AN EVALUATION OF THE IMPLEMENTATION OF ENVIRONMENTAL SCIENCE SYLLABUS IN LOWER PRIMARY SCHOOL:

THE CASE OF ILLUBABOR

A Thesis

Presented to

The school of Graduate Studies of the

Addis Ababa University

In partial Fulfillment of the Requirements of the Degree of

Master of Education in Curriculum Studies

by

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May, 2004

Acknowledgements

I would like to express my heartfelt thanks to my advisor Dr. Elias Nasir for his professional guidance and support to the realization of this thesis.

My special thanks goes to my wife W/o Tizita Asrat and my daughters Selamawit Abera and Hirut Abera for their genuine concern and devotion from the starting up to the end of this study.

I would also like to extend my gratitude to Dr. Tamene Kitila and Dr. Taye Regasa of the AAU (ILS) for their valuable professional help.

Finally my thanks also goes to both Natural and social science curriculum experts of ICDR and Oromia Education Bureau all for their professional assistance and cooperation in providing the necessary official documents.

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CHAPTER ONE

Introduction

This Chapter deals with the introductory part of the study.

1.1 Background of the Study

One of the characteristics and requirement of education sector is the design and development of curriculum. The curriculum developed has to be put into practice at different levels of schooling of which primary education is a part. To this end Tyler (1974) noted that curriculum development is not a theoretical study. Rather it is a practical enterprise.

Primary education is the foundation for any system of education. Its main purposes according to Lock Heed et. al (1991:1) are to produce a literate and numerate population that can deal with problems encountered at home and at work and also to serve as a foundation on which further education career is built.

The aim of Ethiopian education is not different from the purpose indicated above. The 1994 Education and Training policy document reveals that, the purpose of the first cycle education is to enable the students to become literate, numerate and gain basic awareness of environmental and social issues that are relevant to their own surroundings (TGE 1994:16).

Furthermore in the same document, it is stated that the primary education should encourage students to become active learners through the use of discovery method, but not to memorize information.

In line with the policy statements, the school curricula were developed and are being implemented. To achieve the goals mentioned earlier, syllabi were developed for different learning levels. And one of these syllabi is environmental science syllabus. It is an integration of contents from natural science, social science, agriculture, handicraft and home science education that used to be taught independently.

Integrated curriculum demands a particular style of teaching. Thus selection and organization of appropriate instructional strategies and creating conducive atmosphere is indispensable for the achievement of desired objectives underlying integrated curriculum.

However the Ethiopian school curriculum had been criticized for its poor quality and low relevance (TGE 1994). Other studies such as the 1972' s sector Review, the 1986's Evaluative study of the General education system in Ethiopia and the 1988's constructive study of the General polytechnic education have confirmed that teachers totally depend on lecture methods, consequently, students become passive recipients rather than being active participants.

Thus, these and other problems indicate that evaluative study has to be under taken in order to check the extent of implementation of the syllabus under investigation.

1.2 Statement of the Problems

The curriculum designed and developed must be implemented. In this regard Saylore et .al (1981) states that there would be no reason for developing curriculum if there was no instruction. With regard to the process of curriculum (syllabus) implementation in addition to the authors cited earlier, Dereje in (IER, 2002:8) noted that curriculum implementation is a formidable task in most developing countries of which Ethiopian is a part.

Studies also indicate that among many factors affecting effective implementation of subject syllabi including that of Environmental science, are teacher related factor, school environment, in adequacy of resources and technical supports (pate et al (1997); Payne (1974, 131-132); (MOE, 1986:14); (MOE, 1984), (ICDR 2001: 42 and Derebssa in IER 2002).

Therefore, it is apparent from the preceding discussion that there exists discrepancy between the anticipated curriculum and the observed ones in most cases, and Ethiopia is not exceptional

All these indicators and discrepancies imply the existence of an issue to be studied. It is on this ground that the investigator is interested to conduct evaluative study on the implementation of the environmental science syllabus of the lower primary school of Illubabor.

The objectives of the study are to:-

- examine the extent to which the guideline set in the syllabus is realized
- assess whether student-teacher interaction (teaching methods and materials used) match with the specifications of the syllabus
- evaluate the capability attitude and limitation of the teachers in effectively implementing the subject under study.
- indicate some major problems which have influenced the implementation of the syllabus
- assess the extent to which student grasped the content of the syllabus

To attain these a objectives the following basic questions were formulated

1. Are teachers in lower primary schools voluntary the basic instructional ideas and concepts of the syllabus to their students?
2. Do teachers of environmental science use the instructional guide lines set in the syllabus effectively in classroom?
3. How conducive is the teaching learning condition in the schools for better and effective implementation of the syllabus?
4. Is the implementation of the Environmental science syllabus effective in enabling learners to have mastery of the subject matter?
5. What are some of the constraints, which affect the implementation of the environmental science syllabus?

1.3 Significance of the Study

The worthiness of a curriculum is ascertained through field inquiry in to its practical implementation

To this end educators such as Payne (1974) , Pratt (1980) and Vulliamy (1980) capitalize the importance of evaluating curriculum implementation as one of the crucial effort to be pursued to enhance the standard of education

Thus, the study may help to obtain evidences for the purpose of remedying some shortcomings related to the implementation of the syllabus under investigation. More specifically, the findings of the study can indicate the direction as which part of the syllabus is functioning well and which part is not. The result of the study can also help practitioners to see their own shortcomings and strong points. It may also serve as direction indicator for further broad and detail research in similar areas.

1.4 Delimitation of the Study

The scope of the study is restricted to the Illubabor Administration zone. And findings obtained reflect the extent of implementation of environmental science syllabus of the primary schools in the zone.

Besides the depth of the study is limited to the question of effectiveness and acceptability since the aspects of program that require evaluation are numerous.

1.5 Limitation

For the study is not conducted at national level the investigator feels that the generalization could not be free of limitation. The reason for not undertaking the research at national level is mainly time and resource limitation. Similarly continuous observation is desirable to get first hand information in this study. However, each sample teacher was observed only twice in his classrooms. That was because to cover all the sample classes it required longer period of time, which the scheduled time for the study does not allow.

1.6 Definition of Terms

- Environmental science syllabus refers to the grade 1,2,3 and 4 environmental science syllabus designed after the 1994's Education and Training policy.
- Lower primary school are all government schools at which children receive their formal basic education covering the first four grades (1-4).

- Effectiveness refers to what degree the learners achieved the stipulated objectives Pratt, (1980:417). It also entails, capable of bringing about results and being used to a purpose.
- Acceptability entails whether the people involved liked or disliked the experience (Ibid)
- Curriculum Anticipations is planned curriculum referring to content, in situational actions and learning experience
- Curriculum realities: This refers to the implemented contents in situational actions and learning experiences

1.7. Acronyms

CRC: Cluster Resource Center

MLC/MML/ : Minimum Learning Competency/ Minimum Mastery Level/.

SPC: School Pedagogical Center

1.8. Organization of the Study

The study has been organized into five major chapters. Chapter one deals with this introductory part, whereas chapter two and three address the review of related literature and design and method of the study respectively.

Then, the fourth chapter treats presentation, analysis and interpretation of the study result.

Finally the fifth chapter draws summary, conclusion and recommendation of the study Furthermore, Reference and appendices are attached at the end.

CHAPTER TWO

2. Review of Related Literature

The main purpose of this part is to provide a theoretical framework for the study by examining the literature related to integrated primary science and its implementation, which is known as environmental science (educations).

To serve the purpose the chapter is divided into three sections. These are:

1)- The essence and aspects of environmental education-integrated-curriculum and curriculum implementation.

2)- The focuses of curriculum implementation evaluation and

3)- Factors influencing the curriculum implementation

2.1. The Essence and Aspects of Environmental Education, Integrated Curriculum and Curriculum Complementation,

The conceptual framework and background basically supplements the clarity of various studies. To this end the work of different educators has been cited and analyzed as related to the above concepts.

2.1.1. Environmental Education

Environmental issues emerged in the late 20th as a major focus of international concern activity.

In this regard different authors have revealed similar views. For instance, John K in Dufour (1990:150) wrote, environmentalisms as a social movement, The modern, environmental movement emerged in Britain in the late 1960s and early 1970s, undergone some thing of a decline in the late 1970s and reemerged in the 1980s.

In a similar way, Shiundu and Omulando (1992) also summarized the issue in that the need to promote Environmental education, as a field of study in the education system was brought in to focus the 1970s by concern about the interaction between man and his environment resulting in negative influence on the latter.

During this period a number of conferences have been held which intensified the concern of environmental education. Between 1972-1977 a series of conferences were organized by UNS. For example, according to Granvall (1994), in 1972 it was held in Stockholm, Sweden, in 1975 in Belgrade and in 1977 in Tibilisi, Georgia.

The conferences made recommendations and guidelines. In this connection Gronvall (1994) further noted that among the recommendations of the 1975 conference, was the establishment of the UN Environmental program (UNEP).

Hence, the recommendation suggested that the 1977 Tibilishi conference was highly significant in the development of Environmental Education. It was the starting point to systematize and coordinate the Global program in environmental education worldwide.

It was after this that the focus and purpose of environmental education have become apparent. To this end John Kuckle, in Dufour Barry (1990:151), stated that the aims of Environmental Education are to develop an understanding of ecological systems and of the place of human kind within those systems; also to enable students to reflect up on how best individuals and human societies can live in harmony with the planet, and to develop the skills necessary for active and responsible participation. Grandertons (1997:397) is also of a similar opinion. To him, environmental Education has connection explicitly with international and policy making; that is, its obvious connections has been with globalize education-a major focus of study is the entire planet.

In fact, it was in 1970 in Nevada that the first definition of environmental education was drawn up.Neal and Palmer (1990) have put the definition by citing Nevada's conference as follows:

> *Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the interrelatedness among man, his culture and his biophysical surroundings.*

Environmental Education also entails practices in decision-making and self-formulation of a code of behavior about issues concerning environmental quality (ibid p.2)

From the above definitions one can deduce that environmental education is mainly concerned with the interdependence of human being with his environment. It is also apparent from the

discussion that, the word " Environment" encompasses two basic facts: the "Biophysical and the socio-cultural: Gronvall (1994) further elaborated that, the biophysical aspects of the environmental education comprise the biotic and abiotic factors. The latter includes factors such as temperature, humidity, rain, soil characteristics, while the former includes the living organisms, microorganisms, plants and animals including man.

Socio-cultural on the other hand refers to everything around us, which is developed by man through his tools, skills and social institutions. Environmental Education thus may be considered not only as the issue of worldwide but also of the day. To this end Grandertons (1997) wrote environmental education could be regarded as the most successful innovation in education in our time---- at least, if the investment of the energy get school level is taken into consideration.

By the same token Shiundu and Omulando (1992:313) summarize the essence of environmental education as the process of organizing values and clarifying concepts in order to understand and appreciate the interrelatedness between man, his culture and his biophysical surroundings. Environmental education subsumes decision making and formulation of a code of behavior about issues concerning the environment.

Neal and palmer (1990) Gronval (1994), have indicated that based on the above accepted definition of environmental education the contents that can be selected should serve the following objectives considered as the goals of environmental education.

1) To faster clear awareness of and concern about economic, social, political and ecological inter dependence in urban and rural areas.
2) To provide every person with opportunities to acquire the knowledge, values attitudes, commitment and skills needed to protect and improve environment.
3) To create new patterns of behavior of individual groups and society as a whole towards their environment.

It is found that human activities, while striving for survival and development, increasingly affect environment. According to Shinudu and Omulando (1992) the environment is increasingly suffering from consequences of man's economic activities whether these activities are productive or consumptive. Man also increasingly began to realize that the environment has a limited carrying capacity Because of this, he has threatened the environment in order to satisfy his needs and aspirations for further development.

The consequence of environmental problem finally affects the poor regions of the world. This can be affirmed by words of Johan, in Dufour (1990), when she/he states that the nature and scale of environmental problems is truly alarming and the resulting costs fall most heavily on the poor, particularly in the developing world.

Thus it was this situation that led to a series of international conferences (of which some cited earlier) and from which environmental education developed as a field of study, Three of these conferences are high lighted below, as cited in Gronvall (1994) and Shiundu and Omulando (1992; 313-315)

1) Here the key issue was environmental pollution. The Stockholm conference, Sweden, 1972. The conference also dealt with inadequacy of human settlements, the problem of insufficient clean water, disposal of human body waste, infectious diseases, and rampant poverty.

After considering and identifying these problem of the environment, the conference recommended that.

> *The United Nations establishes an international program in Environmental Education. The program should be inter disciplinary in approach and take place both in school and out of school encompassing all levels of education*

The Stockholm conference paved way for the establishment of the United Nations environmental program in Nairobi.

2) It was set up to implement the recommendations of the 1972 Stockholm conference. UNESCO- UNEP Environmental Education program, Belgrade, 1975.

3) The Tibilisi intergovernmental conference on Environmental education 1977.

The conference realized the formulation and endorsement of environmental education goals, objectives and guiding principles. The conference also recommended that member states should develop national policies should strategies furthering environmental education; research projects and incorporate their findings into the general educational process through appropriate courses.

It is imperative to note from the preceding discussion that environmental Science subject of our primary education system seems to have its root in this undertaking.

Environmental science in Ethiopian context as a subject of primary education was first introduced to the system in 1980's in experimental program of the General Polytechnic Education. The program was designed for the lower primary. (Classes 1-3) (The General polytechnic Education syllabus 1980:215)

According to the then educational Policy Education for production, scientific research and political consciousness, the general objectives of the environmental science program was:

- to help students study and understand their natural and social environment
- to enable them analyze the natural and social environment with respect to political, history, geography, natural science education
- to enable them develop skill of careful observation of their environment describe it using simple scientific method and report it.
- to help the students acquire knowledge and skills of preparing clean house, food, clean water and what ever related to their daily life. (Ibid).

However, the program was terminated before it was practiced fully at the national level. According to the experts of ICDR, the reason behind the termination of the program was, it required additional budget that the government could not afford in addition to the cost needed for the war before 1991.

The then curriculum was full of problems and failed to respond to the needs and interests of the society. Following the change of government, (1991) curriculum reform has been under taken as part of the New Education and Training policy designed in 1994.

In the policy document it is stated that, "our country's education is entangled with complex problems of relevance, quality and equity. The objectives of education do not adequately indicate future direction. The absence of interrelated concepts and mode of presentation that can develop student's knowledge, cognitive abilities and behavioral change by level, to adequately reach problem solving ability and attitude are some of the major problems of our education system. (1994:2).

As part of the implementation of the new policy objectives a new curriculum was designed for the first cycle primary to make primary education more relevant to the lives of the young

learners: Learning is also planned to be based on local relations, use home languages as medium of instruction. In addition, emphasis is placed on literacy, numeracy, social skills and environmental awareness. In short the aim of education is to create --- problem solving capability and activity oriented approaches to learning. Shiundu and Omulando (1992:316) also expressed similar views.

According to ICDR, (1994), at first, the new education policy objectives were to be achieved through the traditional linear model. However after two years of trial it was changed to an integrated model.

This is because the linear model was criticized to be too subject discipline oriented with some nine academic subjects that many primary teachers found to be very cumber some to teach to young children, under a very tight teaching time table. (ibid)

Moreover the reasons for choosing the integrated approach are implied in the following government policy statement (TGE, 1994).

> *Education does not operate in isolation rather it has to be integrated with research, practice and development to contribute toward all round development of society" (p.2)*

It is clear from this statement that integrated subject /curriculum/is important for the learners individual development by contributing to the meaningful knowledge formation and understanding. It is also worth noting that integrated science and environmental education share some features in common and thus are similar in character. This will be addressed to some detail in the following pages.

Hence to what extent has the intended integrated environmental science of the primary education been put in to effect?

2.1.2. Integrated Curriculum /science/

An integrated curriculum (syllabus) may be understood as unifying all types of knowledge and experiences in the curriculum development. Different educators have noted the essence of an integrated curriculum differently. For example, according to Ornstein and Hunkins (1998:240), curriculum integration refers to the linking of all types of knowledge and experience confined within the curriculum plan. It is essentially a design feature to bring into

close relationship all the bits and pieces of the curriculum in ways that enable the individual to comprehend knowledge as unified rather than as atomized.

Therefore integration allows the learners to obtain a unified view of knowledge and an in depth meaning of the subject matter. Other educators such as Saylor, Alexander and Lewis in Orstein and Hunkin (1998) say that integration only occurs within the learner. Taba as cited the above source also advanced a similar view, defining curriculum integration as something that happens in an individual whether or not the curriculum is organized for that purpose.

This reveals that in the integration it is the student who plays a greater role because he organizes in meaningful manner knowledge and experiences, which at first seem unrelated.

Taba, as cited in Ornstein and Hunkins (1998:241), noted the significance of integration by stating, that integration of knowledge was an important issue because of the knowledge explosion, increasing specialization in society, and expanding technology. It was also an attempt to interrelate the content components with learning experiences and activities in ways that would facilitate learning.

The discussion entails that integrative process of curriculum was indispensable because of the science and technological advancement, expansion of knowledge and specialization of the. Integration also contributes to effective learning.

Despite this in the past it was argued that much of the curriculum was not integrated as such. Related to this fact, Taba (in the 1960s) as cited in Ornsten and Hunkins (1998) states that much of the curriculum was disjointed, fragmented, segmented and detached.

Even in schools today, many argue that the curriculum still is arranged in bits and pieces that prevent students from seeing knowledge as unified or synthesized.

Keeping in mind the dynamisty of the world and the knowledge we have about it, we might follow Taba's advice that there is a need to develop common knowledge by dealing with ideas that transcend and connect fields of study.

Eisner year is of a similar view. He argues that knowing depends on direct experience that engages the learner in actual contact with the qualities of the environment or keeps the learner in touch with experiences conceived by the individual's imagination.

Here the integrated curriculum /science/ enables the learners to see knowledge in unified and interconnected manner, This enables the learner to understand meaningfully and attempt to solve practical, every day problem.

This approach also takes the learner outside the laboratory and away from the textbook into the local community, where the action is and where solving problems involves integration and application of subject matter.

On the other hand, Ornstein and Hunkins (1998) stated that, the increased attention to integration results in part from the ongoing discussion of post-modernism, constructivism and post structuralism.

These movements all advance the idea that knowledge is not separated from its reality, that people cannot really disconnect themselves from their inquiry and that the curriculum really cannot exist as separate bits.

Things are connected and reconnected, knowledge is dynamic not static, knowledge cannot be separated, objectified and then quantified with precision. Thus one cannot separate the known from the knower.

The above discussion reveals that since things remain interconnected, knowledge is dynamic not separated; integration of knowledge in precision cannot be achieved.

Partt's (1980) view affirm this assertion in that; it is not possible to integrate totality, for totality cannot be completely grouped, it is ever expanding emerging. "We will never achieve total, integration of knowledge. However, at the same time, it is worth noting that our knowledge is never completely disintegrated."

Thus it seems that absolute integration is difficult to realize, integrating knowledge and experience can be achieved to a varying degree throughout the educative processes.

There are also educators who argue against the above position. They advance the idea that integrative approach enhances a better learning. To this end Frederick et. al (1993) summarize that the integrated thematic curriculum design, based on the belief that learning is integrative, is multidisciplinary and establishes connection among various subject areas.

The integrative curriculum approach appears modern method in the instructional processes that matches the emergence of the environmental education.

To this end comparing the traditional subject centered curriculum and the integrated thematic units, Beane (1991:9) noted that to many elementary students, the traditional topical subject centered curriculum "presents an endless array of facts and skills that are un connected, fragmented and disjointed."

There are many advantages of integrated thematic units most emphasize both the relationship that exists between and among content areas of different subjects and recognize the need to see relation ships between and among ideas. (Frazee and Rudniski (1995:14).

An integrated curriculum addresses a diversity of learners experience more naturally.

According to the authors cited above the teachers ensure that students have opportunities to transfer knowledge from one subject area to others and they witness first hand experiences the interdependence of all subject areas in the elementary curriculum.

Eby and Kujawa (1994) added that teachers break down the boundaries between and among subject areas or topics and then plan learning experiences that help students make connections as they read, write, discuss, conduct science investigations, engage in mathematical problem solving, and utilize music and art.

An integrated approach to curriculum design in the elementary school capitalizes on the curious nature of elementary students who interact with the learning environment in such a way that they integrate that experience into their thinking and learning.

Further more according to Breane (1991:9-10) integration is what students do when they start with a whole picture of a problem and then seek to solve it. Integration also implies wholeness and unity rather than separation and fragmentation---- and real curriculum integration occurs when young people confront personally meaningful questions and engage in experiences related to those questions.

The above discussion reveals that as students are engaged in learning and provided with question and problems with in an integrated units they use prior knowledge and skills to seek answers and possible solutions that have meaning to them.

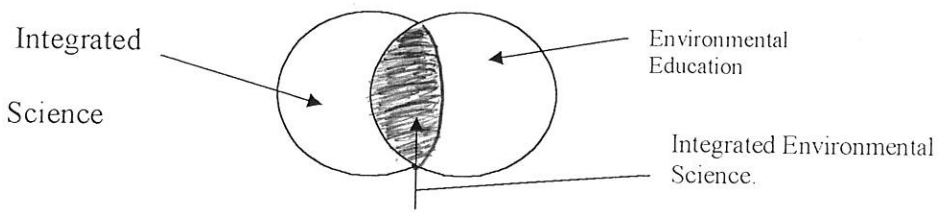
Lastly it is worth mentioning that there exist similarities between integrated science and environmental education. According to Dysai (1971:113) this similarity is apparent both in method of learning and content as cited in Eshetu (2005)

For instance regarding content, integrated science is presented in an integrated style through the adaptation of theme such as the nature of matter, energy and its transformation, ecology, nature etc. Similarly, in 1971 it was suggested that an environmental education curriculum should include concept groups such as physical environment, planet, earth, energy flow, atmosphere, land forms and soil, climate and meteorology, lithosphere, surface water etc.

As far as learning methodology is concerned, the aim of both environmental education and integrated science is to help the learner to understand his environment. For example Gronvall (1994) and Dysai (1971) both environmental education and integrated scene apply activity methods extensively, descriptive and analytical system as well as experiential situations and two –way communication methods.

Of course these methodologies and resources are not only pertinent to integrated science and environmental education. They are known by modern methods as learner-centered---helping the learner to acquire the desired knowledge, develop skills and values through active participation.

It was the similarity cited above that gave rise to environmental science. And environmental science is an emerging relationship between integrated science and environmental education. This relationship can be presented as follows as revealed by prof. Blum at her Nimgen conference in Dyasi (1979)



Adapted from Dyasi (1979) in Eshetu (2001)

By the same token the 1994 Education and Training Policy stressed and gave due attention to the integrative approach of the curriculum. For example Article 2.2.4., 3.2.6 (p16), and 3.6.3.(p25) of the document presents in similar ways the purpose of providing basic education and integrated knowledge and ensuring coordinated curriculum development for students to acquire the necessary entrepreneurial, knowledge, productive attitudes and skills at various levels of training.

In sum curriculum integration is responsive to the desire to make curriculum socially relevant and personally meaningful knowledge; knowledge is made meaningful here, through interaction between the learner and the world around him/her, where the interaction leads to understanding, not just memorization.

Hence, the investigator of the study strives to examine the practicality of this theoretical aspect through inquiry.

2.1.3. The Concept of Curriculum Implementation Evaluation.

The most appropriate and valued school curriculum remains futile if it is left on the shelves after designing it. The success of the developed curriculum is highly determined by the degree to which it is workable in practice-its implementation. To this end Pratt (1980:426) said.

> *Curriculum change is a political process, a question of "who gets what, when and how" perhaps because of its political nature, the question of implementation has often been ignored by curriculum writers and left to the administration management specialists, who have studied change and innovation extensively.*

Thus implementation is the important part of curriculum development process (cycle) which may lead us to the essence of curriculum implementation.

Different educators may perceive curriculum implementation differently. Accordingly Reinhart and Beach (1997:21) Stated that curriculum implementation involves the actual teaching of the material and interaction with students. Others such as Shiundu and Omulandu (1992:176) also revealed that curriculum implementation is the process of effecting the new curriculum. It is the systematic process of ensuring that the new curriculum reaches the immediate beneficiaries-the learners. These authors went further to say that the process of implementing the new

curriculum is the stage when many more people come into interaction with the new curriculum. These may include teachers; student parents administrators, and the lay public.

For Marew (2000:4) some educators assume curriculum implementation as part (step in) curriculum planning process and expect to proceed from design stage to the actual implementation stage. While others believe curriculum implementation to be a separate component in the curriculum action cycle.

Both, in one or another way, portray basically putting the developed curriculum into practice at the mission center- classroom where the students and teacher interact.

The process of implementing a new curriculum is a highly complex one and therefore requires an extremely skillful assortment of participants and relevant content for effective results. And the task of curriculum implementation can be said to involve two main processes.

