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Integrating Learner Culture into the Elementary Curriculum: The Case of Grade 2 Science in the Amharic Speaking Regions of Ethiopia

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ABSTRACT

Integrating Learner Culture into the Elementary Curriculum:
The Case of Grade 2 Science in the Amharic Speaking Regions of Ethiopia

Sharmila Pillai

This thesis study investigates the integration of traditional indigenous knowledge into an elementary school curriculum in the Amharic speaking regions of Ethiopia. The main question it addresses is whether science education in this developing country builds on the learners' schemas, culture and environment, or whether it presents them with unfamiliar abstractions that are barriers to learning leading to eventual marginalisation. My study is in two phases. The first is a content analysis of a Grade 2 Science textbook used in the Amharic-speaking areas around Addis Ababa. The second is a classroom observation, which I conducted in four schools in September 2001, comparing the findings of the content analysis to actual teacher language and behaviour at the point of delivery. The overall findings suggest that the inclusion of indigenous content taught via Amharic can be an effective bridge between students' local understandings of phenomena in their home culture and "Western" scientific ways of looking and knowing.

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CHAPTER ONE

Introduction and Problem Statement

The former Canadian Minister for International Cooperation, Maria Minna, discussed two things that Canadian money and expertise can do for education in the developing world: On the one hand, we can focus on "funding teacher education and helping administrators learn how to oversee the national school system..." In other words we can share our knowledge and teach majority world educators how to run their school systems. On the other hand, we can provide material resources: "We still do the project along the way, helping build some schools." The priority, however, is clearly given to sharing our knowledge, since "[building schools] in itself isn't going to give them an educational system, and that's not sustainable in the long run" (quoted in the *Toronto Globe and Mail,* September, 2001). These ideas are reflected in the "Sector Wide Approaches" and "Comprehensive Development Framework" outlined by the Canadian International Development Agency (CIDA), 2001. These ideas are interesting because they suggest that there are two broad approaches to educational assistance, and that there is often a prejudice in favour of one over the other—in this case, knowledge sharing over resource provision. This dichotomy has provided a framework for my study of educational needs in an African country, Ethiopia, and in what follows I hope to be able to offer some relevant comments on it.

On the world agenda, there is a "growing recognition of the importance of engaging developing countries in the international system." However, the goals put forth by the countries that lead the international system, the developed countries, can often

"seem ... remote from the priorities of developing countries," as mentioned in the document *Strengthening Aid Effectiveness: New approaches to Canada's international assistance program (CIDA, 2001, p. 3).* For most developing countries, reducing poverty is the single main concern of the government. But through its "comprehensive development model" (p. 9-10), CIDA also recognizes that there is no single path to this goal, and that one situation varies from another. The second context for my study, then, is this "no single path" principle. As it applies to the Minister's words above, there is no reason to assume that the needs of education in developing countries are for knowledge (where we from the developed world provide "our knowledge") over resources (basic infrastructure like building schools, reducing class size, constructing toilets, and so on).

The bias for knowledge over resources can also be found in the developing world's own assessment of its educational needs. The following is from the proceedings of the World Education Forum in Dakar, Senegal, 2000, concerning the state of education in Africa, whereby "access to education is limited, its quality poor and the curricula often irrelevant to the needs of the learners and of social, cultural and economic development" *(A Framework for Action in Sub-Saharan Africa: Education for an African Renaissance in the Twenty-First Century, UNESCO, p. 26).* Throughout the document, resource level problems ("access") are given less space and attention than knowledge level problems ("curricula irrelevant to learner needs and culture"). In my study, I have challenged this common bias and shown that there may be exceptions to it. There may be a single goal for development, and a single role for education within that goal, but that is not to say that there is a single analysis of either the problems of developing education or a single direction in which the path forward lies.

Many world leaders from the African continent envisage this century as the one in which we shall see an African renaissance, one that will be led principally by education. In the words of South African President Thabo Mbeki (1999, Opening Speech, Conference on Education for African Renaissance in the 21st Century), "the success of this [renaissance] project is dependent on the success of our education system." It is generally believed that education will be the salvation of the African people: "We are more convinced than ever that education is the *sine qua non* for empowering the people of Africa to participate in and benefit more effectively from the opportunities available in the globalised economy of the twenty-first century."

At the same time, however, and in contrast to the idealistic speeches at international conferences, it comes as no surprise to read about the dismal state of real education in the continent of Africa. Education in the majority world (all the countries of the third world who make up the majority of the world's population) is often said to be vulnerable to many disasters, natural and man-made, that hinder its progress. The worst of both types of disasters inevitably happen in sub-Saharan Africa, in countries like Sudan, Somalia, and Ethiopia. Disasters of nature are largely beyond an analysis of the type proposed in this thesis, but what sort of man-made disaster can hinder the development of education in a majority world country?

Perhaps the most commonly cited knowledge-level problem with education in the majority world is the supposed lack of a link between the indigenous culture of the students and the system of education in the country. For example, a common situation is where students contemplate imported science texts written from a cultural and even

linguistic perspective they are totally unfamiliar with. An Ethiopian writer, Negash, in his book *Rethinking Education in Ethiopia* (1996), describes this problem as follows:

> the greatest shortcoming of the education system in Africa in general and in Ethiopia in particular is that it is poorly related to and interlinked with the traditions of education which predate the coming of modern school... At some stage Ethiopia will have to develop an education system which is closely linked with its indigenous knowledge systems which have been the mainstay for the survival of its cultures and societies, (p.31).

This whole idea of the need for integration of modern education with indigenous culture is elaborated in United Nations publications and conferences too. At the UNESCO *World Education Forum* in Dakar, Senegal in 2000, the fact was stressed that "the African indigenous knowledge systems, languages and values should be the foundation for the development of African education systems... to promote appreciation of diversity, richness and dynamism of cultures" (p. 27).

What specifically does indigenisation amount to? We see frequent stress on the indigenisation of education, where an accent on "local capacity building and reliance on indigenous solutions" (p. 29), is being sought after. Broad statements of this type proliferate in a lot of the literature emitted from conferences worldwide dealing with African concerns. Less common, however, are specific objectives that could realize such an indigenisation. Some of these meetings, however, do chart specific objectives. For

example, in the meeting (UNESCO-EFA, p. 28), a number of plans are set out which attempt to focus the intention to indigenise. African nations should do the following:

- Review and redesign curricula and teaching methods accordingly to make them relevant to the cultural environment and to the educational, psychological and socio-economic needs of the children.
    - This could be done by incorporating the value systems based on the indigenous knowledge of the place, gained through formal, non-formal and informal education.
- Promote the use of the mother tongue in the early childhood education, early years of primary education and adult education; link personal development to the learners' cultural heritage and strengthen their sense of self.
- Improve the development, production and distribution of learning materials that are affordable and more suitable to local conditions.
- Undertake research and develop the use of local alternatives to imported manufacturing inputs for the design and production of cost-effective textbook and learning materials.
- Validate and apply home-based, traditional approaches to child-care in parental guidance and teacher training, reinforcing the principle that learning starts at birth.
- Link formal and non-formal education for mainstreaming the marginalised groups into a lifelong learning system.
- Integrate education into the family, community and the workplace.

If learning is to be successful then it must be rooted in what the individual already knows. This is the most basic principle of a constructivist vision of learning and education (Bruner, 1986). What the learner already knows is, in turn, rooted in the culture that he/she has been raised in, its ways of looking at things, the world-view of the child, and so on.

The above-mentioned points sound rather idealistic on paper, but are they in fact being put into action? How would we know if indigenisation was taking place, how could we adequately see this? The very idea of indigenous is rather vague; "how indigenous is indigenous?" asks Negash (1996, p. 40). This is a question that even anthropologists have not been able to answer adequately.

In order to make education indigenous, education policies must be anchored to African reality. This could be done by conducting research in the language and in the environment of those being studied. The basic need would be to identify, analyse and solve the major factors that emerge while integrating traditional knowledge with modern concepts. This is a genuine challenge and it is necessary to rely on the many examples that have proven to be effective in the African context. This would include, "curriculum reform toward locally relevant subjects, affordable teaching materials and textbooks, and the use of the mother tongue as the language of instruction" (UNESCO, EFA, p.26).

It is a well accepted principle that learning will only take place if it is integrated with what people already know. " The most fundamental tenet of Vygotsky's theory is the integration of the 'internal' [what people already know] and the 'external' [new concepts]" (Newman, Griffin and Cole, 1989, p.63). I strongly believe that local,

indigenous, traditional knowledge has a very significant role to play in the development of educational programs in the developing world. Therefore, the recognition that indigenous knowledge can contribute significantly to the educational system in a particular place is important, as this knowledge is part of the society where educational programs are being implemented.

The use of indigenous knowledge in classrooms also helps students appreciate the world-view they already possess, knowledge that they have gained informally. This knowledge should be recognised and valued. This contributes to an individual's sense of pride in his/her own unique cultural heritage. This sense in the strength of place and empowerment of local culture and environment seeks to offer an access to the knowledge of the world at large: *aprender de lo cercano para llegar a lo lejano* (learn about what is near you in order to reach out to what is far), (Cox & Avalos, 1999, p. 284).

In order to understand this further, it is necessary to operationalise the concept of what it means to have an integrated system. If we are to take the example of a class setting, we could state that the teaching of science in a class in Africa ought to be transmitted from a base, which students can understand and relate to. According to Cobern (1998), "science teaching and learning occurs within a social and cultural framework or context, and thus it is critical that teachers and students understand science within a context of culturally grounded values and practices" (p.4). Therefore, in my study, I have attempted to see in what ways, if at all, scientific concepts are systematically tied to students' home and cultural experience. To do so, the study

combined a content analysis of textbooks with classroom observation and interviews with teachers.

In my project of research I have attempted to look more closely at the statement, for example, echoed by Negash, "At some stage Ethiopia will have to develop an education system which is closely linked with its indigenous knowledge systems..." (1996, p. 31). But what is his evidence they have not already done this? This study has sought to determine to what extent such linking is or is not actually occurring in the current education system in one part of Ethiopia.

I investigated this question by examining a Grade 2 Science textbook from Ethiopia and also went out to observe first hand how the text is being taught in four different schools in and around the country's capital, Addis Ababa.

The reader will find the methodology elaborated in Chapter 4, but here is a brief outline of the field procedures that I followed.

- I obtained a Grade 2 Science textbook from Ethiopia and analysed it, categorizing the items in the textbook. Each chapter was divided into sections and the content analysed and described in detail.
- I interviewed teachers, in and around the capital city Addis Ababa, as to their methods of teaching and testing students.
- I observed classes in which the Grade 2 science book was the basis of learning, in September 2001, using naturalistic observations in an inductive/qualitative approach.

This research study investigates the use of a Grade 2 Science textbook in several Ethiopian classrooms. It shows that the textbook written and published in Ethiopia by Ethiopians for the Ethiopian primary school system already incorporates many of the targets proposed by UNESCO (EFA, 2000) concerning the need to indigenise education. The study also shows that at the point of delivery, teachers in the classroom refer abundantly and effectively to their learners' cultural milieu, thereby making the content of the book more accessible to them. By the simple operationalisation of this concept, I hope to show that, at least as far as integration of new indigenous knowledge is concerned, a sound system of education already exists in Ethiopia, supported and strengthened by the Ministry of Education.

The first chapter of this thesis study elaborates on the rationale by illustrating the importance of the data and information that has been gathered. This chapter also defines indigenous knowledge, as this concept serves as the basis of the study. Chapter 2 first discusses the theoretical framework of the study, which is the skeleton of the body of work, tapping into what is meaningful to young learners and provides them with a stepping stone into a new world of discovery. Chapter 3 outlines developments in education. This chapter talks about education in sub-Saharan Africa and Ethiopia, and the need for integrating indigenous and scientific knowledge. The next chapter, Chapter 4, details the analysis of the data collected. The analysis of the data naturally leads to the findings, which are outlined in Chapter 5. In Chapter 6, I briefly answer the specific research questions outlined in Chapter 2 and then proceed to illustrate the broader implications of this study. The limitations of the study are also discussed in this chapter.

The references list, though not extensive, is (I hope) quite rich in content. This section is then followed by a series of appendices, which are detailed recordings of the various interviews, and minute-by-minute renditions of the class observations that I carried out.

Rationale and definition of Indigenous knowledge

What will be gained by this study?

The rationale for this study has shifted along with the process of carrying it out. Initially, at the stage of writing the proposal, I had made some assumptions based on what I then knew.

In my proposal, I expected to find that indigenous knowledge was being ignored or downplayed in Ethiopian approaches to science education as it is so often reported to be in other areas of Africa. I expected to bring this finding to the attention of those concerned through handouts, oral presentations, research reports, seminars, informal workshops, PTA meetings and conferences. The findings of the study could be circulated to the "agents of change," in order to work in collaboration with them, the agents of change being the Ethiopian Ministry of Education, Teacher training institutes and University faculties.

As the study progressed and my assumptions (questions, hypotheses, expectations) were tested in the field, new questions arose along with insights gained. From my field study, I concluded that most of the above mentioned benefits of integrating science education in traditional knowledge were actually in practice already in

Ethiopia. This became clear from reading the aims and objectives put forward by the Ministry of Education for the Grade 2 Science syllabus, from interviewing the teachers, and from analysing text material that had been clearly been carefully prepared to preserve the indigenous knowledge base and reinforced with regular workshops for teachers in orientation and teaching methods.

It became obvious that the Ministry of Education is following a systematic methodology that works in the school system in the Amharic speaking regions of the country. The main actors who carry out these aims and objectives are, of course, the teachers in the classrooms.

The role of a teacher is very important in a classroom, as detailed in the work of Walpole (1999). A teacher is a "powerful cognitive model." Teachers can introduce cultural aspects and invite students to share their ideas and knowledge. Students in turn ask teachers questions about the text, and for this teachers should understand and draw on their learners' prior knowledge, the knowledge that the students are already familiar with. A teacher's knowledge, according to Shumba (1995), should include the nature of science but also science related societal issues, so it must include knowledge of traditional culture (p.32). This would help the child to develop flexibility and control over understanding the material presented. As Walpole writes, bridges between text and children can be built by "considering the structure of ideas and information **in** a text, and the ideas and information that students bring **to** the text, (1999, p.368).

The understanding that I gained over the course of conducting this study strongly challenge some of the generalisations so often made about education in Africa. Many studies have insisted that the poor quality of education in poor African countries like

Ethiopia places children at a serious disadvantage and often talks of the need for improvement in educational systems. The need for indigenisation is commonly put forth as one the key improvements needed. Such indeed was the very impression with which I began my research, yet at every turn, I was proved wrong. The analysis of the textbook, the classroom observation, the analysis of the tests, a closer look at the aims and objectives put forward by the Ministry of Education, and the attitudes of the teachers towards indigenous and cultural knowledge--all showed the contrary to what is so often claimed about educational systems in the majority world.

From my study of four schools in and around the capital Addis Ababa, I was led to believe that my methodology was a useful one—that being, to get down to grass roots level and actually look at the books the children are using and what goes on in their classrooms rather than reading grandiose statements of where all the problems of developing education may lie--that can serve as a model for investigating teaching and learning in other parts of Ethiopia and in Africa beyond.

Having gained evidence that the seminal systems of education put forth and carried out by the Ministry of Education are sound, at least in the case of the four schools that I observed and collected data from, I would suggest that my methodology is adaptable and can be used as a design to analyse the level of indigenisation in African education, and I hope that this model will be successfully implemented elsewhere.

I hope that what I have found, when suitably confirmed and replicated in other regions of the country, will contribute to a strengthening and updating already existing systems and concepts of education in Ethiopia. It would therefore be advisable to look instead at what other pressing needs there may be in an effort to improve the future for

young Ethiopians. My study suggests that one of the most pressing needs is physical infrastructure, and therefore it would be worthwhile to reopen the movement that supports this. Countries like Ethiopia should benefit from resource transfers that provide funds for schools and other infrastructure, mainly aims that provide a range of services toward long-term development projects like, training, learning, and institutional strengthening.

Indigenous Knowledge defined

In this paper the term *indigenous knowledge* refers to the fusion of three factors: (1) Schema, which is the world knowledge from prior experiences that a student possesses, (2) the cultural background of the student acquired through experience and observation, (3) the physical surroundings or environment of the student. For the clarification of this point, I have drawn largely on the work of Anthony Eziefe, from his article "Integrating the Learner's Schema, Culture, and Environment into the Science Classroom: Some cases Involving Traditional and Aboriginal Studies'.

Anderson (1972, cited in Ezeife, 2001), talks about the possession of 'world knowledge' by saying: "schema are a kind of mental map that we develop through experience with the environment. ...Each person has unique schemata, since each person has been exposed to a different total set of experiences" (2001, p.19). These experiences are what help a student construct understanding and meaning of a given topic, thereby building on the relevancy of the subject to his/her daily activities. This can be the starting point through which scientific concepts can be introduced into the nimble mind of an eight- year old, Grade 2 student of science.

The 'culture' of a person is another major contributing factor that plays an important role in my definition of indigenous knowledge. Culture, according to Goodenough (cited in Geertz), consists of "whatever it is one has to know or believe in order to operate in a manner acceptable to [the culture's other] members." Geertz goes on to say that "from this view of what culture is follows a view, equally assured, of what describing it is" (p.11). Culture is acquired through the "interaction between people and their environment" (Kroma, 1996), an idea reiterated by Hollins, (1996, as quoted in Ezeife, 2001, p. 20); it is an expression of "...how people live together as a community [and] how they interact with their physical environment." In other words, a group of people living together tend to adopt the same beliefs and traditions that makes them part of a community, a country, a continent, the universe.

The third important factor that contributes to my definition of indigenous knowledge is the environment. This refers mainly to the physical environment that the students live in, and includes the flora and fauna of the place and the links that the students can form with their surroundings and the way they can incorporate these into their learning environment.

The interplay between these three themes is intricate: "the student's schema are drawn from the culture into which he or she is born [and] this culture [in turn is] largely shaped by the physical surroundings [or]...environment" (Ezeife, 2001, p. 20). All this is to emphasize the importance of integrating the learners' schema, culture and environment into science concepts and lessons when teaching science in an elementary school setting.

CHAPTER 2

Theoretical Framework and Research Questions

This study is located within the macro-theoretical framework of education and development with specific reference to sub-Saharan Africa, with one aspect of education in Ethiopia providing a case in point. More specifically, the study took a close look at the incorporation of indigenous knowledge, via the learners' mother tongue, into the teaching/learning process in a Grade 2 classroom in Ethiopia. The purpose of the study and main research question thus centred on determining the extent to which this incorporation occurred and in what ways it appeared to make the content of the curriculum accessible to the learners.

Thus the theoretical backdrop of the study includes our knowledge about the learning theory of constructivism. If education is to conform to constructivist principles it must be rooted in and dovetailed to the existing knowledge and experience of the learner, which as Vygotsky, Bruner and others have pointed out includes the cultural background of the learner as well as what he or she has learned in a formal way. "Learners have encoded [this knowledge] for themselves out of [their cultural background]...and raised it from a lower to a higher level of organization" (Resnick, 1987, as cited in Cobb, 1999). In the context of education in a developing country, this is a complex matter, for more often than not there is a sharp cultural divide between the home and the school. The African child usually speaks one language at home, uses another at school. He/she often has one name at home and is called by another at school. He/she has one set of clothing

for school, another for home. He/she has to deal with one set of norms governing his/her behaviour with elders at home, another at school for at home children must show deference by seating themselves lower than adults and they must not challenge their elders with questions. At school they must stand when visitors enter the classroom and there they are expected to ask and answer questions.

So the point about using indigenous knowledge is that it provides a strategy to link the home and the school, as "many of the concepts that are taught in school have no equivalence in the students' culture or language, reflecting disjunction between the culture of the home and the cultural content of the curriculum." Thus, in order to cross cognitive, cultural, and linguistic borders, "the establishment of meaning may be assisted by drawing on students' first language skills, making cross linguistic and cross-cultural connections possible" (Cleghorn, 1992, p.312).

Ye Gedel Mamitou and Three Models of Integration

There is no doubt that very young Ethiopian children possess an understanding of the world around them and have concepts through which to interpret it. In fact, they have a rich cultural understanding of the phenomena of nature, but one based on metaphor and subjective impression rather than defined concept and objective measurement.

For example, Ethiopian children all know the phenomenon of the *echo* as *ye gedel mamitou* (which in Amharic means "the old woman who hides in caves and precipices'). If you were to call out to her, she repeats what you say in a hollow voice. It is not out of the ordinary in a village school yard to see eight-year-old Yonas point a finger at teary-eyed, five-year-old Yohannes and say: He is afraid of "the old woman in the cave"!

What are the prospects for growing useful scientific concepts from the metaphors of traditional knowledge? If this sort of "imagery" were to be used in a science text, could the familiarity of knowledge be adequately used to present the scientific theme of "echoes" and "sound waves"? Certainly the cultural perspective would be preserved and might even aid in the comprehension of the scientific theme. "Science must be taught through events in everyday life," according to Knamiller, Osaki and Kuogo (1995, as cited in Gray 1999), who also speak in terms of the need for the curriculum to be "operant" and closely linked with local issues and problems. Moreover, the student could easily experiment with the notion of an echo on his/her way home from school just by hollering down the closest precipice. Still, the question of integrating traditional knowledge is not as obvious as it sometimes seems.

I have used three models to interpret the potential interplay between traditional and modern concepts of Science education:

1. Traditional knowledge is ignored. Most African nations have inherited an education system that is not linked to the realities of present African needs, as (Urch, 1992, p. 2) writes: "African leaders today are faced with the task of re-evaluating and reshaping those institutions imposed on them by former colonial powers...[as they] have inherited a formal educational structure not linked to the realities of present African needs."

