Zambia is reviewing the school and teacher education curriculum, EE should be broadened in scope in order to contribute to the pupil's overall development as well as the promotion of education for sustainable development at national level. In order to foster transformative and strong sustainability, EE under the current integrated approach is rather conservative and weak in terms of sustainability. If the curriculum is overloaded, curriculum experts should identify and remove the dead wood from the curriculum and replace it with EE. To strengthen EE in the schools and teacher education curriculum, the Ministry of Education should consider retraining teachers in appropriate methodologies in EE for sustainable development as well as developing a citizenry that is conscious and motivated to develop and manage its own environment in a sustainable manner.

Keywords:

Curriculum, Environmental Education, primary school, training, teacher education

INTRODUCTION

Environmental education aims at developing a citizenry conscious and motivated to develop and manage its own environment in a sustainable manner. However, these citizens can only be produced by competent teachers who are also environmentally conscious and motivated to teach environmental education in schools. In this context we define competences as those combinations of knowledge, skills and attitudes that enable teachers to effectively contribute to environmental education issues, on the basis of their specific expertise and more general their educational capabilities. The focus is on the ability to effectively handle environmental issues in their teaching and learning

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processes. The focus would also be on their ability to think, communicate and learn how to engage with the learners on issues to do with the environment in schools.

Environmental education aims to: i) provide all pupils with opportunities to acquire the knowledge, understanding and skills required to engage effectively with environmental issues, including those of sustainable development (Milupi *et al*, 2020) ii) encourage pupils to examine and interpret the environment from a variety of perspectives – physical, geographical, biological, sociological, economic, political, technological, historical, aesthetic, ethical and spiritual; iii) arouse pupils' awareness and curiosity about the environment and encourage active participation in resolving environmental problems (Ward 2004; Kaiko *et al* 2021). The aspect of providing 'equal opportunity' to all pupils to learn should be emphasised because it is key even to their academic performance improvement (Mundende and Namafe, 2019).

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Accordingly, the concept of competence has been developed over the past decade and has gained ground as a dominant educational approach in education for sustainable development (ESD). The idea is that learning should focus on integrative competences required in professional life, and not on the acquisition of isolated skills and pieces of knowledge. The best way to acquire these competences appears to be in a learning environment that combines actual practice ('learning by doing'), and explicit reflection on what and how to learn from that practice ('learning by reflection') (Könings et al., 2005 cited by Joop de Kraker et al., 2007).

Muller (2004) identifies teacher competence as the most important factor in education and argues for solid disciplinary training of teachers. Ideally those who teach ESD should be selected from graduates in natural sciences (e.g Biology and Earth Sciences) as well as social sciences (which may include human geography, environmental sociology) rather than expecting all teachers to do ESD or Environmental Education. While Environmental Education is not a school subject in the Zambian curriculum, the opportunity does exist to include dedicated environmental courses in teacher education programmes. Peden (2006) contends that it is important to develop core environmental education through environmental literacy courses before understanding environmental education, where the focus is on pedagogy at the expense of discipline knowledge.

In Zambia, as is other developing countries, human interaction with the environment has resulted in a number of environmental problems which have been observed over the past years. The problems include destruction of natural resources, desertification, threats to biodiversity, destruction of ecosystems, air and water pollution, soil erosion and others. In this context, it becomes important to know how teachers view and relate to these problems. Admittedly, environmental education aims at developing a citizenry conscious and motivated to develop and manage its own environment in a sustainable manner. However, these citizens can only be produced by competent teachers who are also environmentally conscious and motivated to teach environmental education in schools.

The study is of importance on the premise that the implementation of the Environment Education strategy for Zambia cannot be effectively executed without knowledge of the level of capability or competence among teachers to offer lessons on environmental content in various syllabi. The baseline information may also provide ideas which can inform teacher refresher programmes and in-service workshops on environmental education.

Human beings, on their part depend on the environment for their livelihoods, with increased population and associated needs; more pressure is exerted on the environment which jeopardizes the delicate balance that controls ecosystem

process. Socio- economic development without the due regard to sustainable utilization of environmental resources is invariably equivalent to self destruction among human beings. In this context the importance of environmental education is clearly that of creating an environmentally conscious society which will aim for a sustainable utilization of environmental resources. Environmental education is, therefore, a vehicle for combating inevitable destruction.

The introduction of environmental education in the school system has attracted tremendous regional attention in Southern Africa. To this end, a planning conference on environmental education was convened in Botswana in 1992 to, among other intentions, provide background on environmental education, to identify constraints in improving environmental education in the region and draw up a plan of action to facilitate environmental education in schools in the SADC region. Papers presented in the conference provided insight into environmental education experiences in various countries in the region. This, however, varied from subject to subject where teachers in agriculture, science and social studies were relatively conversant with environmental content in their syllabi.