- Changing attitudes of people, policy makers, administer, teachers, teacher trainers, school supervisors, parents, the lay public and ultimately the learners themselves.
- Providing the materials and the administrative means to make the process possible (Shiundu and Omulando 1992)

That is people concerned must be persuaded about the worthwhile of the innovation and facilities (materials) and personnel supports have to be delivered if the implementation is to be realized Ornstein and Hunkins (1998:292) in a similar way noted curriculum implementation as an interaction process between those who have created the program and those who are charged to deliver it.

Regarding the nature of curriculum implementation Ornstein and Hunkins further state, although, experienced leaders of curriculum activities have realized that implementation is an essential aspect of curriculum development, only in the last 15 to 20 years has implementation become a major educational concern.

Such interest has evolved partly because many curriculum innovations designed and developed have not been succeeded. In this connection Ornstein and Hunkins (1998) wrote, there are numerous reasons for the failure of innovative curricula to be implemented successfully. Perhaps the key reason is one advanced by Seymour Sarason. He posits that much educational

reform has failed because those in charge of the efforts had little or a distorted understanding of the culture of school.

The Preceding assertion entails that in addition to the above points the degree of communication between the curriculum planner and implementer as well as the knowledge of the school conditions may impede the effective implementations of the curriculum.

Fullan and Pomfret provide some comment on this issue; Effective implementation of innovations requires time, personal interaction and contacts in-service training and other forms of people based support. Research has shown time and again that there is no substitute for the primacy of personal contact among implementers and planners (consultants), if the difficult process of unlearning old roles and learning new ones is to occur. Hence for effective implementation all concerned bodies and facilitating inputs must be addressed. Ornstein and Hunkins (1998) Strengthen this view by maintaining that for implementation to emerge we have to address the behaviors of all players in the curriculum game such as curriculum creators, administrator, teachers and supervisors. (P292-293)

- It is apparent that successful implementation of the curriculum results from careful planning. As indicated by some educators recently, on top of careful planning vision building is becoming crucial for-effective implementation.

To this end, mattew miles and Karen Lowis, in Ornstein and Hunkins (1998), state that for planning to occur there must be vision building. In their research they found that those schools successful in implementing change and improving their programs had staff that passionately held similar images of what the school should become. As revealed in the preceding pages, the process of curriculum development is continuous and the planned curriculum has to be implemented.

Emphasizing the nature of curriculum implementation in developing countries Dereje cited in (IER 2001:8), noted that curriculum implementation is a formidable and complex task in most countries where planning and leadership capabilities are at the lowest stage. As part of developing countries, African countries in general and Ethiopia in particular share similar educational changes highlighted above.

Bao Salia (1989:21) after contrasting centralized and decentralized curriculum in Africa summarized that, unlike centralized curriculum changes as it is in such countries likes sierra Leone, Ghana, Kenya and Nigeria; decentralized curriculum change, planning and development take place at various local levels.

Critics believe that this is a more relevant method of curriculum development because it is tailored to the needs and environment of the people. Research in to the effects of both centralized and decentralized methods in learning and educational development in African could provide an insight into which type should be adopted. It is argued that decentralized curriculum change seems more effective specially for rural children, because it is easier to relate the curriculum to the needs and culture of the community at local level than national level.

This complies with the Ethiopian situation. The country is undertaking decentralized education system including curriculum issues. To this end the 1994 Education and training policy envisages that teachers professions and beneficiaries will be made to participate in the preparation, implementation and evaluation of the curriculum (TGE 1994: 12)

Though the policy has addressed the curriculum development and implementation in the country; the design and development of good curriculum alone will not guarantee goal attainment of the school unless implemented effectively. It is argued that in most cases curriculum implementation is a formidable a task in most countries.

Dereje and Bardach, as cited in (IER, 2002:10), noted that curriculum implementation is more complex and extremely difficult to implement in a way that pleases every one including the potential beneficiaries in developing countries. Hence Ethiopia cannot be exception.

According to Amberber (1985) Ethiopia's educational system is challenged by a number of unsolved difficulties, there has been an increasing criticism about the declining quality of education. Hence from the preceding discussions one can conclude that of many unsolved educational problems of the country ineffective implementation of the curriculum is among the major ones.

2.2. The foci of Curriculum Implementation Evaluation.

In relationship to the application of evaluation research on educational phenomena, there seem to exist confusing concepts, which need clarification for proper handling of the specific phenomena under study. With this perspective, then the concepts curriculum evaluation and curriculum implementation evaluation are the typical ones.

In this regard Orstein and Hunkins (1998:322) noted that, like most concepts in education there is no consensuses as to the meaning of evaluation. Despite this Michael Scriven as, cited in Ornstein and Hunkins (1998:326), made a clear-cut distinction between the above two concepts.

Accordingly, curriculum evaluation refers to the study of the curriculum plan separately and this type of study is called "Intrinsic evaluation". It focuses on the inherent characteristics of curricula rather than on their effects.

The curricular aspects to be examined are those of the adequacy of the curriculum objectives, consistency between objectives exposed and the content of the instructional materials, and the accuracy, coverage and significance of content. Shiundu and Omulando (1992) and Marew Zewdie (2000) expressed their views about the issue in similar ways.

Curriculum implementation evaluation on the other hand, according to Ornstein and Hunkins (1998:325-327), Shiundu and Omulando (1992:198-200) address the question of to what extent the planned curriculum is put into practice or use. Hence, the two concepts appear to be distinct but interrelated activities. The latter is mainly concerned with the practicality of the curriculum while the former focuses on the internal structure of the curriculum plan itself. They are said to be of interrelated because the results obtained through implementation evaluation are the sole indicators of the test of a curriculum plan.

Though the idea of evaluation, as noted by Lange (1974:22-23), has been in existence since the history of mankind, it was during the early 1900s that the concept of evaluation in education began to receive formal pattern. From this time onwards educators have proposed different alternative approaches as focal points to evaluate the implementation of a curriculum. Among these approaches, those group stressing the measurement of learning outcomes in terms of student's abilities, skills and effects as sole indicators of curriculum implementation is one.

Many authors such as Bloom as far back as 1956, wheeler (1967) and Popham and Baker (1970), to name a few, have contributed to the evaluation and refinement of the objective oriented approach to evaluation. But Tyler is credited much for conceptualizing and popularizing the objective evaluation.

Thus citing Tyler's year idea would suffice to depict their intentions.

> *For Tyler" The process of evaluation is essentially the process of determining to what extent the educational objectives are actually being realized by the program of curriculum and instruction. However, since educational objectives are essentially changes in human beings, that is, the objectives aimed at are to produce certain desirable changes in the behavior pattern of the student, and then evaluation is the process of determining the degree to which these changes in behavior are actually taking place". (Tyler, 1949:105-106).*

Tyler further elaborated evaluation as a powerful device for clarifying educational objectives if they have not already been clarified in the curriculum planning process (Ibid p124) Evaluation also has a powerful influence upon learning. Students are influenced by the kind of evaluation to be made in their study and even teachers are influenced in their emphasis by the sort of evaluation, which they expect to be made.

In short, the focal point to evaluate the implementation of a curriculum is the actual learner outcomes against the educational objectives. Pope (1983:26) appreciating this approach of evaluation termed it "experimental ", Scientific" or operational by the people who like it and classical or traditional or industrial or engineering style by the people who do not. However Pope supports the approach by contending that its conceptual basis is the scientific method.

Nonetheless, still there is a body of theoretist who argues that such evaluation exercises (objective model) are too narrowly conceived failing to consider the multitude of other factors in the school. In this regard Eisner (1979) and Stenhouse (1975), cited in Robert and Mary (1983:176), noted that the crucial criticisms of objective model is, that it is educationally thin and assesses with out explaining --- Hence the developer of the curriculum cannot learn from it.

As a result these criticisms of the objective model have given rise to a number of alternatives, which can broadly be termed "process model" of evaluation. (e.g. Simon 1980) (ibid)

It seems because of these that many educators such as Grotelueschen (1982:99) Aldrich(1974,2-3) argued that the focus of implementation has to be directed towards answering the question "does the unique combination of materials, activities administrative arrangements and role determined tasks lead towards the achievement of the objectives".

Thus a lot of evidence with many forms has to be collected for a comprehensive evaluation. Authors such as Hiemstra (1976:116), Worthen and Sanders (1987:157) recommended adapting the mid way approach.

In sum the previously cited two approaches, objective model and process model are different contrasting approaches regarding the area of emphasis to be given in evaluating the implementation of a curriculum.

Many educators, however, advised evaluation researchers to be systematic in the selection of variables as focal points for research undertaking. This is because the argument between these two groups seems not to be easily reconciled.

As the process of curriculum implementation requires contact with many schools, teachers, students and other educational workers, a number of factors could influence its success.

2.3. Factors Influencing Curriculum Implementation

A number of factors can be mentioned as facilitating or hindering the implementation of a given curriculum, method of teaching or any other educational activities.

Factors related to the nature of curriculum and its organization, teachers' attitude, skills, experience, professional competencies, the availability of appropriate instructional materials, school facilities, class size and supervisory assistance can be cited as some of the main factors that can influence the implementation of syllabi.

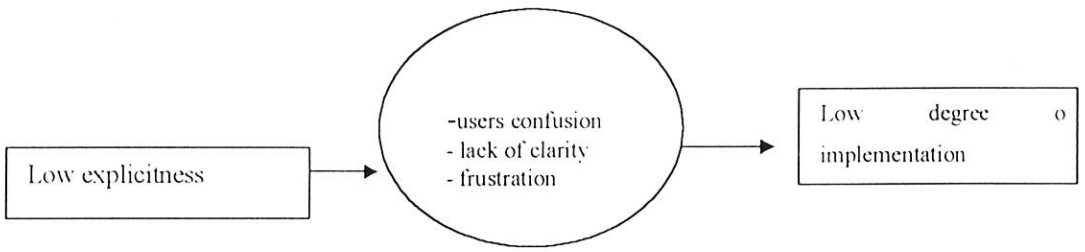
In the forth coming pages an attempt will be made to mention ideas related to these factors as viewed by many authors /scholars /in the field.

2.3.1. The Nature of the Curriculum as Factors Influencing Implementation.

The nature of the curriculum itself-its design, the way it is communicated to the users and the like can facilitate or hinder its implementation. Curriculum that lacks explicitness and that is

poorly designed, that fails to specify the intents clearly and poorly communicates them to the users seems to be by itself a barrier for effective implementation.

Chart 2 show below the degree of explicitness of curriculum plan and level of implementation.



Adapted from Fullan and his partner (1977).

The curriculum which is planned with a low explicitness can result in confusion and frustration on the side of the implementers and ends up in ineffective implementation.

According to Walker and his partner (1986:67) most educators and citizens seem to think that if only they had a clear idea of the ends they were seeking and their priorities among them, then our curriculum problems could be posed in a straight forward way and solutions sought through routine systematic methods.

As mentioned earlier inexplicit and poorly designed curriculum that compasses complex ideas and processes will be particularly susceptible to resistance. Affirming this view Deighton (1971:581) summarized . . . of the phases of curriculum development specification is one; specifying complex ideas and objectives facilitate its practicality.

The users, particularly teachers; involvement in the curriculum development to include their interest, and philosophy is considered by many as a potential factor for successful curriculum implementation.

In this connection, Langenbach (1972:35-38) noted that teachers who have been participated in curriculum planning have more positive attitude towards curriculum use than those who have never participated. That is, if the curriculum developer communicates to the first line implementers-teachers, about the innovation and includes their interest (of the users) this may guarantee a successful implementation.

Thus, though it is practically unrealistic to expect that every and each teacher is a member of curriculum designer team, the above point indicates that, at least teachers have to have some kind of opportunity (they can be consulted for, example) to add their own input to the designed curriculum and there by to facilitate the implementation process. Many other educators also stress the importance of clarity of curriculum planning process and openness between the curriculum designer and users.

According to Ornstein and Hunkin (1998:295) it is almost an axiom that when ever a new program is being designed communication channels must be kept open so that the new program comes not as a surprise. Frequent discussions about a new program among teachers, principals and curriculum workers are a key to successful implementation.

Another aspect of the nature of curriculum as a factor of implementation appears to be its organization. It is often argued that most curricular materials characterize inclusions of vast (voluminous) contents that may not be relevant and fail to be managed.

Regarding this Moon B. (1994:56) states that overcrowding of the curriculum within subjects and across the curriculum, as a whole remain to be the biggest difficulties.

In the process of curriculum development the innovation that lacks clarity and explicitness that is poor in design and that fails to communicate its intent to the implementers may not be successful program.

Some research studies also confirm this assertion For example a, study conducted by Gross (1971:196) in America revealed that teachers due to lack of clarity about the innovation failed to understand the role expected of them in the process of implementation. Similarly, Lock et al (1991:45) in his study of curricular, emphasizes in 130 countries (94- low and middle income included.) noted that their curricula presented in textbooks particularly the scope and sequence of the materials is often poorly designed.

Thus the nature of the curriculum itself can be a barrier to its implementation when it is poorly designed and lacks explicitness by causing confusion and ambiguity to the implementers.

Another aspect of curriculum characteristic is its consideration of learners' maturation factors, experiential background and readiness to learn which may influence the actual curriculum

implementation. This entails that during the design stage due consideration must be given to student factors and their meaningful learning's.

To this end, Firdissa (2003:128) in IER indicated that the success or failure of a program implementation could be predicated on the basis of identification and quantification of beneficiaries and resources. This assertion also confirms Pratt's (1994:45) words, design implement able program, rather that first design--- then implements it. Moreover some educators also comment that the content of text books in many countries also fail to reinforce the development of higher order thinking skills – such as problem solving skills and critical thinking. Lock et al (1991:46-47).

Here, although teachers can adjust their teaching methods to elicit thoughtful consideration of the text, textbooks that require more than memorization of problem solutions to solve "real world" questions and problems, that encourage the development of thinking skill are desirable.

It is argued that in developing countries problem approach curriculum and evaluation type have rarely been conducted; but according to Ogundare, in lock et al(1991), in Nigeria students who were exposed to a " problem approach' Curriculum were found to learn more factors and also understood the material better and applied the knowledge to new problems. So a well-designed, organized curriculum that conveys its intent clearly facilitates the implementation process.

This being so, in Ethiopian case as per quality of curricular materials, a research finding conducted by ICDR (2002:17) indicated that most of education experts and parents under study witnessed their positive attitude / satisfaction/with some aspects of the primary syllabi (1-8), specifically the harmony noticed between the subject area and the general objectives of the country. They also contents are suited to local condition and children are learning in their vernaculars, which may facilitate student understanding and stimulate their effort to study hard.

It is apparent from the above findings of the local study that the fit between the subject area objectives and educational goal of the country and the consideration of the experience and needs of the learner inject some thing positive to the implementation process of the curriculum under investigation. However the curriculum cited still is not with out problem.

For example, according to the material source cited parents and education experts confirm that the teaching contents of the materials are vast and complex beyond the level of under standing of the children.

In sum as indicated throughout the preceding discussion a poorly designed curriculum or a curriculum which does not specify the intents clearly and which poorly communicates them to the users, seems to be by itself a barrier for effective implementation.

2.3.2. Lack of Adequate Personnel Support.

To start with, curriculum development process is continuous that extends from design to implementation stage. Throughout all these processes the involvement of personnel's is essential. Likewise depending on their roles, the personnel range from designers to implementers (i.e. curriculum expert, teacher).

Thus there must be some communication channel between curriculum designer and teacher. In order to make the program clear, a newly designed curriculum must be communicated to the teacher via open channels. Ornsein and Hunkins (1998:295) Zaltman and his associates in Fullan and Pomfret (1977:374) have all indicated the need to create a communication channel. To these authors the communication channel has to be two directional from curriculum planner to the implementer and vice versa. So continuous follow up and assistance to teachers regarding the implementation of curriculum in schools is expected from the curriculum planners.

Therefore proper feed back networks if stretched by curriculum planners are supposed to function as means of identifying problems encountered during implementation in order to provide support for addressing problems.

To this end literature reveals that most of the teachers do not have a clear under- standing of the innovations. according to Gross and his associates (1971:197) in some countries for example a case study conducted in USA reflected that, one barrier that blocked the teachers effort to implement the innovation investigated was their lack of clarity about the new role. It was found that most of the teachers did not have a clear image of the role performance expected of them.

It is apparent thus from the above assertion that the desirable communication channel between curriculum planners and teacher was lacking, and apparently this restricted the effectiveness of the curriculum implementation.

In between the curriculum designers and teachers one can find a number of responsible intermediary organs that are expected to give useful support. Hawes (1979:179-180) indicated that though teachers are at the very midst of the process there are those who give them help and support. These include, educational officers, school supervisors, pedagogical center workers at various levels and school directors.

Different authors argued that these people play an important role by delivering administrative and technical supports to teachers in the process of curriculum implementation. For example, according to Gross et al (1971), Ornstein and Hunkins (1998) and Azeb (1971) these people play a crucial intermediary role such as listed below in one-way or the other.

- Providing teachers with a clear picture of his new role requirement
- Adjusting organizational arrangements to make them compatible with the innovation.
- Providing the teachers with the necessary retraining experiences to develop their capabilities for coping with difficulties of implementing the innovation.
- Using their experiences and trainings, contribute to the betterment of the education system.
- Providing directions and guidance, as well as keeping channels of communication within the school organization and between the school and the community.

Ornstein and Hunkins (1998:314) particularly attach great value to the school supervisors in facilitating curriculum implementation; According to them supervisors are effective it is likely that the teachers within the system will feel committed to and be comfortable with the new program being implemented.

This being so, experience and literature inform us that the technical support provided by the intermediary personnel's including supervisor is found to be unsatisfactory to lead to successful implementation of the curriculum.

To this end Caillods and Posthlewaite (1989:172) in a study of teaching- learning conditions in developing countries, blamed supervisors as one of the causes for ineffective implementation of the curriculum. These authors also criticized supervisors for their rare visit to schools in the rural remote areas. They further commented that whenever supervisors go to school there often limit their activities to routine administrative matters instead of providing technical assistance and encouragement in their teaching duties.

Similarly Azeb (1971:28-29) in her article to Ethiopia Journal of Education noted that supervisors, (out of their legitimate duties), too often have been deployed merely to fill administrative gaps in educational offices of different levels.

In the same vain Dereje in IER (2002) also indicated that the quality of educational leadership at grassroots level and the role of the community, which is mainly confined to routine fund raising and labour contribution in the implementation process has not been as satisfactory as desired. For him the professional support of the wereda education office to the school seems to be minimal perhaps due to the shortage of human and other resources.

From the above discussion one can infer that a failure of supervisors to render directing and guiding technical support to school system in general and teachers in particular can lead to an ineffective curriculum implementation.

Furthermore, other personnel such as administrative bodies, directors, unit leaders department heads and school pedagogical center coordinators are also considered as immediate support systems for the teachers role in curriculum implementation. (Sampath and others, 1984:70).

In this regard some educators emphasize the role of school principals in the process of curriculum implementation. For instance, Orstein and Hunkins (1998) considered the school principals as a key guarantor of successful implementation.

By the same token, Lewy (1977:71-72), Hawes (1979:143), indicated that due to the responsibilities vested in them school administrative bodies should be involved in or consulted from the very beginning of the curriculum program design to be executed in the school.

Confirming the preceding assertions, some research findings attribute failure in curriculum implementation to the inadequacy of the school administers support. For instance, Orstein and Hunkins (1998:302) in indicating the consequence of lack of administrative support remarked

that people will not embrace change unless those officially responsible, often legally responsible for the program have shown or guaranteed their support for the change.

Regarding the support expected of the school administration as a condition for effective curriculum implementation, many educators argued that recently many of school heads are unable to provide supportive guidance and orientation to the new graduate teachers. In this connection, Singhal in Caillods and Postlethwaite (1989:172) commented that many, new graduates have been sent to the schools assuming that they would receive attention, guidance and supervision from qualified and experienced school heads.

But a study conducted in Indian schools shows, for example, that heads of schools do not spend much time on supervision and guidance of teachers. (Getachew, 1994).

It is clear from the preceding discussion that whenever there is inadequacy of the supports or failure on the part of the personnel in the system to provide both administrative and technical assistance to teachers then implementation will be hindered.

2.3.3 Teachers Related Factors.

Whenever the process of instruction is raised, the role of a teacher cannot be over looked. Teacher is the most important link in any chain of educational innovation (between the designed curriculum and its execution)

To this end Sauanders and Vulliamy (1983:361) remarked that it is what goes on in the classroom that finally affects student learning which is the end result of implementation.

Jackman (1997:21), and Dahal in Walker (1986:62) demonstrated similar views regarding this issue.

The former contended that in the instructional process teachers' role must reveal their commitment to children knowledge---- and desire to connect home and school successfully. The latter authors state that student learning and achievement is not only determined by the teachers' role, but also indirectly by factors such as course syllabi, class size, length of school years etc that define and constrain the work of students and teachers.

Therefore, in schools, whatever ideology is the guiding educational philosophy teachers have a pivotal role to play.

In order to execute the role expected of them teachers' abilities and competence are important variables to be considered in the process of curriculum implementation.

Gross et al affirming this view noted that the extent to which a curriculum is implemented as planned depends up on the extent to which teachers are clear about and the degree to which they are competent to perform it. MCDonald (1978:10) and Hicksvernon et. al (1970:48) are of similar views.

Therefore for a teacher to be able to do this job, the level and quality of his/her training and the education acquired would matter.

Lock (1991:62-63), Gerhard (1982:23) Hicksvernon et al (1970:48) and Lewy (1977:71-72) having similar position on the issue of teachers training indicated that, the academic and professional training of teachers has a direct and positive bearing on the quality of their performance and consequently on the achievement of students.

It is evident from the above discussions that academic and professional training entails that teacher must know, enough about curriculum foundation, subject matter, method of teaching, the learner and his growth, the setting for and learning environment, the interaction between learner and environment. Moreover as a result of training, teachers should be able to see, analyze and integrate the needs, feelings and aspirations of children in their environment with their communities and the nations needs. Obviously the knowledge of these variables may have a positive consequence for curriculum implementation.

As teachers are the backbone of the whole education program their training becomes the focal point and a vital factor affecting the quality of education. It seems because of that Agrawal (1996:316), Ambaye (1999:1-3) and Hawe (1979:21) in similar ways summarized their views of teacher education by maintaining that; teacher training is the first essential thing for implementation. And there is no conceivable way in which curriculum implementation can be divorced from the process of teacher education.

Thus as perspective on teacher education widens to span the whole career of the teacher and as the work of teacher preparation courses becomes far more closely linked to the work in schools, its relationship to the tasks of curriculum development and implementation becomes more evident.

In this connection, Hawes (1979) and Ambaye in IER (1999) noted that, the implementation of curriculum change and continuation of the new approaches in schools depend both on the retaining of teachers and on knowledge, skills and attitudes fostered during pre-service (initial) training.

As mentioned earlier, the acquaintance of both pre service and in service training of teachers may influence their performance in curriculum implementation.

In this regard, educators further commented that, establishing good contact by curriculum designers with teachers training institutions is an important task to secure the would be teachers effectiveness in curriculum implementation. According to the authors, cited above in addition to the pre-service training, refresher courses of different type would help even the most highly qualified teacher to become aware of their unforeseen shortcomings.

It also provides opportunity to share and extend experiences among teachers (Lewy (1977) Caillods and Pastelthwaite (1989) Ornstein and Hunkins, 1998).

So a failure to arrange and execute such program for teachers would likely affect their effectiveness in curriculum implementation.

When we see the Ethiopian context from these perspectives, it is argued that teachers are not well prepared particularly the primary school teachers. This is evident from the words of Abaye Tsehaye in IER (1999:1). In Ethiopia poor or ill preparation of teachers as it was in the past have some undesirable effect on the delivery system of education. For him all available evidence indicates that among many teachers in Ethiopia, the critical determinants of effective teaching, namely knowledge of the subject matter, pedagogical skills and motivation are lacking. He related the problem to inability of teacher training system to respond to the difficult task of training teachers to handle an increasingly complex process of education in the context of limited and competing resources. Derebssa in IER (2002) is of similar view.

From this premise, it follows that teachers are likely to fail to carry out the task expected of them effectively in the process of realization of the syllabus. Yet things are getting improved as some new approaches to teacher training approach such as practicum is being introduced.

In addition to ability and competence, equally important is the teachers attitude towards the teaching learning as one of the factors in the implementation process.

Collahan (1998:2) considers the teacher attitude as a very important aspect in the leaching process and suggested that teachers' attitude towards the subject is one of the commonly studied characteristics. Similarly, according to Noel (1996:117), Baker (1974:566), students with teachers' positive attitude towards teaching and the curriculum are found to be high-level achievers in learning.

So in this context, teachers' attitude or devotion to their duties is a principal issue for effective performance.