In most cases the textbooks that these countries use are imported or donated by countries in Europe, Asia or North America. Therefore, the information in these books pertain to their respective countries with examples of botany and zoology that reflect their local flora and fauna, (snow, polar bears etc.). This is the material that the African

child has to use in the formal system of education that he/she is following. Western textbooks are used as if the learner were imitating Western children. This is what Cobern (1998, p. 2) calls the "uncritical copying of Western educational practices." However, everything we know about learning tells us that this assimilation approach will produce brittle and untransferable knowledge structures. Also, knowledge as encoded in "Western-styled curricula" which has no connection whatsoever with "understanding the richness of traditions [and] culture" as Urch rightly states, can "move African students away from their cultural heritage" (1992, p. 3-4).

2. Traditional knowledge and scientific knowledge co-exist and without being integrated in the learners' thinking. This point is so clearly elaborated in the work of Cleghorn, Mtetwa, Dube, Munetsi (1998), when they describe schooling in Kenya, where the school culture is devoid of any relation to the home culture,

> ...African home-school language differences are usually coupled with meaningful cultural differences; the school embodies Westernised cultural values through the content of the curriculum and with normative expectations for behaviour that are often at odds with the traditional knowledge and values still prevalent in many homes. (p.464)

According to Fuller and Snyder (1991): "African children also may enter the classroom with language, knowledge and cognitive maps that are quite inconsistent with social forms found within this foreign school setting" (p.274), and they are not given an opportunity to use the indigenous knowledge that they posses. What this effectively boils

down to is the co-existence of traditional and Western knowledge side by side without integration. This seems to be the subtext in Clark and Ramahalpe's (1999) article, where for example in the discussion of the phenomenon of lightening, "traditional beliefs were given the same status as science in the classroom." This clearly shows that both exist but they are not integrated.

3. Traditional knowledge and scientific knowledge are compared and the appropriateness of each to different contexts is made clear. In order to illustrate this model, I have drawn directly from the Grade 2 Science textbook that I analysed (here translated and summarized). Chapter 1, "Measuring Things": In this chapter we are introduced to traditional concepts of measurement--*sinzzir* (hand span), *kende* (forearm), *cha'ma* (foot), *irmija'a* (stride). These forms of measure are introduced and the emphasis is laid on approximation. Next, scientific concepts of measurement are introduced--metres and centimetres--with an emphasis on exactness. It is through exercises and experiments that students are led to discover that one form of measurement is more reliable than the other in a scientific or experimental setting. This process of guided discovery lead students to understand the different contexts in which they can use traditional or modern concepts that they are taught in the classroom.

However, the legitimisation of the traditional provides a point of departure for understanding scientific knowledge as it acts as a "border crossing." When using local resources and subject matter that relates to the daily lives of the students in order to teach science, students are able to analyse and look critically at the subject matter and relate it to the scientific concepts being introduced. In the teaching of science, it is imperative that

science educators acknowledge the wealth of indigenous knowledge and they should use it to strengthen scientific arguments.

Research Question

In this section I mainly outline the questions that I have attempted to answer in my thesis study. The answers to these questions, I hope to find through the analysis of the data that I have collected by observation of classes in progress, by interviewing teachers, by analysing the contents of a textbook, teacher's guide, and tests, all of which I collected in Ethiopia in September of 2001.

Is the learning of science in the early grades in Amharic medium schools in Ethiopia, anchored in the learners' familiar or indigenous experience, knowledge and culture? This is my principle research question to be followed by questions that elaborate, with reference to the content of Ethiopian learners' science text material, where I ask:

Is the content 'scientific' (or at least similar to that of an equivalent North American science text)

If so, is scientific content anchored in the learners' indigenous culture

With reference to learners' tests on science materials I ask:

Are test tasks also rooted in learners' experience and culture

With reference to actual lessons I ask:

Is anchoring of science text reinforced in classroom interactions?

Is further anchoring by teacher provided at the point of delivery?

It is important to restate that learning is social in nature, so that education should not be divorced from the learners' culture. The concepts that are presented in education are, for most intents and purposes "enmeshed" by culture, language background and religion (Frasier, 1998). Therefore, it is not wrong to state that the cultural background of learners should be integrated with what they learn in order to render it more meaningful to them. It is also imperative to recognise the wealth of indigenous knowledge children bring into the classroom.

Scientific or Western knowledge will inevitably play a dominant role in the formal educational process. However, this knowledge has to acknowledge the contribution made by indigenous and cultural knowledge to the process of learning. It has to recognise the crucial role that cultural knowledge plays in order to produce in learners more enthusiasm for the experience of schooling, so that their learning does not take on a "cloak of irrelevance."

If the prescribed text material carries cultural nuances, it is important to see that students are made aware of the significant role that culture plays in their education. Therefore it is important to see this reflected in the questions that the students are tested on during the course of their study. The examples presented and the questions asked would be relevant if they respected and reflected the wealth of "world knowledge" a student possesses.

The teacher is one of the most important and immediate resource persons that a student has. This position that the teacher enjoys should manifest itself in what he/she brings to the classroom. The recognition and significance of indigenous knowledge and culture can be transmitted to the students through the words of a teacher. This of course is

only possible if the teacher himself/herself is convinced of how important this message really is! By talking to the teachers and getting their opinion on whether and how integrating indigenous knowledge into their classrooms can bridge the gap between the school culture and the home culture, I hoped to get some sense of how important they thought this message was, and of prospects that the message of the textbook was being reinforced and further elaborated in the classroom.

CHAPTER THREE

Education and Development: Recent trends in primary education in sub-Saharan Africa

Primary School Education in Sub-Saharan Africa

Few would be surprised to hear that Primary School Education in sub-Saharan Africa faces a grim future. Delivering primary school education to a fast growing population of primary enrolments will strain every national budget in the area. But many African countries are trying to honour the commitment made at the Conference on the Development of Education in Africa in Addis Ababa in 1960, sponsored by UNESCO. The year 1980 was then set as the target year to achieve universal primary education, but this proved over ambitious mainly because populations increased and strained the available resources (Sunal, 1998).

Why Primary Education? According to Sunal, there are two reasons that justify the necessity and importance of primary school education in Africa. The first is that it can make citizens literate and enable them to deal with situations that they encounter at home. The second point (taken into consideration by Lockheed & Verspoor, 1991, cited in Sunal, 1998) is that primary education is the basis of further education for any student. These two objectives are of course not always achieved in sub-Saharan Africa, as many students do not complete their primary schooling and some do not attend in the first place. According to Sunal, "enrolment and school-age population grew rapidly into the

early 1980s" but then decreased drastically (1991, p. 8). This was mainly true in the low-income countries, those that were at war, and those that had a gross national income in decline. These countries included Ethiopia, Mozambique, and Somalia (Gajaraj & Schoemann, 1991, cited in Sunal 1991, p. 9).

A factor in students' dropping out of school early, according to Sunal, is that the "content of the curriculum presented to children while they are in school is often too limited to accomplish its purpose" (1998, p.6). Sunal presents an example from Chad, where students must spend two years in Grade 1 because the material presented in class has not covered the requirements of the curriculum for that grade. This is because, as Sunal and several others state, while the curriculum materials developed for countries throughout the sub-Saharan region are often quite high (the standard is too high for the student to cope with), the actual delivery of the material in class is poor, due to high student-teacher ratios, under-qualified teachers, and few books and teaching materials (Cornia, Jolly, & Stewart, 1987; Graham-Brown, 1991; Lassibille & Gomez, 1990; Sunal, Osa, Gaba, & Saleemi, 1989, cited in Sunal 1991).

Factors that influence primary School Education. One of the factors that influence education in sub-Saharan countries is the ratio of students to teachers. If the projected ratio of students, i.e. thirty-seven per teacher, had been achieved by the year 2000, it would have been a great accomplishment (Sunal, 1991, p.10). But it was not achieved. In Ethiopia, a maximum number of students are packed into a class, sometimes for lack of money, but also sometimes precisely to make money. This point is amply illustrated as I have described one of the school settings in which I carried out my field study (with emphasis on salient observations):

School D[1] is an urban school found in the capital city, Addis Ababa. The school itself is an old building dating over a hundred years, as a result of which, no renovations or enlargements to classrooms can take place. This physical handicap is no excuse though, to the filling up of classes with an unprecedented number of students. The school has a certain amount of autonomy from the government because fees are collected. As a result a maximum number of students are put into a class, that is to say, the more students in a class the more fees collected by the administration. The money collected helps in the day-to-day running of the school.

Another factor that greatly influences primary education is the quality of teachers or teacher education. The quality of instruction in Ethiopia as in other African countries is negatively affected by a history of poverty and underdevelopment coupled with a vastly increased demand for schooling in the last 10 to 20 years. This demand has far outstripped the economic resources and the pace at which adequate numbers of teachers could be trained. Quite often lower primary classes are taught and then the Ts. (Teachers) are given in-service training and they are then sent to the secondary section. It is a vicious cycle of trying to keep up with the demand for schooling in the face of continuing underdevelopment. The result has been an increase in untrained and under-trained teachers, especially at the lower primary levels. This lack of training has manifested itself in poor teaching practices, where a teacher with limited training can utilize strategies where mere "recall of information is the expected result of student learning" (Fuller & Snyder, 1991 cited in Sunal, 1991, p.11). This strategy also requires

[1] The naming system for schools in the fieldwork part of the study appears in Chapter 4 below.

little preparation on the part of the teacher. An even more limited strategy is where the teacher writes sections of the text on the board and the students simply copy it down verbatim. This takes up most of the time so no real teaching gets done. A teacher who is insecure in teaching can use this system to "stay out of trouble." As this is how the teachers themselves were educated, the strategy becomes entrenched as the established way of doing things.

The high ratio of students to teachers found in some of the classes creates deplorable working conditions for teachers in these schools. This fact greatly impedes the advancement of primary education too. Some institutions are also known to employ less qualified teachers at a lower salary simply in order to meet the growing student enrolment. Unfortunately we can see that these are strategies often used in sub-Saharan Africa at the expense of students and the quality of their education.

These facts of course can be somewhat curtailed by improving the working conditions which would bolster the quality of teacher and student performance in schools. Teachers who are motivated, motivate the students, and vice versa. A survey conducted by Mwamwenda and Mwamwenda in Botswana showed that 'students with adequate classrooms, desks, and books perform significantly better on tests than do those without adequate facilities and materials,' (1987, p.11).

We can very clearly see that conditions have to be "adequate" for learning to take place. After having conducted my research in Ethiopia, I believe that reducing class size and improving the conditions for teachers and students would greatly improve the quality of education in primary schools.

Historical overview of education in Ethiopia

In this chapter I attempt to talk about the beginnings of education in Ethiopia with a view to contextualising the emergence of science education. It is often said that education started in the fourth century in this country. This being said, I wanted to find out more about education in general and how it all began. One of the books that I found most useful and will be referring to quite often is *Education in Ethiopia* (1979) by Teshome Wagaw.

According to Wagaw, the basis of education in Ethiopia has been the Ethiopian Orthodox Church. The church education that "students" received prepared them for clerical duties: priests and monks or those who would perform civic duties: judges, governors, administrators etc. Following the tradition of church education, children began their education between the ages of seven and twelve. The elementary level consisted of four main stages of learning, which took two years to complete. It was known as *Nibab Bet (House of Reading).* In this first stage, the students learned the Amharic syllabary of 256 characters, in the second and third stage the child learned to read the Epistle of St John and the Acts of the Apostles, in the fourth stage the child learned Ge'ez, which is the ancient language of the Ethiopian Orthodox Church.

The next level was the *Zema Bet (House of Church Music);* this level took four years to complete and consisted of learning music written by Saint Yared, the Patron saint of music in Ethiopia and also the inventor of musical notes.

The *Qine Bet* (House of Poetry), which takes the student about five years to complete, is characterized by ambiguity, vagueness and secretiveness. This is the highest form of language in Ethiopian culture. Qine is the study of two types of poetry: *Semena-*

Werk (Wax and Gold) and *Wuste Weira* (Inside the Olive tree) (Germa Amare, in Wagaw, 1979).

The final stage of higher learning is the *Metsehafi Bet* (House of learning philosophical books). This stage consists of several branches dealing with the Old Testament, The New Testament, church dogma and philosophy, and astronomy. Those who finished all four schools were known as the *Arat Ayne* (Four Eyed).

The Ethiopian Orthodox Church remained the guardian of education till the end of the nineteenth century. It was in charge of marrying church with state as the students were also instructed in *Fitheha Negist* (Judgment Of Kings), the Ethiopian traditional code of law, the computation of the calendar, which needed mathematical training, other secular subjects like languages, history, astronomy, literature, music, fine arts and law were also taught. After all this instruction the scholar, now about thirty-five years of age continued to serve community, society and country (Alemayehu, 1985; Tedla, 1995; Wagaw, 1979).

Absent from the foregoing account, of course, is any mention of science education. Wagaw (1979) explains that this omission was deliberate:

> The study of sciences and astronomy was minimal. Science was represented by two works written in the eighteenth century, possibly derived from Arab and Syrian sources. There is evidence that they have been modified; for example, prescription for the treatment of hair, skin, and eye diseases, seem to be Ethiopian. The astronomy works probably originated from similar sources, again with adaptations to suit local conditions. Apart from these, scientific studies were

> apparently never pursued—perhaps because "works of science do not exist in Abyssinian literature. As the heavens and the earth are ruled by God, all enquiries into the workings of the heavenly bodies and the laws of nature were and are regarded as sinful." (cited in Budge, 1928, p. 574)

In other words, at a time when in Europe the foundations were being laid for modern science and science education, in Ethiopia science was virtually taboo.

At the beginning of the twentieth century, during the reign of Menelik II, Ethiopia saw the need to bolster its education system, as there was a need for people in the fields of statecraft, diplomacy, commerce and industry. This led to the construction of secular schools in the country, the first one being established in Addis Ababa in 1907, (data collected for the Federal Research Division, Library of Congress, 1991). This heralded the beginning of modern schools in Ethiopia. The curriculum that was followed now included the teaching of Science. Among the other subjects, which were: French, English, Arabic, Italian, Amharic, Ge'ez, mathematics, physical education and sports. All these subjects were taught in French (Pankhurst, 1976; Wagaw, 1979, as quoted in Sjostrom & Sjorstorm).

The promotion of modern education continued during the time of Emperor Haile Selassie I. Now the Protestant and Catholic Missionaries who had been first encouraged by Menelik II, helped to found "a large number of schools during the first decades of the twentieth century," (Sjostrom & Sjorstorm) and now there were about 8,000 students enrolled in 20 public schools (Library of Congress, 1991). In 1930, with Haile Selassie

ascending the throne, educational progress was intensified and coordinated by the Ministry of Education and Fine Arts where, often, foreign expertise was used:

> Ernest Work, an American brought in in 1930 to advise the government, suggested that the educational system should be "neither French, Italian, English nor American" but Ethiopian. He recommended first that Amharic be used as the medium of instruction... "Ethiopian boys and girls should be educated in their own languages[2], learn about their own country and men and interesting things, as well as the world in general." (Wagaw, 1979, p. 39; footnote added)

A definite plan for education, with primary education taking six years, was put into motion just before the schools were closed during the Italian occupation of Ethiopia from 1936 to 1941. After independence the schools were reopened, but now there was a need for a formal curriculum, a curriculum that was uniform and adaptable to every community throughout the land. This new uniform curricula covered the first six grades of elementary education followed by another six years of secondary education.

In 1952 there were a total of 400 elementary schools with the number of students enrolled amounting to 60,000. There were an additional 52,000 students in mission schools in the 1960s.

In May 1961, The Conference for African States on the Development of Education in Africa sponsored by UNESCO, was held in Addis Ababa. It gathered 39

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[2] It needs mentioning that Amharic is the first language of only some parts Ethiopia; in other parts it is itself a sort of "colonizing language" as French and English were in other African countries. My study does not deal with this issue as it was conducted entirely in the areas where Amharic has always been the first language. (See Hancock, 1997, p. 34, for a fuller discussion of the role of Amharic in Ethiopia's history.)

participating Africa governments and 24 as observers. These independent nations were deciding on priorities in their educational needs, which were the following: (Wagaw, p.142),

1. Short-Term Plan (1961-66)

- Annual 5% increase in enrolment for primary level
- Second level education increase from 3% to 9%

2. Long-Term Plan (1961-81)

- Free and compulsory education at primary level
- Education for 30% of second level students who have completed primary level
- Higher education for 20% who complete secondary level
- Improvement of the quality of schools and universities

In 1968, at the Conference on Education, Scientific, and Technical Training in Relation to Development of Africa in Nairobi, Kenya, in a review of the Short-Term plan of 1961-66 the countries had fallen by a million less than anticipated except in higher education enrolment (Wagaw, p. 151). But it must be stated that the population growth was far less than anticipated.

For Ethiopia, this was a first opportunity to compare its own social conditions with those of other African countries (Wagaw, p. 152). At the conference, one thing that was clear was the educational deficiencies of Ethiopia when compared to several of its neighbours which were former colonies but now independent countries (Final Report of

the Ministers of Education of African countries participating in the implementation of the Addis Ababa Plan, 1962).

The UNESCO statistics revealed that educational progress in Ethiopia was small compared to the educational achievements in other African countries, which were much more impressive and

> ... had left Ethiopia lagging behind especially at elementary and secondary levels. Ethiopia, a symbol of African freedom on the political scene, a country of great prestige led by a much respected leader in Africa, was shocked by the facts brought to light at the Conference. ... Ethiopia had to...back its political leadership in Africa with educational and economical leadership. (Wagaw, 1979, p. 152)

Embarrassed by the results that were highlighted at the Conferences, the Ministry of Education came up with new plans. The target for the short term plans from 1961-66 was to increase primary enrolment from 40% to 51%. In the long term, they aimed at:

- Universal, free, and compulsory primary education.
- Reduction of the drop-out rate from 60% to 20%
- Class size to be reduced from 45 to 35 students
- Primary school teachers were to have secondary school education with three years of teacher training.

Table 1: Long term plans for Primary Education enrolment in Ethiopia

1960-61	1965-66	1970-71	1980-81
40%	51%	71%	100%

Source: Library of Congress. (1991).

Clearly, the long term plans discussed by Wagaw, in 1979, and summarized in Table 1, were not realized as there was a shortage of trained personnel, a lack of funds, and overcrowded facilities which resulted in poor education.

These inadequacies were a result of the school financing system in the country. "To finance primary education, the government levied a special tax on agricultural land...this fostered the expansion of primary education in wealthier regions rather than in poorer ones" (Library of Congress, 1991). The government tried to rectify this imbalance in 1970, but it was too late and the education crisis became yet another contributing factor to the overthrow of the imperial regime in 1974.

After the overthrow of imperial rule, the provisional military government took a series of measures to dismantle the feudal socio-economic structure, which also affected educational development. In 1975, a new policy was brought in to improve education in the rural areas of the country in order to increase economic productivity. Control and operation were given to the sub regional levels for the curriculum to address local requirements. Students used free textbooks in local languages and the government had plans to include fourteen more native languages by 1980. In the mid 1980s education was

still based on a structure of primary (six years), secondary (four years) and higher education.

The number of primary schools by 1986 was 7, 900 and enrolment was at 2,450,000. While the enrolment of boys doubled, that of girls tripled and the schools in the urban areas had more enrolments when compared to those of the rural areas. But the future for education was not bright, only about 42% of six million primary school aged children enrolled in school for 1985-86, and continued education for these students was slim, because in 1985-86 there was only one junior secondary school for every eight primary schools and only one senior secondary school for every four junior secondary schools. This showed that there would not be enough space for primary school leavers and they would have to end up on the job market where jobs were scarce for people with a limited education (Library of Congress, 1991).

The shortage of schools also resulted in overcrowding of the existing schools and this situation was aggravated by rural-urban migration of the late 1980s. A teacher shortage only increased the already existing problems created by over crowded classrooms. Most urban schools operated on a morning and afternoon shift system to maximize the use of space. Education was also severely under-funded, as there was a decline in the education budget from 18% to 14.5% owing to conflict and war, (The United States Agency for International Development [USAID], 2001, and Library of Congress, 1991).

Now, however, according to the USAID statistics, the current government of Ethiopia has pledged top priority to education allotting 19% of its national budget

towards education. Table 2 shows encouraging statistics for the present state of primary education in Ethiopia (adapted from USAID statistics, 2001):

Table 2: Present state of Primary Education in Ethiopia

Indicator	1997 Actual	1998 Actual	1999 Actual	2000 Planned	2000 Actual	2001 Planned
Total enrolment ratio of primary education (girls and boys) divided by the school age (7 and 14)	31.4	42.0	45.8	39.0	51.0	53.0
Education share of national budget divided by total government budget (no debts)	16.0	16.1	17.8	18.0	14.5	14.5

Source: USAID statistics, 2001

Science Education In Sub Saharan Africa and Ethiopia

Science education in sub-Saharan Africa traces its origins back to the fourteenth century with the Arabic schools. Basic science education developed through informal science education, which came up mainly along with community education. The connection between these two fields is attributed to the various community occupations mentioned by Sunal, Jones and Okelbukola (1998):

> woodcarving and woodwork, dyeing and weaving textiles and reeds selecting and using medicinal plants, pottery and glass making, charcoal production, astronomy and astrology, weather and planting seasons, irrigation, erosion control, multicropping, burning practices to provide fertiliser, architectural styles and building materials, ...well construction, boat building, navigation, fishing, herding, smelting and alloying techniques for working with metals, control of diseases and using tools of communication. (pp. 103-104)

These occupations vary from region to region and consequently the teaching of science too in any one country or region also differed. The development of a strong science education is recognised as being important for national development to take place. This has been evidenced by the many conferences and meetings that had taken place over the past forty years: Lagos Plan (1980), the African Priority Programme for Economic Recovery (1986), and at the OAU (Organisation of African Unity, 1981), it was made quite clear that no economic development could take place without an adequate science education programme (Sunal, Jones & Okelbukola, 1998, p.105).