Attitude is very important because it prepares one for a favourable or unfavorable response. Attitudes are shaped by, among other factors, experiences which, in turn are activated in the presence of all objects and situations (Manyatsi, 1991). Teachers, and even their students, may develop a particular attitude towards the environment which might have a bearing on the teaching/learning of environmental education in our schools (attitude shaping behaviour). Literature suggests that an increase in environmental knowledge may not in itself influence behaviour. The building of knowledge, awareness and concern for the environment requires a complex mechanism to bring about consequential changes in values, attitudes and behaviours.

STATEMENT OF THE PROBLEM

Environmental Education has been integrated in the Basic School Curriculum as cross-cutting issue. This integration entails that the subject is not time tabled and may be taught at the teacher's discretion. Very little seems to be known with regard to teacher competence in the delivery of environmental education in the context of the Zambian school system and hence this study.

Purpose of the study

The purpose of this study was to investigate teacher competence in the delivery of Environmental Education in Basic Schools in Zambia.

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General Objective

The study investigated teacher competence in the delivery of Environmental Education selected basic schools in Zambia.

Objectives

With a view to achieving the general objective stated above, the following were the specific objectives of the study.

- a) To find out the level of environmental knowledge among basic school teachers.
- b) To investigate attitudes of basic school teachers towards environmental issues.
- c) To find out teaching approaches, strategies and other environmentally related classroom practices used by teachers.

Research Questions

The study attempted to answer the following research questions.

- a) What is the level of environmental knowledge among basic teachers?
- b) What is the attitude of basic school teachers towards environmental issues?
- c) What teaching approaches or strategies are used in the teaching of Environmental Education?

Significance of the study

- The study provides empirical research findings on teacher competence in the delivery of Environmental Education in selected basic schools in Zambia.
- The findings of this study may also provide useful directions for the general improvement in teacher competence in the handling of Environmental Education lessons in basic schools in Zambia.
- The study may stimulate further research on teacher competence in Environmental Education in Zambia as the study has drawn lessons from other countries that may have similar conditions with Zambia.
- The study may also contribute information to the existing body of knowledge on teacher competence in the teaching of Environmental Education.
- This information may also be valuable to educational practitioners, curriculum developers, policy makers in education and other stakeholders interested in Environmental Education.

METHODOLOGY

A descriptive survey design was used to carry out the study. The study employed both qualitative and quantitative techniques in order to collect detailed information about teacher competence in the delivery of Environmental Education in basic schools. This design involved the use of

questionnaires, semi-structured interviews, in-depth interviews, focus group discussions and analysis of documents in order to get detailed information.

Target population

The target populations for this study were school teachers, pupils and school managers. The target populations for this study were school teachers, pupils and school managers.

Sampling

Purposive sampling was used in selecting schools, teachers and school administrators. Stratified random sampling was also used in order to ensure that the sample for pupils was representative. In all the three schools, pupils from the lower basic, middle basic and upper basic were randomly selected using the class attendance registers.

Data collection techniques

Data was collected through questionnaires, semi-structured interviews, in-depth interviews, focused group discussions and analysis of documents.

Data processing techniques

Both qualitative and quantitative data were utilized in analyzing the data. Qualitative data was analyzed using thematic categorization procedures. Specifically, the across-case approach was used in the analysis. Under this approach, we were able to organize multiple responses from different respondents and generate given thematic areas.

Descriptive statistics were used in the analysis of quantitative data. Numerical data was summarized using frequency distributions, percentages and graphic presentations in form of tables and charts.

Ethical Considerations

All ethical considerations in this study such as; seeking permission from the school authorities, issues of confidentiality were taken into account and other basic research conventions.

Limitations

The study could not meet the targeted number of respondents especially from the pupils. This was due to differences in their timetable. At the time the study was being conducted, some pupils were preparing for their end of term examinations.

ANALYSIS AND DISCUSSIONS

Analysis of Findings from Respondents

This section presents and discusses findings from classroom teachers, school managers and pupils. It focuses on factors that impede or enhance teacher competence in as far as teaching and learning of environmental education in Zambia is concerned. Factors related to teaching and learning such

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as curriculum, availability of teaching and learning materials and generally the quality of teachers. These factors were instrumental in determining teacher competence in

environmental education. Emerging themes patterning to environmental education in the schools sampled are therefore presented here.