It is also worth noting that, the level of competence and devotion of teachers must lead to desirable students behavioral change through meaningful learning. Most educators and programs, in this regard recommend discovery (problem solving) approach for student learning.

For example MCNeil (1990), Collahan (1998:238), Noel (1996:228) and TGE (1994:7) all emphasize the importance of problem solving in the educative processes. In these authors, views problem-solving approach facilitates the process of organizing the curriculum to fit the pupils level of intellectual development. Besides the students will be made to search out information, organize, generalize and draw conclusion by their own which is the end result of effective teaching.

The essential element in discovery learning is pupils draw conclusion and generalization or they apply knowledge acquired to new situation.

However, it seems even now a days in schools, modern teaching techniques such as problem solving are little or non-existent at practice. In this regard MCNeil (1990) commented that student lack operative knowledge that is deficiency in understanding of how the facts are known and the capacity to apply this knowledge in new situation.

This being so, the efficiency of teachers is crucial to the success of education; the teacher has to keep up with the knowledge's explosion and as the curriculum gets more and more crowded with new themes such as environmental education, improvement in new and modern teaching techniques must be developed and applied.

2.3.4. Lack of Instructional Facilities

The success of curriculum implementation requires effective inputs. That is, instructional facilities. Instructional materials thus are critical ingredient in learning, and the intended curriculum cannot be easily implemented without them.

Such facilities may include equipments, curricular materials, audio visual and audiovisual materials, classroom, furniture and the like. Dale E(1969 100-120), Lock et al (1991:5-7).

The availability and use of these instructional facilities, as asserted by many, correlate with positive student gains and effective curriculum implementation. To this end according to Dale (1969) and Jackman, (1997:28-350) instructional materials (particularly learning aids) by involving hands on experiences with variety of materials stimulate interest in learning. Similarly, for Lock et al (1991) instructional materials provide information, organize the scope and sequence of the information, present and provide opportunities for students to use what they have learned and learning occurs more easily when facilities and teaching material are routinely provided Some help teachers to communicate knowledge others also enable students to practice what has been taught.

It is clear from this that, in the process of instruction to maintain the balance between concrete learning (doing) and abstract learning (thinking) uses of multimedia is advantageous.

Evidence shows that scarcity of instructional materials is a common problem of developing countries. This in term may have a direct influence on the proper functioning of the teaching learning process.

In this connection Lock et al (1991:39) remarked that students of developing countries are likely to attend a shelter less school or one that is poorly constructed and equipped. The learning environment in developing countries typically has few resources, with crowded classes and chronically under nourished children.

Poor environment and the resulting shortage of instructional facilities makes the job of educating children more difficult in developing countries than it is in developed countries.

Among instructional facilities curricular materials especially textbook, is the important one. The words of Lock (1991) witnesses this when he says textbook as delivers curriculum, it is the

single most important thing in structural material, --- nothing has ever replaced the printed word as the element in the educational process. Consequently text books are central to schooling at all levels. Of course other things being equal, the use and availability of other curricular materials, namely, syllabus and teachers guide are equally important in the facilitation of effective implementation.

Studies show that the availability and uses of text book enhance student learning and their achievement. For example, research conducted by lock (1991:49) revealed that Nicaraguan students in classes randomly assigned to receive text books scored significantly higher (about one third of standard deviation) on a test of mathematics achievement than student in classes without textbook.

Some educators comment that availability and use of instructional materials in developing countries have not been widely documented but the consensus is that primary students either lack textbooks and other instructional materials entirely or share them extensively with others. Lack et al (1991:52) ICDR (2002:16)

In sum surveys conducted in different developing countries, indicated that teachers do not have the necessary teaching aids at their disposal.

For instance, Caillods and Postlethwait (1989:172-173) remarked that in a study conducted in Zimbabwe, there were ten primary school classrooms without black board. A similar study indicated that 80% of the students of Dhamar in Yemen, 95% in Bilene district of Mozambique 45% in Cameroon have to sit on the floor. Paxman (1989) Heynman et al (1984) Armitage et al (1986) in lock et al (1991:52-54) have also reported similar observations.

In the same vain, Wadi (1983:88) in the study of universal primary curriculum implementation in Tanzania, Bizunesh (1983:56-57) in an evaluation study of kindergarten curriculum implementation in Addis Ababa; Mekasha (1991:69-72) in the study of implementation of the primary school Home Economic syllabus in Keffa and Illubabor have all reported that the full and effective implementation of the curriculum studied were hampered by shortage and lack of instructional facilities.

Thus as part of developing countries Ethiopia also shares this problem, which is evident from the following assertion in teaching primary school subjects in accordance with the specification

of the curriculum, there is a serious shortage of instructional materials (MOE, 1986:45, Dereje in IER 2002:8 -9, Derebsa in IER 2002: 80-83, ICDR, 2002:16-17).

Therefore as evidence and research results cited so far revealed, the implementation of a curriculum can be hindered by the shortage of the necessary instructional facilities. In this case, in addition to other instructional materials particularly for the learning activity of young children, the availability and use of concrete learning aids such as real objects, models, charts, diagrams etc seem to have paramount importance.

CHAPTER THREE

Research Design and Methods

3.1 Method

The study is designed to address the evaluation of implementation of environmental science syllabus in primary schools of. Ilubabor zone

Thus, a descriptive survey method was employed to gather pertinent data with regard to the issue under investigation.

3.2 Data Sources

To serve the purpose of the study teachers, principals, department heads and school pedagogical center coordinators of the lower primary school were used as data sources.

Furthermore, Wereda school supervisors and some curriculum experts of the Region were consulted for information.

3.3 Sample Population and Sampling Techniques

The universe of the study includes government primary schools in Illubabor zone. At present the Zone comprises 13 Weredas with about 370 primary schools and over 160,000 students and 2500 teachers at this level (zonal Education Desk report 1995). Of the schools cited above, nine were selected based on purposive sampling method. The investigator decided to employ purposive sampling (for the selection of schools) due to the following reasons.

- The schools are not uniformly and evenly distributed in the zone, consequently the investigator is interested to include the typical as well as peripheral schools and reduce urban biases.
- For convenience and to deal with in-depth and concentrate resource on these schools.

In this regard Babbie (1973:106) Says that some times the researcher can select his samples on the basis of his own knowledge of the population, its elements and nature of his research aims.

Then from nine primary schools mentioned earlier 4 teachers, from each were included in the study. Similarly about 706 students were included by randomly selecting 20 pupils from each grade level (i.e. 1-4) and took tests.

Finally directors, department heads, school pedagogical center coordinators, Wereda supervisors of the selected schools and curriculum experts from the region have been consulted as sample informants.

Lastly it is worth noting that since the lower primary education emphasizes the local physical and social environment, familiarity of the investigator to the region underlies the selection of the zone as the area of study.

3.4 Instruments and Procedures of Data Collection

In this study, four types of data collecting tools were employed. These include questionnaire, classroom observation, achievement test and interview. Of these, questionnaire and achievement test are the major ones to be triangulated by observation and interview

i) Questionnaire:- The questionnaire prepared for teachers by the investigator has four main parts.

The first part was prepared in the form of attitude scale to get information about the teacher's agreement or disagreement with the specification of the syllabus. (applying Likert scale). This section was prepared based on the information received from two primary schools, Bechera and socho) in Ilubabor with the help of questions designed in advance. Further more, the instructional procedures particularly pertinent to teachers activities (in providing opportunity for student learning) proposed in the syllabus and teacher's guide were assessed to get useful statements for measuring the attitude of teachers towards the specification of the syllabus.

The second part of the questionnaire was prepared to collect data about the existence of conducive teaching- learning condition and favourable opportunity for the implementation of

the syllabus. The basis for this section also is the information gathered from schools syllabus, teacher's guide and literature.

Then the third section of the teacher's questionnaire was aimed at gathering data related to the extent of applying the procedures particularly teaching learning methods and materials suggested in the curricular materials under study.

Lastly, the items in the fourth part were prepared to get information about the major factors which influenced the implementation of the syllabus. In this case a set of possible factors were randomly listed and respondents were asked to rank these factors according to their priority of influence

Likewise different sets of questionnaire were prepared for school officials namely principals department heads, and school pedagogical center coordinators to supplement the teachers' questionnaire. The ground for the preparation of these parts was similar to that of the preceding items.

The draft questionnaire was first administered to eight environmental science teachers of two primary schools selected for the try out (Bechera and Dabena Daru) in Bedele-Dabo Wereda. The questionnaire was tested for clarity of question, directions it contains and for the information that it can draw from the teachers. Thus during the field out trial it was found that two teachers returned the questionnaire without responding to the open ended part. However during the discussion held with the teachers involved in the try out study, no significant reason was given by those who did not respond.

In deed, very few teachers suggested that it would have been convenient to respond if the questions had alternative choices. Based on this suggestion the open ended part of the questionnaire was modified

It was after this try out that, the questionnaire was administered to the actual respondents directly by the investigator.

ii) Observation check list:- The observation checklist developed, has two parts. The first part was designed to analyze the extent to which teachers use various teaching methods, teaching materials and related techniques in providing opportunities to their students in mastering the objective intended both by the syllabus and teachers' guide during the instructional process.

The checklist was adapted from Yolye (1977:201) but with considerable modification to suit the purpose of the study.

The observation checklist has column for time, teacher activity and all suggested teaching methods and materials (see Appendix- B)

In each observation the type of teaching methods and materials used were indicated using the mark (✓) in the respective boxes. The time consumed in pursuing each activity was registered in the space provided.

Teachers' and students' activities during the teaching- learning process were also registered by the use of tick ("✓ ") corresponding the activities (methods and materials indicated)

The classroom observation checklist as indicated above is highly structured. But to make it flexible and be used for collecting relevant data spaces were provided at the end of the instruments. Thus recording the events as they occur helped to collect appropriate data. And then on the basis of their frequency of occurrence assigned to frequently, rarely and not at all.

The second observation checklist was designed to check the availability of teaching materials in the school pedagogical center (SPC). The check list contains the groups of teaching materials. The availability of these materials was cheeked both by asking teachers and SPC coordinators and visiting the SPC. In this case, the available materials were counted and their amount was registered

Besides, teachers' use of available teaching materials was registered based on their extent of use (frequently, rarely, not at all). The criteria used for determining the extent of use were the following:

If teachers used more than half of the available materials and applied repeatedly it was considered as they used frequently. If teachers used half or less of the available materials and observed only once while using it was considered as they used rarely and. If they did not use any, it was taken as not at all. This was supplemented by general observation and some clearing questions.

Instrument was also given to professionals from education faculty for comments. Hence it was found appropriate and no problem was observed regarding this instrument.

Then they were used during classroom observation to register the activities and instructional materials under takings as they occur.

iii) Achievement tests

- Four types of achievements tests were prepared for grades 1-4 in Afan Oromo.
- The investigator first examined the curricular materials of environmental science of the levels under study and a document of minimum learning competency prepared by ICDR (1995 E.C). Besides he consulted experts from ICDR as well as primary school teachers and gathered information about the coverage of the portion

Then, in developing the test item the investigator first prepared a table of specification for each grade level, considering the portions to be covered during the first semester (see Appendix G).

Therefore, under the four major goals of minimum learning competency (i.e. attainment of knowledge skill and attitude related to man and his life, his physical environment, social environment and ethical values) Eleven of the environmental instructional objectives for grade one, Twelve for grade two, Ten for grade three and Twelve for grade four were found to be covered during the first semester. (by considering the category of objectives for the course).

As mentioned earlier, based on table of specification, eighteen items for grade one, twenty items for grade two, twenty-one items for grade three and twenty-five items for grade four multiple - choice test items (for all grade levels) were prepared.

On the basis of analysis made from the syllabus and teachers' guide, to examine the instructional objectives, in terms of bloom's taxonomy of educational objectives. Except a few the instructional objectives of 1-4 grade environmental science were dominated by cognitive domain especially lower categories from knowledge to application. Consequently test items were prepared in order to measure the students level of attainment of objectives as a result of learning the subject understudy.

Taba (1962:313), indicates that the nature of a test instrument has to depend on the objectives to be evaluated. The test items after being prepared were given to ICDR social science and

natural science experts for comments and based on their comments three items from grade one, one item each from grades two, three and four have been revised and improved.

Then, the test items were pre-tested in the two schools selected for the try out with 160 students.

After this each item was analyzed to check its discrimination power and difficulty level. The reliability index was also calculated with the help of Kuder-Richardson Formula 21.

The results of the try out and item analysis were the following.

Out of 18 items prepared for grade one two items were completely discarded owing to their defect. Another three items were modified both in stem and alternative parts. The difficultly level and the reliability index of the items were found to be 49.4% and +0.69 respectively. Thus, as a criterion referenced test, it can be used for the purpose intended.

Out of 20 items prepared for grade two, 2 revised and improved both in stem and alternative parts. Its reliability index and average difficulty level appeared to be +0.7 and 66% which are average and optimum respectively to serve the purpose. On the other hand, out of the 21 items prepared for grade three four items were seriously revised and improved in both parts, stem and destructive. The reliability coefficient and difficult level were found to be +0.72 and 68% respectively.

Finally regarding items designed for grade four, out of 25 items one was totally altered due to its problem and two were improved in their alternatives. Like wise the reliability index and average difficultly level for this grade were computed to be +0.85 and 73% respectively. The reliability index was found to be very good level. Though the difficulty level seemed a bit difficult, the item could serve the intended purpose.

Lastly, for amendment the items were given to a graduate student of educational psychology.

Then they were administered directly to the sample student directly by the investigator and his assistants.

Here, it worth noting that for grade one students the test was administered orally and time free for they are less able to read and write.

Similarly grade two students were assisted by reading the question and the students completed test by writing their response. Lastly the test item has been translated in to English for the sake of convenience

IV. Interview: To supplement the information gathered by other instruments as well as for clearing of some unforeseen data, unstructured questions were prepared for a face to face communication to be made with Wereda supervisors. But for affirmation it was also held with some selected teachers directors and SPC coordinators.

3.5 Analysis of the Data

The method of data analysis was determined on the basis of basic question formulated. Since the basic questions raised were five, the following methods were employed. For the first basic question (related to attitude towards syllabus specification) Likert scale (5,4,3,2,1) measurement of agreement disagreement was used associating responses to the scales.

Then an individual's score was determined by summing the point values given for each statement by the respondents. After that scores were categorized into high and low using a median test. Median seemed appropriate to determine high and low for it is greater than mean of the observed attitude score. Then, chi- square (X^2) test of association was applied. First the teacher respondents were grouped in to four on the basis of grade levels they taught, and the attitude score of each teacher was listed under the group they belongs. Then the score of the four groups were combined in to a single distribution and the grand median was computed. This was followed by the comparison of each groups individual score with the grand median.

From this, it follows that, if a particular score is above the grand median, the observation is assigned to the above median category and vice versa.

Thereafter the data were arranged into two by four contingency table , followed by the computation of the chi-square (X^2) statistical test to show whether there is a significant difference between the above and below median proportion in the four groups with alpha (α) 0.05 level

Here scores falling above the median would indicate better or high attitude towards the syllabus demands.

Furthermore for cross account and to see whether there is significance variation in rural and urban setting of the same measurement t-test also was applied

In this case the mean score, the standard deviation, the median, the maximum and minimum score of both grade levels and urban and rural setting have been considered to arrive at decision of level of significance whether there is difference or not at alpha (α) 0.05 level. For computation SPSS out put (of soft ware programme) has been used

The second basic question refers to the observation data obtained. The data were collected and combined on the basis of the item of observation rating form. The observation rating form of the SPC has also been considered in the process of assembling these data. The three point scales, frequently, rarely and not at all were employed, in this session to indicate frequency occurrence of instructional considerations (guidelines and concepts) as performed by teachers. Based on the value received during the observation sessions, the frequency counts were converted in to percent to make the figure easily understandable.

Concerning the third basic question, in assessing certain situation of the school environment including teacher related issues the data obtained were summarized using simple frequency counts and percentages.

Regarding the forth basic question the test results for each grade level were scored to be compared to the recommendation of ICDR'S minimum learning competency (MLC) set for the level by grade. According to the document and also affirmed by experts from the institute, students from grades 1-4 at least should meet 50% of the recommended areas of competency for each grade level. (ICDR, 2003).

Thus since the goal of area of competency and the instructional objectives of the grades (1-4) comply, the cut off score of minimum mastery level was decided to be 50% of the item given/ designed/ to (of) each grade.

Then above and below MML has been determined. Like that of teachers attitude measurement, to assess whether there is significant difference in student test result between the above and below minimum mastery level by grade chi-square statistical test has been applied (at α 0.05 level.

Within the same vain to see the existence or not of significant difference between urban and rural students in level of attainment of the minimum mastery level t- test statistical procedure was employed.

The basis for the setting the cut off score to be compared with the mean test score of the student is explained in Appendix N (see the appendices section).

Lastly the data obtained pertaining to the fifth basic question was assembled using a rank-order. First the mean rank of each factor was computed by multiplying the frequencies respondents with the rank value they gave to it and summing the product and dividing it by the total number of respondents, then the resultant (obtained) rank was assigned to each of the mean rank, and the lowest mean rank having the first rank, the next lowest the second rank. . . etc, while the highest mean rank got the last rank.

Therefore the upper high ranks (1^{st}, 2^{nd}, 3^{rd} . . .) could indicate the major factors which hinder the effective implementation of the syllabus.

CHAPTER FOUR

Presentation, Analysis and Interpretation of Data

In the forthcoming pages, the data collected through questionnaire, classroom observation, achievement tests and interview are presented via tables and thereby interpreted to give answer for the basic question of the study.

4.1 Presentation and Analysis of the Results

4.1.1 Teachers' Attitudes towards Instructional Consideration in the Syllabus

Table 1 The number of teachers who scored above and below the grand median in the attitude scales by grade level.

Grade level	Respondent groups above or below median score		
	Above median (High)	Below median (Low)	Total
One	4 (40%)	6(60%)	10 (100%)
Two	4 (50%)	4 (50%)	8 (100%)
Three	4 (57.14%)	3 (42.86%)	7 (100%)
Four	5 (55.56%)	4 (44.44%)	9 (100%)
Total	17	17	34
$X^2 = 0.6539$			

The median computed for thirty four teachers is found to be 71.5 It is apparent from the table above that teachers who scored above the grand median and those who received below are identified on the basis of grade level they taught ---

Then, depending on the data revealed in table above, a chi-square (X^2) median test statistics was computed (Appendix -M). The finding shows that, as the computed chi square value (X^2=0.6539) is less than the critical chi-square value (X^2=7.815) there is no statistical significant difference in the level of agreement to the implementation requirements of the environmental science syllabus among the four groups of teacher teaching 1-4 grades

towards their respective perspectives at P<0.05 level of significance. That is , all appear to have similar attitude in this case.

However as can be deduced from the table, most of the respondents (57,14% and 55.56% of grade 3 and 4 respectively) fall above the median while the proportion remain minimal for grade one and two. That is 50% of grade two and 60% of grade one respondents scored below median.

Thus according to this data relatively more number of teacher of grade one and two exhibited a low level (below median) of agreement to the implementation demands of the syllabus than that of grade three and four. Moreover some of the teacher respondents and school principals interviewed indicated that though teaching environmental science demands special style of teaching, most of the teachers are not well informed (oriented) about method of teaching integrated science, particularly those with longer services. The background information (personal profile) of the respondents also strengthens this statement. That is about 52.9% of the respondents are 40 years or over, and 58.8% of the same group are with services greater than 20 years.

To see the variation of attitude of teachers to wards their respective syllabus demands in terms of location, t-test comparison has been applied

Hence, the following tables 2 and 3 represent the t-test comparison of attitude score of teachers by setting and grade level

Table 2 t- test comparison of attitude score of teacher respondents by setting

variable	group	N	Mean	SD	t	df	Sig. (2 tailed)	Decision	Median	Minimum	Maximum
Location attitude score	urban	20	91.0625	6.0807	-	-	-	-	92.5000	75.000	98.75
	Rural	14	85.0000	7.3380	-	-	-	-	85.6250	71.25	98.75
	Total	34	88.5662	7.1915	2.627	32	0.013	Sign	89.3750	71.25	98.75

At P< α 0.05 level of significance

It is apparent from the table that, the comparison of attitude score of teachers towards their respective curriculum requirement by setting shows variation. This can be noticed by

considering the mean and median score of urban and rural groups. As can be seen from the table the mean score of attitude for the urban and rural teachers is 91.0625 and 85.0000 respectively. In the same vain the median score of the same group is found to be 92.5000 and 85.6250 in that order. Thus both result denote the existence of difference in the attitude score between the rural and urban teachers.

To decide whether the observed variation or difference between the two setting is statistically significant, comparing with the help of t- test is helpful.

Accordingly the calculated t-value (2.627). is greater than the critical t- value (2.0303) at d.f 32. In other Words the computed alpha (α) level is 0.013 which is by for less than α= 0.05 level of significance selected to decide the level of significance for this study. As a result one can conclude that there is a significant difference in attitude between urban and rural teachers towards the curriculum demands of their respective grade environmental science syllabus. More specifically urban teachers have manifested relatively high interest (attitude) towards their syllabus demands with means score of 91.0625%, median of 92.5% and minimum score of 75% as Compared to their rural counter part having mean attitude score of 85%, median of 85.625% and minimum score of 71.25% in that order.

This being the case from both rural and urban groups no teacher has received attitude score below the average; (50%) score. This can be assured by the fact that, the minimum score for both groups is 71.25.

In general, this entails that all the teachers of urban and rural teaching at different grade levels at least have a good view toward the syllabus understudy at varying degree.

Table 3. t- test Comparison of Attitude Score by Grade Level

Grade	variable	Group	N	Mean	SD	t	df	2 tailed sign	Decision	Median	Minimum	Maximum
1	Attitude score and Location	Urban	6	90.2083	4.4312	-	-	-		91.2500	85.00	96.25
		Rural	4	86.5625	1.5729	-	-	-		86.2500	85.00	96.25
		Total	10	88.7500	3.9087	1.555	8	0.159	Not sign	87.5000	85.00	96.25
2		Urban	5	92.250	5.4054	-	-	-		93.7500	85.00	98.75
		Rural	3	85.0000	12.0546	-	-	-		80.0000	76.25	98.75
		Total	8	89.5313	8.5026	1.205	6	0.274	Not sign	91.2500	76.25	98.75
3		Urban	4	95.9375	3.2874					96.2500	92.50	98.75
		Rural	3	77.9167	6.8845					77.5000	71.25	985.00
		Total	7	88.2143	10.6765	4.678	5	0.005	Sign.	92.5000	71.25	98.75
4		Urban	5	87.0000	8.1777					90.0000	75.00	95.00
		Rural	4	88.7500	5.4962					88.7500	82.50	95.00
		Total	9	87.7778	6.7540	-365	7	0.726	Not sign	90.0000	75.00	95.00

At, $P<\alpha$, 0.05 level

On the other hand it is imperative from the table above that regarding attitude score of teachers toward the syllabus specification, there is no great variation observed by grade levels except a few. For instance the mean score of attitude for grade 1,2,3 and 4 are 88.75, 89.5313, 88.2143 and 87, 7778 respectively. Which tend be equal.

Similarly with in the grade level itself between urban and rural the difference in attitude is not significant, In other word, the teachers of urban and rural of inter grade levels have similar attitude towards their respective curriculum requirements.

However the difference is significantly noticeable in grade three. That is, the mean score of attitude for urban teacher is 95.9375% while that of the rural teacher of the same level is

77.9167% . This difference by t-test is statistically significant at α 0.05 level, because value calculated (t=4.678) is greater than the critical t- value (t= 2.571).

4.1.2 Teachers Classroom Instructional Performance

The forthcoming table depicts the teachers' classroom instructional performance.