However, designing and planning a science curriculum is one thing, but "employing it with desired effect is quite another" (Cobern, 1998, p.15). We find this very idea echoed by Sunal: "It is generally found in sub-Saharan Africa that implementation takes a different form from what was originally intended" (1998, p.109). This is mainly so because of the dismal conditions under which teaching has to take place with overcrowded classes and under-prepared and unqualified teachers, which are directly related to a reduced quality of education in the schools. Other factors that greatly

contributed to this are, as Sunal writes: "the lack of equipment and materials for teaching science, inability to complete the syllabus because of changes in programmes and curricula" (1998, p. 106).

The science curriculum is worth mentioning, because African education follows a trend where Western Science is sought after without limits. This implementation of Western Science education disregards the cultural background of the learner, as Ogunniyi states: "in sub-Saharan Africa, Western education has not been used to promote integration between the Western and African cultures, but to replace existing ideas" (1988, cited in Sunal, 1998). He reiterates: "...most science curricula in sub-Saharan Africa are modelled on those in the West and do not reflect the cultural background of the learner" (p.114). This idea has been met previously in this report as one of the three models of integration proposed in Chapter 2.

In my study of primary science education in the Amharic speaking regions of Ethiopia, as stated in previous chapters, I did not find evidence for these criticisms. I am going to address the issues brought up in the previous paragraphs concerning curriculum, materials, course completion, and teacher preparation and show they are not applicable to the learning conditions in the case of the four schools that I observed in the Amharic-speaking regions of Ethiopia.

Current Ethiopian Primary Science Curriculum. There is evidence within the Teacher's Guide to suggest that the references used to design the current Science text book for Grade 2 in the Amharic speaking Ethiopia, is based on Western models of

Science education, the references used are: Brandwein, 1960; Gega, 1986; Johnson and Goodman, 1986; Mee, Boyd, Ritchie, 1987; Underwood and Webster, 1985.

There is ample evidence though, in the text to show that there is integration of culture within the prescribed textbook, as we will see in Chapter 5.

One of the objectives of the Science syllabus in Ethiopia, published in 1984 by the Curriculum Department, Ethiopian School Syllabi as cited in Girma, 1992, states that: "the acquisition of fundamental knowledge of science from the children's immediate environment was necessary for their present and future life inside and outside their school." Another important point was the number of science periods, the students had per week (two periods in 1984, this figure has been raised to five periods in the self-contained system that the schools were following in September, 2000.) Among the topics found in the textbook at the Grade 2 level in 1984-1990 were these: the human body, clothing, food, shelter, diseases and methods of prevention. The topics discussed in the textbook in 2000 were: measuring things, our body and health, plants around us, animals around us, lifeless things around us, energy, and the environment. The difference that springs to mind is a greater emphasis in 2000 on the "around us" theme--the integration of learning in the "immediate environment."

As Ogunniyi (1988) cited in Sunal 1998, states:

> Science curricula should not present modern science from a superior vantage point... The individual in a traditional society should be made aware of the benefits and limitations of science and be exposed to the similarities and differences between the traditional and scientific worldviews.

This factor we can safely say is not the case in Ethiopia, as the various examples illustrate that Science education in the Amharic speaking regions of the country is certainly creating a link between the home culture of the students and the school culture relayed via the textbook and teaching in the schools.

How this background relates to the research questions

The picture that emerges from this brief summary of science education in Africa generally and Ethiopia specifically gives plausibility to the argument that there could be a pressing need to integrate indigenous and scientific knowledge.

African countries, in their rush to scientific and economic development, are tending to make a quasi-religion of Western science, elevating science and in some cases ridiculing their own distant intellectual origins—which of course are the present intellectual origins of many of their citizens, particularly among the youth of remote areas. If there is one thing we know about learning, it is that learning remains ineffective, abstract, and inert where it is not integrated in learners' prior knowledge, knowledge that the learner can relate to. Therefore, if a country denies its intellectual origins then this is likely to be a problem for learning and learners.

However, a plausible argument is not a proof. Is it merely plausible that African countries have abandoned their cultural traditions for scientific implants, or have they actually done so? If we want to go beyond plausibility, we have no choice but to look at specific countries and cases and build up a database of descriptive evidence at grass roots level—classrooms, teachers, classroom interactions, learning materials, tests, and so on as described in Ch. 6). Ethiopia, coming to science late and being pressed to catch up with neighbouring countries, would appear to be a good test case for this investigation.

CHAPTER FOUR

Methodology

Research Question

Is the learning of science in the early grades in Amharic medium schools in Ethiopia, anchored in the learners' familiar or indigenous experience, knowledge and culture?

Research Method

1. Content analysis of Ethiopian learners' science materials
    a. Is the content 'scientific' (or at least similar to that of an equivalent North American science text)
    b. If so, is scientific content anchored in the learners' indigenous culture
2. Content analysis of learners' tests on science material
    a. Are test tasks also rooted in learners' experience and culture
3. Classroom observation
    a. Is anchoring of science text reinforced in classroom interactions?
    b. Is further anchoring by teachers provided at the point of delivery?

Elaboration of method

By direct observation of materials, coding and counting items in a textbook, I have attempted to find out how and if cultural and indigenous aspects are integrated or introduced into the elementary school curriculum in Ethiopia. I have also gone into schools to observe the implementation of this textbook in classroom settings.

The observation of materials from afar facilitates perspective as researchers document and describe materials as dispassionately and fairly as possible. The observation of artefacts provides evidence for the topics and questions, as they are material manifestations of "cultural knowledge" in a syllabus.

In the textbooks, the material that is presented can be identified, analysed and finally evaluated. In this way, one can distinguish relevant information that emerges. One can look at any problems and find out about what needs to be done.

The artefact that I studied is an elementary Grade 2 Science textbook. It is a light green coloured book with 'science' written on the cover in Amharic (one of the main languages in Ethiopia), in black bold lettering about 3 cm in length. The book is 30 cm by 25 cm and has 50 pages. The science textbook is available for all Grade 2 students throughout the provinces that use Amharic as their official language. It is produced and distributed throughout the country by the Ministry of Education of Ethiopia. It is the only science book used in Grade 2.

Population and Setting

My field work was conducted in and around Addis Ababa in September 2001. I had the opportunity to visit four different schools that were socio-economically different. The schools that I selected were at convenience, based on personal introductions with teachers that I made through mutual friends. The four schools shall be known as Schools A, B, C, and D.

School A. This is a private all girls' school run by Missionaries. It is located in Addis Ababa and mainly serves the middle class and richer population of the capital. In this school there are around 1,289 students, they make up the student body from Kindergarten to Grade 12.

A picture of Ss in clean uniforms with pristine white shirts and well-combed hair, even on a Friday, states the obvious. There are only two Ss to a desk and there are three isles, so the teacher can walk freely around the class, giving individual attention to the Ss. The class is large and has been freshly painted. There are large windows on one side of the class with curtains.

The class is divided into groups--Green, Red, Yellow, Blue. When teaching the teacher calls on the various groups to answer and this creates team work:

> Your group is GREEN right, O.K you answer. O.K now how about the RED group, Yes, YELLOW now.

This school is not following the Ministry of Education (MOE) policy on **self-contained classes.** They have a separate teacher for each subject. Therefore my observation was limited to Science being taught in Grade 2. They are still following the old textbook from last year. The first chapter of this book introduces a lesson on "Traditional and Modern Methods of Measurement"; therefore, it is not hard to pick out the cultural nuances from the textbook and notes put on the board for the Ss to copy. We find that the textbook is telling Ss that traditional forms of knowledge are still in existence. In most of rural Ethiopia where people are not educated they still use traditional methods of measuring things.

In this class, I was able to observe genuine student/teacher interaction. This too I can attribute to the socio-economic conditions of the school, because the Ss stand a better chance of having a one-on-one conversation with the teacher. A student volunteered additional information based on the subject being discussed. They are able to demonstrate respect for the teacher at the same time they express their opinions freely and engage in conversations with the teacher.

School B. School B, as the name suggests, has both primary and junior secondary education. It has a population of about 1,254 students. On entering the school compound, my first impression was of buildings crowded together, to make the best use of space. This is a typical example where functionality rather than aesthetics plays a role.

The Grade 2 class that I observed had a population of 28 boys and 32 girls. There were 60 students in this class. The class had an aisle in the middle about 80cms wide and wooden desks where three students would sit to a bench. The teacher moved around the class supervising the students to some extent. As there is only one aisle in the class, the teacher is able to circulate, talking and checking on student's books:

9:28 Ts walks around looking at the Ss books and says, "Write fast."

9:43 "How many of you have finished, please write fast, write fast."

The Ts circulates and looks at the children's books. He says, "Use your pens to write because you might lose some if you use pencils as it rubs off easily."

The class was long by normal standards, 10m by 5m. There was a chalkboard in the front of the room. One side of the class had windows, giving onto the volleyball court outside. This of course, creates a lot of noise, and it is impossible to hear the teacher and the students get thoroughly distracted. The class had no posters or charts. It was a white

washed class. I was later informed that all the self-contained classes had charts on the wall, which were in the Resource Centre, as it was the beginning of the school year.

A system used in all the schools I observed was to put up work on the board for the students to do. This proved to be the best way of keeping the class under control (60 students).

> **11:20** "Do you have questions?" and " Write what is on the board, while I correct yesterdays' H.W." He says this and puts up more exercises for the Ss to do off the board. [This could be a tactic to see that they do not disturb]. The Ss are asked to do the work on the board while he personally corrects their work.

But unfortunately we also find that, with a lack of individual attention, there are a lot of children who get left behind, students like, Iyob Tadesse who slip through the system:

> A little boy is not doing anything; when asked for his book he does not answer, he pays no attention. He is still playing by himself with a paper. He is not sullen or morose. He is now sharpening his pencil and he has his exercise book open.
> **11:38 T:** "Any more uncorrected books?" He comes towards the boy and says: "You said you would write, right?" The boy says "Yes"; his neighbour says, "He is sharpening his pencil." The teacher moves away. [Still the boy does nothing.]

Iyob Tadesse has perfected the art of getting off without doing work, and in a large class he can easily get lost and the teacher cannot pay him more attention. The teacher in this case has not caught on that this little boy may have bad eyesight and needs

to wear glasses. The "large class size" has now manifested itself by jeopardising "health," and therefore, the ability to learn in the case of Iyob Tadesse!

School C. This school was situated about 20 kms. out of the capital city of Addis Ababa. As I walked to get to the school, I had to cross a stream that had swollen and resembled a river the last time I had gone there when I interviewed the Grade 2 science teacher.

The hills in the distance, covered in yellow Maskel daisies, presented a picturesque background for the school. It is a typical rural school, with long single storey buildings made of cement blocks and corrugated iron roofs. The classes are big, with windows on one side of the class. There are no pictures on the walls and the desks and benches are old.

The student body that makes up this school comprises of 889 boys and 1,113 girls, therefore the total school population is 1,902 students. The class that I observed had 57 students in it with 32 girls and 25 boys. The class had two aisles and plenty of room for the teacher to circulate. This enabled the teacher to pay more attention to Ss as she could walk around the class and look at Ss work individually; this also enabled her to know the students by name.

I felt that this class that I observed was at an advantage because of the quality of teaching taking place. I found the teacher to be engaging and truly interacting with her students, showing a genuine rapport with them:

She has place to move around, so she does and asks the class to show/calls on one student to go to the front of the class and demonstrate. Thewedros, you try, look at me, from your middle finger to your thumb. What is it called? Class chorus--*sinzzir*!

The teacher was conscious of the attention span of the students and had activities that diverted their attention and improved their concentration when she got back to the main topic:

1. She gets the Ss to sing in the middle of her lesson, class is once more attentive and alive.
2. O.K just put your hands in the air and shake it around now, shake, shake. Now you got some air right? Now you will listen to me right? Good class! It's a bit hot that's why you are feeling tired.

This was one of the only schools in which the teacher used material from the Resource Centre. Every school is required to have a Resource Centre which boasts of Teaching Aids that the teachers and students produce. These Teaching Aids could be in the form of posters, charts, pictures, models and other material that could be used in a classroom:

In the same way we can measure weight to give us an exact measure. <u>She uses a pair of scales that she has brought from the Resource Centre.</u> Again she uses this and demonstrates in front of the class.

After having watched this class in progress, I came away with the feeling that the children had actually learned something. This feeling was certainly perpetuated by the teacher. She was able to control and teach a "large" class, paying attention to the students and having them follow what she was teaching. On the whole this was an interesting class to follow.

School D. This is an urban school found in the capital city, Addis Ababa. The school itself is an old building dating from over a hundred years ago, as a result of which no renovations or enlargements to classrooms can take place. This physical handicap is no excuse, though, to the filling up of classes with an almost unmanageable number of students. The school has a certain amount of autonomy from the government because fees are collected, and as a result a maximum number of students are put into a class. That is to say, the more students there are in a class, the more fees are collected by the administration. The money collected helps in the day-to- day running of the school.

The school serves a population that belongs to a poorer section of society. To a casual bystander this would manifest itself in the lack of clean clothes that the children were wearing–shoes without socks, torn trousers and shirts. As Martha Wright puts it, "...to Western eyes [this] could be overwhelming: the small thin, children dressed in little more than rags ... with only broken pencils, a blackboard they can barely see, no textbooks and only a few thin copybooks" (2001, p. 61). Their exercise books were of a good quality, bought by themselves, not donated by some aid organisation, albeit, thin (50 pages). This factor in itself was evidence that these children or their parents had made some investment and they were here to gain some form of education.

The total population of this school is 821 students, the number of boys being 375 and girls 446. The Grade 2 class that I observed had 80 students in it, the boys numbering 37 and the girls 42. The class was 8 m by 10 m, and was at the end of a very dark corridor. On entering the class, one was greeted by two large windows that were left open for fresh air and light. The Ss were sitting together like sardines in a can with their bags on their backs at all times as there was nowhere else to put them. As Wright put it, there were "crowds of them packed onto broken desks..." (p.61). The lack of shelves in the class had an obvious reason, i.e., that every inch of space available was used to seat a child. The number of students in this class created the obvious problems that one might expect from an overcrowded class. The lack of space in the class for the teacher to circulate made it difficult for the teacher to give students individual attention, so much so that one side of the class was doing what it liked while the teacher was on the other side, physically unable to move to this side of the class. There is a visible lack of control in the class as it is overcrowded. The teacher's only hope of having some sort of discipline in the class lies in having monitors. This illustrates the "power" the monitors have, for there is no other way of controlling such large classes.

The class does look impossible to control, but what is fascinating is that the teacher is not shouting, but talking in a low voice. This shows that she is not perturbed by the fact that there are so many in the class; she is going about her business--her style of teaching. She knows that she will be able to gain the student's attention soon, and she does:

1. **11:20** [The class is silently doing their work, the teacher is correcting the work.]

[Students have their hands up when they finish]

Ss: "Finished."

T: "I will come."

2. **11:25** [Corrections are going on, of the 10 problems the teacher had put on the board. The class is relatively silent.]

The way in which the teacher changes her voice and talks to the children is typical of how one addresses and talks to a group of children--mainly to give advice. Traditionally, knowledge was transmitted orally in Ethiopia through storytelling, and this system has been adopted by this teacher. She is following a trend that I have often seen used to talk to children at home when trying to calm them and also when trying to teach them something.

To summarize, I observed a teacher using her own style and initiative to do her best under the circumstances. As for the students, it was noticeable that in a very large class, only a very few benefit from the system; the rest are carried along, only to become one among the very many who are ignored.

In the preceding pages I have tried to give as detailed a description as I can of the population and setting in which I carried out my study.

Data Types and Instruments

Content Analysis

- Analysis of a Grade 2 Science textbook from Ethiopia:

For the content analysis of the text I have referred to Borg and Gall's (1994) *Educational Research: An Introduction.* These authors state that most content analysis in education is directly related to the material being analysed. The analyses deal with simple "classifications or tabulations of specific information."

A content analysis of a textbook, according to Borg and Gall (p. 520) can tell us the following things:

- What topics are covered by the book?
- What emphasis is placed on each topic?
- In what sequence is the topic presented?
- What [cultural] terms are introduced?
- What [kind of language] is most frequently used?

Borg and Gall argue that, "content analysis can be a valuable tool for obtaining certain types of information useful in identifying or solving educational problems." One such type of information would presumably be an initial idea as to how these learners' cultural background is being handled in their primary science course (ignored, coexisting, or integrated).

I have categorized the items in the Grade 2 Science textbook and analysed it according to an adapted checklist from Cunningsworth's (1995) *Choosing your Course Book.* I have referred to Obura's (1991) work in order to develop a form on which to record information from the textbook. Each chapter has been divided into sections, the contents of which are analysed and described in detail (see Appendix A for checklist).

Classroom Observation

Observation of the science book used in Ethiopian schools. My class observation is based on LeCompte and Preissle's *Ethnography and Qualitative Design in Educational Research (1993).* It was carried out in four different schools, which were in four different socio-economic areas. My observation was carried out in the month of September 2001, at the beginning of the school year. I first interviewed the teachers, developing a rapport with them and then proceeded with the non-participatory phase to record details.

As a non-participant observer, I was "detached, neutral, and unobtrusive," seeking minimal involvement in what I was recording. I "positioned [myself] in a location as unobtrusively as possible" observing from the "margins of social events" (p.205-206). Nevertheless, at one point I found myself in the only available space in the class, which was the teacher's chair. In this way, I disrupted the normal goings on in class because I hindered the teacher from sitting and correcting books, instead she had to try and do her correcting by standing up and stretching out to get exercise books to correct. As for being "unobtrusive," I was dressed very casually, in a T-shirt and jeans most of the time. I found myself "unobtrusive," so much so, that in one class, the teacher actually told the students, "She may look like a little girl, but she is actually doing her Masters in Canada!"

The behaviour of my subjects included what they said and how they said it, but I avoided interrupting to seek clarification. I recorded accurate minute-by-minute accounts of what my subjects did and said, building up my "stream-of-behaviour chronicles" (p. 207). In this way, I was able to "study the use of time and motion," noting, for example, how long were the students out of their seats, and how long they were at the toilet.

The following were my principles of observation:

- I limited my observations to what was relevant:
    - Observation time (how long I observed the action)
    - Action time (explaining experiments etc.)
    - Teacher asks questions and waits for answer
- I was able to record the physical environment.
    - For example, *Class is quite large. It has a proper green-board. Teacher has notes on the board. There are two large windows in the class and they are open.*
- I paid attention to social and power dynamics.
    - Looking for prejudice (gender, other)
    - Seating patterns
    - Percentage of Teacher and Student talk
    - Teacher centred class or not
- I recorded all utterances of key phrases/concepts.
    - I noted whether the teacher seemed confident/confused/uncertain/anxious
    - I photographed the teacher and students in the class while they were modelling activities and carrying out experiments.

Interviews

Data collection in qualitative research is often done following more than one method, following the idea of "method triangulation." Triangulation increases validity and opens

up new perspectives for further investigation (Borg & Gall, p. 397). Therefore, in order to improve the quality and impact of my data collection, I interviewed teachers from all four schools that I observed. The form of interviewing that I carried out is categorized as *key-informant interviewing* by Goetz and LeCompte (1984). The informants (the teachers) "possess[ed] special knowledge" that I did not have, and they were willing to share this information with me (in line with LeCompte & Preissle's discussion, 1993, p. 166).

The method I used to develop my interviews is based on "following guidelines [and] constructions consistent with the goals, assumptions, and designs of [my] research project" (p.168). I used what Denzin (1978) called a non-standardized interview, where general questions and specific information wanted by the researcher are anticipated and maybe asked informally in whatever order or context the researcher so desires, or what Patton (1990) referred to as a general interview guide. This guide is "a set of issues developed before the interview takes place, that the interviewer [uses, and] these issues may be addressed at any time in the conversation; the guide is a checklist to assure that all relevant topics are covered" (p.169).

My interviews were recorded on voice-activated cassette tape recorders. The interviews were conducted in private settings, at the interviewee's private houses. This section concludes with a sample of these transcriptions. By using the various books I referred to as guides, I was able to carry out my research and gather information in the manner indicated by the authors I was using. The methodology I followed is a simple form of qualitative data collection that I adapted to my setting and to the work that I was carrying out. I am satisfied that this methodology has enabled me to gather the information I needed to answer my research question.

Plan For Analysis of Data

The observational and materials data I have collected, are intended as contributions to a disciplined description of what actually happens in public education in one sub-Saharan land, Ethiopia. And yet my description is not based on random observation, but rather responds to a question concerning a claim that has caught my attention. The claim, as already mentioned, is that there is a major need in African science education for "indigenisation," the anchoring of science education in the learners' traditional culture (discussed in Ch. 2).

Is the physical science as taught to young Ethiopians based on their traditional cultural knowledge? Or is it taught to them as something abstract, foreign, and unrelated to other parts of their lives? Is there a pattern, or is the answer 'sometimes yes, sometimes no'? These questions are the focus of my research, and my objective is to step back from the claim that indigenisation is needed and see, in four schools within one country, whether the claim is true, or false, or indeed whether there is anything that can be said about it at all. Behind this question lies, of course, another, which is whether the problems of African education are intellectual (e.g., need for indigenisation) or material (e.g., need for resources).