Demographic Characteristics of Teachers

Table 1: Gender vis- a- vis Years of Teaching Experience

		Years of Teaching Experience				
		Below 5	5 - 10 years	11 - 15 years	16 and above	No Response
Gender	Male	2	2	3	0	1
	Female	2	3	4	7	2
	No Response	0	0	0	0	0
Total		4	5	7	7	3

Source: Field data, 2022

There were 26 teachers that completed the questionnaire, among whom 8 (31 %) were male, 18 (69 %) were female, who appeared to be the majority of the respondents and 3 (12 %) did not indicate the gender or the years of experience. As can be observed from Table 1 above, out of the 8 male teachers, 2 (8 %) had less than 5 years of teaching experience, while 2 (8 %) had between 5 and 10 years experience, 3 (12 %) had between 11 and 15 years experience and none had 16 and above years of teaching

experience; and also out of the 18 female teachers 2 (8 %) had less than 5 years experience, 3 (12 %) had between 5 and 10 years experience, 4 (15 %) had between 11 and 15 years experience and 7 (27%) had 16 and above years of teaching experience.

A general appearance of teaching experience shows that majority of the teachers who completed the questionnaires had an average or good experience in teaching, that is, between 5 and 15 years of teaching.

Table 2: Highest Professional Qualification by Gender

		Highest Professional Qualification					Total
		Primary Teacher's Certificate	Primary Education Diploma	Secondary School Diploma	Other Specify	No response	
Gender	Male	2	3	2	1		8
	Female	5	7	4	1	1	18
	No Response	0	0	0	0	0	
Total		7	10	6	2	1	26

Source: Field data, 2022

Table 2 above reveals that out of the 26 teachers 7 (27 %) had a Primary Teachers' Certificate as their highest qualification, of which 2 (8 %) were male and 5 (19 %) were female; while 10 (38 %) had highest qualification of primary education Diploma, of which 3 (12%) were male and 7 (27%) were female; those with Secondary Teachers' Diploma, 2 (8 %) were male and 4 (15 %) were female; on others 2 (8%) did not specify their qualification (1 male and 1 female) and 1 (4 %) did not indicate the gender. The indication in Table 2 is that majority of the teachers had

either a Primary teachers Certificate, Primary Education Diploma or a Secondary Teachers' Diploma. From this one's expectation would be that the teachers in these schools had correct qualifications to enable them teach at Basic school level. Despite their qualifications, it was noted that they had scanty knowledge and information on issues of environmental education thereby leaving a question on whether they had covered adequate knowledge and skills in environmental to meet their levels of competence during teacher training.

Table 3: Years of Teaching Experience by Age

Age of Respondent	Years of Teaching Experience					No Response
	Below 5	5 - 10 years	11 - 15 years	16 and above		
20 - 30						0
31 - 40	4	5	3	3		0
41 - above			2	4		
No Response	0	3	1	1		0
Total	4	8	6	8		0

Source: Field Data, 2022

Table 3 shows the age of the 26 teachers against their years of teaching experience. As can be observed, out of the 26 teachers, 15 (58 %) were aged between 31 and 40 years old, of which 4 (15 %) had less than 5 years of teaching experience, 5 (19 %) had between 5 and 10 years of teaching experience, 3 (12 %) had between 11 and 15 years of teaching experience and 3 (12 %) had 16 years of teaching experience and above; among the 6 teachers who were aged 41 years and above, none of them had less than 10 years of teaching experience, 2 (8 %) had between 11

and 15 years of teaching experience, 4 (15 %) had 16 years of teaching experience and above.

Recognition of Environmental Education in School

The respondents were asked to indicate whether EE was recognized at their schools by answering ‘Yes’ or ‘No.’ The findings revealed that EE was not recognized by teachers as evidenced by 67% of teacher respondents who marked ‘No’ while 33% marked ‘Yes.’ The common reason for not recognizing it was that the curriculum was overloaded. The distribution in the table below shows this negativity.

Table 4: Recognition of EE by teachers in selected schools

Response	Frequency	Percentage
Yes	9	33
No	17	67
No Response	0	0
TOTAL	26	100

Source: Field Data, 2022

The importance of teaching EE in schools

The respondents were asked to indicate whether or not it was necessary to teach EE in schools. The findings revealed that 85% of teacher respondents said it was necessary that EE be taught in schools, 12% did not see any importance of

teaching it while 3% did not indicate. The common reason given for teaching EE was that the pupils should aware of their environment and their responsibility to it. The distribution of teachers by the importance of EE in high schools is shown in the table below.

Table 5: Showing Teacher response on the importance of teaching EE in schools

Response	Frequency	Percentage
Yes	22	85
No	3	12
No response	1	3
TOTAL	26	100

Source: Field Data, 2022

Experience in the teaching of EE

The question on the experience of the teachers teaching EE in high schools was aimed at finding out if the respondents had at one time taught EE. The findings revealed that only

33% had taught EE while 60% had never taught it and 7% did not indicate anything. The main reason advanced by those who had never taught EE was that it was not part of the curriculum.