(See table 4)

Table 4 Teachers Classroom Instructional Performance Classroom Observation Result by Grade Level

		(Extent of using instructional methods and materials in classrooms)																														
Instructional considerations		Grade one (total 12)						Grade Two (Total 8)						Grade three (total 8)						Grade four (total 8)						Total (1-4)36						
		Frequently		Rarely		Not at all		Frequent		Rarely		Not at all		Frequently		Rarely		Not at all		Frequently		rarely		not at all		Frequently		rarely		not at all		Total
1	Method and material	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	
1.1	Lecture	7	58.3	5	41.7	-	-	4	50	4	50	-	-	5	62.5	3	37.5	-	-	4	50	4	50	-	-	20	55.6	16	44.4	-	-	36
1.2	Note giving	6	50	6	50	-	-	5	62.5	3	37.5	-	-	4	50	4	50	-	-	2	25	4	50	1	12.5	17	47.2	17	47.2	1	2.7	36
1.3	Question and answer	8	66.7	4	33.3	-	-	8	100	-	-	-	-	6	75	2	25	-	-	7	87.5	1	12.5	-	-	29	80.6	7	19.4	-	-	36
1.4	Discussion	3	25	9	75	-	-	3	37.5	5	62.5			3	37.5	3	37.5	2	25	4	50	3	37.5	1	12.5	13	36.1	20	55.6	3	8.3	36
1.5	Project	-	-	-	-	12	100	--	-	1	125	7	87.5	-	-	-	-	8	100	-	-	2	25	6	75	-	-	3	8.3	33	91.7	36
1.6	Group work	-	-	3	25	9	75	-	-	2	25	6	75	-	-	4	50	4	50	-	-	3	37.5	5	62.5	-	-	12	33.3	24	66.7	36
1.7	Demonstration	3	25	5	41.7	4	33.3	-	-	4	50	4	50	2	25	3	37.5	3	37.5	2	25	2	25	4	50	7	19.4	14	38.9	15	41.7	36
1.8	Invited guest	-	-	-	-	12	100	-	-	-	-	8	100	-	-	-	-	8	100	-	-	-	-	8	100	-	-	-	-	36	100	36
1.9	Debate	-	-	-	-	12	100	-	-	-	-	8	100	-	-	-	-	8	100	-	-	-	-	8	100	-	-	-	-	36	100	36
1.10	Drama	-	-	-	-	12	00	-	-	-	-	8	100	-	-	-	-	8	100	-	-	-	-	8	100	-	-	-	-	36	100	36
1.11	Song/ play	3	25	2	16.7	7	58.3	-	-	3	37.5	5	62.5	2	25	2	25	4	50	-	-	1	12.5	7	87.5	5	13.9	8	22.2	23	63.9	36
1.12	Role playing			4	33.3	8	66.7	-	-	-	-	8	100	-	-	3	375	5	62.5	1	12.5	-	-	7	87.5	-	-	7	19.4	28	77.8	36
1.13	Field trip	-	-	-	-	12	100	-	-	-	-	8	12	-	-	-	-	8	100	-	-	-	-	8	100	-	-	-	-	36	100	36
1.14	Assignment related to student experience	-	-	3	25	9	75	-	-	4	50	4	50	3	37.5	4	50	1	12.5	3	37.5	3	37.5	2	25	6	16.7	14	38.9	16	44.4	36
1.15	Pictures and diagrams	-	-	7	58.3	5	41.7	1	12.5	5	62.5	2	25	-	-	4	50	4	50	-	-	4	50	4	50	1	2.8	20	55.6	15	41.7	36
1.16	Models	-	-	4	33.3	8	66.7	-	-	3	37.5	4	50	-	-	3	37.5	5	62.5	1	12.5	3	37.5	4	50	1	2.8	13	36.1	21	58.3	36
1.17	Real object	-	-	3	25	9	75	-	-	2	25	6	75	-	-	2	25	6	75	-		3	37.5	5	62.5	-	-	10	27.8	26	72.2	36

It is apparent from table 4 and appendix O that teachers' classroom instructional performance related data is presented by grade level. The table comprises data on basic methodologies and learning aids suggested in the syllabus or teachers guide of environmental science

For cross account the responses of the sample teachers regarding their effort in realizing the instructional strategies suggested is also presented along with the classroom observation result.

As can be deduced from table 4, out of the class sessions observed in grade one, in majority of them the dominant instructional procedures followed was question and answer, explanation and then short note giving.

In 66.7% of the classroom question and answer or inquiry style of teaching and encouraging students involvement activity was frequently observed

In 58.3% and 50% of the classrooms the frequent activities observed were explanation of teachers and giving note on chalkboard respectively. In the first case teacher explanation dominates with little student involvement during answering rarely raised question. In this way the teachers were observed treating student as a whole, no instance of checking student attentiveness seen during those sessions.

Of the teaching techniques suggested in the syllabus discussion, demonstration, play/ song, group work and the like seem to be given less regard. Because for example discussion, demonstration and play or song were applied in similar ways rarely in 25% of the class room observed. And in about 35% of the classrooms totally the lessons were devoid of playful. This being the case, to maintain students attentiveness and motivation particularly those of the primary level, varying the approach and making the lesson joyful or play full is desirable.

Further more among methods suggested in the syllabus some methods are not used at all. These include. Field trip, invited guest, debating and dramatizing.

The reason given not to use such strategies and using limited ones, by some teacher are unavailability (e.g. guest) time consuming (e.g. field trip), Class size shortage of resources and due to the nature of the topics treated. Regarding use of instructional materials in grade one the classroom observation result reveals that , in 58.3% and 33.3% of the classes teachers were observed supporting their lessons with pictures/ or diagram and models rarely respectively.

Besides only in 25% of the classes real objects were used to enrich the learning opportunities of students

Except some differences, the teachers response to the extent of realizing instructional procedures suggested confirm to the preceding results.

The similarity lies in the frequently used teaching methodologies and teaching materials. For teachers respondents question and answer, lecture, discussion (methods) and picture charts (materials) are important ones.

However regarding the teaching methods and materials rarely used and those not used the data indicate difference (see table 4 and appendix O).

The teacher respondents indicated that the teaching methods and materials such as Group work, Demonstration, fields, trip discussion (from methods) and samples, photographs etc (from teaching materials) as being frequently used. But this was not observed during classroom observation sessions, denoting that the action of the teachers and their report do not match.

Similarly it was clear that was invited guest approach has not been used by any one of the grade level during the semester under consideration as cross accounted by some. But of the respondents of grade one about, (44.4%) reported that it is rarely used. This may reflect the attempt made by some to obscure their weakness.

Thus in sum in grade one, regarding maximizing student participation, relating lesson to student experience and environment and making up the lesson concrete better efforts were seen in forty- four percent of the class sessions observed. By the same token, in another equal percent of the classrooms, these approaches and procedures were found to be rare. But in other class sessions, (nineteen percent) the lessons were presented theoretically without associating with the student's immediate environment.

Table 4 again reveals, information pertinent to teachers classroom performance. That is classroom observation result. Accordingly from the table, it is imperative that in grade two like that of grade one, it was observed that in 100%, 62.5%, 50% and 37.5% of the class session question and answer, note giving lecturing and discussion methods respectively were observed to be used frequently. In these classes teachers were seen striving to enrich lesson

by varying methods, encouraging student participation in the lesson activities using probing question and expecting answers related to student experience. This was observed in 50% of the classes in general.

These classes were also seen while using teaching materials produced from the resources available such as pictures an diagrams in 62.5% models in 37.5% and real objects in 25% of the classes, but applied rarely.

In the middle there are classes where methods of teaching and teaching materials were not used appropriately. In 35% of the classes the teachers were limited only to explanation and writing notes, while the students role was restricted to listening and writing. Here no attempt was made to relate to students experience or environment through examples.

Similar to grade one, of many teaching methods and teaching materials suggested in environmental science syllabus, in grade two as well, some are either applied very rarely or left out all together. For instance field trip, inviting guest, project etc were not realized as noticed during the observation

However teachers response regarding the classroom performance referring to methods and materials usage appear different from what was observed as it was indicated in the preceding discussion of grade one cases

Thus in this grade, in some of the lessons observed there is a failure to use varied methods and local source of information as desired

Regarding third and forth grade teachers instructional performance as shown in table 4 they show similar trend. In both grades, the dominant instructional methods observed were, question and answer in 75% and 87.5% of the classes, teachers explanation in 50% each, discussion in 37.5% and 50% respectively.

This part of the classes were found to be better in classroom performance, though note giving and lecture method were also combined as noticed (observed) in the classrooms. Note giving and teachers' lecture or explanation when extended restricts student participation and discourage motivation and creativity (consequently it is undesirable).

In brief in about forty seven percent (47%) of the classroom cited above the teachers were observed while striving to vary students activities from listening to speaking writing to exercising. They were also seen to motivate through inclusion of some playful activities and citing examples from students immediate environment (examples).

However regarding use of instructional materials pictures, diagrams and models were found to be used in both grade classes rarely. On the other hand in the majority of the teaching materials and teaching methods either applied rarely or remained un used as mention in the previous sections

For instance demonstration, group work, role playing etc from methods, and samples maps etc from teaching materials are rarely used. Like wise others such as field trip debate invited gust (methods) and photograph, experimental objects were found to be devoid of the lessons. The basis for this statement (in addiction to observation) is the interview held with some teachers, department heads and directors.

Lastly in about 29% of the classes the methods and materials used fails to enhance student involvement. The teachers appears to be reluctant to assist in guiding, varying methods to maintain students motivation and attention

Here the classes were dominated by teacher's activities and lacks teaching materials pertinent to the topic. Moreover the lessons were presented conceptually without simplifying and exemplifying with student's environment in similar ways both for grade three and four. Of course the case for grade four seems severe

Finally as can be seen from table 4 and appendix O and also conformed by directors interview and SPC observation and interview result, the dominant instructional methods observed in classrooms were

1st Question and answer frequently used in 80.6% of all classes

2nd lecture methods used in 55.6% of the classes observed

3rd Note giving, frequently used in 47.2% of the class sessions observed

4th Discussion, frequently used in 36.1% of the class sessions observed

Others such as project, play/ song group work, demonstration, role playing etc. occupy the intermediate position and rarely used, where as field trip, invited guest, debate etc are not used at all. Regarding instructional materials pictures, diagrams and models were found be the most rarely used ones

Here in supporting lessons with learning aids in general (for both 1-4 grades) there is failure. The information received from school principals and SPC coordinators reveals similar results. For instance regarding the teaching techniques most frequently used in their respective schools directors indicated,

1st, Question and answer, 88.9% of them

2nd Discussion, 66.7% of them

3rd note giving, 55.6% of them as important in that order

In similar ways they rated pictures charts and models as relatively most utilized instructional materials in lessons

4.1.3. Instructional Resources in the Schools

The following tables represent the condition and picture of instructional resources in the schools pertinent to the implementation of the environmental science syllabus. Instructional resource in this contexts may mean those resource like classroom furniture teaching materials learning aids, the time needed and the support provided by educational personnel's, etc.

Table 5. Availability of furniture at classrooms by grade

Furniture	Teachers respondents																											
	Grade one N-10						Grade two N-8						Grade three N-7						Grade four N-9						Total N - 34			
	Adequate		Inadequate		Non exist		Adequate		Inadequate		Non exist		Adequate		Inadequate		Non exist		Adequate		Inadequate		Non exist		Adequate		Inadequate		Non exist	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Bench or desk for student	1	10	7	70	2	20	1	12.5	7	87.5	-	-	2	28.6	5	71.4	-	-	3	33.3	6	66.7	-	-	7	20.6	25	73.5	2	5.9
Chair / table for teachers	1	10	9	90	-	-	1	12.5	4	50	-	-	1	14.3	6	85.7	-	-	3	33.3	6	66.7	-	-	6	17.6	25	73.5	-	-
Blackboard	6	10	4	40	-	-	4	50	4	50	-	-	6	85.7	1	14.3	-	-	3	55.6	4	44.4	-	-	21	61.8	13	38.2	-	-

Table 5 Shows the internal conditions of schools regarding the availability of basic classroom furniture. As can be seen from this table, inadequacy of furniture is a common problem in all the four grade levels. In this connection about 73.5% of the respondents affirmed that bench or desk for students and chair and/or tables for teachers are inadequate at all grade levels (1 – 4).

By the same token, some 5.9% of the respondents indicated that their schools are provided with no bench or desk. It is worth noting here that this information was received from respondents of grade one. The reason raised by the respondent to rate non exist for these facilities was, the student seat is below standard which is made simply from the local raw materials in traditional ways. Where as for teachers usage no chair or table at all in the schools of these respondents as they revealed.

According to the data from table 5, still there are respondents who rated the availability of bench / desk for students and chair/table for teachers at their respective schools. That is about 17.6% of the respondents assured that the furniture cited above are adequately available at their schools.

Finally, as far as chalkboard is concerned the majority of the respondents noted that chalk board is adequate in their school systems. It is confirmed by about 61.8% of the respondents.

However, yet the remaining 38.2% of the respondent said their schools are not provided with adequate black board. Inadequacy for this group may be expressed as the shortage of the chalk board on one hand, and becoming over utilized and discarded, in convenient etc on the other. But no classroom is without a chalkboard as shown in table 5.

Thus in general, most of the classrooms seem to be ill-equipped with the necessary furniture.

Table 6. Availability of environmental science curricular materials by grade level

Curricular materials by grade		Teacher respondents															
		Level of availability						Ratio: teacher/ student									
		Adequate		Inadequate		Non existent		1:1		1:2		1:3		Other		None	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Grade one N = 10	Syllabus	1	10	3	30	6	60	1	10	-	-	-	-	1	10	7	70
	Teacher's guide	4	40	5	50	1	10	4	40	3	30	1	10	-	-	1	10
	Student text	4	40	6	60	-	-	3	30	5	50	-	-	2	20	-	-
Grade two N = 8	Syllabus	-	-	8	100	-	-	-	-	-	-	-	-	-	-	8	100
	Teacher's guide	4	40	3	37.5	1	12.5	4	50	2	25	1	12.5	-	-	1	12.5
	Student text	2	25	6	75	-	-	1	12.5	4	50	2	25	1	12.5	-	-
Grade three N = 7	Syllabus	-	-	-	-	7	100	-	-	-	-	-	-	-	-	7	100
	Teacher's guide	-	-	-	-	7	100	-	-	-	-	-	-	-	-	7	100
	Student text	5	71.4	2	28.6	-	-	2	28.6	4	57.1	-	-	1	14.3	-	-
Grade four N = 9	Syllabus	-	-	2	22.2	7	77.8	-	-	1	11.1	-	-	1	11.1	7	77.8
	Teacher's guide	2	22.2	2	22.2	5	55.6	1	11.1	1	11.1	-	-	2	22.1	5	55.6
	Student text	2	22.2	7	77.8	-	-	2	22	-	-	4	44.4	3	33.3	-	-
Total (1-4)	Syllabus	1	2.9	13	38.2	20	58.8	1	2.9	1	2.9	-	-	2	5.9	29	85.3
	Teacher's guide	10	29.4	10	29.4	14	41.2	9	26.5	6	17.6	2	5.9	2	5.9	14	41.2
	Student text	13	38.2	21	61.8	-	-	8	23.5	13	38.2	6	17.6	7	20.6	-	-

The general trend of the curricular materials distribution as can be seen from table 6 shows disparity in distribution between grades.

Particularly, according to the data displayed, inadequacy of the syllabus and teacher's Guide is apparent. The severity of shortage appears to increase with grade levels. This can be noticed from the rating of the respondents. For example 60% of grade one respondents indicated in availability of syllabus at their school. Where as 100% of grade three and 77.8% of grade four respondent revealed complete absence (lack) of syllabus at their respective schools.

In general at all grade levels the shortage of syllabus and teacher's guide seems severe. To this regard, of the total respondents, 38.2% and 29.4% affirmed the inadequacy of syllabus and teacher's guide respectively at their schools.

With in the same vain about 58.8% and 41.2% of the respondents also indicated the total absence of syllabus and teacher's guide respectively in their schools.

Regarding the availability of text book the data revealed that the rating of the respondents range between adequate and inadequate. Thus no respondent rated non existent response.

Though the distribution shows disparity among grades, generally textbook is inadequately available at schools. To this end, about 61.8% of the total respondents realized that the textbook in their school is found to be inadequate. But the remaining 38.2% rated that text book is adequately available in their schools.

Concerning the distribution of text student ratio, about 23.5% of the total respondents maintained 1:1. Where as about 38.2% said it is 1:2, and still the other equal percentage indicated the ratio to be 1:3 and over at their respective schools. This was also cross accounted by the information from the documents of some sample schools. And the data generally revealed inadequacy of these.

Table 7. Availability of teaching materials to be used by grade levels

Item	Teacher Respondents									
	Grade 1(10)		Grade 2 (8)		Grade 3 (7)		Grade 4 (9)		Total	
	No	%	No	%	No	%	No	%	No	%
Centrally prepared (by wereda or like line structure) teaching material										
Adequate	2	20	-	-	-	-	-	-	2	5.9
Not availability	1	10	2	25	-	-	7	77.8	10	29.4
Inadequate	7	70	6	75	7	100	2	22.2	22	64.7
Locally per pared (by spc and teachers) learning aids										
Adequate	3	30	1	12.5	-	-	1	11.1	5	14.7
Inadequate	7	70	7	87.5	7	100	7	77.8	28	82.4
None	-	-	-	-	-	-	1	11.1	1	2.9
Total	10	100	8	100	7	100	9	100	34	100

On the other hand regarding centrally prepared (either by MOE regional education Bureau or wereda education office etc) teaching material, the result from table 7 shows that the majority of total respondents rated in availability and inadequacy of them. About 29.4% of the total said such materials are not available at their schools. While other 64.7% of the total indicated inadequacy of the centrally prepared teaching materials.

Centrally prepared teaching materials here may mean such materials as maps, science kits etc. which are important but unaffordable by schools alone. These materials are hardly found at schools, as observed and cross accounted from SPCS. Like wise concerning locally prepared (by SPC and teachers), teaching materials respondents rated differently, which implies the availability and adequacy of these materials differ from school to school. According to the data from table 7, very small proportion of grade one (30%) two (12.5%) and four (11.1%) respondents indicated adequacy of locally produced teaching materials.

The other group of the respondents at all grade level revealed that the locally prepared teaching materials are not adequate at their respective schools. About 77.8% of the total rated that their schools are provided with inadequate locally produced teaching materials. These results comply with observation result of SPC'S. It has been found that (except a few), out of 9 schools surveyed, 4 of them were poorly equipped with learning resources as a whole, having a total learning aids (pertinent to environmental science) of 16,32,37 and 39; as compared to those with 233, 90, 84, 83 and 65 of similar learning aids respectively.

Table 8. The extent of teachers acquaintance with method of teaching integrated curriculum by grade level

Item	Teacher respondents																			
	Grade 1 N = 10				Grade 2 N = 2				Grade 3 N = 7				Grade 4 N = 9				Total			
	Yes		No		Yes		No		Yes		No		Yes		No		Yes		No	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Whether they have training on integrated curriculum and teaching methodologies	2	20	8	80	1	12.5	7	87.5	-	-	7	100	1	11.1	8	88.9	4	11.8	30	88.2

It is imperative from table 8 that the opportunities teaches have, to be familiar with method of teaching integrated curriculum like environmental science is not inviting at all grade levels. To this end only about 11.8% of the total respondents assured that they had attended training (short period workshops) on integrated curriculum teaching. But the remaining 88.2% of the total respondents affirmed that they had no training on methods of teaching integrated curriculum.

This being the case, however, environmental science which is integrated of natural sciences, social sciences, agriculture home science, hand crafts etc requires special method of handling, due to its unique character, consequently training and orientation on methods of teaching this science is indispensable.

Table 9. The degree to which the teacher respondents are satisfied with the following conditions or items.

Descriptions	Teacher respondents																											
	Grade one N=10						Grade Two N=8						Grade Three N=7						Grade four N=9						Total			
	High (abundant)		medium (Some extent)		Low (non exist)		High (abundant)		medium (Some extent)		Low (non exist)		High (abundant)		medium (Some extent)		Low non (exist)		High (abundant)		medium (Some extent)		Low (non exist)		High (abundant)		medium (Some extent)		Low (non exist)	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
The extent of suitability of the curricular materials (syllabus T-guide and text book	-	-	10	100	-	-	-	-	7	78.5	1	12.5	1	14.3	6	85.7	-	-	2	22.2	7	77.8	-	-	3	8.8	30	88.3	1	2.9
Interest towards teaching profession	6	60	3	30	1	10	6	75	2	25	-	-	5	71.4	1	14.3	1	11.1	4	44.4	4	44.4	-	-	21	61.8	10	29.4	2	5.9
The extent of satisfaction performance with evaluation results	1	10	7	70	2	20	2	25	4	50	2	25	5	71.4	2	28.5			3	33.3	6	66.7	-	-	11	32.4	19	55.9	4	11.8
The adequacy of the supports by school administrative bodies	4	40	5	50	1	10	1	12.5	6	75	1	12.5	3	42.9	4	57.1	-	-	1	11.1	6	66.7	2	22.2	9	26.5	21	61.8	4	11.8
The adequacy of the support by supervisors	2	20	5	50	3	30	-	-	4	50	4	50	1	14.3	2	28.5	4	57.2	-	-	4	44.4	5	55.6	3	8.8	15	44.4	16	47.1
The extent to which spc produce and supply learning aids relevant to environ Sc.	1	10	7	70	2	20	2	25	6	75	-	-	2	28.6	4	57.1	1	14.3	1	11.1	5	55.6	3	33.3	6	17.6	22	64.7	6	17.6

Table 9, represents support service provided by different bodies to teachers and teachers' corresponding interest and positions.

The result from the table depicts that the respondents rating to the extent of suitability or relevance of the curricular materials range from high to medium for all grade level. Those rated high degree of suitability of the curricular materials is only limited to grade three (14.3%) and four (22.2%). But the remaining larger number of respondents affirmed that the suitability of the materials is medium. About 88.2% of the total respondents assured this statement.

Regarding teachers interest towards teaching profession, the result indicates a bit variation from grade level to grade level. But in general the larger proportion of the total respondents (61.8%) have exhibit high degree of interest towards teaching profession. Where as about 29.4% and 5.9% of them showed that their interest toward teaching profession is medium and low respectively.

Ones interest towards teaching profession may affect positively or negatively his commitment and effort to teaching performance depending on his position. Similarly concerning the extent of satisfaction with the performance evaluation results, at grade level the result shows variation. For example the larger proportion of respondents 71.4% from grade three showed that higher rate of satisfaction, while about 25% and 20% of grade two and one respondents indicated low level of satisfaction with performance evaluation result.

In sum, the aggregate result from the table depicts that of the total respondent 55.9%, 32.4 and 11.8 rated medium, high and low degree of satisfaction with the efficiency evaluation result respectively that school uses to judge their performance. In one-way or another this has some implication on the effectiveness of implementation of the syllabus.

Curriculum implementation requires a coordinated effort of different people involved in the process. As related to this, the data summarized in table 9 represent the support provided by the school administrative bodies, directors and school pedagogical center coordinators as well as supervisors. As can be observed from the table teachers rated the support they get from school directors from high to low. Greater than half of the total respondents (61.8%) indicated

that the support rendered by the school directors as medium. Yet there are some respondents (11.8%) who are less satisfied with the help they get from the directors.

From the variation of responses of teacher one can deduce that, not all schools directors are equally concerned about the implementation demands of the syllabus. It is also worth noting that directors on their part, asserted that they have been providing as much assistance as possible that ranges from coordinating their activities to technical support. Hence when weighed in the light of teachers responses the reply of some directors is not sound enough to reflect the adequacy of their support for teachers.

By the same token, respondents rated from high to low the support service provided them by supervisors (differently) by grade. But generally of the total respondents only. 8.8% rated the support provided by supervisors as high, whereas little less than half of the total respondents (44.1% and 47.1%) in similar ways affirmed that the support rendered by supervisors is medium and low respectively. This also has been affirmed by interview held with supervisors. According to information received from the supervisors, recently the schools have been clustered and given to supervisors for support service. And the program is being under operation, however, due to various reasons such as scattered nature of schools, shortage of logistics, additional works given them, supervisors are not delivering support required of them to teachers or schools as needed. Related to this regarding the support given to implementers in general and school teachers in particular, the natural and social science curriculum team of Oromia education Bureau indicated that the communication and feed back lines with implementers is made with letters and other media, during the occasions of workshop as well as via assessments of sample schools selected. For the purpose of evaluation. According to these experts the technical assistance and feed back they render to the implementers basically is on content areas of the curricular materials.

Lastly with regard to the extent to which SPC produce and supply learning aids relevant to environmental science, in general most of teacher respondents (64.7%) indicated that the pedagogical centers have some teaching aids or its performance level is medium. The variation in the responses of teacher teaching in the four grades is not much. But with the exception of grade two, in all grades of the rest, there are certain respondents, 20%, 14.3% and 33.3% of

grade one, three and four respectively who rated the pedagogical centers as having no materials useful for their subject at all.

The information received from SPC and observation result can be compared with the teacher's replies/ responses. Therefore the responses of the spc coordinators of all school revealed that the centers have certain amount of teaching aids relevant to environmental science including the quantity of some major ones. Moreover, though, the size and type vary from school to school, the investigator witnessed availability of some learning aids at schools surveyed. Among learning aids observed pictures showing a family charts showing language spoken models of different animals and objects and maps of region and nation etc are some.

Therefore, the response of those very few teachers shown in table 9 which magnifies a total unavailability of teaching aids in the school pedagogical, centre is not in line with the real situation. The reason why they have rated the center as empty may be attributable to their failure to be served by the centers.