Long before these fascinating questions can be answered, there is a need for elementary description and pattern perception, and that is what I am proposing for the data I have collected. I am looking at four Ethiopian science classrooms and related materials to see whether there is any pattern, any systematic approach or attitude, to anchoring learning in the students' traditional cultural knowledge. Basically, I have

prepared checklists for different signs that cultural knowledge has been either integrated or ignored, and I will apply these checklists against my data and report on any pattern I find. I will also try to build up a more general contextual description within which any finding can be interpreted.

CHAPTER FIVE

Findings

In this section, I mainly discuss the summaries of the detailed content analysis with which I examined each chapter of the Grade 2 Science textbook. For the content analysis (as outlined in Chapter 4 of this thesis), I used a checklist,(Appendix A). Next I present details from the teacher's Guide, summarising the main ideas put forth. I elaborate on the methodology that the teachers have to follow. I also discuss the tests in this chapter. I translated a sample test and analysed it in detail.

Content Analysis of textbook for Grade 2 Science

In this section, I explore the content, approach and organization of the Grade 2 Science textbook. I have omitted the summary of Unit 1 as this unit- Measuring Things- is discussed in detail at the beginning, under "Three Models of Integration." The topics that are discussed in the textbook are:

- Unit 2 – Our Body, Food and Health
- Unit 3 – Plants Around Us
- Unit 4 – Animals Around Us
- Unit 5 - Lifeless Things Around Us
- Unit 6 – Forces
- Unit 7 – The Environment

Unit 2. "Our Body, Food and Health," introduces new information designed to capture the students' interest in science. By introducing societal issues through science,

the design of this chapter is aiming at connecting classroom science to the students' life through the various topics on personal hygiene. Thus the idea that students must connect classroom science experiments to everyday life if they are to become lifelong science learners seems to be reflected in the textbook.

Unit 3. "Plants Around Us." With this unit, I can safely say, the students as well as the teacher have a lot of fun. It is interesting to note that from the outset the topic that has been chosen is a common one mainly talking of familiar things found all around. The simplicity that comes through is in showing children what a lot they may discover in their day- to -day environment. They can be taught how to value, respect and appreciate, the most commonly found things in their milieu.

Through the experiments, I believe that this unit introduces a social aspect as growing plants in tins in school and at home will beautify the place. This, not only brings personal satisfaction, but also includes the participation, active or passive of the people immediately involved, for example the parents, siblings, neighbours etc. In its own way, it contributes to the society at large. Children learn all about the plants that are found around them, how to grow them and take care of them. They also learn that beautifying the environment is important and necessary.

Unit 4."Animals Around Us," is a short unit, with 13 pages. The very first line in this unit asks students about the animals found around the home and school. This is significant because from the outset we see that there is a connection that has been made between the home environment and the school environment.

Once again in this unit we find that the material used is familiar to the students and it deals with animals that are found easily. Nevertheless there is an order of

progression, as new information is introduced to the student. There is an introduction of information that is foreign to the student and most of the chapter depends on information provided by the teacher through the various teaching aid material that the teacher can access from the Resource Centre. The teacher, we find, plays an important role in presenting this chapter to the students.

On the whole, what can be said of this unit is that it has a lot of subject matter that is familiar and easy, it is not out of context or cultural convention. This unit also made use of a lot of attractive images to transmit information, which I found was adequately presented.

Unit 5. "Lifeless Things Around Us" is one of the longest in the book as it spans 30 pages in all. We observe a gradual progression in the writing of this Grade 2 Science text, as we dealt with botany and zoology in the previous two units and now we see that this unit widely deals with the physical properties of things.

The topics introduced in this unit, would have to be amplified by the teacher, as there is not much that the students can draw from "familiar knowledge," knowledge or familiarity with the subject stemming from material and subject matter discussed in the children's home environment. For example, we can see that teacher assistance will be necessary with activities involving batteries, on page 75, 76, and 84.

As I skim through the pages, I see that there could be a disparity created between rural and urban students as some of the material shown on the pages would be hard to find in a rural environment, for example, page 92, paper clip, compass, glue, coloured paper.

On the whole, my personal critique on this unit would be to state that the cultural conventions are not respected at all, for example on page 87, there is talk about things made out of clay and failure to mention in any size or form, the most obvious examples of local culture, the use of clay cooking pots and water pots. I found this to be a striking negligence of ignoring traditional culture.

Unit 6."Energy" starts off with a full page of illustrations, the caption reads: 'Sources and Uses of Energy'. The unit is 15 pages long, and it has well illustrated topics. At a glance, we can make out that the themes: 'traditional' and 'modern' are well represented in picture form on pages 101, 102, 103. We can also make out that the unit contains experiments, and based on information from previous units, we understand that this asks for student participation with teacher guidance.

The topics that are discussed in this unit are surprisingly well distributed with information pertaining to both urban and rural students. The use of metaphorical language and the use of images to express a topic, certainly helps students relate to the social and cultural contexts of the material being discussed in the unit. On the whole this unit makes up for the break created in the previous unit where there was a discontinuation of the integration of familiar culture with what was being presented in the text. While it can be an omen of what it will be like in the higher classes, we have ample evidence to show that this could be avoided and a simple respect of interrelating the things found in the children's milieu with the topics discussed in the text can solve the disjuncture that could be created very easily.

Unit 7. "The Environment" is the final unit in the book, yet again it introduces a new subject. The whole unit covers a lot of material that contains cultural depictions in the form of images that jump right out of the page. The images are attractive and show the local environment, rich with cultural material. It is a relatively short unit that contains 12 well- illustrated pages.

Skimming through the unit, I get the impression that it promises to be full of information that will help the student be aware of the environment around him/her.

The topics in this unit mainly deal with enriching and expanding the student's awareness of things that are found in his/her environment. They are topics that are sophisticated enough for the children in Grade 2, as they provide adequate information without being heavy or dense. We can safely say that the information provided is just enough to whet the appetites of the students' hungry brains, tempting them to go for more, which of course, will be provided in abundance in the science text that follows- Environmental Science for Grade 3!

Analysis of Teacher's Guide for Grade 2 Science

The Teachers Guide is designed to help the teachers teach Science in Grade 2 for the Amharic speaking regions of Ethiopia. It clearly states in the preface that the material presented in the book is only to help and aid the teachers, but by no means is it the only guide that the teachers have to use. The teacher is encouraged to "have an in depth look at ...the rich natural laboratory that the environment provides and try to relate this to the...science lessons" (Eziefe, 2001, p.33). The topics presented in this book are related to the social sciences, concentrating on areas like: community life, agriculture,

handicrafts, natural science and life. This shows that science is actually related to all walks of life and the teacher when teaching the subject must make a point of doing so too.

For the purpose of this paper, I have chosen to analyse the topic "health" which is the first section found in the Teacher's Guide, (Appendix F, translation of the section on health). By looking at this section in detail, I have picked out the salient points that show evidence that the schema, culture and environment of a child are taken into consideration when presenting topics that guide a teacher who is introducing material and conducting learning in a Grade 2 Science class.

In order to teach students this lesson on health, the teachers are first asked to prepare material that is in keeping with the student's schema or prior experiences:

> Preparation:
>
> In order to teach this sub-heading, to the students:
>
> - Prepare questions, drawn from their own personal experiences and relate this to the questions to be asked. For example, what problems would a person encounter if he/she fell ill.

Here we have a clear example where the educator is "building on what the child has acquired from home and [the] environment" (Eziefe, 2001, p.21) and has to make use of it in a class setting; thereby, prior information serves as building blocks to new knowledge.

It is of course true that Ethiopian children possess an understanding of the world around them and have concepts through which to interpret it. In fact, they have a rich

cultural understanding of the phenomena of nature, but one based on metaphor and subjective impression rather than defined concept and objective measurement.

For example, as mentioned earlier, Ethiopian children all know the phenomenon of the *echo* as *ye gedel mamitou* (which in Amharic means "the old woman who hides in caves and precipices'). If you were to call out to her, she repeats what you say in a hollow voice. It is not out of the ordinary in a village school yard to see eight-year-old Yonas point a finger at teary-eyed, five-year-old Yohannes and say: He is afraid of "the old woman in the cave"!

What are the prospects for developing useful scientific concepts from the metaphors of traditional knowledge? If this sort of "imagery" were to be used in a science text, could the familiarity of knowledge be adequately used to present the scientific theme of 'echoes' and 'sound waves'? Certainly the cultural perspective would be preserved and might even aid in the comprehension of the scientific theme. Moreover, the student could easily experiment with the notion on his/her way home from school, by hollering down the closest precipice. There are many such examples that teachers can make use of. As Eziefe puts it: " A diligent teacher ...can find many examples of this type....that is how teachers are supposed to become conversant with the salient prior experiences of learners." (2001, p. 34).

The community spirit is held in high esteem in Ethiopia and this is outlined in detail in the teacher's guide in the section under "health." For example, in a community every individual has a contribution to make, be it, economically or politically: the factory worker by manufacturing goods, the farmer by producing food for himself and others, the office worker by the work he/she does; all these people can serve their community only if

they are in good health. If a person cannot work, he/she becomes a burden on society and therefore people have to take care of their health. Just as health is important, so is living together in a community. A person who has strong ties with the community, is a person who is: kind and respectful, helps others, respects the privacy of others, is conscientious about others feeling, has confidence, is trustworthy, likes to work, helps to solve problems that arise, and so on:

A person with qualities to the contrary of the above-mentioned, is a person who is unkind, lazy, envious, and wastes time. As the person does not like community life, he/she is self-centred, a liar and is weak; these would be his/her main characteristics (Translated from Teacher's Guide, Appendix F).

From the above-mentioned point, the reader is given an idea of how important community life actually is in the Ethiopian society. To illustrate this point further, I add the following quote from Tedla (1995):

> In the family the child learns what it means to be connected to others, to depend on the generosity and caring attitude of others. Here one is educated about the meaning of trust, loyalty, kindness, sharing, responsibility, duty, and obligation-essential communal values. What is learnt is not some abstract principles or virtues. Instead, the child observes his/her family and kin reflecting the above qualities in their actions. The child also observes and learns about his/her bonded ness to the community of life through his/her family's *life-affirming* activities that

take place all around him/her. Furthermore, a child's family and kin are actively involved in his/her preparation for adulthood. Thus within the nurturing environment of the family, the child begins his/her journey to understand his/her relatedness, responsibilities, obligations and duties to the whole of creation and to Divinity. (p.157-158)

With this example, I can safely say that culture and community hold a very important place in this country and this very fact is being transmitted to the students via the teachers in the various schools. The methods that are used to transmit this message have been integrated into the teaching system by the teachers and are delivered to the students as recommended in the Teacher's Guide. This was witnessed in my classroom observation, to be reported later.

Teaching Methods:

The teachers are asked to introduce the topic that they are teaching for the day, then they are asked to use questions that would relate to the students personal experiences and elicit from the students examples that could lead to a discussion. It would be of interest to state here that from my class observations, the class "discussion" that takes place "does not look exactly like what we outsiders, including development experts, think ought to be there" (Wright, 2001, p. 74). The 'discussions', in these large classes take on a life of their own, so to speak. We see students asking questions and we find the teacher often saying: "Who can answer that question?," and we find hands flying up to answer and in this way the teacher gradually hands the class over to the students who ask and

answer each other. The teacher gently prompts now and again to show that he/she is still in command. This basically reveals a style of communicative methods of teaching in a very large class.

Another example of "teaching methods" that the teachers are asked for is the use of "Teaching Aids" in class to motivate the students while teaching, and this is especially true for science classes:

Teaching Aids:

- Use posters, charts, pictures or photographs showing a healthy person and a sick person.
- Use posters, charts, pictures or photographs depicting people from different walks of life going about their business.

The materials used are commonly "improvised" on the fly, in the sense used by Eziefe: " as of necessity, the science teacher learns to improvise and adapt everyday gadgets, materials and local resources to science teaching" (2001, p. 31). In Ethiopia, I had the opportunity to observe first hand the Resource Centres in all the schools I visited, which proudly stored the teaching aids made by these innovative teachers and also by the students. I can safely say that these materials were not to be thought of as trivial, but were very impressive and served the purpose they were made for, very well indeed.

Among the "teaching methods" that struck me as special in the Teacher's Guide, as well as in the classes that I observed, was the idea of getting the students to sing in the middle of the lesson. I found this quite charming at first, and then realized that it was a

way to keep a large class in a stuffy room motivated and awake. This very point is referred to by Wright, too, in her article: "changing the pace of the class was a technique...[that] teachers regularly employed, including prompting the class to burst into song as a group" (2001, p. 71). In my classroom observations, I witnessed this technique:

10:50 The bell goes, now it is the Science period.

T: Fold your hands and sit properly. Your thought towards me. We are going to do science now. Before we go to the main topic of the day, let's sing a song about science:

Science, Science, my medicine

I am happy with my health

When I wash my hands and have my breakfast

I saw science in my dreams last night

Science, science is my medicine.

[Teacher is animated and sings along with the Ss.]

T: O.k. children what does Science teach us, you see we even sang about it. Before we go into our main topic of the day, can you just tell me what we sang about?

T: Rahel, can you tell me?

Ss: About, cleanliness!

T: Yes very good, give her a clap. You see in the song it says, we wash our hands and have our breakfast. So science teaches us about cleanliness....

By analysing the very first section of the Teacher's guide, I was able to see that teachers are strongly encouraged to relate the schema, culture and experience of the students to the material they are presenting in class, and by twinning these recommendations that I analysed from the Teacher's Guide along with the observations I had made in the classes, I am able to say that the teachers carried out their "duties to a T"!

Analysis of Tests for Grade 2 Science

In this section I am analysing tests that I obtained from the different teachers I interviewed and observed during my field study in Addis Ababa, Ethiopia, in September, 2001. My main aim is to see if there is the maintenance of indigenous knowledge in the various questions that are asked on the tests, what type of questions are being asked and their purpose. My reasoning here is that if indigenous knowledge is truly being incorporated into these students' learning, then it will not have been abandoned for "just real scientific" knowledge at test time. I shall also be looking for the transfer of knowledge based on the questions the students are asked to answer. I shall also make a simple comparison with a Level 2 science test from Canada, based on the Science Series by Silver, Burdett and Ginn (1989).

Contrary to many studies that show "the main purpose of [tests]...is to reduce the number of students qualified to enter the next level of education" in Ethiopia as in many other parts of Africa (Girma, 1992), I find that, on interviewing the teachers in the Grade 2 classes that they had a completely different story to tell.

In the self-contained system that the schools are following, students in Grades 1-3 cannot be failed. One of the teachers I interviewed had this to say about the system they use in the school where she teaches:

> **T:** We can't fail any students. If there are any weak students we have to put them all together and coach them on Saturdays and we are not paid for it. You see if it is Grade 2 that we are looking at, we take the weakest from all six sections and we teach them; this is for them to be able to follow with the rest in the regular class. The teachers divide the subjects and we teach them, it is for the students' as we don't make any money. It is the new policy.

Students are regularly tested as this guarantees their passing from one grade to the next. In some of the schools I observed, the teachers told me that they gave the students quizzes every 15 days.

> **ME:** So they have their tests every 15 days out of 10 marks, right?
>
> **T:** Yes, they have tests out of 90 and 10 marks are given for class activity and participation and for books. So each Semester is out of a 100.
>
> **ME:** They don't have a big test at the end of the Semester.
>
> **T:** No, they don't.

Yet another teacher I interviewed told me this:

> **ME:** So how are the exams given?

T: Every month I test them out of 10, 3x10 every Semester for Questions and Answers and then another 10 marks to see how they are keeping their exercise books and homework. The other 60 marks I get them to do an exam.

The regularity with which the students were tested showed the importance of keeping track to see if the students had understood what was being taught in class or not. However, as often happens in education (especially education in Africa), "Knowledge that is not tested in the examination is unlikely to receive attention from teachers or students" (Girma, 1992, p. 45). That is, with so much emphasis on testing, lesson content tends to be driven by testing concerns.

What kind of tests are administered?

The tests are well within the level of a student in grade 2. The questions asked are from within the topics covered by the teacher in the class. In fact many of the questions have been directly taken from the textbook. For example, in Unit 1 page 4, the question that has been asked of the students in a "Match the following" form (matching items appear below *in italic*):

"A"	"B"
• *Height*	can be known by the length of shadows
• Weight	*can be measured by "sinzzir"*
• Time	can be measured in the palms of your hands

This same knowledge is also tested in a "True or False" form:

- We can measure height by *sinzzir.* T | F

The questions used are usually found in the various exercises all throughout the textbook and in the tests as well. This was explained to me in detail by one of the teachers whom I interviewed:

ME: So the teacher has notes? The notes are then put on the blackboard and the Ss copy it down. Is it from these notes that the questions for the tests are taken?

T: Yes, it is from these very notes that the test questions are made. But after the teacher has written the notes, he discusses it using teaching aids, he clarifies it for the Ss.

After a three-week interval the teacher gives a class test, a ten-question class test. On each given topic too, there are a lot of questions that are given and these questions are done in class or as homework and then corrected. From these questions the Ss get their tests, not in the same form though; if these questions were used as "True and False" they are then used in "Match the Following"; they come in different forms by changing the wording a little bit (as we clearly saw in the example above).

Another teacher I interviewed had this to say about tests:

Me: How about your questions for the test?

T: Well, every month they have a test. You see they have questions here in their book, I give this to them as homework and class work, from the book. Their tests come out of this, it is not word for word but the ideas discussed are the same.

Me: Do you take questions directly from the text for the tests?

T: No I change that, they do the same questions for homework and class work but I explain the questions to them and give them other examples that are similar too.

Me: What types of questions do you give the Ss?

T: There are five kinds of questions: True and False, Match the Following, Choose the Correct Answer, Fill in the Blanks, and Answer the Following Questions.

I don't always give them the same questions; I look at the portion and see what I can give them.

Analysis of the test questions

There are many instances where we can see references made to cultural nuances, especially with examples taken from the text. In Unit 1 of the textbook, the topic deals with traditional forms of measuring things. There are numerous references with the traditional terms for measure that are used in the tests as well. For example on page 4, Unit 1:

- The length of a *gabbi* is measured in: (a) kg (b) *kende* (c) shadows
- Height can be measured in *sinzzir*.

The use of cultural knowledge in tests renders it as something important and that it has to be remembered by the students. We can say that the questions that carry cultural nuances are in keeping with the integration of the home culture of the students and the school culture. This is very important to point out because contrary to this fact, we find there are many studies that show:

> African home-school language differences are usually coupled with meaningful cultural differences; the school embodies Westernised cultural values through the content of the curriculum and with normative expectations for behaviour that are

often at odds with the traditional knowledge and values still prevalent in many homes (Cleghorn, Mtetwa, Dube, & Munetsi, 1998, p.464).

Therefore we find that schooling in Ethiopia shows a provision of valuable information in the form of cultural schemata that is not being ignored, dismissed or degraded.

However, we can state that all the questions that are used in the tests are those that "necessitate... recall of factual information" (Girma, 1992). We can therefore say that there is no visible transfer of knowledge per se. They are direct one-word answers, a form of regurgitating information where: "drill and rote repetition are likely to be seen as the best teaching strategies to help children identify the terms and cue words that appear on examinations that simply require recall of isolated facts" (Cleghorn et al, p.464). This is certainly not difficult for the student to accomplish, as the very form that the question takes on, is taken word-for-word from the textbook, for example:

- The part of the plant that grows above ground is: the stem. [This example is taken from page 47 of the textbook]
- Flowering plants: a. have seeds b. have stems c. have leaves d. all of the above. [This is an example taken from page 43 of the textbook.]

Having said this, I compared these various points with tests designed for level 2 in a Canadian syllabus, Series-Science: Silver, Burdett and Ginn, (1989). What I found was

quite similar to that which is found in the textbook from Ethiopia. The tests were comprised of questions where the students were asked, for example to do the following:

- Circle the correct picture:
  - On which part of the plant do leaves grow?
- Circle the missing word:
  - A pumpkin seed will grow into (a) a pumpkin plant (b) a tomato plant (c) a bean plant (d) a pumpkin pie.
- Fill in the blanks:
  - The parts of the plant that grow in the ground are_____ (a) stems (b) fruit (c) leaves (d) roots.
- True or False:
  - Some new plants grow only from seeds.

This similarity led me to conclude that if I were to list some adjectives that would apply to my analysis of either set of tests, I could say that the students are mainly being asked to *identify, classify, name, sequence etc.* information picked up during class time. I can clearly see that there is no transfer of this knowledge to other contexts, the students are not asked to *conclude, discover, discern cause-and-effect, describe, compare, predict, hypothesize or infer.* This being said, there is also the reality that they are small children and the level of testing should be in keeping with their level of comprehension and ability.

Classroom Observation

In this section I will talk about the main points that I used to analyse the data that I collected by observing classroom teaching and learning, in the four schools that I covered during my field study in September, 2001. I used codes throughout my observation and shall give concrete examples for each and interpret the codes, explaining their significance and how they relate to my study.

During my observation, I tallied the various instances that I witnessed various attitudes by the teachers and the students in the different schools. I shall talk about the teachers' attitude towards the students while teaching, the teacher/student interaction, instances where I recognise the use of the children's immediate environment while teaching, the various teaching methods that are used, and I have also tallied the attitude of teachers towards girls and boys in the class.