Table 6. Showing Experience in the teaching of EE

Response	Frequency	Percentage
Yes	9	33
No	15	60
No response	2	7
TOTAL	26	100

Source: Field Data, 2022

Integration of EE in subject areas

The teacher respondents were asked to indicate whether it was possible or not to integrate EE in other subject areas. The findings revealed that 85% indicated that it was possible to integrate EE in their subject areas while 10% indicated

that it was not possible and 5% did not indicate. Most of the respondents said it was possible to integrate EE in their subject areas through incorporating environmental issues in the syllabi. The table below shows the distribution.

Table 7: Integration of EE in subject areas

Response	Frequency	Percentage
Yes	22	85
No	3	10
No response	1	3
TOTAL	26	100

Source: Field Data, 2022

Environmental Education as part of the school curriculum

Teachers were asked to indicate their opinions on the importance of EE in the curriculum. Some of the opinions given were as follows:

- It is vital to change the mindset of the learners to acquire relevant knowledge of the environment.
- Pupils should have knowledge about their environment.
- The need to protect the environment.
- EE prepared learners to understand their environment and its proper management.

Sensitization in EE

Teachers were asked to indicate whether or not they had received any form of sensitization in EE. The findings revealed that 80% of teacher respondents had received some sensitization, 14% did not receive any sensitization while 6% did not indicate anything. The findings also revealed that most of the respondents got the information about EE from the media. The distribution of the respondents were as follows:

Table 8: Teacher sensitization in EE

	Frequency	Percentage
Yes	21	80
No	4	14
No response	1	6
TOTAL	6	100

Source: Field Data, 2022

Need for in-service training

The teachers were asked to indicate whether or not they needed training in EE. The findings revealed that 68%

indicated that they needed some formal training in EE. 22% did not indicate any training while 10% never indicated at all.

Table 9: Distribution of teachers by need for training

Response	Frequency	Percentage
Yes	18	68
No	6	22
No response	2	10
TOTAL	26	100

Source: Field Data, 2022

Environmental Education practices or activities at school

The level of participation in EE for teachers and pupils was established through a set of open ended questions requiring teacher respondents to indicate if there were any environmental activities in their schools and if they participated in these activities. The findings revealed that 56% of teachers indicated that there were no environmental activities that were taking place in their schools, 42% indicated that there were environmental activities while 20% did not indicate anything. The findings showed that 15% of the teachers never participated in the environmental

activities, 40% indicated that they participated while 10% did not respond.

Environmental Education activities initiated at school

A question was posed as to whether or not there were any EE activities that were initiated at school. The findings revealed that 56% of teacher respondents indicated that there were no EE activities initiated at their schools, 42% indicated that there were EE activities and 20% did not indicate. The most common activities were tree planting and garbage collection.

Table 10: EE activities initiated in schools

Response	Frequency	Percentage
Yes	11	42
No	15	56
No response	0	0
TOTAL	26	100

Source: Field Data, 2022

Benefits of EE activities to school, teachers, pupils and communities

The question was whether or not different categories of people in the school and around the school benefited from the EE activities by schools. The findings indicated that where there were EE activities, the school benefited by having a clean environment. The teachers were teaching in an environment that was conducive. The pupils were learning in an environment that was conducive and the communities had clean surroundings.

Suggestions for EE at school level

The question on suggestions on EE at school level was aimed at finding out if the respondents had any suggestions on the improvement of the delivery of EE at school level. The findings indicated that the respondents were aware of

many things that could be done in order to improve the teaching of EE and some suggestions were as follows:

- Establishment of EE clubs.
- Organisation of workshops and seminar for staff and pupils
- Giving each class an area to take care of.
- Incorporation of EE in subject areas.
- Recycling of products from manufacturers

Suggestions to Curriculum Development Centre (CDC) on EE

Suggestions on the improvement of the delivery of EE were as follows:

- CDC should include EE in the school curriculum. Namafe (2013) proposes the following options for introducing EE in the school curriculum