On the other hand, in addition to producing and supplying relevant teaching materials SPC is also responsible to coordinate and pursue school based activities like in staff training experience exchanging, conducting research etc. Concerning in staff training, and experience exchanging as noticed during the observation, more than three fourth of the respondents (75%) affirmed the existence of particularly exchange of experience positively. They added the program is also being carried out at cluster resource center (CRC) in addition to within the school. CRC is the school selected to serve as the center for exchange of experience, training and use of resource with the satellite schools organized under it. Currently a CRC serves 5-7 satellite schools. This means, the environmental science teachers seems to have opportunity to get mutual sharing of experience at least through their SPC or department in the school.

The result for interview held with the SPC coordinators strengthens this assertion. About 66.7% of the SPC coordinators assured the existence of experience exchanging at their respective schools

However, the difference becomes apparent when raising the issues of training and research works most of the teacher respondents of all grade levels were found to be less satisfied with the activities of in staff training and research works specially in the later years including the

academic year under investigation. This has also been supported by interview results with SPC coordinators. Out of 9 (100%) SPC coordinators 8(88.9%) assured that no single attempt has been made to facilitate and execute training programs or research works in their respective schools, as of the mid of the academic year under study

This shows that, to some extent the opportunity that the environmental science teachers would have to get, in building their capacity and the like seemed to be affected.

Table 10 Data pertaining to teaching load and class size

Grade	Teachers			Weekly load						Class size					
				<25		25-30		>30		<50		50-80		>80	
	Male	Female	Total	No	%	No	%	No	%	No	%	No	%	No	%
1	6	4	10	7	70	3	30	-	-	6	60	3	30	1	10
2	4	4	8	4	50	4	50	-	-	4	50	4	50	-	-
3	4	3	7	4	57.1	3	42.9	-	-	2	28.6	5	71.4	-	-
4	5	4	9	7	77.8	1	11.1	1	11.1	6	66.7	3	33.3	-	-
1-4	19	15	34	22	64.7	11	32.4	1	2.9	18	52.9	15	44.1	1	2.9

As can be seen from the table above and some teachers also affirmed, both teaching load and student population in classroom have no impact on the time teachers should devote for environmental science lesson preparation. Because only a few of them (32.4%) have a total teaching load of 25-30 periods weekly, while the majority (64.7%) are working less than 25 periods per week which is below optimum load in the eyes of our current school system.

Related to class size (as mentioned earlier) it was perceived by most teacher respondents and assured by principals, as not a felt problem. To this end about 52.9% of respondents have been found teaching pupils not more than 50 per classroom. However yet some of them (47%) have indicated that students size per classroom has influenced special attention to be given to the application of suggestion of the syllabus. Besides this group also complains a longer stay in a class (a whole day with the same group teaching all subjects) affects directly or indirectly the time devoted for lesson preparation.

Hence some of the problem reported by this group like large size is not unique to environmental science and it is part of general methodological issues. The result seems to correspond to the findings of Derebssa in IER (2002) that denotes due to lack of awareness of some new elements in the primary school curriculum and associated work load, some of the teachers of three Ethiopian regional states surveyed have found to be exhibiting resistance to the implementation demands of these syllabus.

Lastly it worth noting that concerning the period allotted for environmental science for all grade levels, as noticed during classroom observation and from interviews with principals, the 300 periods per year and 9 periods per week allotted for each grade is found to be sufficient. Even some of the grade one and two teachers contend that it is more than enough. However some of the remaining grades, three and four revealed that the sharing of radio class period from the main topics could influence the proper application of the instructional consideration of the syllabus.

4.1.4 Students Test Results

Table 11. Percentage of students who scored at above and below the minimum mastery level in test by grade

Group by MLC score	Grade 1		Grade 2		Grade 3		Grade 4		Total	
	No	%	No	%	No	%	No	%	No	%
MLC score (cut off)	9.00	-	10.00	-	10.50	-	12.50	-	-	-
Above MLC	103	67.32	93	50.	74	39.78	34	18.87	304	43.06
Below MLC	50	32.68	93	50	112	60.22	147	81.22	402	56.94
Total	153	100	186	100	186	100	181	100	706	100

It is apparent form the table above that the distribution of student who scored at/above and below the minimum mastery level by grade shows variation. Thus the test results indicate that the percentage of student who scored at or above the minimum mastery level decreases as the grade level increases. That is 67.32% of grade one, 50% of grade two, 39.78% of grade three and 18.78% of grade four students meet at/ above minimum mastery level requirement. Where as on the other hand 81.87% of grade four, 60. 22% of grace three, 50% of grade two and 32.68% o of grade one students failed to get a score at or above the minimum mastery level. This implies that the expected out comes of the syllabus covered during the first semester are not well grasped by the majority of the students (of their respective syllabus); Because out of the total 1-4 students only 43.06% could score result equal to or greater than the minimum mastery level. And this may reflect the ineffectiveness of the implementation process.

Further more in order to see the level of difference by grades and settings chi square and t-test statistical testing respectively have been employed in the following forth coming sessions.

Table 12. x^2 calculation of student test result

group	Grade levels				
	1	2	3	4	Total
At/ above MLC pts	103	93	74	34	304
Below MLC pts	50	93	112	147	402
Total	153	186	186	181	706

(X^2 = at df, 3, α= 0.05 level, X^2 0.05 (3) = 85.41

As the calculated chi-square value (x^2= 85.41) related to the passed or failed pertaining to the attainment of minimum mastery level of the syllabus of each grade is greater than the critical chi-square value, which is X^2 0.05 (3)= 7.815, there is statistically significant difference in level of attainment of the minimum mastery level or objectives of he syllabus under study at P< 0.05 level. In other word there are some grades of students in the "Pass" group and other not. This result confirmed the preceding discussion. The number of student who scored at or above the cut off score (MLC) has been found increasing with decreasing grade level and vice versa.

Generally, however, as can be seen from table 12, the greater number of the total students (56.94%) scored below the minimum mastery level.

Table 13 T-test comparison of student test score by grade

Grade	N	MLC Score	Mean test score	SD	t	df	2 tailed sign	Decision
One	153	9.00	10.1373	3.2988	4.264	152	.000	Sign
Two	186	10.00	8.8333	4.2259	-3.765	185	.000	Sign
Three	186	10.50	9.0538	3.7181	-5.305	185	.000	Sign
Four	181	12.50	9.6022	3.4780	-11.209	180	.000	Sign

At P< , 0.05 level

Table 13 represents t-test comparison of student score with minimum mastery level score by grade.

In this case the mean test score of each grade has been compared with the MLC'S cut off score. Accordingly the result revealed that except grade one the mean test score of grade two, three and four is less than the "Pass" or MLC score. That means for grade two three and four, the MLC score is 10.00 10.50 and 12.50, while their corresponding mean test score is 8.83, 9.05 and 9.60 respectively. Grade one students however, exhibited mean test score exceeding the "pass" score (i.e. their mean test score = 10.14 and the MLC score = 9)

The assessment of t-test result depicts (considering the mean test score obtained by student visa vis the expected out come of the minimum mastery level), the prevalence of significant difference between the intended and the attained /achieved/ out come of the syllabus understudy. Concerning this issue, referring to the computed t-value suffice. As can be seen from table 13, the calculated t-value for grade one (df= 152), two (df= 185), three (df= 185) and four (df= 180) at $P<\alpha = 0.05$ level has been found to be in absolute value 4.264, -3.765,-5.305 and -11.209 respectively. Therefore as all these calculated t-value (at $P<\alpha = 0.05$ level) are greater than the critical t-value (t=1.960) there is statistically significant difference in extent of attainment of the syllabus demand by grade levels.

By the same token, in considering the standard deviation of each grades test score the trend of the score distribution about the mean may be apparent.

In this case, grade one result manifested better test score distribution around the mean with 3.29 standard deviation (SD), followed by grade four with standard deviation of 3.48. For grade three and two the deviation is a bit getting larger being 3.72 SD and 4.23 SD away from the mean respectively.

Table 14 T-test comparison of student test score by setting

Grade	Variable	Group	N	MLC (cut off) Score	Mean test score	SD	t	df	2 tailed sign	Decision
One	Location /Test score	urban	76	9.00	9.8421	3.5779	2.052	75	.044	sign
		rural	77	9.00	10.4286	2.9931	4.188	76	.000	"
		U&R	153	9.00	10.1373	3.2988	4.264	152	.000	"
Two		urban	101	10.00	8.4455	4.2790	-3.651	100	.000	sign
		rural	85	10.00	9.2941	4.1399	-1572	84	.120	Not sign
		U&R	186	10.00	8.8333	4.2259	-3.765	185	.000	sign
Three		urban	105	10.50	9.2286	3.8337	-3.398	104	.001	sign
		rural	81	10.50	8.8272	3.5735	4.213	80	.000	"
		U& R	186	10.50	9.0538	3.7181	-5.305	185	.000	"
Four		Urban	103	12.50	9.2136	3.8211	-8.729	102	.000	Sign
		Rural	78	12.50	10.1154	2.9098	-7.238	77	.000	"
		U&R	181	12.50	9.6022	3.4780	-11.209	180	.000	"

At $P<\alpha= 0.05$ level

On the other hand, table 14 gives the comparison of student results. Thus according to the data from the table significant difference has been observed between the expected and achieved out comes of the syllabus understudy, for both rural and urban setting, In this regard (with the exception of grade two- Rural), the calculated t-value for both urban and rural setting of all grade, (at $P<\alpha= 0.05$ level), have been found to be greater than their respective critical t-value which is t=1.960, indicating the prevalence of statistically significant difference in level of attainment at the level of significance specified.

The calculated t- value for grade two rural student is found to be in absolute value -1.572 which is less then the critical t- value (t= 1.960) denoting that there is no statistically significant difference between the mean of the minimum mastery level score and that of the observed students mean test score. In other word the mean test score of the student and the MLC cut off score of the grade mentioned appeared almost equal

Moreover from the test result of table 14 one can deduce that the mean score of the rural student in most case is better than its urban counter part. That is with the exception of grade three, the mean test score of the remaining grades' rural student in most case is better than its urban counter part. This may indicate that the rural student performed better than the urban student on the test, which in turn reflects better internalization of the subject matter of the syllabus under investigation.

Therefore on the basis of the difference observed in the student achievement level, if not serious, possibly one can deduce that the smooth implementation of the syllabus is impeded in urban than rural of studied schools. The comparison of standard deviation reveals similar result and supplements the above assertion.

In sum, the failurity of the majority of the student (1-4) to achieve the score of minimum mastery level as mentioned earlier could show that most of the student have not internalized or grasped the (intended out comes) and contents covered during the first semester. This in turn may indicate ineffective implementation of the syllabus. Though not discouraging, the extent of concern and effort made for effective implementation appear different between rural and urban settings. It appears to be better in rural schools. When weighed from students achievement result perspective.

4.1.5 Factors Influencing the Implementation of the Lower Primary Environmental Science Syllabus

The forth coming Table represents the major factors responsible for ineffective implementation of curriculum.

Table 15 Mean rank and rank value of the factors which influence the effective implementation of the syllabus

No	Factors	Teacher respondents									
		Grade one No=10		Grade two N=8		Grade Three N=7		Grade Four N=9		1-4 N= 34	
		Mane	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	Inadequate supply of curricular materials (syllabus Teacher's Guide and text book)	6.63	9	3.75	1	5.14	3	3.56	1	4.77	1
2	Inadequacy of the period	6.88	10	4.75	4	5.43	4	7.22	10	6.07	8
3	Low explicitness of the syllabus (eg complex and vague objectives teaching procedures)	5.75	7	4.25	3	5	2	5.33	5	5.08	3
4	Absence of in service or on job trainings	4.25	1	5.5	6	5.86	7	6.11	9	5.43	5
5	Lowness of teachers interest towards teaching profession and/or environmental science	5.13	4	7.75	9	4.43	1	5.11	4	5.61	7
6	In adequacy of the support provided by the school administrative bodies (directors SPC dept head)	4.75	3	8.38	10	5.43	4	5.89	8	6.11	10
7	Low ness of the support rendered by supervisors	7	8	5.5	6	6.25	9	5.6	6	6.08	9
8	Inadequacy of pre-service training	5.25	6	5.38	5	5.67	6	4.5	2	5.20	4
9	Shortage of instructional materials (learning aids)	4.38	2	5.75	8	6	8	5.7	7	5.46	6
10	In adequacy of community support and involvement.	5.13	4	4	2	6.43	10	4.33	3	497	2

As can be noted form table 15, factors perhaps responsible for ineffective implementation of the syllabus are ranked by the teacher respondents on the basis of the degree of impact they may exert on implementation effort and process. Accordingly teachers respondents gave the upper 1st to 4th ranks to the following factors. These include

1st - In adequate supply of the curricular materials (i.e. syllabus, Teacher's Guide and text book)

2nd - Inadequacy of community support and involvement in the education affairs

3rd - Low explicitness (vague complex objective and contents etc) of the syllabus and

4th - Inadequacy of per-service training. Thus teachers identified these four factors as the major factors hindering the effective implementation of the syllabus

Similarly other factors like absence or in adequacy of in service or on job training, shortage of instructional materials and lowness of teachers interest towards teaching profession or environmental science occupied the inter mediate ranks 5th, 6th, and 7th in that order. This shows that though not as strong as that of the upper ranking factors. The influence of these latter factors cannot be undermined.

Yet, factors such as, inadequacy of the period allotted, lowness of the support rendered by supervisors and the supports provided by school administrative bodies (directors school pedagogical center coordinators department heads etc) on the other hand took the lower (8th, 9th and 10th) ranks indicating a minimal influence on the implementation of the syllabus. It follows that these last category of factors are not felt problem of the teachers in their implementation effort.

When summarizing the rating of teachers in terms of grade levels, some sort of difference is noticeable (see table 15). For example grade one teachers ranked inadequacy of the curricular materials 9th+ which was ranked 1st by grade two and four and 3rd by grade three. This difference may be attributed to the differential distribution of the materials to the different levels of schooling. Thus for grade one teachers under investigation shortage of curricular materials specially syllabus and Teacher's Guide is not their serious problems, which was reported by other as a severe problem.

Similarly, inadequacy of community support was rank 10th by grade three teachers. While it was ranked between 2nd and 4th by the remaining grade level teachers. The reason for this difference is not clear at this instance except seeking further verification,

4.2 Discussions and Interpretation of the Findings

According to the result of attitude scales and teachers' direct responses of grade level teachers, have exhibited similar trend in attitude to wards the intents of the syllabus under investigation. That is they appeared to have similar view towards the requirements of the environmental science syllabus of their respective grades.

However, a glance at results from table 1 and 2 indicates that, the existence of difference in level of agreement to the intents of the syllabus between grades and rural and urban schools teachers. As can be seen from the tables cited above a considerable proportion of grade one and two teachers manifested relatively lower (below median) interest towards the specifications of their syllabus than that of grade three and four teachers

Similarly, on the basis of their setting /location/ , teachers are also found to reflect differences in level of agreement to the curriculum demands of their grades. In other word rural teachers (of all grades combined) have exhibited relatively lower interest than their urban counter parts to wards the requirements of the syllabus. Here except grade three, no significant difference was observed between urban and rural teachers attitude scores at grade level (see table 3). Thus, even though it does not seem a serious issue, the observed difference in level of agreement between certain grades and rural and urban teachers to the intents of their environmental science syllabus may be related to newness of some undertaking being pursued. Such elements include integrated curriculum, teaching all subjects in a class (self contained class) etc. So any little draw back particularly in the world of education for its is concerned with human being or generation must be remedied / corrected / on time consequently this difference shall not be over looked.

This finding appears against the works of Noel (1993:117) and Baker (1974:566). These authors in similar ways, emphasizing teachers attitude in instructional process reported that students with teachers' positive attitude towards teaching and curriculum are found to be high

level achievers in learning. Here the positive attitude essence can be related to high (above median) interest in the context of this study.

Further more concerning this issue, Derebssa in IER (2002:184) in his article addressing the quality of primary education in Ethiopia came up with a result denoting lack of awareness of primary school teachers about some new elements in the curriculum like integrated approach, continuous assessment, teaching in a self contained classes and automatic promotion and with the introduction of new curriculum the situation of teaching became worse because the teachers had not grasped the new concepts there in well enough to apply it in their teaching. As a result the new demands on the side of the curriculum (syllabus) and perhaps the accompanying work load as indicated by some respondents may cause the resultant difference towards the demands of the syllabus between rural and urban teachers of the primary school. And since ones deed can not be divorced form his thinking, this difference in level of agreement may influence the effectiveness of implementation of the syllabus understudy.

Related to this, the observational data presented in table 4 and supplemented by "appendix O" reveal the actual classroom instructional performance of the teachers.

According to the results summarized, though minor, variation is noticeable among grades (unlike settings), the teachers classroom instructional performance appear to follow similar trend.

Thus as, the classroom observation revealed and triangulated by teachers and directors responses the frequently used teaching methods were question and answer lecture and note giving. As can be seen from the data it was in a very few classes that teachers were using additional methods, like discussion, demonstration, Group work song, giving assignment pertinent to learners experience and role playing etc. Thus of the suggested methods in the syllabus or teacher's guide, these are less implemented ones.

Besides the result also depicts that there are some teaching methods which are found to be neglected by teachers among which field trip, invited guest project etc are included.

In this case lecture and not giving is a typical of teacher centered approach which restricts student participation in the learning teaching process and maximize their passivity.

Moreover according to data from the above tables some relevant strategies (for young children in general and environmental science syllabus in particular) like demonstration song, role playing field trip etc are found to be either given less regard or totally over looked on average at all grade levels

Another finding that deserves attention is that, environmental science syllabus requires maximum student involvement and relating the basic concepts and contents of the syllabus to the learner's socio economic and physical environmental

Concerning this however the result of this study shows variation in level of application among grades particularly on the basis of class room observation result the application level tends to rise (increase) as grade level increases. Yet it is among less implemented strategies.

Another result depicted by table 4 and " appendix O" is extent of availability and use of teaching materials (learning aids) suggested. In this connection the finding reveals that picture charts and models are found to be used by teachers rarely. Where as other materials such as photograph samples maps real objects etc either given less regard or totally neglected. Moreover, a summary from the above data reveals that most of the classroom hours observed were with out teaching aids.

As can be deduced from the preceding discussions, in general there has been a failure regarding the use of teaching aids to this end, teachers were given chance to reason out as to why they use a limited methods and materials to instructions. And the followings are their reasons, lack of budget, large class size, shortage of instructional materials and the like.

Here it worth noting that, of the reasons raised by the respondents, the first and the last (lack of budget and shortage of instructional materials) as they are interrelated seem to be a real reason that may encounter schools. However regarding large class size, as far as the schools surveyed are concerned it does not seem a serious problem, because as data from table 10 reveals, that about 53% of the total respondents were working with a student population of 50 or less per classroom.

The result of this study therefore reflects that the existence of a big gap between the planned instructional consideration (methods and materials and other procedures) which are supposed

to be used by teachers and that actually used, implying less concern and effort made on the part of teachers to the implementation demands of the syllabus.

The finding here in seems against suggestion forwarded by Ambaye Tsehaye in IER (1999:3), that is "teaching nowadays is more than imparting knowledge it includes helping learners to learn by themselves to acquire skills and develop attitudes in the changing social context" Like wise MCNeil (1990), collohan (1998) and TGE (1994), in similar ways emphasized problem solving approach which allows the learner to learn by discovery.

Moreover this result appear to be in agreement with the findings of Amare Asgedom (1999) denoting that in the surveyed schools teacher depend on a limited methods and materials. He specifically noted that (after surveying the SPC of the Tigray primary schools), of the total respondent teachers included in the study about 79% remarked that they use teaching materials in their lesson when need. According to the observed result, the schools surveyed by this study seem to be susceptible to the problem anticipated by the same author cited above. By criticizing the teacher centered model, he indicated that, teacher centered approach ignores the need for a balance of the concrete and abstract experience. For him if students are deprived of necessary concrete experience during their education, such abilities as observation and doing which are critical in the real world (world of work) remain underdeveloped.

In sum as indicated earlier the gap created between the suggested syllabus specifications and what has been accomplished undoubtedly reflect ineffective implementation of the curriculum on the side of teachers

Table 5 through 10 represent the availability or unavailability of a suitable teaching learning environment and some other teacher related factors. Thus the result reveals that generally the classrooms seem to be ill-equipped with some of the necessary furniture. As a result shortage of bench or desk for students lack of chair or table for teachers are among the major problems of the surveyed schools.

In deed this problem is not special to the schools surveyed by this study. Because shortage of facilities and furniture are among common problems of schools. This assertion is supported by the works of caillods and postlethwaite (1989:172-173) Lock et al (1991:39) Mekesha (1991:8-9) MOE (1986:45) Dereje Terefe (2002:89) and ICDR (2002:16-17) Caillods and

postlethwaite noted that in developing countries, including Africa there are school classrooms without a black board and the larger number of student have to sit on the floor.

Lock and his associate also disclosed that students of developing countries are likely to attend a shelter less school or one that is poorly constructed and equipped. In similar way the latter authors also have reported the existence of shortage of school facilities including furniture (in Ethiopia) in their respective studies consequently shortage or unavailability of such basic classroom equipment could likely influence the smooth running of the teaching learning process and their by affect the end result of instruction

On the other hand table 6 and 7 portray the extent of availability of curricular materials and instructional materials by grade. According to the finding, shortage of curriculum materials and both centrally prepared or locally produced instructional material are apparent. To this end, the unavailability of syllabus is reported as a severe problem, followed by shortage of teacher's is guide in this study. That is about 58.8% and 41.4% of the total respondents have been found to be without syllabus and teachers guide respectively. The Oromia Regional curriculum experts have also affirmed this statement.

On the other hand the findings also indicate inadequacy of instructional materials (centrally or locally produced ones). Regarding inadequacy of textbook the majority reported existence of shortage with varying text-student ratio from grade to grade or school to school. Further more late distribution of the textbook is also found to be among hindering factors of implementation. Concerning the locally or centrally prepared instructional materials the result conveys its inadequacy. As a result about 64.7% of the total respondents indicated the inadequacy of centrally prepared instructional materials, and the other 82.4% disclosed inadequacy of locally produced instructional materials. This particular result corresponds with the foregoing findings and generalization. Moreover it also complies with findings of Derebssa as cited in IER (2002:182); After surveying the conditions of primary of schools three regional states of Ethiopia, he came up with conclusion that most teachers were ill-equipped to teach and were not ready for the new curriculum, because there had been insufficient orientation and lack of syllabi, teacher manual and text books. Concerning the problem of variation in distribution of textbook particularly, the observation goes with he problem anticipated by Pratt (1980:409-426) which remarks that some times the issue of

implementation has been ignored by curriculum planners and left to the teaching and administrative personnel.

Here it follows that for the curriculum materials in general and textbook in particular, are official document published and distributed, and if effective implementation of the curriculum is to be realized, timely and proportional distribution of these materials has to be given due attention by the concerned bodies of central and regional state educational structures.

So, where syllabus and Teacher's guide are not sufficient (lacking) to provide guide lines about what is going on to be taught, likely teacher could develop a negative attitude towards teaching the subject, owning to lack of clear direction and this may ends up in ineffective implementation of the syllabus.

The result from table 8 reveals clearly unfamiliarity of teachers of the surveyed schools with methods of teaching integrated curriculum, to this end about 88.2% of the total respondents assured that they had no any orientation about this approach. Concerning this, environmental science as integrated curriculum and a modern approach requiring maximum learner involvement and teachers creative facilitative effort is indispensable.

Therefore this finding appears against what has been recommended by Gronvall, (1994) and Dysai, (1971). In similar ways comparing environmental education and integrated science, they noted that these approach emphasize activity methods extensively, descriptive and analytical system informal and experiential situations and two- way communication methods, which is relatively different from the traditional common approaches with which most of our school teachers adapted; consequently orientation on how to handle the integrated curriculum to the teachers under investigation is paramount important

On the other hand the result corresponds to the finding of Derebssa in IER (2002:182), which indicates (as observed in some regions) in Ethiopian primary schools lack of awareness is prevalent on the side of teachers about some of new elements in curriculum including integrated approach and others.

From the result one can deduce that lack of awareness how to teach integrated curriculum on the side of the teacher undoubtedly can influence the processes of teaching learning, which in turn leads to ineffective implementation of the syllabus. Hence sustained and relevant

refresher and awareness creating courses need to be provided to the concerned teachers that go beyond mere experience exchange.

From a glance of table 9, three findings of special interest emerge. These are result pertaining to extent of suitability of curricular materials, interest of respondents towards teaching and extent of satisfaction of respondents with their performance evaluation outcomes.