It is interesting to note that in all four schools that I observed, I found there to be a high enrolment of girls to boys. On initial class observation, one might think that there is a gender bias favouring the girls because of the number of times they are called up on to answer in class. A simple tallying of the boy to girl ratio in the class usually proved the contrary as the number of girls in the class was more than the boys. For example, at Belai Zeleke Junior and Secondary school, I recorded the following observation:

> [This Grade 2 class that I observed had a male teacher, so the first thing that jumped into my mind was "Gender Bias'. How does he treat the girls in his class?

Having done a simple nominal count of the number of times a girl or boy was the centre of attention, I found that the girls were called upon 12 times and the boys 8 times, the ratio of boys to girls being 28 to 32. So I could easily say that there was no gender bias in favour of the girls. However, I found the girls in the class to be more assertive and more active than the boys. One example from many is as follows:

[The biggest girl in class tells the Ss to keep quiet, write, don't disturb.]

Another example:

9:16 The bigger girl comes and knocks two girls on the head. "I can't see," protests one; "You are covering me," says another.

Even though she is not the monitor of the class, she takes it upon herself to play monitor. There is another little girl too, in the class, who takes it upon herself to become the teacher's little helper:

11:35 [He gets up and corrects a book. There is a little girl asking for the books and taking them to the teacher to be corrected.]

In another school called Abune Basilios Primary and Junior High School, the number of girls in the class were in a majority and I observed the teacher use endearments when she called on the girls:

[What sign do we use? Those of you who say (–) put your hands up. Now those of you who say (+) put your hands up. It's O.K put your hands up. O.K., Masresh,

Hanna, Mathios, Elenie. Don't worry, Hanniye, you too stand up. Mathios you too stand up. (Hanniye, is a diminutive, in this case Hanna.)]

An interesting factor that pointed to gender bias in favour of girls was when the teacher gave the students some work to be done, the problem that was put on the board for the students to work out used a female as the proponent:

Teacher reads out the problem for them and says it is for Homework:

Problem: "From the 14 eggs that Aberash bought in the market, she fried 6 for breakfast. How many eggs does she have left?"

10:50 The bell goes!

From this problem that was put on the board, we can also see that it has been written in such a way that the students will have no difficulty in relating to the fact that eggs are usually bought from the market place. In a rural setting it is not uncommon to have the market place as the centre of activity. We can see here that the immediate environment of the students plays an important role in the classroom and the teacher is encouraging it further by relating the information she is delivering to the student's home environment. In all four schools that I observed there is ample evidence that suggests the use of the children's immediate environment when explaining a point or teaching a new topic or concept.

Yet another example from School A illustrates this point:

[It was also interesting to note that at the point of delivery the Ts used language and examples from the Ss own home environment, bringing in a familiarity that was not foreign to the Ss:

She uses her *kende* and demonstrates, calling a student and demonstrates again asking the student to use her *kende* to measure the T's desk.

T: When your parents talk about their *gabbi* or *nethella*, and they want to measure it, they usually say that it is three *kende*, right?

9: 20 Students are measuring the blackboard using their *kende*.]

The method of teaching that takes place in these various schools has to be mentioned. I shall first present it as is and give my frank comments on the methodology used, and then I shall present another perspective that is equally convincing:

[As the day's teaching continued, I observed the English lesson in progress. Here, once again, I noted that the teacher tried to make the students understand what he was saying as he reverted to Amharic to explain the use of 'have':

Tholosa <u>has</u> a stick. Tholosa <u>has</u> a dog, Tholosa <u>has</u> a ruler.

The woman <u>has</u> a pen. The girl <u>has</u> a flower.

Now look at the book and we will repeat it once more.

It would have been good to see the teacher ask the students to give their own examples; to see if they had really grasped the concept of 'have'. This of course, would have called for a whole new system in the teaching methodology: an interactive one. This

form of teaching is virtually non-existent, even in the slightest degree, in any of the schools that I was fortunate enough to observe. Instead, there is a steadfast adherence to a system of rote learning that was painfully evident in this class. The whole English lesson was rendered through this system:

> **10:10** Touch the table, the book, the desk. Come here, stand up, sit down, stand up. Go to the window, go to the table, go to the desk, go and touch the table. (Very much like ordering a dog around - most of the instructions were like that.)

We also find that the whole lesson is contextualised to some extent, although it is rote learning in another sense, since the context does not carry any learner goals or motivations.

Another instance that would render its support to the above-mentioned point can be seen when I talk about the teacher at Abune Basilios School:

> [When she explains a point, like in all the schools that I observed, I noticed that there is often a repetition of the same piece of information, followed immediately by a Question and Answer session. The repetitive, question and answer system is a modified rote system used often for the senseless regurgitation of information drummed into the Ss willing minds. The students are very vocal and enthusiastic when answering these questions that are asked:
>
> **3:10** [She asks questions. Ss are answering.]

T: Don't shout, just put your hands up and answer.

[Class participation to answer questions is very abundant. She asks TRUE or FALSE questions.]

T: Why is it false? You, ask him, what is the correct answer?

You answer her, very good, give him a clap.

[Ss answer, she encourages them to ask each other questions. She asks a question again. Ss are very enthusiastic to answer].

T: Don't shout all together, put your hands up and answer. Stand and answer."

[The Ss obey].

It would be of interest to state here that from my class observations, the class "discussion" that takes place "does not look exactly like what we outsiders, including development experts, think ought to be there" (Wright, 2001, p. 74). The "discussions" in these large classes take on a life of their own, so to speak. We see students asking questions and we find the teacher often saying, "Who can answer that question?" and hands fly up to answer. In this way the teacher gradually hands the class over to the students who ask and answer each other. The teacher gently prompts now and again to show that he/she is still in command. This basically reveals a style of communicative teaching in a very large class.

Unfortunately not all teachers have a system of controlling these very large classes and so they make use of monitors who see to the general discipline in the class:

She needs the help of monitors to maintain discipline in the class. This shows the "power" the monitors have, for there is no other way of controlling such large classes, they are just too large for the teacher to handle:

[There is total chaos in the class of 80 Ss.]

T: Monitors, help me out.

[The monitors spring into action and slap a few kids.]

T: No don't do that! [She tells me later that she doesn't like this, which gave me the impression that it was a pretty common practice; mainly to have some sort of order in the class for learning to take place.]

The class does look impossible to control, but what is fascinating is that the teacher is not shouting, she is talking slowly. This shows that she is not perturbed by the fact that there are so many in the class; she is going about her business- her style of teaching. She knows that she will be able to gain the students attention soon, and she does. The way in which she changes her voice and talks to the children is typical of how one addresses and talks to a group of children mainly to give advice. Traditionally, knowledge was transmitted orally through story telling and this system has been adopted by this teacher. She is following a trend that I have often observed being used to talk to children at home when trying to calm them and also when trying to teach them something. This is a fine example of how the teachers attitude and traditions go hand-in-hand.

In School A the Ss stand a better chance of having a one-on-one conversation with the teacher. A student volunteered additional information based on the subject being

discussed. They are able to demonstrate respect for the teacher at the same time they express their opinions freely and engage in conversations with the teacher. Here we find a classic example for Paulo Freire's characterization of the "banking system" of education where children are seen as the passive depositories of knowledge. To avoid this, students have to act as producers of knowledge and not only consumers. "When students bring to the classroom what they already know, and are acknowledged as knowers, the classroom becomes an interactive environment for knowledge production which engages both the student and the teacher" (Kreiser & Semali, 1996). This is clearly seen in this classroom:

> **9:46** One Ss stands up and tells the Ts that there is another traditional measure that was not discussed and that she had heard her grandma use it. The teacher listens carefully and attentively and explains the terminology.
>
> **9:50** Ss are asked if they have any questions and then class ends.

The information I gathered while observing the various classes was immensely interesting. As the analysis of the data gathered provided many different insights into what actually goes on in the teaching of content in a classroom.

Interviews

Policy and Practice considerations: Views of teachers

My main objective for talking to Ato Teshome[2] was because he is the Head Teacher at one of the schools in which I carried out my field study. I wanted to find out from him specifically how much importance was given to indigenous knowledge when presented in the form of policy or objectives in an elementary school curriculum.

I interviewed Ato Teshome, at the Resource Centre of the school, of which he is also in charge. It was a very informal interview, as I wanted to give him room to voice his opinions and contextualise his answers to my questions. I took my cue for the next question from the information I had received from him already, hoping he would elaborate further. He brought with him a stapled sheaf of type written notes and proceeded to tell me at length about the policy objectives put forth by the policy makers from the Ministry of Education. He talked to me about the creation of written textbook material by the Curriculum Department in Addis Ababa. We began our discussion with Ato Teshome telling me about the objectives of Education which are supplied by the Ministry of Education and distributed through the School Board in Addis Ababa. I asked him about the teaching staff and administrators who run the schools. I also discussed the language of instruction and the Grade 2 Science textbook.

He told me that it is the responsibility of every administrative body to oversee the implementation of education in every school. "They decide on how the education is to be

[2] The names of all the teachers and students are fictitious in this thesis study.

delivered with proper evaluation and testing, which is conducted by the teachers or the head teachers." He continued:

T: We have to follow the objectives and as teachers, we must be qualified, with a minimum Grade 12 education.

ME: Do you have to have a teaching Certificate?

T: Yes, from the Teacher Training Institute, but we also have degree holders among our staff.

ME: So you have well trained staff?

T: We have to follow constant workshops, the administrative staff too and we have to apply what we learn in practical terms.

I wanted to find out how exactly the students reacted to the education given in the schools, what effect did education have on students mentally and physically? Here, I was informed by Ato Teshome that it is very important, first and foremost, to have extra curricular activities like metal work, woodwork, sports, moral education etc. for the students to see the relationship that these activities have with Science, Mathematics, Social Science etc. The students are guided by teachers, supervisors and administration this is a mandatory requirement.

T: Previously, this guidance also meant corporal punishment, but now this idea has changed and the catchwords have become--"give support," "teach," "change and improve the student." Each one has to be able to take on the responsibility of being a supervisor.

Next I asked about Administration and Head Mastering:

ME: On the part of the school administration, what kind of role does it play?

T: Well, the school is run with the help of head teachers, unit leaders, assistant directors, and directors we also have a number of departments and clubs: these bodies have to co-exist with the administration along with rules and regulations as to how they will function. You see, it is very important to see that Ss learn about leadership, because if they are not taught how to do it and then they are asked to be leaders later on, they will not be able to, as they do not have the basic formation for it.

I gathered that another important function carried out by the administration is that they have to evaluate the education system, they have to see that in the curriculum the above-mentioned points are present, they judge the strengths and weaknesses in the programme, and they evaluate them constantly to improve them.

Ato Teshome told me that they also try to introduce new programmes, for example, gender equity, HIV/AIDS, population growth, these are just some, which are added onto the curriculum and taught.

ME: You are encouraged to do that?

T: Well, the objectives state that these have to be incorporated and taught in the schools.

ME: Who actually writes these objectives?

T: The policy makers. They are a group of people who are involved in Education. They can be from the Ministry of Education or the Bank, or the Sports

Commission, or the Cultural Ministry. They can be from Mining or Agriculture or from the Health Services. They are advisors of the Curriculum Department. They decide on the way in which Education is to be provided to the citizens of the country, in other words, the policy makers are the civil society. They make a study and each sector provides its views; the suggestions that they make usually concentrates on their field of expertise.

ME: So the policy makers decide everything?

T: No, No, they meet and discuss with educators and the input from the teachers is also very important at this stage. They discuss about the syllabus and curriculum that they have come up with. This is how it begins to take shape and books get prepared, for each and every level in the education system. These books are then supplied to the various schools by the distribution bureau of the Ministry of education in Addis Ababa.

Ato Teshome continued to tell me about the aims and objectives:

T: For grades 1 to 8 these are the objectives, those that I mentioned. Grades 9 and 10 are separate and 11 and 12 are separate as well. University has its own Charter. This is done for every class and for every subject, and this is how the objectives are put forward for the whole system of Education.

ME: Is this done for all the provinces in the country?

T: Now it has changed, since 2000, previously, all the regions used the National language, which was Amharic, but now each region uses its own language as the medium of instruction from Grades 1-6. At the present moment, they are studying

Science from Grades 1 to 6 in their Regional languages (Oromia Region, Southern People's Region, Amhara Region, Somalia Region).

ME: So each region has autonomy to decide what medium of instruction to use for their educational system?

T: Yes, each autonomous region can decide on how exactly they are going to deliver their education, for example, in the Tigray region, they use their own language from Grades1-12. In the Amhara region they use their language from Grades 1-10. In some regions they do English and Amharic as Second and Third languages. Addis Ababa being the centre uses Amharic from Grades 1-6. Then from grades 7-12 we use English.

Next I asked Ato Teshome to tell me a little bit about the Grade 2 Science textbook. In this section our discussion resulted in Ato Teshome giving me his opinion on a number of points made by the policy makers of the Science textbook:

T: In Grade 2 they learn about traditional methods of measuring so now in grade five when I am teaching a lesson on breathing, for example, the Ss may not have rulers on hand and are asked to use what they would find in their milieu, in this case they use their hands to measure. So you see you can relate topics and subjects from grades 2 and 3. So you see there is a lot of relating. That is why when this curriculum was developed, this policy, it was from different walks of life, from different ethnic

backgrounds in Ethiopia that these people were chosen and were invited to develop this curriculum. It is in this way that everything is made to relate. If it is not in this way that curricula and policies are developed, if it is not related to the country/region then when the Ss have finished schooling what are they going to do? What are they going to relate the information they have to? That is why they have put so much emphasis on seeing that it relates to the region and country, to see that it is local and indigenous.

Ato Teshome continued:

As I have just said, they try their level best to see that the syllabus is related to indigenous knowledge. When things can't be related then, they use modern methods of explaining issues. But it always first touches what is around and that which concerns the country and then branches off into the modern. It takes both and goes together side by side.

If a teacher wants to lean more towards the modern, there is no stopping that teacher, but it is always preferable for the students, so they can understand a concept better and relate to it better, it would be better to talk to them about something that they see everyday and are familiar with.

All the books have such a preface, it is only after that the instructions for how to teach, what you will do and what material you use, is presented in detail.

So this is what policy makers do, they state their objectives and it is put down on paper.

By talking to Ato Teshome, I got a clear idea as to how important it is that the policy put together by a group of educated people from different walks of life, i.e. the civil society, form the objectives of education that are carried out by educators in schools. These objectives reflect the local culture and environment, to a great extent.

This shows the importance given to local culture and the environment as this is the basis from which the launching of any international education can take place too, for it is with the self-esteem, confidence and awareness created by knowing what is close that one then begins to investigate further and experiment with new ideas and new concepts.

Interviews with teachers from four different schools

The most enjoyable part of my fieldwork was actually getting to know and talk to the teachers of the various Grade 2 classes at the schools I observed. I had the opportunity to interview some very dedicated and well-trained teachers, some who had been in the teaching profession from 5 to 10 years and more. Ato Sendek Gelaneh from Belai Zeleke Primary and Junior School, Wt. Mulumebet Mengistu from School A, Wzro. Beletu Gebre from Abune Basilios, and Wzro. Ayenath from School E.

I got the impression that these teachers were very diligently following the training and policies that had been put forth by the Ministry of Education. The various methods and systems that they applied while teaching had a sense of uniformity to it. For the

various questions that I asked I was given the impression that they all came from the same mould but when applying it to the various class situations they each used their own style of teaching.

When answering my question about whether they were obliged to finish the whole text, they each said they had to finish the text but the teacher has to be able to discern what is important and what is not by sifting through the material that he/she has on hand. One of them told me: "Yes, I am the one who decides what is important, I just don't teach everything! What I think is important for the Ss in this class is what I use. What is tough I do not encumber them with it as I know I can always give it to them at a higher level in more detail."

ME: So how exactly do you teach something, do you put it on the board?

T: O.K, I pick a topic from the book, I add or subtract, if I think it is too difficult for them I simplify it and explain it to them first, then, I put it down in note form, just a little as they are still in Grade 2 they don't know how to write very well yet.

It was in this way that two of the teachers handled the fact that the material that they were using was "beyond the scope of the children," as one of them put it!

I was also told that the teachers regularly consulted with the Teacher's Association (where teachers could present their views and opinions), often to complain about the enormous class sizes: "because of the number of students, it is practically impossible to control, teach, or correct books. So we have told this to the Teacher's

Association, but they are unwilling to do anything." Another teacher told me it was easier with 50 in class as compared to 65, she said: "last year I had 50 and that was great!"

Another link that all the teachers had was to show me and also tell me about the Resource Centre found in every school where the teachers and the students worked and produced the material that was used in experiments and in class demonstrations. One teacher explains: "I also take and show them pictures with examples and I ask Ss to bring stuff too, for example plants are the most common example. Therefore, we cover the things that are found around us: animals and plants. We ask the Ss to bring what they can. What we can't get we show them the picture and they are able to see the similarities and differences. In this way the student has become the resource, the student is involved physically with the production of a teaching aid. In this way the teacher uses the Teaching Aids."

It was also interesting to note, for the purpose of my study, that the teachers thought that the teaching of culture was an important factor when educating a child. One of the teachers was very explicit when I specifically asked her about culture, during the course of an interview:

> **ME:** As I see it you do give more importance to things that are more cultural?
>
> **T:** Yes, we do give importance to cultural things. Traditional dress, food, this we make sure that the students know very well.

Another went on to tell me:

"Now, there are some things that have to be learnt, for example- culture. The Ss have to know and learn and respect their culture. For example, you can ask Ss from what cultural backgrounds they come, what kind of wedding songs do you have? Ask your parents and come and then you can sing for us, in class. So when the others in the class listen to what these Ss are doing, they are very interested and they are also happy and in this way, they begin to understand that different languages have the same messages. In this way they learn that all languages are the same when used to give the meaning of the same thing, and what do they learn from this, that all languages are equal as they provide the same information."

This same teacher felt that the cultural aspect was being further encouraged by the Ministry of Education as well, and this led me to ask her a direct question:

ME: So when the ministry put this Science book out, I am sure they thought culture was relevant?

T: Well, not a lot is found in the Science book. But in Social Studies, we have a lot of mention and just so, now, in this new book that has come out which is called Social Science, it includes a lot of the social aspect of science making it even more culturally relevant. Social Science came in last year in the II Semester to be precise. It teaches about culture and monuments found in the country. It tells the Ss that they have to look after their cultural heritage, as it has to be passed on

for generations to come. They have to look after the monuments all this is taught from grade 1 and it broadens as it goes on to the higher levels.

Most of the terminology in the text, as I was given to understand, had been changed to indigenise the text and make it more Ethiopian. There were mixed feelings about this. One teacher found this difficult:

T: You see in the book they use Amharic words, but it is better to use the English word, because we can't understand the word used in Amharic, so we usually use the glossary and then give the Ss the English word.

Another teacher on the other hand had this to say:

T: We use both terms and teach, English and Amharic. We use pictures to show Ss what we are talking about. We explain where these are found. So you see we use both terms interchangeably and teach.

In my interviews, I also asked teachers about the textbook they were teaching, the Teacher's Guide and how they tested the children. These questions resulted in my getting uniformity in the answers from all the teachers, which led me to conclude that they were strictly following the Teacher Training that they had received.

When making tests all the teachers told me that they used the material from the textbook--exercises that the students had to do as class work and homework. The

question format usually came as: Match the Following, True or False, Fill in the Blanks, Choose the Correct Answer and on occasion Answer the Following Questions. These questions were then rephrased or repositioned and used in the various tests that the students were given on a weekly or monthly basis. The tests are taken out of 100 at the end of a Semester and this includes marks for work done on time, handwriting and neatness of exercise books, class attendance and participation.

For my question: "Do you use a Teacher's Guide and/or make your own notes?," all the teachers were similar in their answers, they told me that the teacher's Guide played a very important role in whatever they put up for the children to take down in their exercise books:

> **T:** Yes, I use the Teacher's Guide and I do my own notes, I do follow the outline in the Teacher's Guide, but I also prepare my own notes, because you don't copy it exactly as it is in the book.

The textbook, they told me, progressed in an order of difficulty from grade to grade, and they also told me that the concepts presented were repeated in Grades 1 and 2. This they were clearly able to judge as they were following a system called 'self-Contained' classes, where the same teacher taught all the subjects to the students from Grades 1 to 4. She or he stayed with their respective students for the whole duration of the students Primary school cycle. Students in this First Cycle are not failed; the weaker ones have to be coached by the teachers:

T: If there are any weak Ss we have to put them all together and coach them on Saturday's and we are not paid for it. You see, if it is grade two that we are looking at, we take the weakest from all six sections and we teach them, this is for them to be able to follow with the rest in the regular class.

The teachers divide the subjects and we teach them; this is for the Ss as we don't make any money. It is the new policy.

On the whole, the teachers whom I interviewed gave me the impression that they knew exactly what they were all about and I also got the impression that they had ample support from the Ministry of Education on how to go about teaching the curriculum put forth by this institution for the benefit of Primary Education in Ethiopia. The teachers I interviewed were well trained and dedicated to the job at hand and it was a great pleasure for me to get to know them and see how they worked under the circumstances in which they worked.