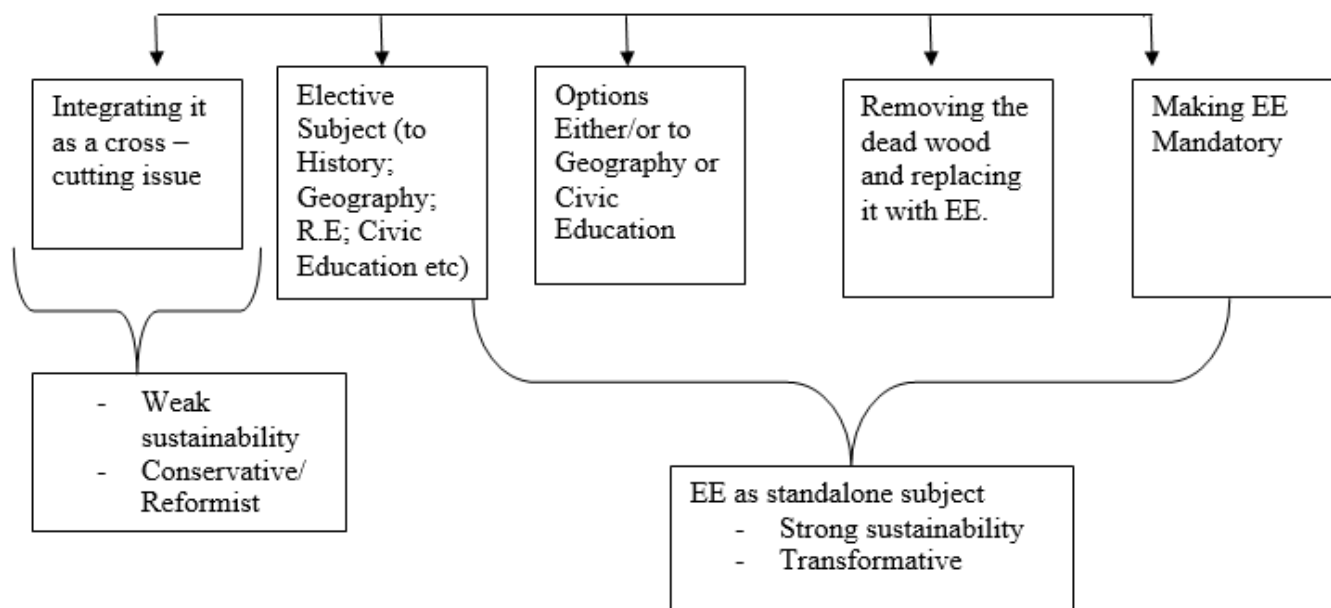


Figure 1 showing Options for introducing EE in the School Curriculum
Source: Adapted from Namafe, 2013

Thematic Areas as responded to by Teachers

Topics that Deal with the Environmental Education in their training

When asked about the topics that were covered in their training on environmental education all the respondents at least gave an indication that they had done something in the line of environmental education giving a 100% representation.

The respondents confirmed their responses by listing the topics they learnt that addressed environmental issues such as:

- Environmental pollution
- Deforestation/ Afforestation
- Agricultural, ecology and wildlife management
- Environmental systems
- Soil Erosion/Conversation
- Global warming
- Climate Change
- Over Population and Its effects

Though they had mentioned about these topics it was noted that when it came to teaching environmental issues in schools they were not categorical in their responses and this showed that environmental education as a subject or field of specialization was still in its infancy in the school curriculum both at teacher training and school teaching levels.

Teaching of environmental education in schools

The teachers who taught topics related to environmental education where asked on whether the topics they had listed above were adequate in addressing environmental education in the school curriculum so that learners would understand it

in all aspects. 50% indicated that the topics adequately addressed environmental education, 42% indicated that they did not. 8% did not indicate any response. It is clear from the responses that the difference between those that approved of the topics and those who did not was quite marginal which might be an indication that the curriculum at basic school level does not provide adequate coverage on environmental education.

Teacher Education and Qualification

Teacher qualification has been identified as critical in the provision of quality education to drive the country's economic and social development. Teacher training is also instrumental in promoting equality of opportunities for individuals to participate in national development as this would enhance the knowledge base of the learners. Despite marked progress that has been recorded in access to basic education for grades 1-9 in the recent years however, there is still a challenge in the area of teacher training particularly in environmental education which is critical in Education for Sustainable Development. As Howes et al (1995) have noted, training of teaching staff is an important aspect of the curriculum in that, without proper training of teachers, even the most comprehensive curriculum can be rendered useless (Kalimapos, 2011).

It must be noted from the outset that the overall picture among the respondents (teachers) was that, teacher education was a critical component in the promotion of education for sustainable development and environmental education at the basic school level. It was observed that, in order to adequately address environmental education issues and concerns in schools, teachers as implementers of all government policies in education need to have in-depth

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knowledge for them to articulate these issues at a comfortable level. However, all the teachers interviewed at lower, middle and upper basic levels noted that the curriculum needed to be strengthened especially on issues of environmental education if teacher competence was to be attained in the subject concerned. It was further noted that there was need for teachers at basic school level to undergo in-service training in environmental education in order to broaden their knowledge base on current trends in education for sustainable development human rights and governance as the current curriculum provides little or no information on key issues of environmental education.