Accordingly regarding the extent of suitability of curricular materials the greater proportion of the respondents (88.3%) reported less suitability of curricular materials (syllabus, Teacher's Guide and text book). Some weaknesses, of the curricular materials have been cited by these respondents, among which lack of different methods of presentation, text is large in volume, it is full of information and fail to lead to practice, mismatch between difficulty level and student maturity etc are some. Here some of the problems cited by the respondents has also been recognized by curriculum experts of Oromia Education Bureau and the summative evaluation study result of the primary school syllabus as reported by Dereje Terefe in IER (2002:9). That is "curricular materials especially, published student text books and teachers guides lack certain pedagogical qualities including clarity and simplicity. Thus problems like mismatch between the readiness of students and the subject content methodology related ones seem to be real challenge encountering teachers. However on the other hand the remaining factors like volume of the textbook, full of information with less practicality etc may not be significant problem (factor) to affect the extent of suitability of the curricular materials under study.

This also against the findings of the summative Evaluation result cited earlier. The result reveals that most of the education experts and parents exhibited positive attitude towards some aspects of primary school syllabi (1-8), like the harmony between the general educational objectives of the country and subject area objective, suitability to the local conditions. This the last aspect reflects relevance of the syllabi to the experience of the learner which likely leads to enhancement of practicality.

Therefore if not discouraging, less suitability of the curricular material is reported by the some respondents and the factors responsible for the less suitability of the curricular materials are also raised, consequently the smooth running of the instructional activities directly or indirectly could be influenced having a negative consequence on implementation of the syllabus.

Regarding extent of their interest to wards teaching profession and/ environmental science a little greater than half (61.8%) of the total respondents indicated high regard towards teaching profession. If it is so this implies there is a good ground to be committed to implementation demands of the syllabus. Moreover this result also remained consistent with the attitude test results of the respondents in which most of the respondents manifested high (above median) interest towards the requirements of the syllabus, but with a varying degree.

However, others a proportion of (35.3%) of the total respondents indicated that either they have medium or low interest towards teaching profession. The reasons given by this group of the respondent were, the demands expected of them become greater and greater, teaching all subjects in one grade class, increased workload etc.

So, this implies the existence of such less interest members in the system (due to the reasons they cited above) to some extent can affect implementation endeavour to be made As per satisfaction of the respondents with performance evaluation result, the finding revealed that the greater proportion of the total respondents (67.7%) on average showed medium or low satisfaction, Here also some of the respondents attributed their less satisfaction with performance evaluation result to issues like poor school administration, inconsistence of some related guide lines and prevalence of certain biases. Here reason given by teacher respondents for their less satisfaction with their efficiency result rotate around administrative system of educational sector. And it seems real problem that may faced some of these respondents. Because the study result reported by Derebssa as cited in IER (2002:180) affirm the above result. According to Derebssa's finding, (commenting on inadequacy administrative systems of primary schools), it was found that most head teachers of the primary schools were unable to provide academic advises to their teachers. More over they lack administrative training for the position they seized. As a result the combined effect of this and other factors may contribute to the complains made by the respondent regarding performance evaluation issues.

On the other hand, pertaining to the support service provided them by supervisors and school administrative bodies (except a few) on average the larger proportion of the total respondent rated medium or low satisfaction more specifically of he total respondents about 91.2% on average indicated that their satisfaction level with the support they receive from supervisor is medium or low, implying failurity of supervisor to provide technical assistance expected of

them. From this it follows that teachers capacity to implement the syllabus consistently can not be built/strengthened.

This finding therefore corresponds with the study results of Caillods and Posthlewait (1989) Azeb Desta (1971) and Derebssa in IER (2002). Both emphasized and reported inadequacy of the support given by supervisors in their respective works. Caillods and Posthelwait for example criticized supervisors for often unsatisfactory support (non technical) and rare visit assistance and encouragement to schools particularly in the rural remote areas.

Azeb also commented that supervisors out of their legitimate duties too often have deployed merely to fill administrative gaps in educational offices of different levels. Derebassa's finding is of similar result.

With in the same vain, the support given by school administrative bodies such as directors, department heads, school pedagogical center coordinators etc has been rated unsatisfactory, because, of the total respondents 73.6% rate support of principals and department heads medium of low. While about 82.3% of them rate the support service of SPC coordinator as medium or low. Like the preceding results, this one also is in accordance with the findings of Dereje cited in IER (2002, 8-9) , which reveals quality of educational leadership at grass root level in the implementation process has not been as satisfactory as desired. In this case in the system of decentralized education, grass root level structure basically encompasses the school administration body roles. According to. Caillods and Posthlewaite (1989) and Derebssa in IER (2002) in most of the schools, heads are unable to provide technical supportive guidance to their teachers in their schools.

Therefore when supportive guidance and encouragement is lacking teachers initiative and sense of urgency can not be developed, finally hindering the effective implementation of the syllabus.

Moreover in addition to the supports of school principals or supervisors colleague /peer/ support is also believed to contribute to the success of curriculum implementation. In this case about 75% of the total respondent indicated the existence of mutual exchange of experience both within and between schools.

Thus such contact of teachers with each other creates opportunity to broaden experience and generate practical solutions to problems encountered in the process of instruction thereby contribute to the effective implementation of curriculum.

The existence of mutual exchange of experience at schools, if given due attention and pursued by educational leaders, likely it may enable one to realize the recommendation forwarded by Bishop (1976) as cited in Getachew E. (1994 112). Accordingly schools attempting to implement a given curriculum should arrange an inter visitation program among themselves

Teaching load and class size also are among important issues to be considered in the light of effective implementation of the curriculum. Hence as revealed in table 10, of the total respondents the greater proportion on average assured that teaching load and class size are not severe problem of the surveyed school. To this end the data revealed that about 64.7% of the total respondent are found to have a weekly load less than 25 periods, and almost equal percentage (66.7%) of respondents teach classes having student population less than 50 (Per class).

But only the remaining 32.4% and 44.1% of the total respondents are reported as working with weekly teaching load ranging from 25 to 30 periods and 50-80 students per class respectively. Less class size is advantageous for the success of effective implementation. That is why Lind bloom (1976) in Getachew (1994) noted that greater pupil achievement, fewer behavioral and disciplinary problems, use of greater variety of methods and materials in teaching and increased knowledge of pupils as advantages associated to small class size.

The difference observed regarding class size and weekly load may be due to location factor. That is schools located in relatively bigger town seem populated when compared to their counter rural parts. Related to teaching load period allotted to course cannot be neglected. And in this case the information received from teachers and principals affirmed that there is no a felt problem regarding period allotted for environmental science syllabus. Moreover the result of summative evaluation of the primary schools (1-8) syllabi finding conducted by ICDR (2002) denotes that the period allotted for environmental science has been found to be sufficient and the portion could be covered with in the allotted time.

Another important finding represented by table 11 through 14 is student test result. According to the summarized data, the intents of the syllabus are attained by a few not by many. In this connection as indicated by Berliner (1976:9), though the schools instructional process have more influence on students cognitions, students test result that indicate the level of attainment of the intended out come can not be totally attributed to instructional processes going on in the schools, because there are a number of out -of school factors like social class, home and other student back ground to be accounted for.

In light of this, the comparison of minimum mastery level and the observed student test result (from table 11-14) reveals significant difference in level of attainment between above (High) and below (low) minimum learning competency by grade. In other word some grades have more student in the "pass" category than others.

Moreover the proportion of students who scored at or above the cut off minimum learning competency appear to decrease as grade level increases. This difference may be due to the increasing level of complexity of the subject matter with increasing grade level.

Similarly, excluding grade three (where urban school students scored better mean result), the rural school students relatively are found to attain better mean test score than that of the urban ones.

It is imperative from the result observed that the failurity of the majority of the student to achieve the minimum mastery level cut off score may imply that the greater proportion of the students of the surveyed schools have not grasped most of the subject matter concept of the syllabus covered during the first semester. Thus this may indicate the existence of gap between what was intended and what has been accomplished. By the same token the difference in students level of achievements between rural and urban schools be attributed to unequal concern and endeavour to wards implementation demands of the syllabus between the two areas. Besides as mentioned earlier other factors like student background, home, social setting could also contribute to such differences to some extent.

Here it is worth mentioning that, the achievement result of the rural student does not correspond with the previously reported rural teacher mean attitude score which was found to

be lower (on average) than that of urban teachers. Hence the reason behind this finding seeks further verification.

On the other hand the result summarized in table15 clearly show some of he factors which have influenced the implementation of the syllabus depending on the degree of impact they could cause. In this regard according to table 15 those factors having strong impact on the implementation of the curriculum where ranked by respondents 1-4 and 5-7 respectively.

These are

- In adequate supply of the curricular materials (such as syllabus, Teacher's Guide and text book)
- In adequacy of community support and involvement in the education activities
- Low explicitness of the syllabus
- Inadequacy or absence of in service training
- In adequacy of the per-service training on one hand and,
- Shortage of instructional materials,
- lowness of teachers interest towards teaching profession on the other

Among the fore ranking factors the first and third are interrelated, which are poor supply and low explicitness of the curricular materials also reported as a severe problem affecting the implementation of the syllabus. Regarding the poor supply and shortage of curricular materials that of syllabus and Teacher's Guide has been reported as severe of all.

Then, it seems that these factors are real problems faced by teachers. Because this result appeared to be consistent with the preceding discussion and other findings such as the Summative Evaluation of the primary school curriculum (1-8) result reported by Dereje Terefe in IER (2002:8). The result remarked that educational materials such as books, science kits libraries etc were found to be inadequate for implementation of the new curriculum as desired. It is further noted in the study that, curricular materials especially, published student text and teachers Guide lacked certain pedagogical qualities including clarity and simplicity.

Moreover the above result appears to be against the suggestions of Lock et al (1991:5-7) and Dale (1969:100-120) implying that instructional materials (including curricular materials) are critical ingredient in learning- teaching process consequently the intended curriculum can not be easily implemented with out them. For these authors the availability and use of instructional materials often correlate with positive student achievement.

As a result in the light of the observed result one can deduce that poor supply and low clarify of the curriculum materials (syllabus and teacher guide as a major factor may affect the effective implementation of the syllabus understudy

Further more, of the upper ranking factors, the second and fourth factors were in adequacy of community support and inadequacy of pre-service training. Here it is not surprising that these factors are ranked as major factors influencing the effective implementation of the syllabus Because the result seems consistent with the preceding findings and discussion where teacher respondents indicated in adequacy of pre-service training and support service they get from different bodies in the system such support service also encompasses community support.

In this case it worth nothing that currently our education is a decentralized education system, where empowerment and maximum involvement and commitment of the grass root level community is required at large.

Concerning community support and involvement in the educational activities, the investigator witnesses that more or less there has been a good beginning though the out come is not satisfactory as desired. It seems because of that the factor is ranked as another major hindering factor of curriculum implementation. In this connection principals of the surveyed schools remarked that now a days, the community participation is formalized (realized) in school structures through the formation of different committee like Parent-Teacher Association (PTA), Education and Training Boards of Kebele etc. However often due to unavailability of the members of such committee, decision making processes and some programs of the school will be stacked some times as indicated by principals.

Therefore in the final analysis, this result seems in agreement with the finding reported by Derge in IER (2002:9) . According to this findings the community support and involvement in the educational affairs of the country has been found to be low, he further noted that

community involvement remained confined to the usual routine fund raising and labour contribution in stead of being empowered to control both the administrative and financial efficiency and effectiveness of the school. Like wise, pre-service training of teachers has also been ranked as the important hindering factor of curriculum implementation. As the preceding data reveals, it seems a felt problem in the surveyed schools for it remained consistent throughout the data gathered. Besides the finding corresponds with the study results of, Hawes (1979:55) in Ambaye (1999:3-4) which comments on in adequacy of pre service training of African countries including Ethiopia. The author after conducting many rigorous research on conditions of African teachers he arrived at a conclusion that convey the lack of correspondence between the needs of schools and TTI programs has brought about lower orientation of trainees of their widening task. Aand and padima (1984:38) in the same source further commented that the changes in the schools should be accompanied by a corresponding change in teacher training program. Consequently, as the success of a curriculum depends to a great extent on the character and ability of the teacher; inability of teacher training to prepare teacher in the light of the demand expected of them in their career; obviously this adversely affect the process of effective implementation

Hence, this factor also appears a real problem of the teachers of the surveyed schools. Particularly of those with longer service years as noticed in this study.

Furthermore, factor from group two categories like inadequacy of in-service training and shortage of instructional materials respectively are related to factors discussed earlier.

In other word inadequacy of in-service training goes with inadequacy of pre-service training while shortage of instructional materials corresponds with poor supply of curricular materials.

Here again inadequacy of in-service training including in staff training has been reported in the preceding discussion hence it is not surprising that the respondents ranked this factors as having a considerable influence on the implementation of the syllabus. As can be noticed from the foregoing data, shortage of instructional materials was also assured to be among one of the felt problem of the surveyed schools. And this ranking shortage of the instructional materials as hindering factor to implementation seems a prevailing challenge refraining schools from effective implementation of the syllabus

To this end result obtained regarding inadequacy of in-service training appear inconsistent with he recommendations of Hawe (1979) as cited in Ambaye (1999) that noted in addition to pre-service training, refresher courses of different types would help even the most highly qualified teachers to become aware of their unforeseen short comings.

But this result seems in agreement with the findings of Derebssa in IER (2002:183) which reveals that in three regional state of Ethiopia concerning in service /on job/ training currently it is known that in principle the program of training is designed to be extended from individual schools to cluster school level, but in practice. (as assured by respondents) its out come remained insignificant.

In sum from the summarized data, it is imperative that directly or indirectly the inadequacy of the in-service (on job) training may be attributable to the less concern given to this issue on the part of school administrative bodies and supervisor at large for they are the immediate responsible bodies to facilitate and coordinate on job training

Similarly lowness of teachers interest towards teaching profession has been ranked by respondents as having considerable impact on the implementation of the syllabus.

But here the result does not correspond with the result indicated in table 10, where about 61.8% of the total respondents exhibited high interest towards teaching; perhaps this difference may be related to individual teachers personal positions not to express his real feeling or not expose oneself.

Particularly respondents which manifested lower interest towards teaching attributed their position, to the heavy work load emerged, introduction of new elements /issues/ with out sufficient orientation, poor school administration etc.

Moreover the existence of such problems has also been assured by Derebsa in IER (2002:18-182) and others. According to this author the study result obtained from three Ethiopia regions reveals that most teachers were ill-equipped to teach and were not ready for the new curriculum because there had been insufficient orientation and lack of syllabi teachers' manual and text book and had little understanding of the underlying concepts and methods of teaching them, consequently lowness of teacher interest toward teaching profession appear a felt problem to have impact on the implementation effort of the syllabus.

Finally factors which took the last lower ranks include, inadequacy of period allotted, low ness of the support given by supervisors and in adequacy of the support given by school administrative bodies. According to this result these factors are found to have a minimal influence on the effective implementation o the syllabus

In this case particularly regarding period allotted of environmental science syllabus (1-4) there has been reported evidence notifying it as not a felt problem hindering the implementation of the syllabus under study. Moreover the summative Evaluation study of the primary school syllabi (1-8) conducted by ICDR/2002/ affirm this finding and accordingly, it is reported that the period allotted for environmental science is sufficient and the syllabus can be covered within the given period

Lastly the important findings are the results observed regarding the support service to be rendered by school principals and others and supervisors. As can be seen from table 15, the respondents gave the lower ranks to these factors denoting that they are not among the serious problems of their respectively schools. But it has been found that this result and the teacher respondents' previous rating appear to contradict one another. For instance a glance at table 9 reveals that about 73.5% and 91.2% an average of the total respondents indicated that the support service provided by school administrative bodies (principals department Heads SPC and etc) and supervisors is medium or low respectively which implies they were conceived by these respondents as problem influencing the implementation of curriculum.

Therefore when comparing and analyzing these two results the controversy observed between the teachers responses may be a deliberate action of respondents not to disclose weakness of each other, as it has been counter accounted in table 9 cited earlier.

CHAPTER FIVE

Summary Conclusion and Recommendation

5.1 Summary

This study was intended to evaluate the implementation of environmental science syllabus of lower primary school (1-4) in the sample schools of Illubabor zone. To this end the descriptive survey approach was used as the method of study. Hence in this study some data gathering instruments were employed to collect information from which answers to the following basic questions have been obtained. These are

1. Are teachers in lower primary schools voluntary to transmit the basic instructional ideas and concepts of the syllabus to their students?
2. Do teachers of environmental science use the instructional guide lines set in the syllabus effectively in classroom?
3. How conductive is the teaching learning condition in the schools for better and more effective implementation of the syllabus?
4. Is the implementation of the environmental science syllabus effective in enabling learners to have mastery of the subject matter?
5. What are some of the constraints which affect the implementation of the environmental science syllabus

The instruments used to secure information were questionnaire, classroom observation, SPC observation, interview, and achievement test. These qualitative data were supported by quantitative data analyzed through chi-square, t-test and percentages.

The data were obtained from 9 sample schools, 9 directors, 34 teachers, 9 SPC coordinators, 8 supervisors and 706 students, The analysis of the data have revealed the following findings.

First, it was found out that in all the grade levels (1-4) there are certain proportion (50%) of teachers who manifested a low level of (below median) interest to the guidelines of the lower

primary school environmental science syllabus. But the proportion is higher (60% and 50%) for grade one and two in that order

Besides Rural teachers of all grades combined have exhibited relatively lower interest towards to specification of the lower primary school Environmental science syllabus than their urban counter part as measured by mean attitude scales.

Furthermore a considerable number of teacher respondent (35.3%) are found to have lower interest toward teaching profession due to increased demand and work load as they indicated.

Second, Regarding the actual use of the basic instructional elements (teaching methodologies and materials), suggested in the syllabus, almost in all the schools surveyed the teaching method dominantly employed were found to be question and answerer, lecture and note giving . However there were very few schools that used other suggested methods such as discussion demonstration Group working, relating subject to learners environment role playing and song (play) which are also among rarely applied methods. Other methods like field trip invited guest, project, debate, dramatizing etc. could not be practiced due to time constraint shortage of budget and teaching materials, less commitment of teachers and the like.

Moreover field trip song/play and providing assignment related to student immediate environments, which are more relevant to environmental science syllabus, have been given less attention. Field trip is not employed at all of all grade level where as assignment related to the learners environment and song or play applied only in 55.6% and 36.1% of the total grade levels rarely.

Concerning the extent of use of teaching materials /learning aids/ in classroom instruction, it is found that in most of the classrooms observed picture, charts and models were employed, However, rarely. But other materials such as samples, maps, real objects and photograph are either less implemented or totally neglected.

Besides a considerable size of classroom instructions (61.8% of grade one, 50% of grade two 62.5% of grade three and 54.2% of grade four) were found to be with out teaching aid as summarized from table 4 and appendix O.

Third, the classrooms of the survey ed schools lack (ill-equipped with) the necessary furniture. About 73.5% of the teachers indicated inadequacy of students seats /bench or desk/ at their schools Another equal percentage of teacher rated their class room as having insufficient chair or table for teachers. Even though not serious other teachers (38.2%) also reported in adequacy of black board at their schools.

Fourth, almost in all the surveyed school in availability of the syllabus and Teachers Guide has been reported. About 58.8% and 41.4% of the total teachers have been found without syllabus and Teachers guide.

Besides unequal and late distribution of the curricular materials (particularly, text book) are also reported as a felt problem.

Similarly about 88.3% of total respondents revealed the less suitability of the curricular materials citing weaknesses like lack of different methods application, lack of simplicity etc.

Fifth, it has also been reported that the greater proportion of the teachers (88.2%) of the surveyed school had no any orientation or training on the Integrated curriculum approach.

Sixth, regarding the support service teachers receive from school administrative bodies (directors department heads SPC coordinators etc) and supervisors most of the respondents rated inadequacy of the service; 73.6% and 91.5% of them respectively indicated that the support provided by these bodies is either medium or none. They also noted existences of variation in relative effort made by teachers to alleviate the instructional problems of environmental science. Moreover about 67.7% of the total respondents reported that they are less satisfied with the process and result of their performance evaluation owing to the inefficiencies of school administration, inconsistence of some guide lines and biases prevailing. Particularly, concerning the support delivered by school pedagogical center, about 82.3% of the teacher respondents assured that the attempt made by SPC coordinators to prepare and supply instructional materials remain some what medium or low, implying in adequacy of the support given

In addition, it is also found that both centrally prepared or locally produced instructional materials are inadequate in the surveyed schools as rated by 64.7% and 82.4% of the total respondents respectively

Seventh, though not without variation most of the respondents have the position that there is opportunity for mutual exchange of experience at thee school as affirmed by 75% of teacher respondent and 66.7% of the SPC coordinators of the respective schools.

Eight, the teaching load of environmental science is found to be optimum, consequently the question of time shortage for lesson preparation is not a felt problem

Related to this period allotted for the syllabus is also found to be sufficient to cover the given portion. However class size if not a serious problem, is reported as a problem for the implementation of some of the specification of the syllabus. This is assured by a little less than half (47%) of the respondents. Perhaps, this is because of the prevalence of variation in student population among schools surveyed.

Ninth, It is also found that student performance showed variation both by grade and location /setting/ as measured by the achievement tests.

The students level of attainment of the minimum mastery level has been found decreasing with increasing grade levels. Hence about 67.32% of grade one, 50% of grade two, 39.78% for grade three and 18.7% of grade four students score at or above the MLC cut off score. This implies that instructional objectives (in tents) of the syllabus are attained with a varying degree by students.

Generally, however, the greater proportion (56.94%) of the students failed to get the MLC cut off score or "pass" score, implying relatively ineffectiveness of implementation of the syllabus.

Moreover a comparison of mean test score and minimum mastery level cut off score revealed that unlike grade one the mean test scores of grade two, three and four are found to be less than that of their respective grades' MLC cut off score; implying that relatively most of the grade one student have attained the intents of the syllabus under investigation compared to grade two, three and four, students

It is also found that students for different setting (urban and Rural) showed a statistically significant difference in the level of attainment of the intent (objectives) of the syllabus; with the exception of grade three (where urban students performed better), the rural school students relatively are found to attain better mean test score than their urban counter parts;

perhaps pointing out the prevalence of differences in the relative emphasis given to the implementation of the specifications of the syllabus.

Finally, regarding the factors influencing the process of implementation of curriculum inadequate /poor/ supply of curricular materials (particularly syllabus and teachers Guide), in adequacy of community support and involvement, low explicitness of the syllabus, In adequacy of pre-service training, in adequacy or absence of in-service/ on job/ training shortage of instructional materials and lowness of teachers interest towards teaching profession in that order, are reported by teachers as the most hindering factors affecting the implementation of the syllabus.

5.2 Conclusion

On the basis of these findings the following conclusions are made

The lower primary school environmental science syllabus is not implemented in all target grade levels (1-4) equally in Illubabor zone as planned.

The intents and specifications of the syllabus set for grade one are relatively better implemented than those for grades two, three and four.

There is a considerable gap between the designed in tents of the syllabus and what is actually being implemented in practice at grade level with some variations.

This is imperative from actual classroom instructional performance of teachers and student results.

Thus teachers' extents of use of teaching methods were found to be limited to question and answer, lecture and note giving. The other teaching methods such as discussion, demonstration, group and individual work role playing, field trip etc suggested in the syllabus to facilitate active learning were not realized as desired. Of teaching materials suggested in the syllabus to enrich learning only picture chart and models were rarely employed teaching materials such as samples photographs real objects etc were not implemented as designed.

As per student achievement test relatively most of grade one and grade two student achieved result at/ above the minimum mastery level cut off score as compared to grade three and four. But as a whole the majority of the students of all grades level received below "pass" score.

The absence of conducive conditions in the schools as well as out side factors seem to have contribution to the ineffectiveness of the implementation process. Besides the dis interestedness of some of the teachers towards the specification of the syllabus and the teaching profession are also important contributing factor to ineffective implementation of the syllabus

Pertaining to in- school factors, the existence of ill-equipped classrooms with necessary facilities such as furniture, shortage of instructional materials in general and in some cases a complete lack of syllabus and Teachers Guide, lack of awareness about integrated curriculum approach and the existence of some school directors and related school administrative bodies, who are less concerned with instructional problem encountering environmental science teachers are the most prominent ones.

In addition to these absence of on job training opportunity for teachers, in adequacy of the support rendered by supervisors and community involvement seem to have exacerbated the problem.

5.3 Recommendations

On the basis of the findings of the stud the following suggestions are recommended.

1. It has been indicated in the study that a significant number of teachers have exhibited low interest to wards the intents of the Environmental science syllabus and teaching profession. At the some time the greater proportion of teachers assured that they lack awareness about the integrated curriculum approach.

   So in order to solve these problem frequent and consistent communication of the curriculum /syllabus/ to the teacher and pursuing the awareness creating works in the form of training work shop seminars etc by concerned bodies particularly Wereda Education Office and Regional Education Bureau need to be realized. Moreover, to raise the ability of teachers training institution the recently started practicum training program of TTIS also must be encouraged to related the actual demands of school and trainings of the would be teachers.