Summary of Findings

The claim that learners' indigenous knowledge needs more emphasis in African education is clearly not based on the experience offered in these four elementary science classrooms in the Addis Ababa region of Ethiopia. From the data I have gathered, it appears to be a consistent pattern that scientific concepts and scientific reasoning are

constructed in the students' minds by connecting the traditional and familiar experience and environment they come from in the morning and return to in the afternoon with what they experience in school. The learning materials and tests, the teachers' guides and manuals, and the official policy of the Department of Education all seem unanimous on the theory and practice of integrating students' school-based learning with their familiar, traditional, indigenous knowledge. Botanical concepts are not introduced through plants from England or France but through plants common to the students' experience; health concerns are not introduced through cross-sectional diagrams but through homely examples and in a context of communal responsibilities; where students are stuck for an answer, the teacher's guiding clue is drawn not from the textbook but from the learners' common home experience. For example:

> **T:** Today's topic is: "how do we keep our faces clean?"
>
> [Teacher changes her voice and talks to Ss. She is talking loud and clear. She asks Ss to ask questions and they are. A boy puts up his hand.]
>
> **T:** "Stand up and speak up." She then goes on to explain using actions and sounds. She is animated, when telling the children how exactly to chase flies off their faces; she uses onomatopoeia. The intonation of her voice changes. [She tells the Ss to *Ishsh* the flies off their faces. This is the sound you use when "shooing" something in Amharic.]

Similarly, when the teacher introduces genuinely novel concepts (e.g. precision measurement) this is done through the mediation of the familiar, traditional version of the same concept using the *sinzzir* and *kende*, *cha'ma*, and *irmija'a* .

In this process of integrating the novel and the traditional concepts, "hard Western" concepts and procedures are neither watered down nor shown to be superior. Nor is the emphasis on traditional concepts and procedures meant to imply their superiority. For example, the sinzzir method of measurement is not shown as superior to measurement in centimetres with a ruler, but rather (a) used as an anchor in prior knowledge (familiar knowledge) to introduce the concept of scientific measurement, and (b) itself left in place in the learners' minds as a satisfactory way of measuring in certain circumstances.

The pattern of cultural integration is so complete that I had begun to wonder if the question had even been worth asking in the first place! However, the fact that one of the units in the students' science book failed to make the links that were so general elsewhere is "the exception that proves the rule" a reminder that this integration has been targeted and realised in a rather deliberate manner.

If the African classroom often "embodies Westernised cultural values" (Cleghorn et al., 1998), presumably mainly in the science classroom, then it seems we must distinguish between different classrooms and maybe different African countries. Of course, the picture could change at later levels of learning, when scientific concepts become more abstract, or in other African nations, for example ones that have been under colonial rule for an extended period. As already mentioned, the building of a descriptive database is a slow and lengthy task. And, despite the habit of thinking of sub-Saharan Africa as an entity, it seems unlikely that one database will suffice for the area as a whole.

CHAPTER SIX

Conclusion

Answers to Research Questions

Research Question. Is the learning of science in the early grades in the Amharic speaking regions of Ethiopian schools anchored in the learners' familiar or indigenous experience, knowledge and culture?

The various sections covered in this thesis study indicate with ample evidence that this is so. The material presented in the Grade 2 Science textbook, the teacher's guide, the tests, the interviews with the teachers, the observations done in the classrooms, the aims and objectives put forth by the Ministry of Education, all show an adherence to the integration of familiar knowledge when introducing new concepts into a child's young mind. There is ample evidence to indicate that the patterns of cultural integration are taking place and while integrating the "new" with the "old" the children are given to understand the function of each system and its place in the learning process.

Research Method

1. Content analysis of learners' science material.
    a. Is the content scientific (or at least similar to that of an equivalent North American science text?)
    b. If so, is scientific content anchored to the learners' indigenous culture.

In order to answer this question, I spent a couple of hours going over Level 2 Science texts from Canada. For example, Silver, Burdett & Ginn-Level 2, discuss these topics:

- Life Science- Plants and Animals
- Physical Science- Matter and energy
- Earth Science- Earth, Space and Weather
- The Human Body- Caring for yourself. Keeping Safe

These very same topics are discussed in the Ethiopian textbook as well. What is noteworthy is the fact that the topics when introduced do not carry any imagery or examples that are not familiar to the students, in other words the material has been adapted to the socio-cultural milieu. This point is discussed in detail in Chapter 5 (Findings, analysis of textbook) of the thesis study. It would be safe for me to pronounce that the concepts when introduced are anchored in learners' indigenous culture.

2. Content analysis of learners' tests on science material.

a. Are test tasks also rooted in learners' experience and culture?

This is answered in detail in Chapter 5 (Findings, analysis of tests). Most of the material used in tests are taken from the textbook and follow the topics and ideas given there in. Tests are administered to the students often and the material they are tested on is familiar to them as it has been introduced to them through examples found in their immediate environment. We can say that the questions that carry cultural nuances are in keeping with the integration of the home culture of the students and the school culture.

Therefore we do see that there is a transmission of cultural schemata through the various tests that are given to the students on a regular basis.

3.Classroom Observation.

a. Is anchoring of the science text reinforced in classroom interaction?

b. Is further anchoring by teacher provided at the point of delivery?

There is ample evidence that shows anchoring of knowledge in familiar environmental themes, topics, concepts that the students can understand. These concepts when introduced, although new, are cushioned with familiar examples, and the students themselves volunteer more information from the environment that they themselves are familiar with. The students at this point are encouraged by the teachers and they are "acknowledged as knowers" (Kreisler & Semali, 1996).

The teachers themselves are the most important players in the field of delivering the knowledge to the students. The training that they have received, the guidance that they have used from the many workshops that they attend on a regular basis and the books that they refer to all show that at the point of delivery there is a resounding impact of culture being integrated into the elementary school curriculum in the Amharic speaking regions of Ethiopia. The interviews with the various teachers amplified the stand that culture holds in the classroom. The children must learn about their culture and heritage, because it is in this manner that they can appreciate and learn about the world beyond.

Broader bearing: Ascertaining Real Needs in African Education

In this concluding section, I once again draw on the comments made by Canada's former Minister of International Cooperation, Maria Minna. In an interview for the Toronto Globe and Mail, she expressed Canada's interest in giving aid to majority world countries in order to help them with long-term structural adjustments in education. She is reported as saying that she wanted to '[help] administrators learn how to oversee the national school system' in their countries. We need to teach them how to do this, not simply 'build some of the schools' (September, 2001).

These assumptions are expressed by many in the development field. My study suggests that distinctions have to be made as to who needs what kind of help! For some it could be a systems overhaul, but for others it could be individual project aid that is more important inasmuch as the existing system works. In order to elaborate this point, I use a very old saying that has often been used in the developing field.

This saying has been used as a philosophical touchstone by government agencies, university departments, research units, and NGOs. I now present an array of examples from different fields portraying the extent to which it seems to serve as a motto for the development industry.

To begin, I can honestly say I myself have always responded positively to this saying, which is one or another variant of the idea, 'Give a man a fish, and you feed him for a day; teach him how to fish, and you feed him for a lifetime.' The full reference comes from a Chinese poem or proverb written by Lao Tze:

If you show a starving man a fish, he will still be hungry.

If you give a man a fish, you will feed him once.

If you take a man fishing, you will feed him for a week.

If you teach a man to fish, he will never be hungry.

Lao Tze - Old Chinese Proverb.

This sentiment reverberates in the communications of many of the world's agencies involved in development, be they domestic or international. For example, it features prominently in the following policy document from the United States Environmental Agency:

> The underlying philosophy of EPA's international capacity-building programs is perhaps best summarized by the often-quoted proverb: ***If you give a man a fish, he will eat for a day. If you teach a man to fish, he will eat for a lifetime.*** It is based on this philosophy that the Agency focuses on establishing the legal, policy, institutional, financial, and scientific frameworks in the partner country from which meaningful and sustainable environmental results will follow. EPA often supplements such broad, institution-based work with shorter-term technical assistance, training or demonstration projects which not only achieve a specific environmental outcome, but which can also be adapted and replicated for environmental results elsewhere.

Looking now at an academic example, the University of Washington's School of Economic Geography is involved in 'economic handicaps, issues and programs' and presents the following two guiding principles at the top of their web page. One is a

quotation from James Speth, the former administrator of UNDP (the United Nations Development Program):

> Poverty is not to be suffered in silence by the poor. Nor can it be tolerated by those with power to change it. The challenge is now to mobilize action - state by state, organization by organization, individual by individual.

The other principle highlighted on their web page is:

> Give a man a fish and he eats for a day; teach a man to fish and he eats for a lifetime.

The fish proverb is not necessarily used as given, but can also be adapted to slightly different aid and development ideas. In my next example, from the American Population Research Institute the saying is applied to population control, and for this a slightly different emphasis was needed. Here it is used to support an idea of teaching individuals to teach others in their own communities about birth control principles. This is illustrated through the following policy document where the basic aim is:

> ...focused on development through training, especially training people how to train others. There is an old saying that states, **'Give a man a fish, and he eats for a day. Teach a man to fish, and he eats for a lifetime.'** Limmat has amended the old saying in accordance with their vision: **'If you teach a man to teach others to fish, you will solve his entire community's problems for life.'**

The fish saying is also used by NGOs. MYRADA, for example, is an agency working out of South India whose main mission is to 'foster a process of ongoing change

in favour of the rural poor in a way in which this process can be sustained by them through, building and managing appropriate and innovative local level institutions rooted in values of justice, equity and mutual support'. They too have made use of the fish saying to sustain their mission, although again with a slight twist on the original—an even bigger twist:

> **Give a man fish and he will eat for a day; teach him how to fish and he will eat for a lifetime.** But what if the path to the river itself is strewn with obstacles? At MYRADA, we not only strive to **teach a man to fish, but also enable him to reach the river.**

The idea of helping him reach the river is interesting, in that it suggests there may be different kinds of help needed--one kind cognitive or educational (teach him to fish) and the other kind material (help him get to the river). Here, the two seem to flow together. However, they needn't. Is aid *always* a matter of teaching people in the majority world how to fish (fix their machines, heal their ill, teach their children, etc)? How all-purpose, really, is this all-pervading fish dictum?

Here is another writer using the fish story, but taking it quite far from the original simple notion. In an academic presentation concerning World Bank/NGO partnerships the dictum is used, in fact, to introduce some complexities. The presentation poses a number of basic questions raised by the intuitively appealing idea of 'teaching them how to fish':

- Who to teach?
- What methods work and who is the best teacher?

- Do all benefit? Women, children?
- Do the people concerned have access to the fishing waters?
- Do the people concerned have access to the markets?
- Who is polluting the water?
- Who is annexing fish stocks?
- Do the people concerned like fish?

Perhaps the fish slogan is just that, a slogan, which while stirring in its intuitive appeal has the ultimate effect of glossing over the differences in aid requirements of different people with different problems. Indeed, some people may know how to fish already but are just unable to reach the river. These people clearly need help reaching the river, not fishing lessons! How many people in developing countries have received sermons, injunctions, advice, and training when this was far from what they needed?

Some experts on aid argue that the emphasis and assumptions implicit in the fish story are simply wrong in many cases. An example is French development banker Jacques Attali, who is pioneering an Internet-based micro-credit banking network in Benin, Bangladesh, and other countries, called PlaNet Finance. In an article in the New York Times, Thomas Friedman reports on an interview he had with Attali:

> There's an old saying: 'Feed a man a fish and you've fed him for a day. Teach a man to fish and you've fed him for a lifetime,' ' says Mr. Attali. **'Well, we have millions of poor people who know how to fish. They just don't have a pole.**

Through PlaNet we might be able to get poles for a lot more of them.

We seem to have come a long way from a simple belief that 'Teach a man to fish' summed up most of what there is to know and feel about aid! Some majority world countries need to learn fishing, some need to be helped to get a pole. It is of utmost importance to make the distinction. Mr Attali, for example, does not see the PlaNet Finance philosophy as the magic formula for all development aid; it works in Bangladesh, with its particular infrastructure, it may not work somewhere else. Indeed this is nothing more than a truism, when articulated.

I propose that there are two paradigms of aid: **they need to learn fishing vs. they need a pole**, and of course various combinations of the two. There are assumptions in the 'Give a man a fish' dictum, which masks the diversity of cases. It may suit the West to believe that the main problems of development are conceptual, as we have seen explicitly in many of the examples above and implicitly in the quotation from Canada's former Minister of International Cooperation. However, it seems clear that sometimes problems are conceptual, and sometimes they are not. Sometimes the people in majority world countries know how to fish but just need a pole; it is of utmost importance that donor countries make the distinctions! This is particularly true in view of the fact that the landscape of the majority world is strewn with the expensive wreckage of misconceived aid projects. Surely the 'fish-or-pole?' framework could be a useful reminder to look for the real needs of those we wish to help.

As a case in point to elaborate the fact that distinctions have to be made, I present my own thesis study. Western or Minority world countries often tell countries like

Ethiopia that their problems are conceptual -- so 'we'll teach you how to fish'- but my research shows in great detail that the problems are the lack of infrastructure or "the lack of a pole" (building some schools, in Minna's words), and not the lack of knowledge on how to run their educational system!

The findings and recommendations that I make in my thesis are primarily action-oriented and echo the recommendations of Education For All (EFA), World Education Forum, Dakar, Senegal (2000). The findings, primarily concerning the integration of culture into a school curriculum, showed the importance of combining the home-culture of a child with the school-culture. The research found that when students were given a chance to be a part of the knowledge that they themselves brought to class, it became theirs to own, and by integrating their knowledge with the new concepts presented in the class the students learning was successful. By referring to indigenous knowledge as a combination of the student's own schema, culture and environment, I found numerous references and examples corresponding to these definitions throughout the textbook the students were using, and throughout the practical teaching in class, and the interviews I conducted with various teachers. It is my belief that this type of analysis - can be applied to other regions of Ethiopia and Africa to contribute to the evolution of education within an overall framework of poverty reduction. As the system of education that most of the (formerly colonized) African nations have inherited are "not linked to the realities of present African needs" (Urch, 1992, p. 2), we may have to teach them how to fish in most cases but not all.

Through this elaborated example, I have attempted to show that every case is different and that what is needed in the majority world, in terms of aid or help in solving or helping to solve the myriad of "problems" that present themselves, is a system that is created from within, a solution created through discussion, negotiation and/or consent, a system that is developed with the help of those concerned--people who make up the civil society of each place. Each case being different, each carries with it, its own particular brand of problems and/or solutions. For some it is teaching them how to fish and for some it is providing the pole.

Limitations

This section discusses some of the limitations of my study. Any educational study has limitations, as far as generalisability is concerned, and this one may have more than the usual amount owing to the relatively unknown language of the research materials, the size of the country, Ethiopia, and the difficulty to travel between the various regions of the country, another point is the relative lack of public research. In this section I will outline the challenges that my research faced, and the ways I have attempted to meet them.

The most important limitations that I shall be dealing with in this part of the report are the following:

- The analysis of the Grade 2 Science textbook written in Amharic that limited my research to Addis Ababa
- The Ministry of Education putting out another textbook for Grade 2 Science in 2001
- When discussing indigenous knowledge the definition had to be operationalised as "familiar knowledge" for the purpose of my study
- The class observation inevitably disrupting the normal goings on in the classroom.

The analysis of the Grade 2 Science textbook written in Amharic that limited my research to Addis Ababa

Ethiopia is a country with over 55 million people. These people belong to different ethnic groups and speak different languages. There are about 99 distinct languages (Wedekind, 1994, as cited in Bloor & Tamrat, 1995). The main representative

language being Amharic, mainly spoken in the Central Highlands and Addis Ababa, it is also the official language. Tigrinya is mainly the language of the North, and Orominya, and Somali are spoken in the South of the country.

In 1993, the government declared that all the regions in Ethiopia would come under regional autonomy, and this would mean, according to Bloor and Tamrat (1995), that:

> for the first time, Ethiopia's leaders show[ed] a very strong commitment to status planning which geared to the recognition and development of indigenous living languages other than Amharic. The policy which they have selected is ...akin...to the model of Belgium or Canada (p. 55).

This language "issue" was explained to me further in a personal e-mail by area expert E. St-George (e-mail communication November 4, 2001) where she explained to me that in the South, the language issue was truly the most difficult issue to deal with, while in Tigray, it was one of the most fulfilling, as the language is old and it has a script and formal orthography. In the South, however, languages hadn't developed in written form as yet and they are now using the Latin alphabet for their mother tongue that teachers are not familiar with.

Thus, we find that it is quite evident that my study of a Grade 2 science textbook in Amharic limits my findings to the Amharic speaking regions. However, this study can serve as an example that can be used as a model for the other regions of the country.

The Ministry of Education putting out another textbook for Grade 2 Science in 2001

This posed as the second potential challenge of my research. My study was divided into two phases, the first phase dealing with the content analysis of a Grade 2 Science textbook and the second phase dealing with the observation of this textbook being taught in the classroom. In September, 2001, when I went to visit the various schools and carry out my field research, I was informed that the textbooks for Science had been changed. New textbooks, written, published and distributed by the Ministry of Education were to be used in the various schools around Addis Ababa. The new textbooks combined the subjects, Social Studies and Science and were now called Environmental Science, instead of Science. They gave more importance to cultural and environmental details, which was combined with Science.

This change was not seen as anything out of the ordinary and on interviewing the teachers who were to teach this new book, one of them had this to say:

ME: How about other cultural references in the book?

T: Well, not a lot is found in the Science book. But in Social Studies, we have a lot of mention and just so, now in this new book that has come out which is called Environmental Science, it includes a lot of the social aspect of science making it even more culturally relevant. It teaches about culture and monuments found in the country. It tells the Ss that they have to look after their cultural heritage, as it has to be passed on for generations to come. They have to look after the

monuments all this is taught from grade 1 and it broadens as it goes on to the higher levels.

Therefore, we see that even though the science textbook I analysed had been rendered redundant, I was able to see first hand, the integration of culture and familiar knowledge into the elementary school curriculum in the Amharic speaking regions of Ethiopia. This helped in clarifying what I meant by indigenous knowledge and how important a role it plays in the educational system.

When discussing indigenous knowledge the definition had to be operationalised as "familiar knowledge" for the purpose of my study.

As the term "indigenous' conveyed a number of meanings, I had to find a way in which I could define exactly what I meant by it. In a science curriculum what exactly posed as indigenous knowledge? Was it the local knowledge of the community? Did it feature subjects that the students were familiar with? Or was it the description of native plants or stories about local heroes and heroines? By answering many such questions and relating them to Piaget's theory that learners conceptualise through experience, I operationalised, indigenous knowledge as familiar knowledge in order to show that the culture of the place was indeed integrated into the teaching material, in this case the Grade 2 Science textbook.

By referring to indigenous knowledge as a combination of the student's own schema, culture and environment, I found numerous references and examples that

answered these definitions throughout the textbook, the practical teaching in class, the tests and the interviews I conducted with various teachers.

Students were given a chance to be a part of the knowledge that they themselves brought to class, it was theirs to own, and by combining their knowledge to the new concepts presented in the class the students benefited by actually learning. I can safely say that I found ample evidence that showed the integration of the home-culture of a child with the school-culture. Students who entered the classes, entered a world where their home-culture was not disfavoured, degraded or dismissed, but was rather encouraged, combined and given importance in the world of the child.

The class observation inevitably disrupted the normal goings on in the classroom

The final point that I bring up, as a limitation of my study is the inevitable interruption caused by an observer entering a classroom full of curious eight-year olds. It comes as no surprise to say, on entering the class I was greeted by 60-70 pairs of beautiful black eyes following my every move in their room. When I went to sit at the back of the class, I had heads turn and stare, until the teacher said: "collect your thoughts', [I found this metaphor delightful]. The class then turned back and paid me no more attention, which was good because I was looking for minimal involvement in what I was recording.

In one of the classes that I observed, I had to occupy the teacher's chair, which was the only available free space in the class, [as it was filled to maximum capacity and beyond] this made it difficult for the teacher to sit down and correct the students exercise books and so she stood in one corner of the class and did it.

However, I made myself so unobtrusive that in one of the classes I was observing, the teacher made it a point of introducing me at the end of the class and asking me to say a few words to the students. Another factor that makes me believe that the disruption was not a major problem because there are many researchers who come in on a regular basis from the Addis Ababa University to exhaust the resources.

As for limitations to a study, I am sure there are many but the few I mentioned above are some of the challenges that I came across while doing my study.

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Appendices

APPENDIX A
Content Analysis Chart

QUESTIONS:	Chapter ?
Content:	
Is there adequate recycling and revision of content material?	
Does the content material depict traditional culture?	
Are there traditional metaphors used in the text?	
Is the "Western" concept compared or related to indigenous knowledge?	
Does the textbook deal with the conventions of cultural knowledge?	
Imagery:	
The number of images on a page/how much of the page does it occupy?	
Do the images depict traditional life?	
Are the images attractive?	
Do the images represent local or foreign culture?	
Is the link between the text and the image clear?	
Text:	
How much of written text is there on a page?	
Is the vocabulary used scientific/regular?	
Is the vocabulary transliterated?	
Is metaphorical language used to describe phenomena?	
Topic:	
Are topics relevant to both urban and rural students?	
Will the topics help expand students' awareness and enrich their experience?	
Are the topics sophisticated enough and yet within the learners' level?	
Will the Ss be able to relate to the social and cultural contexts presented?	
Is it appropriate for a Grade 2 level?	
Methodology:	
What are the approaches to content? Is this appropriate to the learning/ teaching situation?	
What level of student involvement can be expected?	
What techniques are used to present exercises? Are they suitable/adequate or can they be improved?	
Are students expected to take a degree of responsibility for their own learning?	
Are the topics sequenced according to an order of progression/random?	
Design and Organization:	
Is the material suitable to the level of the student?	
Does it allow Ss to work towards meeting external syllabus requirements?	
NOTES:	

APPENDIX B

Content Analysis of Chapters 2-7 according to chart (Appendix A)

Chapter 2

Content. This chapter is titled- *"Our Body, Food and Health."* The chapter contains 27 pages. It begins by asking students to identify the parts of the face and body. Each chapter has its own agenda. The content that is introduced in this chapter is new and there is no recycling of material. A social aspect is introduced, as children are being taught personal hygiene. There are 8 pages on personal hygiene. Cultural topics are being used in abundance in this chapter. On page 17 girls who traditionally tie scarves are being counselled not to do so, to let their hair breath. They are asked to wash it and keep it clean. This shows that there are societal issues that are being dealt with and not only science.