In discussing the importance of teacher competence in environmental education it is worth noting that, training of basic school teachers is done at two different levels. For instance, training of lower and middle basic school teachers takes an integrated approach where certain subject areas are lumped together. The rationale behind this integrated approach is that, teachers at this level are not expected to specialise in a particular subject area but are exposed to all subject areas offered at lower and middle basic school levels. It is clear from this arrangement that the basic school curriculum at teacher training level is somewhat shallow on important topics such as environmental education or education for sustainable development because of its integrated approach. It is possible that teachers do not have adequate grounding in these issues as the curriculum does not specifically focus on environmental education but these are taken as topical areas within the broader curriculum. This in turn might compromise teacher competency and the quality of teaching given that the curriculum offered at Basic teacher training college is rather too general. Additionally it was noted that the curriculum needed to be updated in order to reflect the current trends in environmental education and education for sustainable development as doing so would help in enhancing teacher competence in the area of environmental education in the schools. At upper basic level, there is subject specialisation; however, environmental education is covered in bits and pieces. Therefore, there is no environmental education subject offered in basic schools.

Curriculum

The need for including EE in the school and teacher training curriculum cannot be underscored. It is widely recognized that, a curriculum acts as a guide to the personnel in schools. It also helps to ensure that staff cover important learning areas, adopt a common pedagogical approach and reach for a certain level of quality across age groups and regions of the country. This is true especially in the area of environmental education given the central role of these issues to the realization of education for sustainable development of the country in general. Thus, a curriculum

that is thoughtfully planned, challenging, engaging, culturally and environmentally responsive, and comprehensive is likely to promote teacher competence and positive outcomes for all young children. A curriculum in environmental education therefore, needs to be broadened in scope in order to contribute to the child's overall development as well as the promotion of education for sustainable development at the national level. To achieve these outcomes however, there are a number of benchmarks that would culminate into an effective curriculum; and these act as strengthening factors at the teacher training level which should be a priority on the Ministry of Education agenda because this would help reduce the knowledge gap on environmental education and generally education for sustainable development among the teachers at basic school level. It was observed that if this part was adequately addresses then all the negative practices and habits obtaining in schools in the management of the environment would be reduced.

Syllabus Coverage on Environmental Education

At the time of this study, the curriculum at Basic school level was divided into three levels; lower basic 1-4, middle basic 5-7 and upper basic 8-9. At the lower and middle basic level, environmental education was covered under the subject Social Development Studies (SDS) which integrated four subjects and these were Geography, History, Social Studies and Religious Education. It was also covered in integrated science which integrated all natural sciences namely; biology, chemistry, physics and agricultural science. At the upper basic school level, the subject was covered in Civics, Environmental Science and Geography. This shows that there is no stand alone subject called Environmental Education in the schools. Currently EE is just covered as a component in the subjects as noted above and this has an implication on teacher competence because there are no experts specifically trained in Environmental Education as a discipline.

At the lower basic and middle basic the SDS syllabus was designed in such a way that it prepares the learner physically, socially, culturally, emotionally, economically and spiritually. It also provides opportunities for the development of skills, knowledge, values and attitudes necessary for an individual in society but does not come out clearly on environmental education. This is also reflected in the Ministry of Education policy document on education of 1996 (i) especially on the mission statement which reads as follows:

The mission of the Ministry of Education is to guide the provision of education for all Zambians so that

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they are able to pursue knowledge and skills, manifest excellence in performance and moral uprightness, defend democratic ideals, and accept and value other persons on the basis of their personal worth and dignity, irrespective of gender, religion, ethnic origin, or any other discriminatory characteristic.

From this mission statement it is clear that the policy on environmental education in Zambia is not succinct.

In terms of coverage of environmental education at basic school, it was noted that there were variations according to the level of learning difficulty. At the lower basic level (1-4) the curriculum was limited mainly to information on basic issues of the environment such as cleanliness, hygiene and taking care of the surrounding. This limitation in curriculum coverage was also noticed in the responses from the pupils which were mainly homogeneous with much emphasis on cleanliness and taking care of the surroundings and very little was mentioned on how environmental education could bring about education for sustainable development in the country. This could be a gap in the realisation of the general learning outcomes as envisaged by the Ministry of Education at basic school level. There is need to strengthen the curriculum provision at this level in order to inculcate a culture of education for sustainable development with a focus on environmental education. Equally at upper basic pupils were not confident on issues of environmental education. This confirms findings from classroom teachers. This kind of situation had serious implications in the improvement of quality, relevance and delivery of the curriculum on environmental education.