2. One of the repeatedly raised problem was that inadequacy of on the job training for he teacher, as a factor of ineffective implementation. Therefore equal and due attention should be

given to the in service training of teachers particularly for those of the primary first cycle school by the concerned educational bodies at all levels. (Regional Education Bureau and MOE)

3. It has also been revealed in the study that, there is a failure on the side of the teacher to implement the specified intents of the syllabus as planned, consequently consistent support service, a close follow up, encouraging and identifying teachers interest, has to be made so that the teachers are convinced and initiated of their teaching career. In this case, those immediate responsible bodies, directors, department heads on one hand and supervisors on the other hand must work a lot. In addition to this, to create a sense of mutual competition among teachers on the basis of performance incentive delivery program has to be encouraged and pursued.

4. Lack of curriculum materials and late distribution of these materials of environmental science has been consistently raised by teachers as one of the major factor influencing the implementation of the syllabus. Hence due consideration must be given to maintain adequate proportional and timely distribution of the curricular materials (syllabus, Teacher's Guide and text book of the environmental science) by the concerned educational officials at various levels and school principals should take of the handling and utilization of these materials in the schools.

5. For the teachers professional development and capacity improvement the recently started school built supervision, experience exchange with in school and between schools must be strengthened to be effective through attention and concern of school administrative bodies and supervisors at large.

6. Once again the main responsibilities of supervisors is known to detect problem and give practical solutions for the problems of teacher in the light of curriculum implementation improvement, thus they have to give the help to teachers so that they can make better decision concerning what and how of teaching, particularly, in such a Environmental science syllabus, which appear new in its approach and the supervisors need to make immediate follow up and assist the day-to-day activities of teachers and initiate possibilities to have practical in-service training opportunities for teachers.

7. It has also been reported that in adequacy of community support and involvement in the education activities and existence of weak school administration as among the leading factors responsible for ineffective ness of the implementation of the syllabus. Therefore awareness creating works must be given special attention among local communities regarding the uses of education and empowering them to maximize their participation by the concerned administrative bodies at different levels particularly of those of grass root level. Besides school administrative system also has to be strengthened through improvement of professional capacity and to some extent by facilities as much as possible.

8. Lastly, as this study is only limited to the evaluation of practicality of Environmental Science Syllabus of one administrative zone of the country, interested researchers in the field can conduct similar study in another setting to see the extent of practicality of such syllabus of other zones.

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Appendix A

Teacher's Questionnaire

Objective: The purpose of the questionnaire is to collect data pertinent to an evaluation of the implementation of environmental science syllabus. The result of the study is used basically for academic requirement. Thus you are kindly requested to give your response genuinely and frankly on the basis of the questionnaire that follow. Thanks in advance.

General Information.

. The name of the school :----------

. Wereda ----------

. Qualification ----------

. 12 + TTI -------

. Diploma -------

. Sex M ------ F ---------

. Age : ----------

Service year ----------

. Grade and Section ----------

. Weekly load ----------

. No of student in a class -------

Direction 1: With the reference to the given major purposes of teaching integrated environmental science syllabus, indicate by (☐) the fulfillment of the following and your agreement on the basis of the scales given. The scales are .

5= strongly agree 4= agree 3= not decided

2= disagree 1= strongly disagree.

Table 1. Questionnaire related to attitude.

No	Specification of the syllabus and aspects of its implementation	Level of agreement				
		5	4	3	2	1
1	The intents of the curriculum is clearly specified in the curricular materials (syllabus, Teacher's Guide and Text book)					
2	The syllabus suits the development of problem solving skills in the students					
3	In order to teach Environmental science effectively, the teacher should have both professional and subject matter knowledge and competences.					
4	The environmental science teachers should devote most of their time, in planning organizing and integrating their teaching for betterment of the lesson.					
5	The availability of the syllabus gives chance for the teacher to have a clear view of the intent of the designed curriculum					
6	The environmental science teachers have to get in service or on job training to be familiar with modern teaching techniques.					
7	Using concrete visual and audio teaching materials will help students for better learning					
8	Lesson at grades 1-4 should be related to student immediate environment and with discovery method					
9	Field trip best comply with the desirable method to teach environmental science.					
10	Both the objectives and contents of the environmental science syllabus (1-4) are relevant and interesting					
11	The design and organization of the syllabus is integrated enabling student to receive unified knowledge to see interrelated ness of subjects.					
12	The text book of the environmental science can be covered with in the allotted time					
13	The assessment procedures suggested in the syllabus leads students to meaningful understanding instead of memorization					
14	The syllabus is provided with clearly organized subject matter suitable methodologies, evaluation techniques and reasonable period allotment.					
15	Teaching environmental science require teachers to have a research inclination.					
16	The teacher's knowledge of the environment he is teaching in and active social interaction with the community makes his teaching more purposeful.					

Direction 2 : under this, two sub division of directions have been presented; 2.1 and 2.2.

2.1. Here indicate whether the following are adequately available or not using tick (√)

Table 2 : Availability of facilities.

No	Description	Level of availability			Ratio	
		adequate	In-adequate	Non Existent	Syllabus Teacher Guide Teacher	Textbook Student
1	Furniture (for students & teachers)					
2	Black board					
3	Syllabus					
4	Teachers Guide					
5	Text book					
6	Other necessary teaching materials					

2.2. Give your response by choosing from the given alternatives the one that you feel appropriate at the same time supplement your response by evidence or description when necessary. (Circle the letter of your answer).

7. Have you had any training on an integrated curriculum and teaching method?
   a) yes b) no
8. If your answer to "7" is yes, give the duration of the training._____
   _____
9. How do you evaluate the suitability of the curricular materials (syllabus, Teacher's Guide and text book)?
   a) high b) medium c) low
10. If your response is medium or low, what do you think the limitation of the materials especially text book?
    a) The text invites to cover portion rather than to deal in depth.
    b) It is full of information which does not lead to application.
    c) The text lacks different methods of presentation.
11. How do you rate your interest towards teaching profession?
    a) High b) Medium c) low
12. If your answer is medium or low, why

    ---

13. The extent of satisfaction with the evaluation processes and results which the school uses to judge your performance?

a) Low b) medium c) high

14. If your answer to the above question is low or medium, what is the reason?

---

15. How do you rate the support provided by supervisors and school administrative bodies.

a) Adequate b) medium c) low

16. To what extent SPC produce and supply teaching materials relevant to environmental science syllabus.

a) abundantly b) to some extent c) not at all d) no SPC.

Derection3. After carefully reading and understanding the lists of the teaching procedures and instructional materials given below give rank order to each on the basis of importance you attach to them. The methods are listed from 1 while instructional materials are enumerated 1-8

3.1. Rank order indicating degree of importance.

No	Teaching method	Rank order
1	Lecture	
2	Note giving (on chalkboard)	
3	Question and answer	
4	Discussion	
5	Project (individual)	
6	Group work	
7	Demonstration	
8	Invited guest	
9	Debate (dialogue)	
10	Dramatizing	
11	song	
13	Role playing	
14		

No	Instructional materials	Rank order
1	Chart	
2	Picture	
3	Photograph	
4	maps	
5	Diagrams	
6	Specimen/samples/	
7	models	
8	Experimental Objects (kits etc.)	

Direction 4

After considering and understanding these factors, give rank according to the level of their influence on the implementation of environmental science syllabus on the space provided. Note that, those factors having strong influence should take the upper ranks (1,2,3---) those with minimal influence should take lower rank (---- 11,12,13)

No	Factors	Rank
1	Poor supply of curricular materials (syllabus, Teachers` guide and text book)	
2	In adequacy of the period allotted	
3	Low explicitness of the syllabus	
4	Absence in in-service and on job trainings	
5	Teachers` disinterestedness to wards teaching profession and environmental science	
6	Inadequacy of the support given from the school administrative bodies.	
7	Inadequacy of the support (from supervisors)	
8	Inadequacy of the pre service training	
9	Shortage of instructional materials (learning aids)	
10	Inadequacy of community support and involvement in the activities of educational process.	

Appendix B

Class Room Observation Rating Form

Objective: the purpose of the observation is to obtain some data pertinent to the evaluation of implementation of environmental science syllabus. The final result of the study is used for the requirement of academic purposes.

Date: ----------
Wereda: ----------
School ----------

Observer's name ----------
Grade and Section ----------
Length of the period ----------

Period ----------
Topic ----------
Size of the students---------
M ----------
F ----------
T ----------

Direction: The format contains teaching method, instructional materials as well as teachers' and student activities. Thus it is helpful to follow and record the starting time and end of acts employed during the period. At the same time indicate by (✓) the instructional materials used and the corresponding activities of the teacher and students respectively by (✓) when ever applied

(a)

	Teaching methods	Time	Instructional materials									Teachers activities							Students activities					
			Chart	Picture	Paragraph	Maps	Diagram	Model	Black Board	None	Other	Lecture	Question and answer	Answering	Note giving	Demonstration	Guiding stand points	Others	Listen in	Asking	Answering	Practice of work	Group work	Note copying
1	Lecture	Start --- End----- Gap-----																						
2	Note giving	Start --- End----- Gap-----																						
3	Question and answering	Start --- End----- Gap-----																						
4	Discussion	Start --- End----- Gap-----																						
5	Individual task (Project)	Start --- End----- Gap-----																						
6	Group work	Start --- End----- Gap-----																						
7	Demonstration	Start --- End----- Gap-----																						
8	Invited guest	Start --- End----- Gap-----																						

(b)

No	Teaching Methods	Time	Instructional materials (if any)	Topic	Students involved			Students role					Teacher's role					At the end of the lesson								
																		Teacher's activity					Student activity			
					M	F	T	Listening	Giving	Asking	Answering	Other	Listing	Asking	Answering	Guiding	Other	Elaborating	Explaining	Asking	Answering	Suggestion	Asking	Answering	Listening	Others
9	Debate	Start --- End----- Gap----																							
10	Dramatizing	Start --- End---- Gap----																							
11	Song	Start ---- End----- Gap-----																							
12	Role Playing	Start --- End---- Gap-----																							

(c)

No	Teaching method	Topic	Place		Teacher's role	Student's role	Instructional process of field trip											
							Teacher's activity				Student activity							
			In school	Out side the school							Report							
							Explaining	Asking	Answering	Listing to report result	Individual	Group	Discussing	Asking	Answering	Others		
13	Field trip																	

III. The general conditions observed in the class during the period has to be summarized here under.

1) The observations (comments) in summery regarding the application of teaching methods.

2) Comments regarding the use of instructional materials

3) The effort of teacher to maximize the student involvement and the actual student participation as observed.

4) The assessment techniques employed by the teacher to check students' participation and understanding.

Appendix C

Directors and Others Questionnaire

Objective: The objective of the questionnaire is to collect some data for evaluation of the implementation of the environmental science. The result of the study is used for academic purpose. Besides it can also be used for the improvement of the syllabus.

Hence on this ground you are kindly requested to give your genuine and relevant opinion on the basis of the questionnaire that follow.

Information:	Service year:	Your present position (responsibility) (√)
Date----------	As a teacher: ----------	Director ☐
School----------	As Dept Head: --------	Vice Director ☐
Wereda ---------	As Unit leader: --------	Unit leader ☐
Qualification -----	As Vice Director-------	Dept Head ☐
Sex M ☐ F ☐	As Director: ---------	tick(√) against one

Direction 1. Give answer by choosing and describing where needed.

1. Do you have training on educational administrations (Directors' course) (Circe your response)
   a) Yes b) no I don't
2. If your answer is "a" describe the level of the training
3. Did student textbook reach your school before the beginning of the classes?
   a) Yes b) no
4. If your response to "3" is "b" at what time it was supplied.
   a) One week after the class has begun
   b) One month after the class has begun
   c) Two months later
   d) Write here if you faced different condition.
5. Are there the following environmental science curricular materials that is, syllabus. Teacher guide and text book at your school.
   a) Yes b) no
6. what is the level of adequacy and their distribution among teacher and students?

Syllabus: Teacher: Ratio ----------
Teacher's Guide: Teacher Ratio ----------
Test book: Student Ratio ----------

7. Does your school have pedagogical center.
   a) no b) yes
8. How do you evaluate its organization and effectiveness
   a) better b) medium c) poor
9. Does school pedagogical center have budget
   a) no b) yes
10. If your response is yes, how to do you judge the budget in the eyes of service spc deliver.
    a) sufficient b) some what enough c) not sufficient
11. How do you rate the participation of teacher's at SPC.
    a) in producing instructional materials b) by borrowing the available one
    c) do not participate
12. To what extent teachers use instructional (teaching) materials in their lessons.
    a) Frequently and effectively b) use rarely c) do not use
13. Do students participate in Spc activity programs
    a) Yes b) no
14. Is there a library at your school
    a) no b) yes
15. If your answer is yes are there reference books relevant to environmental science?
    a) yes b) no
16. With in a year How often teacher take students out of school campus for field trip?
    a) not at all b) rarely c) two times d) If different from the above describe
17. Is there any in staff training culture pertinent to environmental science syllabus and teaching methods at your school.
    a) yes b) no
18. What mechanisms do you use to detect and minimize problem (if any) related to effective implementation of subject syllabi in general and environmental science syllabus in particular.

_____

_____

_____

Direction 2: Here are the major teaching methodologies and teaching materials as suggested in the syllabus. First give rank order both to the teaching methods that ranges 1-13 and then for teaching materials ranging from 1-8, on the basis of the importance you give them.

After that indicate by tick (√) how frequent (often) teacher use them in the classroom for the effectiveness of implementation of environmental science syllabus.

2.1. Degree of importance – rank

No	Teaching methods	Rank
1	Lecture	
2	Note giving	
3	Question & answer	
4	Discussion	
5	Project(individual work)	
6	Group work	
7	Demonstration	
8	Invited guest	
9	Debate	
10	Dramatizing	
11	Song	
12	Role playing	
13	Field trip	

No	Instructional Materials	Rank
1	Chart	
2	Picture	
3	Photography	
4	Maps	
5	Diagrams	
6	Samples	
7	Models	
8	Experiments objects kits	

Appendix D

Questionnaire to be filled by School Pedagogical center Coordinator

The objective: The objective of the questionnaire to obtain some data as to what extent instructional materials are used by teacher in the classroom. More over the result of the study is used for academic purposes.

Hence, you are kindly requested to show your cooperation by giving your genuine response on the basis of the questionnaire that follows.

Information:

. The Name of the school.

. wereda

. Qualification

. Sex M ------ F -------

. Age ----------

. Service year:

. As a teacher ----------

. As a SPC Worker : ----------

. Weekly load (periods) if any ----------

. The size of sections ----------

. Size of Environmental Science teachers

M----- F--- T ----

Direction 1. After reading each question, choose and answer that one you feel appropriate of the giver alternatives by circling. Besides when needed give additional remarks or justification.

1. Have you attended any training that addresses the functions of school pedagogical center. a/ yes b/ no
2. If your response is yes, for what length of time?
3. How do you judge the effectiveness of the organization of your school's pedagogical center .

   a) better b) medium c) poor
4. Does the center have yearly budget?

a) yes b) no

5. If yes, how about its adequacy.

a) Sufficiently adequate b) some what adequate
c) not sufficient

6) Are there any centrally prepared and supplied teaching material in your spc.

a) no b) yes

7) How do you rate the participation of teachers at spc.

a. in the production of the materials
b. by borrowing and using the available one
c. do not participate

8) How often teacher use the available teaching materials?

a) frequently b) rarely c) not at all

9) When do teachers borrow teaching materials? Give your response briefly

_____

_____

10) Do student participate in SPC. Programs

_____

_____

11) How do you evaluate the effectiveness of the following

11.1) In staff training activities _____

_____

11.2) Experience exchanging _____

_____

11.3) Conducting research as coordinated by your center _____

_____

12) What means do you use to assist teachers so that the process of teaching learning will be effective and meaningful.

_____

_____

Direction 2. After reading and understanding , indicate the extent of availability by(√) Quantity be giving number and extent of using by (√) in the following chart (table).

Teaching materials, availability and use.

No	Teaching Materials	Extent of adequacy		Quantity	Extent of using the materials (by teacher)			Reason
		Available	Not available		Frequently	Rarely	Not at all	
1	Charts							
2	Pictures							
3	Photograph							
4	Maps							
5	Diagrams							
6	Samples							
7	Models							
8	Experimental materials(kits etc)							
9	Real objects							

Additional remarks about un for seen data (if any) ----------

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Appendix E

Interview with supervisors

Objective The purpose of the interview is to gather some data pertinent to the evaluation process of the implementation of environmental science syllabus; and the result of the study is used only for the academic purpose.

Thus on this ground you are kindly requested to show your cooperation by giving relevant and reliable information on the basis of the forth coming interviews. Thanks in advance.

. Name ---------- sex ---------- wereda----------

. Qualification ---------- age ----------

. Total service year:----------

. (in teaching) ----------

. (supervisor) ----------

1. What is the commonly used way of supervision to assess the implementation of environmental science syllabus (1-4) in your wereda?
   a) Class observation b) discussion with teachers
   c) Written report d) other
2. Is there any on job training or workshop program designed on integrated environmental science syllabus (1-4) for teachers' share of experience.
3. Does your office conduct research (evaluation study) on the extent of implementation or prepare and distribute written document to teachers?
4. Would you describe the means you have used to facilitate the implementation of the environmental science syllabus (1-4)
5. Would you enumerate the strong points and short comings of the implementation process of the environmental science syllabus that you have encountered.

Appendix F

Table of Specification (for grade 1-4)

Subject: Environmental science

Table of Specification **Subject - Environmental science**

Grade one

	Instructional objectives	Contents		No of items
	The students will be able to	Man and his life	Our environment	
	-identify and states the outer parts human body - Describes and explains the uses of human sense organs	-The outer parts of human body (physiology) sense organs personal hygiene **(item 1-4)**		4
	-explains the meaning and enumerate the role of the family in the society	Family types of families **(item 5-10)**		5
	- Identify and state the basic necessities of life - List their possible sources	Basic needs of man **(item 11-12)**		3
	-Distinguish animals of their environment states & enumerate some of them - Explains the uses of domestic animals and wild life - List some disadvantage of both domestic and wildlife (animals) - Takes care of such incidence (problem) that both domestic and wild animals cause - Identify the conservation methods and also participate at their level		Animal of our environment - Domestic animals - Wild animal s -Uses of animals and their disadvantages **(item 13-16)**	5
			- Methods of conservation **(items 17-18)**	1
	No. of Items	12	6	18

Table of specification subject Environmental Science

Grade Two

	Instructional objectives	**Contents**			**No Of items**
	The students will be able to :	Man and his life	Our natural environment		
	- Understands and lists the basic necessities ties of life - Describes the meaning and sources of food clothing and shelter. - Explains the importance of keeping personal hygiene and environmental sanitation. - They practically demonstrate by keeping their hygiene neatness of their schools and their home - identify the major norms of life and exercise assuming responsibility. - Explains the use of instruments of measurements.	Basic needs of life (man) Food Clothing Shelter Sources uses **(item 1-3)** Hygiene Personal Environmental **(item 4-6)** Norms of life different types measuring things . -traditionally -Modern way. **(item 7&8)**			4 3 2
	- Explains the location of their werda in relation to their surrounding. - exercise sketching the map of their wereda & explain the meaning of maps - Identify the landscape of their wereda and states its nature. - explains and states categories and distribution of plants - state and explain types of animals and their categories		Wereda(district) Location Size Basic directions Map **(item 9-12)** Landscape of the wereda plants(Vegetation) -Types -Parts -Distribution -conservation -Animals -Categories **(item 13-20)**		2 9
	No. of Items	9	**11**		20

Grade: Three

No	Instructional objectives	Contents			
	The students will be able to	Man and his life	Measuring things	Our living environment	No of items
	- Comprehend and explain the meaning of food and its types , and its uses to man - Categorizes different types of food according to their uses - identifies and states the basic necessities of man - builds and demonstrates skills of self guiding	-Food and its process **(item1-4)** -Style of life programmed (planned) Time Money Labour power **(item 5-7)**			4 3
	- Explain the concept of measurement - distinguish between the traditional and modern ways of measuring things. - Measure physical phenomenon using different measuring devices (instruments) - Produce the models of some measuring tools from their surrounding resources		. Concept of measurements .measuring things: Traditional modern ways weight(mass) Length Time **(item 8-11)** volume Liquid (things **(item 12&13)** Weather and climate elements Temperature Wind Rain **(item 14-15)**		4 2 2
	Define the concepts of environment and natural resources . -Describes the major types of natural resources of their environment - States and explains different conservations methods of natural resources and interrelated ness			Environment Natural Resource and conservation methods soil water vegetation & wild life **(item 15-17)** Plants seeds & its parts **(item 18-20)**	2 3
	No. of Items	7	8	5	20

Table of specification

Subject: Environmental Science Grade Four

	Instructional objectives	Contents			No of Item
	The students will be able to	Understanding our environment	Man and his life	Our natural environment	
	- Observe and identify things around them - analyze measure record and report the major things of their environment - Identify the major problems and attempt to study them - solve some problems they face	-Observing things around us - studying the problems of our environment - -procedures & (steps) of research of their level **(item 1-5)**			5
	- Explains the nature of human growth, physical and psychological changes that occurs on their bodies. - States and describe the changes that occur at different age level and explains the care that must be taken identifies and states the ethical principles and values - Understands and explains how to build good conduct or desirable behavior -Explain the importance of plan in every walks of life.		Physical growth of human being (physiological changes) childhood Adolescence Some problems & characters -Ethical principles and values of life **(item 6-15)**		10
	-Explains the concept of food - States the categories of food and their sources - Describes the cause of diseases and prevention methods.		- Food an its processes -Digestive system of food - Blood circulation and its significance - Causes of diseases and prevention methods- **(item 16-21)**		6
	- States and explains the nature of vegetation and animals -Describes different characteristics of plants. - Explains the interrelatedness of vegetation climate an animals.			-Vegetation (plant) - Animals **(item 22-25)**	4
	Total number of item	5	16	4	25

Appendix G

Achievement Test (1-4)

Academic year 1996 E.C

Environmental Science examination

For grade One

Name of the school: _____

Werda: _____

Kebele in which the school is found: _____

Sex : _____ **Age :** _____

Instruction: Answer the following questions by choosing the correct response from the given alternatives.