On page 20, students are asked to brush their teeth regularly using the traditional twig as a brush. The conventions of traditional and cultural knowledge are being illustrated. There is no introduction or mention of "Western" toothpaste and toothbrush. The headings in this section start with a question, for example, *what would happen if you don't keep your ears clean?* Which is then followed by the answer, in this case, regarding personal hygiene. This promotes the students to think and make them aware of the necessity of personal hygiene.

Imagery. The images in the textbook are simple, but cannot be described as being attractive. The imagery that is used depicts everyday life, which is realistic and authentic, an excellent example of this is found on page 37,where we find an image depicting the water cycle. It is a village scene showing a boy defecating by the water near where a woman is collecting water in a clay water pot, ready for home consumption . In this chapter all the images represent local culture. The link between the text and the image is made clear, with a caption that summarizes the main idea of the text. On the whole, about 40% of the chapter is occupied by imagery.

Text. This section contains a lot of written text, about 90%. Most of the vocabulary that is used is regular with a couple of instances for transliteration. One noteworthy example is the use of the transliterated word *Basilar Dysentery.* One could easily argue that this is too high for a grade 2 student, yes, but why is this the only scientific term used? The symptoms for this ailment are discussed in detail (passing stool with mucus, blood and puss) the local name is used too- metaphorically meaning "loose motions with blood." This is mainly because *Basilar Dysentery* is a common problem! Pages 41-42 deal with a whole section on HIV/AIDS. There is transliteration, but what is interesting here is that the level of awareness and prevention advice is maintained at a grade 2 level. Students are advised not to share blades or sharp objects, and to make sure that cuts and bruises are covered and that blood does not come in contact with open wounds. There is no reference to AIDS being a sexually transmitted disease, rightly so as this is not what a 7 or 8 year old has to watch out for. The main theme here being "prevention is better than cure."

Topic. The topics chosen in this chapter are relevant from an awareness and prevention aspect, I say this as there are instances, page 18, where children are being asked to make sure to wash their faces with clean water and use a clean cloth to dry their faces. Teaching children to be aware of personal hygiene is very important but, there are areas where there is no running water or no water at all to wash with. Therefore we can say that the subject matter, in this case is only relevant to urban children. As for helping to expand students' awareness and enrich their experience, I would say this is an excellent section, where the whole chapter deals with the awareness and teaching of personal hygiene.

The topics that are discussed are sophisticated, but always with a specific objective, it calls for teacher guidance and explanation, with examples drawn from student's lives and environment. On pages 30 –33, the concept of food is introduced; it is divided into 4 sections-1) dairy 2) meats 3) fruits and vegetables 4) bread and grains. In the section on meats, the introduction of proteins takes place and the image that corresponds shows pulses. The word that is used for "protein" is *meat* in Amharic, (the image which follows is a dish of eggs, broad beans and chick peas.) If protein is being introduced for the first time, it would be necessary for the teacher to explain the concept of protein to the students.

Methodology. The content is approached in such a way that it introduces the students to the plants and animals found around them in their environment. Topics like force and energy are also discussed. The ways in which these topics have been introduced is interesting as it keeps to the level of the student. Experiments don't go into great detail but are just enough for the student to grasp the idea being introduced.

The level of student involvement that is asked is this section is large, as the whole section deals with the subject of personal hygiene, the students are advised to carry out what they are being introduced to, in this way the students are being asked to take a degree of responsibility for their own learning.

The different exercises that the students are made to do are not new, but they have been introduced to them before. They take the form of comprehension questions after every topic that is introduced throughout the chapter. Students are asked to answer True or False questions based on the topic introduced. They are also asked to fill in the blanks with the correct answer. Some topics carry an exercise, where the students have to Match the stem of a sentence with the correct ending. Some exercises give a statement with 3 possible answers and the students have to choose the correct answer. These different exercises are scattered throughout the chapter and this creates a situation where students are forced to answer and play an active role in the learning process.

I would hazard a guess in saying that the design and organization of the material allows students to work towards meeting external syllabus requirements because the exercises that the students are asked to do could easily be asked on a test or exam at the end of a term. To confirm this probability, I would have to see a sample of a test paper related to a particular chapter in the grade 2 Science textbook.

The topics discussed in this chapter while introducing new information is also designed to capture the students' interest in science. By introducing societal issues through science, the design of this chapter is aiming at connecting classroom science to the students' life through the various topics on personal hygiene. Thus the idea that students must connect classroom science experiments to everyday life if they are to become lifelong science learners seems to be reflected in the textbook.

Chapter 3

Content. Each Unit. I found discusses a new topic. Within the unit there is revision of the given topic, the thorough introduction of the topic followed by exercises and then in the end there are exercises based on the entire lesson..

In this unit the material that is discussed is mainly taken from the children's environment and so the plants that are introduced are familiar to them. The language used to describe these plants is also very familiar to the students. It starts by explaining what flowering plants are and asks the students for examples and gives examples with illustrations. The illustrations are depictions of local vegetation. When introducing the various plants, the local name is used. I find that the conventions of cultural knowledge are maintained as students are asked to work with the materials they have on hand, for example, planting in a tin; thereby recycling used tins which is a very common practice in Ethiopia.

Imagery. The total number of images found in this unit amounts to only 10% of the whole unit. Most of the experiments have only the text giving numbered instructions, but no illustrations. Most of the images show vegetation that is familiar to the student as it is taken from the environment. The images found in this unit are detailed and attractive

and the relation between the image and the text is faultless. In this unit images are used in exercises too. Students are asked to compare and contrast the shape, size, weight and colour of plants.

Text. In this unit the ratio of text is high, it is 90% of the unit. What mainly constitutes text in this lesson is the layout, where the students are expected to carry out many experiments and the instructions form the body of this unit.

When giving examples of the various plants, transliterations are used, for example on page 45 the image bears the transliteration "fern." On page 44 after giving the local term used for non flowering plants the transliteration of the term is used in brackets. There are transliterations that are used mainly along with the scientific term, this is probably to get the students ready for content in higher grades.

Topic. The topics that are discussed, when discussing plants in this unit are both relevant to urban as well as rural children. The topic on plants and flowering plants in particular is used to introduce students to be aware of their surroundings and to take care of it. The beauty found in flowering plants is discussed and students are asked to plant flowers in school and at home. This unit contains material which is very hands-on, as the students are actually asked to carry out the experiments given in the text with the help of their teacher and parents, for example page 54.

The topics in this unit are made sophisticated when the transliteration is added, otherwise the material discussed is at the level of the student, which is made all the more interesting by the number of experiments presented in this unit.

The experiments that the students are being asked to carry out could sometimes bring about a social change, albeit a very subtle one, without ruffling any feathers, for

example, by planting flowering plants, people can easily see that they should not destroy or throw garbage near where the plants are growing. The student on the other hand has the satisfaction of taking care of his/her plant, by watering it and seeing it flower.
The experiments that the students are asked to carry out are well within their level of "do-ability," comprehension and production.

Methodology. The approach to teaching the content in this unit takes on a new form, as the whole unit is presented in the form of experiments that the students have to carry out with the help of the teacher as well as the parents. This interactive form of teaching would be very interesting to observe as it involves a lot of work out side the usual "text book only" form of teaching. The participation of the students in the various experiments is necessary and very important in order to teach this unit.
After each topic is introduced in the unit, there are exercises that follow, for example, True or False, Fill in the blanks, Comprehension questions, Match the following, Multiple choice etc. These exercises are not new to the students, therefore it follows the usual teaching style. This style can always be improved upon, but most likely it serves a purpose of meeting the syllabus requirements. It would be interesting to find out if the questions from the text are used in exams and tests.

When carrying out the experiments the students are given a lot of responsibility for their own learning as they are guided but have to work on their own to come up with the results of the experiment of growing plants and gardens. The topics dealt with in the unit are fairly random and have no order of progression, the experiments introduce a new topic and the instructions on how to conduct the experiment are given.

Design and Organization. Throughout this unit, what comes forth is the facility of the material presented. The topics are simple and effective. The topics discussed are interesting and very much in keeping with the level of the student. Each topic discussed has a set of questions that follow. It is designed to facilitate learning with comprehension. Throughout the unit material is presented in a way where a question is asked and the second line proceeds to answer the question, then the instructions for the experiments follow.

The teacher is asked to provide examples to the students while introducing the various topics. The teachers can use the material presented or can provide examples by bringing samples to class. How exactly the teacher deals with this aspect of teaching would be interesting to see.

Through the experiments, I believe that this unit introduces a social aspect as growing plants in tins in school and at home will beautify the place. This, not only brings personal satisfaction, but also includes the participation, active or passive of the people immediately involved, for example the parents, siblings, neighbours etc. In its own way, it contributes to the society at large. It teaches students that beautifying the environment is important and necessary.

Chapter 4

Content. Like every unit so far, the material that is introduced in this unit is all new, there is no recycling of information within the unit. The topic, once introduced is followed by exercises that correspond to the information given when introducing the topic. Most of the information provided in the unit, the children would have no problems relating to as the examples of the animals given are those which the students have already seen and if not, are certainly found in the environment. Some of the names of the insects and animals are metaphorical, for example the firefly is known as "the dinner of the fire," presumably because fireflies are attracted by fire and usually get burnt when they go too close.

On page 62, the authors have got a bit too ambitious, as they ask the students to build and maintain an aquarium in school. Half a page has been devoted to pictures of different fish but they are not named. In Ethiopia it is not common at all to see fish kept in an aquarium, it may have to do with the fact that the country is landlocked and the river fish are too big to have as pets. This could be an instance where the "Western" concept of rearing fish is being introduced. The text does not get into too much detail, but rather asks students for more information on rearing fish. Therefore we should note that a lot of the information is to be provided by the teacher. There is a slight detour from the conventions expected regarding familiarity of subject, yet it could be that the information being introduced is to be made use of, at a higher level later on.

Imagery. The images in this unit are attractive and accurate representations of animals found in the country. The ratio of images found in this unit is 80%. An exercise on page 61 is based on the images found on the previous two pages. Almost all the

animals and insects featured in this unit are familiar to the students as they are found in the milieu. The images used and the text that follows depicts local culture, for example on page 61 the students are asked to give examples of what type of worms live in the human body. This is a common ailment in Ethiopia; where people have tapeworms in their bodies, from eating the traditional delicacy of raw meat. The text and exercises that follow the images are very clear as to what they are referring to.

Text. In this unit unlike the previous unit, the text is limited as it occupies only 20% of the unit itself. The animals and insects represented are very familiar to the students and the language used to describe the various characteristics of these insects and animals is regular uncomplicated vocabulary. There are no scientific terms that are used, and there are no instances of transliteration in this unit. The language used is rich with metaphorical references, for example the word used for centipede is "100 legs' suggesting a translation of ideas from "centipede."

Topic. The topics chosen are relevant to both to rural and urban children, as the animals and insects discussed are found throughout the country and are familiar to the children. The exercises suggested will certainly help expand the student's awareness of the organisms around. On page 61, one of the exercises is practical, the students are asked to bring different insects and creatures without a backbone to examine in class.

In this unit we find that some of the information presented is sophisticated because it has to be provided by the teacher, therefore it makes one wonder if the teacher is provided with a "Teacher's Guide" that contains answers to some or all of the questions asked in this unit.

The students will not find it hard to relate to the material presented, as I have already stated, it is material that is familiar to them, and most children – rural or urban, have come across lizards, snakes, crocodiles, spiders, worms, snails, tics, fleas etc., certainly in their grade two life span.

Methodology. In this unit we have seen that there is a lot of "teacher dependency" and if the unit is to be taught according to how it is set there is a lot that is asked of the student too- as independent study or taking on responsibility for their own learning. This comes forth as being too ambitious because in most cases the teacher is the sole source of information throughout the developing world.

Most of the exercises are the usual form of answering comprehension questions, true or false or fill in the blanks. On page 66, however, students are asked to fill in a grid and this exercise looks challenging, especially if the students have not used grids before while working on their various exercises.

On the whole, what can be said of this unit is that it has a lot of subject matter that is familiar and easy, but we also see that the teacher plays an important role in presenting this chapter to the students and therefore, teacher observation would make for a very interesting study. Once again it is worthy to note that the information presented is familiar and not out of context or cultural convention. For grade two, it is adequate that the information provided deals with familiar animals rather than introducing animals that would be foreign to students. That is of course, not saying that there is no room for comparative studies, of introducing topics that could add to the awe value or to raise the curiosity level of the student.

This unit also made use of a lot of attractive images to transmit information, which I found was adequately presented.

Chapter 5

Content. The topics introduced in this unit are new and self-contained. As this unit is a lengthy unit, the subjects that are discussed are revised at the end of the unit. This unit has turned out to be quite a disappointment as far as traditional knowledge is concerned. On pages 87- 95, the experiments the students are asked to conduct, i.e., asking the students to make things like a kite, a mask, an animal shape out of an envelop. I find that these ideas depict, not cultural, but rather Western culture and could very simply use examples from Ethiopian culture to introduce, perhaps shapes and sizes, if at all that is what the lesson is trying to teach. There is no comparison or interrelation of cultures, but a total replacement of ideas from one culture with that of another. On page 94 for example, there is no necessity at all to ask children to cut out the shape of an animal from an envelope. I find that this lesson has not dealt with the conventions of cultural knowledge, instead I find that, the authors have used material that is foreign to students when they could very easily have maintained the traditional conventions that they have been following so far in the previous units.

Imagery. The images for this unit, could easily have been more numerous. The number of images, when compared to text in the unit, comes out as 2 to 1. The images that are used in this unit are all non-traditional. This is because the objects they use for the different experiments and the objects they have chosen to experiment with are all non- traditional. For example, on pages 82-83 all the objects they have shown as

examples of things made from metal are all non- traditional, an aeroplane, a pair of pliers. The images basically are representing foreign culture rather than Ethiopian culture. The images are attractive, but as mentioned before, they could be more numerous.

Text. The amount of text in this unit is double that of the images present. Most of the vocabulary used to describe the various experiments throughout this unit are transliterations and could be an introduction to material that will be presented in higher grades, examples of this are found throughout the unit, on pages 80, 83, 84, 85, 86, etc, and the words that have been transliterated are: oxygen, nitrogen, ammonia, mercury, chemical, molecule etc. We immediately recognize that these are scientific words and that they do not exist in Amharic.

There is a careless mistake that has been made on page 88, the metaphorical use of the term "an instrument to cut wire," (a pair of pliers), is written as "a wire to cut an instrument"! This clearly shows an example where the link between the text and the image is not clear and in this case, clearly wrong!

Topic. The topics discussed in this unit are not relevant to both urban and rural children. For example, on page 75 the language that is used is not appropriate for rural children: "the same way, as water travels through pipes, electricity travels through wires." In remote areas in Ethiopia, where this textbook will be used, water is still collected in clay pots from rivers and streams.

This whole unit could be said to expand the students' knowledge, but with a lot of help from the teacher when introducing the various themes. The topics discussed are not within the students level and as mentioned before, it asks for a lot of teacher support. The students are asked to answer questions after experimenting, this shows that a lot of

practical knowledge is necessary, this is clearly seen on page 74 among others. In order for the students to relate what is given in the text to their social and cultural milieu, they will need a lot of teacher support.

With the understanding that the topics introduced in this unit, will be made use of later on at higher levels, one could say, the topics introduced are appropriate to the level, for example, on page 76, the word is given in Amharic and then the transliteration is given beside it, this can ideally seen as preparing the students for the future.

Methodology. This unit asks for a lot of experimentation, this can be seen in the activities that the children are asked to do on pages 70 through 77. The content is made use of in the usual way where students are asked to answer Multiple Choice questions, True or False, Match the Following and comprehension questions; these techniques used to present exercises are, what have been used since the beginning of the text. They are quite adequate in fact, there is the introduction of an interesting exercise, which is the use of a grid to collaborate information, the students are introduced to condensing information into a grid form. The unit contains a number of exercises dealing with grids, on pages, 71, 72, 74, 75, 77, 80, 86. This approach to the content matter facilitates the learner to remember facts and it is also a neat way of presenting facts, without much clutter and getting the main points across.

There is a lot of student involvement that has been asked for, especially when conducting the various experiments, this would also show that the students take a certain degree of responsibility for their own learning.

Design and Organisation. The material that has been presented in this unit most certainly is within the level of the students, but with re-enforcement from the teacher, so how exactly, this situation is tackled by the teacher would be interesting to observe! As far as meeting external syllabus requirements, this is covered very adequately, in a separate section at the end of the unit. From pages 96 to 100, the section is called revision and there are questions at the end that would fit in with the external syllabus requirements.

On the whole, my personal critique on this unit would be to state that the cultural conventions are not respected at all, for example on page 87, they talk about things made out of clay and they fail to mention in any size or form, the most obvious examples of local culture, the use of clay cooking pots and water pots. I found this to be stark negligence of ignoring traditional culture, which I found goes on through out this unit.

Chapter 6

Content. The topics that are introduced in this unit are new as is the case in all the units that I have analysed so far. This unit being fairly short, only 15 pages, does not adequately recycle and revise the content material. The content that is presented does contain material that depicts cultural life, which is authentic. For example on page 103, traditional methods of cooking using a fireplace and cooking pot with firewood or coal are illustrated.

The use of language in metaphorical terms has a very good example on page 111, the use of the word "fan" in Amharic, conjures a different image in the minds eye to that

which is being illustrated as an electric fan, nevertheless it conveys the message very beautifully.

The use of examples in experiments and otherwise, shows concepts that are local and others that are foreign. We can see that some of the concepts discussed would be irrelevant to rural children, yet introducing these concepts shows it off as an "awareness builder." From the examples presented, it would be fair to say that the unit deals with the conventions of cultural knowledge, with the use of authentic illustrations, for example, on page 104, drying clothes out in the sun on a clothesline.

Imagery. This unit is one in which the ratio of images to text is 50% to 50%. The use of images helps the learner to grasp new concepts that are being introduced, and it also re-enforces the already existing image of a particular object the child has. This is clearly seen on page 102, with illustrations of electrical appliances. The use of images to convey traditional ideas is also shown clearly, for example, page 103, has pictures of a traditional cooking stove that any child-urban or rural would be familiar with. We can therefore clearly state that the images in this unit represent both, traditional as well as foreign culture.

On the whole, in this unit the images are attractive, and the link between the image and the text is made explicit. It must be mentioned though that page 107 carries an image that has to be referred to as ugly!

Text: The amount of written text found in this unit is equivalent to the amount of images found in it. We find, in this unit, a lot of the material is expressed simply and adequately when providing information for students to carry out the various experiments given in the book. Along with the explanations, we find the use of scientific terminology

made use of. Here again we notice the introduction of transliterated terms, for example on page 102, "generator." This is certainly a term that students will be using often at higher levels of science education.

The use of metaphorical language in this unit is noteworthy, as mentioned above, on page 111, there is an excellent example where the use of the word "fan" in Amharic, conjures a different image in the minds eye to that which is being illustrated as an electric fan, nevertheless it conveys the message very beautifully.

Topic. The topics that are discussed in this unit are surprisingly well distributed with information pertaining to both urban and rural students. The images on page 102 and 103 adequately illustrate this point as they can also be seen as "awareness builders'. On page 110, there is a whole section devoted to the dangers of fire and how to prevent and avoid fires, on page 111, another section is devoted mainly to the prevention of accidents that could occur because of electrical complication.

The topics discussed in this unit are within the students, level of comprehension as they have material that is used in providing information and only expecting the grade 2 level students to be aware of the topic being discussed.

The use of metaphorical language and the use of images to express a topic, certainly helps students relate to the social and cultural contexts of the material being discussed in this unit.

Methodology. The approach to content that is used in this unit is to introduce students to a new topic and then base comprehension questions on the given unit, this method has been used in the other units as well. It would be difficult to say whether this method of teaching is appropriate or not, as we do not actually know how this unit is

being taught by the teacher. There are questions that one might pose: Do the students actually get to participate in the various experiments asked of them? How much of student involvement actually takes place during the teaching process? On page 105, the students are asked to fill in a grid with information based on energy sources and their uses, this asks for some amount of student involvement. On pages, 107 and 108, student involvement is required in the experiments that are being expressed, the participation and information necessary to carry out the various experiments asked for in the unit shows the requirement of student responsibility.

The techniques used to present exercise in this unit are similar to those of the other units analysed so far. The exercises take on the form of: Comprehension Questions, Fill in the Blanks, True or False, Match the Following, and also filling in a grid. The techniques of presenting the various exercises are standard and it would be possible to say that these exercises meet external syllabus requirements. This is yet another unanswered question at the moment, as it would take observation of a class in progress and the analysis of the types of tests and test questions to see if the material presented in the textbook matches the form of examination given to the students. It would be safe to hazard a guess as to what type of questions could be asked on the examination and to say that the very same as are being asked of the students in the various uniform exercises throughout the units. We can also safely say that a lot of material is recycled within the textbook.

This unit has helped to further the pattern with the presentation of exercises, that the students and the teacher are required to do.

Chapter 7

Content. Each unit introduces individual topics, and the subjects dealt with in this unit are new and the information is recycled within the unit itself with the various exercises that are asked of the students. The content matter in this unit has a high degree of cultural representation, for example, on page 118 there is a rendition of a very cultural theme, the slaughtering of a bull for meat. This is shown as part of the food chain. The content that is introduced in this unit does not relate to "Western" concepts per say, because when the subjects are introduced, we find that a lot of it pertains to the local environment, and is presented as such. So much so, in fact that there is a possibility that urban children would have difficulty in relating to some of the rural environment presented as being part of the environment in which they live. The unit we find deals with the conventions of cultural knowledge, in the sense that a lot of cultural knowledge is used in this chapter.