Teaching and Learning Resources

The quality of teaching in any education institution is mainly measured by the availability of teaching and learning materials. In this study, it was pertinent to establish the availability of teaching and learning materials on issues of Environmental Education. Overall, there was a growing concern in all the sampled schools with respect to the teaching and learning materials. It was revealed that teaching and learning materials in environmental education was virtually not there at all three levels that is lower, middle and upper in basic schools though a pocket of such information was embedded in other subject areas as already noted in the preceding paragraphs. Most of the schools surveyed had inadequate or no teaching and learning materials at all. This inadequacy of teaching and learning materials in environmental education has serious implications in the delivery of quality education at basic

school level. This situation presents a challenge not only to teachers but might adversely affect the promotion of education for sustainable development starting with the basic school level.

It must be pointed out here that the teachers guide is critical in the teaching and learning processes. It is critical in the sense that they guide teachers in the delivery of effective and desired results to the learners. This kind of picture has the potential of undermining effective teaching and children's learning not only in the area of Environmental Education but more so in education for sustainable development in the school system leading to poor quality of education at the end of the day. It was also revealed that due to the non-availability of teaching and learning materials in the area of Environmental Education it made most teachers develop a negative attitude towards the subject and tended to concentrate on topics where information was readily available.

The nature of Environmental Education as a subject area is also a challenge. Unlike other subjects EE deals with current issues affecting human life. This in itself poses a serious challenge in as far as the production of teaching and learning materials is concerned. This entails that the curriculum need to be kept abreast with current issues and it also entails reorganising teaching and learning materials on a regular basis. It is in this respect that most of the respondents suggested that in order for teachers and pupils to be in touch with reality, there was need for the policy makers within the Ministry of Education to strengthen education for sustainable development in schools as this would enable teachers and pupils access latest information on the environment across the globe. It was further suggested that the Ministry of Education could make use of the already established Resource Centres in the districts to provide internet facilities using modems of service providers such as Airtel Zambia, MTN, Zamtel, to mention but a few.

It was also revealed that a number of topics required a constant update and this meant that information on these areas had to be sourced from somewhere which in most cases was not available.

VIEWS FROM SCHOOL MANAGERS

Views from the school managers interviewed were not very different from those that were given by teachers especially those pertaining to teacher competence, inadequate teaching and learning materials, and generally lack of clear cut policy from the Ministry of Education on Environmental Education.

PUPILS' VIEWS ON ENVIRONMENTAL EDUCATION

Focus Group Discussions (FGDs) were held with pupils from Grade 1- 4, Grade 5- 7 and Grade 8- 9 pupils from all

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the sampled schools with a total number of 63 participants from all the three levels. The rationale behind the focus group discussion was to consolidate the findings from the teacher interview which have been presented in the preceding paragraphs.

Pupils – Upper Basic School Level

Some pupils were able to define the concept of the environment using their Civics, Geography and Environmental Science knowledge but were unable to breakdown the concept by giving examples of good environmentally acceptable practices done at home, school or local communities. Their understanding of environmental education was quite rudimentally and the responses were mainly limited to issues of taking care of the surroundings. There were variations in responses between pupils coming from low density area and those that were coming from high density areas. For instance, while pupils in high density areas were able to give basic characteristics of environmental issues, they could not give examples of very good practices done at home, school, local community or at national level. On the other hand, children in the low density

areas seemed to have a broader understanding of environmental issues. This could clearly be seen from what they highlighted as characteristics of a very good environment.

Clearly, pupils coming from low density areas found in the sampled schools appeared to have a better understanding of environmental issues. Conversely, most pupils from high density areas found in the sampled schools did not seem to have any idea on how they could participate in decision making at home, school, local community and national level in as far as environmental issues were concerned. Further, a large number of pupils, was of the view that environment issues were not being adequately covered and indicated that environmental issues are of great importance in their everyday well-being. To demonstrate their validity of knowledge, pupils were asked to qualify whether or not there was good management of the environment in their respective area. From a total of 27 upper basic respondents, 17 expressed a negative concern by indicating NO while 10 exhibited positive (YES) to the point in question. Their responses were tabulated in percentages (Figure 2).