1. Which one of the following is not a part of external human body organs?

   A. Leg B. teeth C. Neck D. Breast

2. Bad or good smell is sensed by

   A. eye B. skin C. ear D. Nose

3. Tongue is used for

   A tasting B. smelling C. Seeing D. Touching

4. A failure to keep one's personal hygiene may cause disease.

   A. True B. False

5. Group of people living under one shelter forms

   A. House wives B. Relatives C. Family D. Household

6. Which one of these is not a good act?

   A. being obedient to parents guidance

   B. Neglecting advices of father and mother

   C. considering and valuing parents words

   D. all are answers

7. Which of the following is not among the role of children?

A. Taking care of little sibling B. Fulfilling family basic needs

C. looking after livestocks D. learning

8. Use of Oxen may enable us to produce more agricultural out put than using tractor

A. True B. False

9. Which of the following is a sort of hand craft activities used as income generating.

A. potry B. black smith C. Smoothing hides

D. all of the above

10. In order to survive woman / man has to get

A. Food B. Clothing C. shelter D. All of these

11. Of these which one is used as raw material for producing cloths

A. skin and hides B. Silk C. cotton

D. all of the above

12. Which one of the following is not correct?

A. Food is required for human growth

B. clothe gives us energy

C. House is used as a shelter

D. All are correct

13. Which of these are not commonly found in your surrounding/locality?

A. Camel B. goat C. dog D. cat

14. On the basis of their uses, one is different from the rest, which one is it?

A. Horse B. Mule C. donkey D. Cow

15. Livestock's are used as

A. source of food B. source of clothes C. means of labour

D. All are answers

16. Which of the followings incidences are caused by domestic animals?

A. biting B. Kicking C. wounding D. all are answer

17. Which of these are not domestic animals?

A. cow, hen, sheep B. Horse, mule, donkey

C. Goat, dog, cat D. Monkey, Fox, rabbit

18. Taking care of their disadvantages, to get advantages from animals, we must conserved them.

A. False B. True

Academic Year 1996

Environmental Science

Grade 2

Name of the school: _____

Woreda (District): _____

Kebele :_____

Sex:_____ **Age:** _____

Instruction: Choose the correct answer from the given choices

1. Which of the following is basic for the survival of human being?

A. food B. Cloth C. Shelter D. All of the above

2. Which one of is the source of heat and energy?

A. Fatty meat and butter B. Cabbage and egg

C. Tomato and Orange D. Maize and carrot

3. Which method is used to preserve food?

A. Washing B. drying C. refrigerate D. 'B' and 'C' are answer

4. A failure to keep our clothes _____ causes disease?

A. attractiveness B. Safety C. Cleanness D. Newness

5. Which of these helps us to keep our personal hygiene?

A. Taking bath B. shortening and cleaning finger nails

C. 'A' and 'B' are answers D. getting enough bed time

6. One of the following may be affected due to use of contaminated water?

A. Tuberculosis B. diarrhea C. malaria D. Common cold

7. For which of the following diseases medicine is not discovered yet?

A. AIDS B. Trachoma C. ringworm D. skin rash

8. Of the following, that may cause a trait to human being is ?

A. Animals B. fire C. Water D. all of them

9. Which of the following is the least unit?

A. a day B. a seconded C. a minute D. an hour

10. Many Kebeles together form a _____

A. Zone B. Town C. Woreda

11. If you face the sun in the evening your right shoulder will points to:-

A. West B. East C. North D. South

12. What is the use of the map?

A. Show the shape of the earth

B. represents man on the paper

C. show the picture of animals

13. The topography of the land can be similar every where

A. False B. True

14. Which of the followings is among the characteristic of highlands?

A. Coldness B. Mountains and plateau C. Hotness

D. 'A' and 'B' are correct

15. The elongated low lying land found between two parallel faults is known as?

A. mountain B. plateau C. rift valley D. Amba

16. Plants are living things

A. True B. False

17. Which part of the plant body helps them to prepare their own food?

A. Flower B. leaf C. root D. stem

18. Which of these methods is a measure of plant conservation?

A. Clearing B. burning C. planting D. Peeling out

19. Of the following animals, which one does not lay eggs?

A. bat B. hen C. eagle D. Snake

20. Which group of plants need abundant amount of rain fall?

A. grass B. Shrubs C. forest D. Savanna

Academic year 1996 E.C

Environmental science Examination for Grade 3

Name of the school :_____

Woreda :_____

Name of the Kebele in which the school is located

_____

Sex male: _____ **Female** _____

Age _____

Instruction: - After reading the following questions carefully, select the best answer from the suggested alternatives

1. What is the use of food for our body?
   A. It provides energy B. It prevent diseases
   C. It is the basis for the building and repair of cell structures
   D. All of the above
2. Which of the following food groups are used for building and repairing of the body?
   A. Beans, Fish B. Maize, Butter C. Pumpkin, Banana
   D. Cabbage, Salt
3. Which of the following is not balanced diet?
   A. Bread, Tea, soup of barely
   B. porridge milk, orange
   C. Injera, shirowat, cabbage
   D. soup of Lentils, Bread, Banana
4. Which one is a good habit during meal?
   A. talking while eating
   B. Washing hands before and after meals

C. Sitting in appropriate place

D B and C

5. What is the use of planning in all walks of life?

A. Enables us to generate relevant means of implementation in advance

B. Helps us to determine resource input and time

C. Saves human power time and financial resource

D. All of the above

6. Which of the following is an example of hand craft tools?

A. Pliers hammer

B. Rake, Liner

C. Mattock, Dibber

D. Sickle, hoe

7. Which of the following is required for efficient work?

A. Human power B. Financial resource

C. Time D. all of the above

8. In the process of facilitating the work, which one is the last stage?

A. Planning B. implementation

C. monitoring and evaluation D. None of the above

9. Which of the following association is wrong?

A. farm- plough B. Sweater- awl

C. A and B D. Wood work – saw

10. Which one of the following is not traditional method of measuring? length?

A. Feet B. Span C. meter D. Cubit

11. What is the unit of mass?

A. Kilometer B. Meter C. Kilogram D. Millimeter

12. Which of these is the modern means to measure volume of liquids?

A. Bottle B. Pot C. Barrel D. Liter

13. one meter is equal to _____ centimeter

A 100 B. 1000 C. 10 D. 10,000

14.Of the following which one is smallest unit of time?

A. minutes B. day C. hours D. seconds

15. Which of the following is most affected by climatic factors?

A. trading B. Agricultural activities

C. hand craft D. Industrial activities

16. Which of the following is a wrong association between elements of climate and instrument used to measure?

A. amount of rain- Anemometer

B. amount of rain- Rain gauge

C. temperature-Thermometer

D direction of wind – Wind vane

17. Which of the following Natural resources are used by man to full fill his basic needs?

A. Soil B. Water C. Forest and wild animals D. All of the above

18. What are the methods used to control soil erosion

A. Contour ploughing B. Planting wind break

C. Reforestation D. All of the above

19. Methods of conserving forest and wild animals support each other

A. False B. True

20. Which of the following seed is mostly dispersed by animals?

A. orange B. lemon C. tomatoes D. apple

21. The part of seed that contains stored food is known as

A. plumule B. Cotyledon C. Radical

E. Embryo

Academic year 1996 E.C

Environmental science Examination for Grade 4

Name of the school :_____

Woreda :_____

Name of the Kebele in which the school is located

_____

Sex male: _____ **Female** _____

Age _____

Instruction: - After reading the following questions carefully, select the best answer from the suggested alternatives

1. What is the need of understanding our Environment?
   A. It is source of our basic necessity ‘
   B. Helps to exploit our natural resource
   C. To minimize the influence of environmental factors
   D. All of the above
2. Which of the following method is not help us to study our surrounding?
   A. Discovery B. Observation C. Interview
   D. Document (recalling)
3. What type of questions help us to study our surroundings?
   A. Short and clear B. long sentence C. General
   D. Open ended
4. In the course of research which one is the first step?
   A. Data gathering B. Hypothesis
   C. Identification of the problem D. Recommendation
5. Which of the following is not correct?
   A. For every problems studied it is simple to get solutions

B. Learning by discovery leads one to meaningful understanding

C. Based on the data gathered a hypothesis can either be proved or disproved.

D. None of the above

6. Which of the following, shows the correct stage in human development?

A. Adolescent _____ adult _____ Old age

B. Baby _____ Adolescence ____ Adult

C. Child hood _____ Adolescent __ old age

D. Baby _____ child hood ____ Adolescence

7. Enlargement of breast and Menstrual cycle in female is observed during?

A. Child hood period B. Adult C. Adolescence

8. What are the problems seen during Adolescence?

A. Drug abuse B. Sexually transmitted disease (STD)

C. Unwanted and teenage pregnancies and abortion

D. All of the above

9. Which of the following statement is not correct?

A. Teenager pregnancy can contributed to development by causing population growth

B. Early pregnancy may affect both the health of mother and off spring

C. Unwanted pregnancy could also be a cause of social evils.

D. Unwanted pregnancy also affects the economy of country

10. One of the following is not moral value?

A. Truth B. bias C. honesty D. transparency

11. Which of these contributes to social interaction?

A. Expressing one self

B. Identification of truth and false

C. Manifeststing active participation

D. All of the above

12. Which of the following plan is used for monthly and daily activities?

A long term plan B. Short term plan

C. Mid- term plan D. None of the above

13. Of the following one is not good method of utilizing money

A. Identifying source of income

B. Conducting market assessment

C. Budgeting

D. Receiving Debt as much as possible.

14. Which of the following is not obligatory to perform certain activities?

A. Planning B. Appropriate environment

C. Age and resource D. modern technological device

15. A science that is employed in growing of plants and rearing of animals

is?

A. Trade B. Agriculture C. Industry D. Hand craft

16. From the following food stuff which one is used for building and repairing the body?

A. Minerals B. Vitamins C. Proteins D. Fats and oils

17. From the following which one is the source of Vitamin "A"?

A. Carrot, papaya B. Vegetables, Green peppers

C. Lemons, oranges D. Tomato, wheat

18. What is the deficiency disease caused by lack of iron?

A. Rickets B. Scurvy C. Goiter D. Anemia

19. What is the part of alimentary canal where digestion of food is completed?

A. Mouth B. Small Intestine C. Stomach

D. large Intestine

20. Which of the following a disease of Blood circulation?

A. AIDS B. Malaria C. A and B D. Common cold

21. What are the methods used to control disease?

A. Personal hygiene B. Getting balanced diet

C. Identifying the way of transmission of disease

D. All of the above

22. Based on their distribution, which one has strong relation ship?

A. Plants ____ soil ____ Climate

B. Animals __ Soil ____ Human activities

C. Plants _____Human activities _____ water

23. On the basis of on their reproduction, which one is different from others?

A. Onion B. Maize C. Banana D. Cactus

24. Depending on their habit which of the following animals are different?

A. Cow, mule B. Goat, Sheep

C. Donkey, Horse D. dog, cat

25. To make their own food green plants require ____.

A. Water B. Light energy C. Carbon dioxide

D. All of the above

Appendix H

Back Ground information of the Teachers Respondents

Grade level	Sex			Age Range			Academic background	Service year			Weekly load			Class size		
	M	F	T	<25	25-40	>40	TTI	>10	10-20	>20	<25	25-30	>30	<50	50-80	>80
One	6	4	10	-	7	3	10	1	6	3	7	3	-	6	3	1
Two	4	4	8	1	5	2	8	4	2	2	4	4	-	4	4	-
Three	4	3	7	-	2	5	7	-	-	7	4	3	-	2	5	-
Four	5	4	9	-	2	7	9	-	2	7	7	1	1	6	3	-
1-4	19	15	34	1	16	17	34	5	10	19	22	11	1	18	15	1

Appendix I

Background information Student Samples

Age	Grade One			Grade Two			Grade Three			Grade four			1-4		
	M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
7	24	21	45	11	3	14	-	-	-	-	-	-	35	24	59
8	20	22	42	29	38	67	19	12	31	-	-	-	68	72	140
9	13	16	29	26	32	58	37	32	69	19	19	32	92	96	188
10	13	13	26	14	13	27	17	22	39	24	35	62	73	81	154
11 and above	5	6	11	10	10	20	21	26	47	46	45	91	80	85	165
Total	75	78	153	90	96	186	94	92	186	89	92	181	348	358	706

Appendix J

Background information of directors

Sex			Qualification						Service year as															
			12+TTI			Diploma			Teacher						Director						Total					
									<10		10-20		>20		<10		10-20		>20		<10		10-20		>20	
M	F	T	M	F	T	M	F	T	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
9	-	9	8	-	8	1	-	1	3	-	4	-	2	-	4	-	4	-	1	-	-	-	3	-	6	-

Appendix K

Back ground information of School pedagogical center coordinators

School	SPC coordinator			Qualification		Age			Service			Weekly Load		
	M	F	T	12+TTI	Diploma	<25	25-30	>30	>10	10-20	20>	>15	15-25	25>
Mesengo	1	-	1	1	-	-	-	1	-	1	-	1	-	-
Abune Mechael	1	-	1	1	-	-	-	1	-	1	-	1	-	-
Bubu	1	-	1	1	-	-	-	1	-	-	1	-	1	-
Chore	1	-	1	1	-	-	-	1	-	1	-	-	-	1
Bogo and Checha	1	-	1	1	-	-	-	1	-	1	-	1	-	-
Gechi No.3	1	-	1	1	-	1	-	-	1	-	-	1	-	-
Weseger	1	-	1	1	-	-	-	1	-	1	-	-	-	1
Hawa Yember	1	-	1	1	-	-	-	1	-	-	1	-	-	1
Bedele No. 2	1	-	1	1	-	-	-	1	-	-	1	-	1	-
Total	9	-	9	9	-	1	-	8	1	5	3	4	2	3

Appendix L

Back ground Information of Supervisors

Wereda	Super visors																								
	Sex			Age range								Service year								Education					
				10-20		21-30		31-40		41>		<10		11-20		21-30		31>		Deg		Dip		TTI	
	M	F	T	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Algie Sachi	2	-	2	-	-	-	-	1	-	1	-	-	-	1	-	1	-	-	-	1	-	-	-	1	-
Halu Bure	1	-	1	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-
Alle Didu	2	-	2	-	-	1	-	1	-	-	-	1	-	1	-	-	-	-	-	1	-	1	-	-	-
Gechi	2	-	2	-	-	-		2	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	2	-
Chora	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-
Yayo Hurumu	-	1	1	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-
Bedele Dabo	3	-	3	-	-	-	-	-	-	3	-	-	-	-	-	2	-	1	-	1	-	2	-	-	-
	11	1	12	-	-	1	1	5	-	5	-	1	1	3	-	6	-	1	-	3	-	3	1	5	-

Appendix M

Calculation of the chi-square (x^2) Statistics

Attitude score of teacher by Grade level (out of 80% but later converted to 100).

Grade 1	Grade 2	Grade 3	Grade 4
68	68	-	60
68	64	68	69
69	79	-	66
73	79	74	72
71	-	62	76
69	61	57	73
73	71	75	74
68	76	79	76
77	75	79	66
74	-	-	-

Combination of the score of the four groups of teachers to obtain the Grade median

57,60,61,62,64,66,66,68,68,68,68,68,69,69,69,71,**71,72**,73,73,73,74,74,

74,75,75,76,76,76,77,79,79,79,79,

Grand Media = $\frac{71+72}{2}$ = 71.5

1. Calculation of x^2 median test statistics for the teachers attitude towards the syllabus specification.

The formula x^2 cal = $\sum_{i=1}^{r} \sum_{j=1}^{c} \frac{(oij - eij)^2}{eij}$

Cell	0-E	$(0-E)^2$	$\frac{(0-E)^2}{E}$
1	-1	1	0.2
2	1	1	0.2
3	0	0	0
4	0	0	0
5	0.5	0.25	0.7143
6	-0.5	0.25	0.7143
7	0.5	0.25	0.0555
8	-0.5	0.25	0.0555

$x^2 = 0.6539$

2. Computation of the chi square (x^2) statistics for student test results

Cell	0-E	$(0-E)^2$	$\frac{(0-E)^2}{E}$
1	37.12	1377.89	20.91
2	-37.12	1377.89	15.81
3	12.91	166.67	2.81
4	-12.91	166.67	1.57
5	-6.09	37.09	0.46
6	6.09	37.09	0.35
7	-43.94	1930.72	24.77
8	43.94	1930.72	18.73

$x^2 = 85.41$

Appendix N

Minimum Learning Competency (MLC) for grade 1-4.

Minimum Learning competency and Instructional objectives as basis for determining "pass" or "fail" score

Grade one Environmental Science Syllabus

Area of competences and expected out comes-objectives	Cut off score	Instructional objectives The students will be able to:	Contents	Items
1. Man and His life - Name the outer party of human body keep their cleanness - Identify and explains the uses of human sense organs - Identify and state the basic needs of human being and their uses	3.5	- Identify and state the out parts of human body - Explain the uses of human sense organs - Describe the basic necessities of life and their possible sources	Man and his life - The out parts of human body . Sense organ . Hygiene - Basic needs of human being -Types -sources and characters	7
2. Social Environment -Describe the members of family -state the roles of family members	2.5	• Explain the meaning of family • state the type of families • Enumerate roles of a family	Family - Family - Types of families - Role of families	5
3. Esthetics and desirable norms - Form smooth friendly relation ship with others - Identify and state some esthetical principals	0.5	Identify some basic norms and values of family and obey school disciplines.	Family , norms values and school disciplines	1
4. Natural Environment - Describe the types and characters of animals of their environment - Explain their uses and disadvantages	2.5	- State and enumerable animals of their surrounding - Explains the uses of domestic and wild animals - Lists some disadvantage of animals - Identify conservation methods	Our Environment - Animals of our environment . Domestic animals . Wild animals . Advantages and their disadvantages	5
Total	9			18

Minimum Learning competency (MLC) and Instructional objectives as basis to determine "Pass" or "fail" score

Grade two environmental sciences

Area of competency and expected out comes- objectives	cut off score	Instructional objectives The students will be able	Contents	Items
1. Man and his life - Describes the uses, sources and methods of preserving foods - Explain other basic needs and their sources - State and explain the need for health - Explain the meaning and types of measurements	3.5	- understand and enumerate basic necessities of life - Explain the meaning characteristics and sources of each basic necessities - State the concept of hygiene and explain the importance of keeping personal hygiene and environmental sanitation - Explain the meaning of measurement and distinguish between traditional and modern ways - State and describe different measuring instruments	Man and his life • Basic needs - clothing - shelter - sources and characteristics • Hygiene personal and environmental • Measuring things . Traditional and . Modern ways	7
2. Ethics - Identify the basic ethical values of their society - Explain communication norm etc	1	- Explain the meaning of measurement and distinguish between traditional and modern ways state and describe different measuring instruments	Different types of Ethics values	2
3. Social Environment - State and explain the location and size of their wereda describe basic direction meaning and uses of map	1.5	- Explains the position of their wereda in relation to their surrounding - Describe the meaning and uses of maps	Wereda . Location . Size . Basic direction . Map and its function	3
4. Natural Environment - Explain the nature and types of the prevailing natural resources of their wereda - Identify and describe the vegetation and animals of their surrounding - states some relevant conservation measures	4	- Identify and explain the nature of their wereda landscape - state and explain the type and distribution of vegetation and animals of their surrounding - states conservation methods and apply	- Land scope of the wereda - vegetation types and distribution - animals types - conservation measures	8
Total	10			20

Minimum Learning competency (MLC) and Instructional objectives as basis for determing "pass" or "fail" score grade

Grade Three Environmental science

Area of competency and expected out comes-objectives	cut off score	Instructional objectives The students will be able	Contents	Items
1 man and his life and (Ethics) - identity and describe food and food processes - Explain the concepts of balanced diet, sources and its uses - Comprehend the desirable way of leading life planning their daily activities budgeting their time money etc.	4.5	- Comprehend and explain the meaning and uses of food system - Group food according to their uses - Identify and state self guiding methods	man and his life . Food and its systems - Types - Characteristics . Way of life and self guiding . Planning - Activities - Time, money - Labour power	9
3. Social environmental - explain the meaning of measuring thing - Identify and describe different methods of measuring things convert units to each other	2.5	- Explain the meaning of measurement - Explain the difference between the traditional and modern ways of measuring thing - Measure physical phenomenon using different devices	Measuring things - traditional and - Modern ways length time volume, mass	5
4. Natural environment - Identify and explain the meaning of natural resources - state different types of natural resources - classify on the basis of their uses	3.5	- Defines the concepts of Environmental and natural resource - Describe the major vegetation of their environment - Explain their inter dependence and method of conservation	Weather and climate - Concept - Elements - Natural resources - soil, water vegetation and wild life	7
Total	10.5			21

Minimum Learning competency (MLC) and Instructional objectives as basis to determine "pass" or "fail" score

Grade four Environmental sciences

Area of competency and expected out comes-objectives	cut off score	Instructional objectives The students will be able	Contents	Items
1 Natural environment	4.5	- observe and understand things around them - analyze measure, record and report major things of their environment - Identify major problems of their environment - study and attempt to solve some problems - explain the nature and types of natural resources	understanding our environmental - observing things around as - studying problems - Research and its steps - natural resources • plants • animals	9
2. Man and his life	5	- Explain the nature of human growth and physiological changes occurring on their bodies - states some changes and accompanying problems and the care that must be taken - Explain type uses and sours of food stuff	Man and his life - Physical growth of human being - growth and changes characteristics of each level - some problem related to human development - food and types and uses.	10
3&4 social Environment ethics	3	Identify and explains some guiding principles of ethic, like good conduct and behavior - Explain the importance of planning in every walks of life - Identify methods of utilizing resources	- Desirable norms and behaviours morality self guiding and planned way of life - Labour - Money	6
Total	12.5			25

Appendix O

Teachers' Instructional Performance by grade (Application of Teaching Methods and Materials)

A. Teaching Methods

Instructional considerations		Extent of using as indicated by respondents																													
		Grade one (No 9)						Grade Two (No =8)						Grade three (No = 7)						Grade four (No = 9)				Total (No= 33 (1-4)							
		Frequently		Rarely		Not all of		Frequent		Rarely		Not at all		Frequen tly		Rarely		Not at all		Frequently		rarely		not at all		Frequently		rarely		not all	
1	Teaching methods	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
1.1	Lecture	3	33.3	5	55.56	1	11.7	3	37.5	4	50	1	12.5	4	57.14	2	28.5	1	14.29	3	33.3	6	66.67	-	-	13	39.4	17	51.5	3	9
1.2	Note giving (copying)	-	-	9	100	-	-	4	50	4	50	-	-	3	42.86	3	42.8	1	14.29	2	22.2	6	66.67	-	11.1	9	27.3	22	66.7	2	6
1.3	Question and answer	9	100	-	-	-	-	6	75	-	-	2	25	3	42.86	4	59.14	-	-	6	66.67	2	22.2	-	-	24	72.7	6	18.7	2	6
1.4	Discussion	9	100	-	-	-	-	8	10	-	-	-	-	4	57.14	3	42.86	-	-	4	44.4	5	55.56	-	-	25	75.8	8	24.2	-	-
1.5	Project	3	33.3	6	66.67	-	-	3	37.5	3	37.5	2	25	1	14.29	4	57.14	2	28.57	4	44.4	4	44.4	1	11.1	11	33.3	17	51.5	5	15.2
1.6	Group work	8	88.89	1	11.1	-	-	4	50	3	37.5	1	15.5	4	57.14	3	42.86	-	-	6	66.67	3	33.3	-	-	22	66.71	10	30.3	1	3
1.7	Demonstration	6	66.67	3	33.3	-	-	4	50	4	50	-	-	1	14.29	6	85.71	-	-	1	11.1	7	77.78	1	11.1	12	36.4	20	60.6	1	3
1.8	Invited guest	-	-	4	44.4	5	55.56	1	12.5	3	37.5	4	50	-	-	4	57.14	3	42.86	-	-	3	33.3	6	66.67	1	3	14	42.4	18	54.5
1.9	Debate	4	44.4	3	33.3	2[4]	22.2	1	12.5	5	62.5	2	25	1	14.29	4	57.14	2	28.57	-	-	7	77.78	2	22.2	6	18.2	19	57.6	8	24.2
1.10	Dramatizing	1	11.1	6	66.67	2	22.2	1	12.5	5	62.5	2	25	-	-	6	85.71	1	14.29	2	22.2	4	44.4	3	33.3	4	12.1	21	63.6	8	24.2
1.11	Song	6	66.67	3	33.3	-	-	3	37.5	2	25	2	25	2	28.57	4	57.14	1	14.29	-	-	6	66.67	3	33.3	11	33.3	15	45.5	6	18.2
1.12	Role playing	6	66.67	3	33.3	-	-	5	62.5	3	37.5	-	-	2	28.57	5	71.4	-	-	3	33.3	5	55.56	1	11.1	16	48.5	16	48.5	1	3
1.13	Field trip	3	33.3	5	55.56	1	11.1	3	37.5	5	62.5	-	-	1	14.29	6	85.71	-	-	-	-	6	66.67	3	33.33	7	21.2	22	66.7	4	12.1
1.14	Assignment related to environment	4	44.4	5	55.56	-	-	3	37.5	4	50	-	-	1	14.29	5	71.47	-	-	3	33.3	4	44.4	1	11.1	14	42.4	18	54.5	1	3

B - Teaching Materials (aids)

Instructional considerations		Teacher respondents																											
		Grade one No 9						Grade Two No =8						Grade three No = 7						Grade four No = 9				Total No= 33							
		Frequently		Rarely		Not all of		Frequent		Rarely		Not at all		Frequently		Rarely		Not at all		Frequently		Rarely		Not at all		Frequently		Rarely		Not at all	
		No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
2 2.1	Teaching materials chart	8	88.89	1	11.1	-	-	3	37.5	5	62.5	-	-	3	42.86	4	57.14	1	-	3	33.3	6	66.67	-	-	17	51.5	16	48.5	-	-
2.2	picture	9	100	-	-	-	-	6	75	2	25			4	57.14	3	42.86	1	-	4	44.44	5	55.56	-	-	23	69.7	10	30.3	-	-
2.3	Photograph	-	-	6	66.67	3	33.33	-	-	4	50	4	50	2	28.57	4	57.14	2	28.57	-	-	4	44.44	5	55.56	2	6.1	18	54.6	14	42.4
2.4	maps	1	11.11	6	66.67	2	22.2	2	25	6	75	-	-	2	28.57	3	42.86	2	28.57	1	11.1	8	88.89	-	-	6	18.2	23	69.7	4	12.1
2.5	Diagrams	4	44.44	3	33.33	2	22.22	3	37.5	4	50	1	125	2	28.57	4	57.14	1	14.29	-	-	7	77.78	2	22.22	9	27.3	18	54.6	6	18.2
2.6	samples	5	55.56	3	33.33	1	11.11	3	37.5	5	62.5	-	-	2	28.57	4	57.14	1	14.29	-	-	5	55.56	4	44.4	10	30.3	17	51.5	6	18.2
2.7	models	6	66.67	3	33.33	-	-	7	87.5	1	12.5	-	-	5	71.43	2	28.57	-	-	4	44.44	4	44.4	-	-	22	66.7	10	30.3	-	-
2.8	real objects	3	33.33	4	44.44	2	22.22	3	37.5	5	62.5	-	-	2	28.57	3	42.56	2	28.57	2	22.2	6	66.67	1	11.1	10	30.3	18	54.6	5	15.2