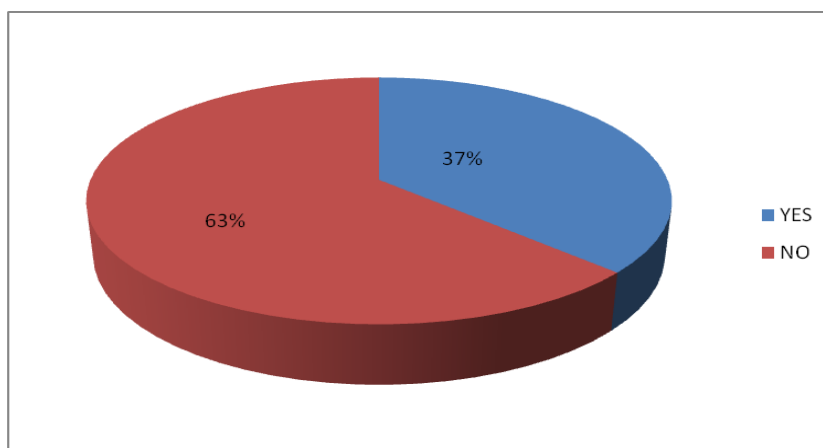


Figure 2: Showing Responses of Pupils from upper basic on whether or not there was good management of the environment in their respective area
Source: Field Data, 2022

Lower and Middle Basic School levels

Equally at the middle basic school levels, pupils demonstrated some working knowledge on the concept of environmental issues though not much was exhibited in terms of real environmental education.

The picture at the lower basic school level was even worse where most pupils especially those in high density areas could not explain on most of the environmental issues. Most pupils could hardly give examples of good environmental practices at home, school or in the community.

This knowledge observed in pupils at this level could mainly be attributed to inadequate information in text books as well

as low teacher competences in environmental education. Mainly at this level, pupils acquire the knowledge on environmental issues from the subjects Creative and Technology studies (CTS), Social Development Studies (SDS) and Integrated Science (IS). Pupils were asked to demonstrate if the environment from their respective areas was being properly taken care of. In their response, out of the 31 respondents, 23 indicated that their environment was not being taken care of properly, while 8 indicated that their environments was taken care of properly(Figure 3).

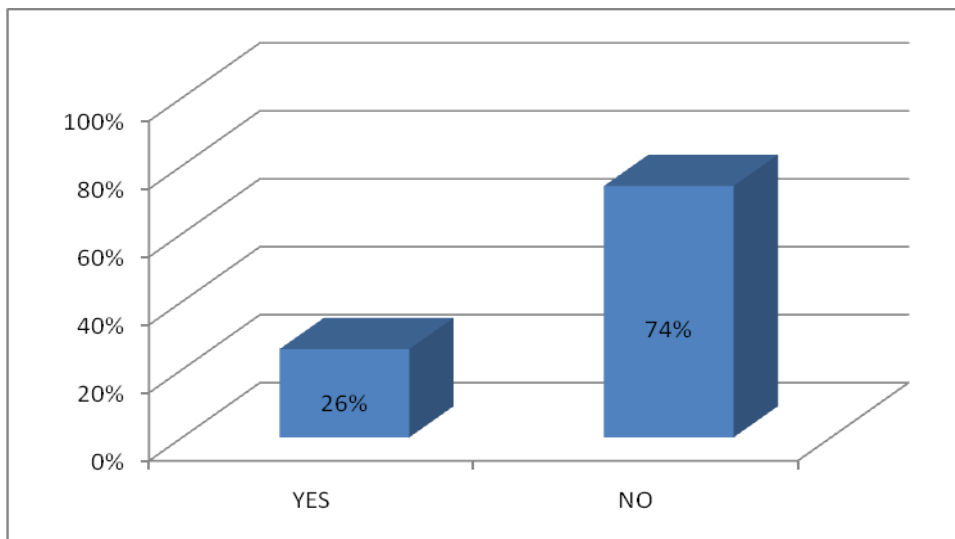


Figure 3: Showing Responses of Pupils from Lower and Middle Basic School levels on whether their environment was being taken care of properly
Source: Field Data, 2014

CONCLUSION

The study explored teacher competence in Environmental Education in selected schools. The study focused on factors that impede or enhance teacher competence on environmental issues in schools. Environmental Education aims to provide all pupils with opportunities to acquire the knowledge, understanding and skills required to engage effectively with environmental issues including those of sustainable development. It also encourages pupils to examine and interpret the environment from a variety of perspectives. In this sense, the study observed that information on environmental education in schools is inadequate or virtually not there, though this does not imply that issues of environment in nature are not taught in one way or the other in the schools.

The study also noted that there was no clear cut policy on environmental education in selected schools. Further, the study concludes that environmental education is still a challenge on the part of the teachers in schools. In this study, we set out to explore teacher competences on environmental education in selected schools.

Recommendations

- The Ministry of Education should formulate a clear cut policy on environmental education.
- Environmental Education should become one of the subjects in school curriculum
- The government through the Ministry of Education should train teachers in the area of Environmental education
- The Ministry of Education should re-train teachers in appropriate methodologies in environmental education and education to Sustainable Development

- Schools should be encouraged to partner with organisations that deal with environmental issues.

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