Imagery. This unit is very well illustrated and most of the ideas in text form are supported by a corresponding image. As to the ratio of image verses text, we find that it is 50%-50%. The images that are used are very traditional in nature and examples of this can be found on pages 118, 126, 127. They depict scenes like, people working in the fields, the slaughtering of cattle, etc.

The images found in this unit are among some of the most attractive images found throughout the book. They are simple black and white pictures, but very tastefully representing scenes from rural and urban Ethiopia. The text that is used to explain what is represented by the image is very clear and concise. The unit is made attractive owing to the beautiful picture representation found in it.

Text. The amount of written text when compared to the amount of space devoted to images found in the chapter makes up for about half of the unit. The various ideas that are presented are well described and the language that is used is at times scientific, but often it is regular and simple, explaining and giving information that the student can make use of now or at a higher level. This is most often seen through the transliteration of words, for example, on page 121, introducing the use of an instrument to measure heat, "thermometer" and "degree Centigrade" and "Fahrenheit."

We find that this unit abounds in rich metaphorical language which is used to help students understand different concepts, for example, on page 124, when talking of "altitude" (transliterated), this term is explained as being- the height of land above ground level. Another wonderful example found in this unit, is the metaphorical term used for "fertilizer," which is, "strengthener"- as it strengthens the soil!

Topic. In this unit we find that the topics discussed and illustrated pertain to students in rural areas more than those in the urban cities. Nevertheless, students are asked to think of things in their environment, so that does make it an inclusive lesson, and with the help of a teacher this could be made relevant to the student.

The topics in this unit deal with enriching and expanding students awareness, for example, on page 126, there is a section that asks students their opinion on how to improve the environment around which they live. Here again we find that student participation is asked for and it would be interesting to see how this is dealt with in a class in progress.

The topics are presented in such a way that they are sophisticated enough for the children at the Grade 2 level, as the experiments and information provided is just

introducing the topic and not getting into detail. We find examples of this on pages 122 and 124, for example, the 5 main vegetation belts for Ethiopia are named and then discussed in brief.

With the information provided in this chapter, the students will have little problem in relating to the social and cultural contexts presented, albeit we saw that there was information given that was not appropriate for urban children. This however, is dealt with adequately as students are asked to write about things they find around them in their milieu.

Methodology. The content in this unit is presented and then there are comprehension questions that follow. this has been the format for the whole textbook, except when a separate section was devoted to revision.

The level of student involvement in this unit has not been as high as some of the other units, but nonetheless it asks for student participation in its drive to introduce environmental awareness.

An interesting and fun way of remembering and summarizing important points is making students fill in grids with information, this exercise is found on page 116, where students are asked to walk around their school with their teacher and fill in the chart with what they observe, and in what state or what action it was performing. This shows that students are expected to take some degree of responsibility for their own learning. Here again, it would be interesting to know how much class participation there really is?

Design and Organization. The unit comes forth as being adequately informative for the level it is targeted, grade 2. The information provided is mainly in the form of introductions and brief descriptions with a few transliterated words being introduced as if in preparation for higher classes.

The exercises and experiments that the students are expected to do, can be made use of in external examinations, but this has to be clarified on observing a class in progress.

The methods used in dealing with the information in this unit are similar to that of the other chapters, but we can say that this is an interesting and fun unit that makes up the last one in the textbook. The images were attractive the information provided just enough to whet the appetites of the students hungry brains, tempting them to go for more; which of course is to be provided in the following textbook for the following grade-GRADE!

APPENDIX C

Classroom Observations (1-4)

1. School D

Grades 1-8
Higher 13 Kebele 02 House # 004
Teacher: Yeshi Sintayew

Date: 17-09-01

This is an urban school with autonomy because fees are collected; as a result, the maximum number of kids are put into a class. This grade 2 class that I observed has 90 students in it. The Ss are sitting together like sardines in a can. They have their bags on their backs at all times as there is no room to put them down.(SEC)

It is a class which is 8mts by 10mts. The class is quite large. It has two big windows which are kept open, and this provides light as well as fresh air. The class has a proper green board.

9:45 O.k. fold your hands and listen. What did you do last week? Can we just talk about that a little. Who is a healthy person? Do you remember? Faint Yes. O.k. pay attention. Today's Lesson, we shall see how we look after ourselves.

The lesson is on Personal Hygiene awareness.

Teacher uses actions to show the Ss how to wash their faces, teeth, and bodies, and change their clothes regularly.

9:55 While teaching she changes the tone of her voice when she talks.

teacher does not have much space to walk around in fact she has no space to move.(SEC)

The class is doing what it likes. The other side of the class there is marginal attention and we hear a faint YES. She does not have the attention of the whole class(Ts Attitude).

9:58 Have you got questions on the 4 points that I have been explaining.

Is it clear? Now you can copy it down if it is clear, write!

Monitors (there are 3, I girl and 2 boys, they are bigger than the others in class and are also faster at copying) are very active maintaining discipline. the teacher moves to the other end of the class and says she wants to see what is being copied, the 4 pts off the board.

10:05 The Ts tries to control the monitors who are beating the Ss. She also tries to control the class that is getting slightly out of hand.

10:08 Teacher tries to creep between desks, to correct ex-books (as I am sitting in her chair as there was no other room for me, I think at any other time she would be there and ask the Ss to bring the books to her.)(SEC)

Teacher tells the Ss to study what they have in their books, but nobody listens to her. they are doing their own individual private work. The class is too crowded for there to be any kind of order.(SEC) it looks impossible to control. teacher is not shouting, but talking slowly(Ts attitude).

10:14 She has finished looking at ex-books.

10:15 Asks Ss now what must we do to keep our faces clean? etc.

Ss answer, she encourages them be asking them to clap when someone has the correct answer. (teaching method). she asks a question again. The repetitive, question and answer system is a modified rote system. Ss are very enthusiastic to answer. She has to say ,Don't shout all together, put your hands up and answer. Stand and answer. The Ss obey. She asks one to be louder. *She uses YOU for masculine and the little girl says, I am a girl. The teacher says, o.k. then go on answer the question. (GB)The fact that the teacher*

thought nothing at all of this shows me that there is no gender bias. Very good, now give her a clap. She has done well.

Ss ask won't you correct our books and she says No. Discipline.

10:20 The monitors are very active. The bell goes for recess and there is total mayhem in trying to get out.

Xxx

This is the Maths period.

11:00 Take your exercise books out. What are we going to do now? The whole class in unison-MATHS. You must use your pencils says the teacher. I will punish those using pens. Now fold your hands and listen.

11:05 I am going to revise what you did last week. She draws some figures on the board, some balls. She asks Ss how many there are on the board, the whole class answers. It is a lesson in addition taking place.

11:10 Asks a Ss to come to the board and do a sum, when she gets it right, the others are asked to clap in encouragement.(teaching method) She calls upon another Ss, a girl(GB), she gets it wrong, the class puts up their hands to answer. Another Ss gets a chance to correct it. The Ss who got it wrong is asked to follow the example and do another sum. She does and gets it right. The teacher asks her to read her sum out loud and she gets a clap.(GB)

11:14 revision is continuing.

11:15 Rubs the board. She now asks the Ss to keep quiet, listen and look at what she is writing on the board. The Ss do so. The monitor is at work maintaining discipline in the

class. The teacher goes on to explain what has to be done in the class, addition. She then asks the Ss if they have any questions.

11:17 When you finish the exercises, call me I'll come and correct your books.

The brats in front of me have just farted, the others have stopped writing and are holding their noses.

11:20 The class is silently doing their work, the teacher is correcting the work. The Ss have their hands up when they finish and are saying "finished." Teacher says she will come.(Ts attitude).

11:25 Corrections are going on, of the 10 sums the teacher put on the board. The class is relatively silent. Ss help each other (Ss attitude). One can't see the board and proceeds to copy what is written in her neighbours exercise book. I think she is just mindlessly copying as she hasn't done any of the answers, I think she doesn't know how to add, she is also copying the corrected answers of the other. She has been conveniently forgotten in the system, (SEC) as the teacher can't give individual attention to the Ss.

11:30 Correction going on. Monitors are disciplining the Ss., who are certainly louder now. The teacher asks the Ss to get ready to come to the board. She asks the class to keep quiet. (teaching method) Here the teacher is using a tactic of getting to keep the class quiet, by asking them to come and do sums on the board. They seems to enjoy this.

She asks the Ss to put their books away and fold their hands. She warns, I'll stop correcting if you don't keep quiet. She continues her corrections. The 3 monitors are up and about and are asking the Ss to keep quiet.

11:40 O .K we are now going to do corrections. To correct your work, write the correct answer under the sums you have got wrong. We have three rows, I'll call one Ss from each row to come to the board and do a sum.

Lots of hands are up and there is a lot of enthusiasm to get to the board. Ss shout "ME," "ME," "TEACHER," "TEACHER." She calls on one and when the Ss is right , she says clap for this Ss.

In unison, quite loud, the Ss finish the questions orally.

11:45 The bell goes for lunch. there is absolute mayhem, as they leave for lunch. She stands by the door and sends them out in an orderly fashion. She even carries one to help him out of the class.(TS attitude) (SEC) shows that the children can't even get out of the class, it is so packed. She shakes hands as they leave the class.

Xxx

SCIENCE: The lesson is based on health. The teacher explains the notes she has on the board regarding health and how the Ss must keep themselves and their surroundings clean.

2:15 What did we do this morning then. One of you stand up and tell me. Very good, now what else. Tell me your name first because I want to learn your names. Are you all listening, talk louder. O.K Bisrat that is the correct answer, give him a clap. (GB)

2:20 What are some of the other points we made. O.k. good, that is enough for now. Today's topic is: HOW DO WE KEEP OUR FACES CLEAN?

Teacher changes her voice and talks to Ss. She is talking loud and clear. She asks Ss to ask Ss to ask questions and they are.(Ts attitude) A boy (GB) puts up his hand. Asks the boy to stand up and speak up. She then goes on to explain using actions and sounds. She

is animated, when telling the children how exactly to chase flies off their faces, she uses onomatopoeia. The intonation of her voice changes. (teaching method)

2:25 Is the point clear, she asks. Are there any more questions? She is very encouraging.(Ts attitude)

2:30 Now they copy notes off the board, she goes around looking at their books.

2:35 The bell goes for the period to change. I will make you read it tomorrow, so copy it down. 3 ½ lines. Ss are copying off the board.

Xxx

2:43 The teacher goes to the board and changes the subject to Amharic. She says it is reading. Now close your ex-books and listen, those of you who haven't finished can do so after class.

2:45 Fold your ex-books, fold your hands and listen to me. I don't want to see any pencils, put your hands in the air, let me check. Now listen quietly, with your hands folded.

2:47 "I'll read it for you first and then you will come out and read."

The title is.....

O.K children, when we read we have to do it loud and clear, like me. We have to make it tasty for our listeners. just like when we make `watt`. How do we make a "watt" tasty? She answers her own question, by adding onions and spices to it. Why do we add spices to it?

Students chorus: to make it tasty!

O.K then children , just like that, we have to stop at full stops and pause at commas....

She puts the punctuations on the board and asks the students what they are, then

2:50: She begins to read aloud with intonation.

2:55 She asks for a volunteer to read She comes to the front, gives her name and reads(GB) I notice that she happens to be the only one in the class who can read with any clarity, the others are still struggling ,this I put down to not enough teacher attention as the classes are too large and this is the result.(SEC)

The teacher stands behind her and gives her encouragement by prompting. (teaching method) She gets a clap when she has finished.

Another Ss comes out, and the reading goes on.

2:59 The Ss are getting restless, and are beginning to disturb. This is mainly due to the fact that those coming out to read don't really know how to and so it is becoming boring and the children are getting fed up.

3:00 Listen to the person, who is reading. Teacher, we can't hear. That's because there is too much talking.

Monitors go into action. The readers are too slow, and so there is a lot of private activity, a lot of it. Now we can't hear anything. there is total mayhem in the class. Monitors are in action.

3:05 Teacher decides to hand the book to a Ss and asks her to read aloud.(GB) This too does not work. So she changes tactics. She ask the Ss to read some other material that they have. (teaching method) She decides to read the story out aloud again. She tells the Ss that when they read at home too they should read out loud. She is innovative in trying to get the SS attention.(Ts attitude). She asks them to keep quiet. I'll ask questions ,she says.

Ss have lost interest and are doing there own thing. You are not listening to me, I think I had better stand here. She comes to the front and centre from the right side, which is where she stands most of the time because that is the little space she has in the class.(SEC)

3:10 She asks questions. Ss are answering. Don't shout, just put your hands up and answer. Class participation to answer questions is very abundant. She asks TRUE or FALSE questions. Why is it false, what is the correct answer. Very good, give her a clap.

3:15 Now I am going to give you H.W, write it down. The teacher is at the board with her back to the class. There is total chaos then. Monitors, help me out she says. The monitors spring into action and slap a few kids. Teacher says no don't do that! All this may seem like incompetence on the teachers part, well what is to be done with 90 Ss in a class with one teacher. (SEC)

3:17 She reads out the questions she has put up on the board, FILL IN THE BLANKS, 2 questions. She asks the Ss to copy it and do it at home.

3:25 The Ss are still copying.

3:30 Class over/ she stands near the door and sends the Ss out. She carries the smaller ones and helps them get out as everybody is crowded near the door, total mayhem. There are some who have stayed behind to finish copying off the board.

2. Teacher: Sendek Gelaneh

School: B
P.O Box 30164
Addis Ababa

Date: 20-09-01

This class has an isle in the middle about 80cms wide and wooden desks with 3 to a bench. The class is long, 10mts by 5mts. There is a chalkboard in front. One side of the class has windows.

The class has no posters or charts. It is a white washed class. I am later informed that all the self-contained classes have charts on the wall, which are in the Resource Centre, as it is the beginning of the school year.

The Ss are all in uniform and they all have nicely covered exercise books they also have a text. The handwriting in the Ss looks better and neater than that of School D.

8: 45 We are going to repeat and revise what we did before. What we did yesterday.

This is what we looked at: Cleanliness, we looked at keeping our hands and faces clean.

The lesson is on personal hygiene. This is the first lesson in the textbook, which incorporates both Science and Social Studies and is called Social Science.

8:50 today we will see how we can keep our faces clean.

Teacher asks the Ss what they find on their faces, the different parts of the face.

Hands go up and Ss answer. The class is quiet, not rowdy at all. They raise their hands and answer.

Seems like the Ss have a lot of info and the teacher has to sift through.

The questioning:

When and why do we wash our faces?

Asks a boy and then another boy. Yet another. Now a girl answers, a boy again. That's 4/5! (GB)

8:55 the teacher is still questioning the Ss:

Should you wash your face?

Who/ why should you wash your face?

8:56 Now we are going to talk about taking care of our eyes. Why do we need to do that? A Ss answers and the teacher says You see she gave a good answer (Ts attitude) (GB).

9:00 You are not listening, he tells the class. That is why you can't give the right answer. Girl's hand is up and he asks a boy. (GB)

If I touch my eyes with chalk on them, I can loose my sight, he uses an example from what he has at hand and what the Ss will grasp quickly. (Ts attitude) then no TV I can't read or write he continues.

9:05 It is question time, now you have to ask me questions.

2 girls ask questions. The teacher asks if there are any other questions and then says O.K let me sum up and conclude.

9:10 The teacher asks the Ss to take their Science books out, write down these reminders, he says. A slight noise and excitement builds up, he turns around and tells them to keep quite. The biggest girl in class, (age) tells the Ss to keep quite, write, don't disturb.

9:14 Ts is writing on the board. There are some Ss crawling to the front because they can't see. One Ss at the back says he can't see very quietly. He stands up. (This boy is sitting directly in front of me)

9:16 The bigger girl comes and knocks two girls on the head. I can't see protests one, you are covering me says the other. Teacher I can't see whispers the boy in front of me.

9:20 I whisper to the little boy to speak louder/he does. The teacher reacts and asks all those who can't see to get closer. They do and now they sit 4 to a wooden bench.

The Ts goes around and looks at the children's books. He says use your pens to write because you might loose some if you use pencils as it rubs off easily.

Teacher is still walking around the class and tells a Ss Now you see, you are rubbing your eyes. Yes well it is not only to write about in your books you have to put it into practice too.

9:22 The teacher has put 7 lines on the board, the heading of which is: `How to Keep our Faces Clean`, `Keeping Our eyes Clean`, `How to look After our Eyes`. The teacher has been going around the class and he gets back to the board and writes.

9:25 Ts says he will read what is on the board to help those who have difficulty seeing. He reads line by line. (Ts attitude)

9:28 Ts walks around looking at the Ss books and says `write fast`.

9:30 A parent is at the door of the class and says he was asked to come. Ts leaves class, he comes back in and says who is Yiyob Tadesse?

9:32 Teacher is outside, this is the second interruption in class.

9:35 Ss are copying and getting lively, some have finished. Teacher comes back into class. Teacher calls Iyob and asks him, Why don't you write? Now if you don't tell us your problem we can't help you. *Because I don't like it. (Ss/Ts inter)*Iyob is still in front of the class. *They make me write at home too. So I don't like it.(He has tears in his eyes.)*

The teacher says that he will talk to the parents about it and arrange it. (Now the boy is truly crying)

O.K close the windows, I think there is too much sunlight, Ts continues, now you, Iyob, have to promise that you will try to write in class. Strange because this is the very same boy who kept whispering that he couldn't see earlier.

9:43 How many of you have finished, please write fast, write fast.

Didn't we say we have to take care of our eyes, too much bright light is not good, we have to be careful- especially when things are being welded.

9:45 If we have finished copying we can go to our next subject. Those who have not finished copy from your friends.

9:50 Ts comes to have a chat and ask me about Canada. He has gone back and threatens to punish those who are talking and says, I'll be rubbing the board now.

Xxx

O.K now it is English .take your books out. The teacher talks in English.

9:55 Open your books to page 5. He goes around the class opening books to page 5.

he says, Ss look at this boy, What is your name? It is Naod- the Monitor.

Naod is in front of the class to demonstrate.

He says H, A,S =Has. He says say it after me. Naod has a pen. Naod has a ruler. HAS, HAS, Naod has a ruler.

Says you: and gives Naod a book, the Ss who is asked answers Naod has a book.

The Ts asks the class to repeat after the Ss who just answered and they chorus "Naod has a book."

Teacher says: Stand up and answer, Naod has a pencil and the class choruses after the Ss, Naod has a pencil.

Now the Ts says, Naod, HE. class chorus HE, Ts: He HAS. Class HE HAS. HE HAS A PENCIL. He has a ruler.

Repeat after me:

HE has – the man has

She has – the woman has

It has

The teacher has a book.

Teacher proceeds HAVE is for plural nouns (I don't think the Ss understand him)

10:05 Teacher talks and demonstrates with another boy (translates too)

1 boy and 2 girls. Calls them by name.(GB)

I have a pencil.

She is Bethlehem. The teacher asks Beth to go to the door.(GB)

Calls another girl, Hewan, go to the door.(GB)

Come to me ,come here. go and touch the door. We saw touch didn't we.

10:10 Touch the table book, desk. Come here, Stand up ,sit down, stand up. Go to the window, go to the table, go to the desk, go and touch the table. (VERY MUCH LIKE ORDERING A DOG, MOST OF THE INSTRUCTIONS WERE LIKE THAT.)

Calls a girl to come and read: HAS.(GB) Repeats, HAS, SHE HAS, HE HAS.

10:14 Personal activity going on at the back. 'Look at page 5'choral repetition of what is in their books:

Tolosa as a stick. Tolosa has a dog, Tolosa has a ruler.

The woman has a pen. The girl has a flower.

Now look at the book and tell me. BALL the teacher spells it out and asks the Ss to repeat. You read #4 and #5, a girl

Yes very good.

HE HAS, SHE HAS

10:16 We will repeat it once more. A ruler, a bag, a ball, a girl, a boy ,a pencil.

10:17 Writes words on the board, Ss are lively and the teacher turns around and picks up his rubber tube, does he ever use it on the Ss, I don't know.

10:20 Say it ,spell it. R, U ,L, E, R= a ruler, a ruler, R,U,L,E,R= ruler.

Teacher draws a ruler on the board next to the word. (Ts attitude)

Explains in Amharic the use of HAS. Ss are listening, he switches back into English.

10:25 Copy what is on the board in your exercise books. Says it in Amharic.

10:35 Write it. Ss are copying and are wrestlers.

The teacher comes over to me and chats with me.

Because of the number of the Ss it is practically impossible to control, to teach ,to correct books. So we have told all this to the Teacher's Association, but they are unwilling to do anything.

Q: Are there trained teachers who could teach in order to reduce the class size?

Of course, but you see, it is not a government school so you see they pay and to get the money they take more Ss. for economical Ss. That is the problem. It is not the govt that pays, it is the parents that pay.

We can't fail Ss, this too we are against, we have taken it up with the board. Even if some Ss can't read or write. That is wrong ,this too we have complained about to the Teacher's Association. We have to get the policy changed.

He is of the opinion that the subject matter is too much. He also thinks that the self contained classes are too much work for one teacher and they have made this known to the Minister too, but to no avail.

Q: When you teach the text, do you do what you want to do or do you follow what is in the Ts Guide?

The material is too much he says, he chooses and makes his own notes and teaches as doing 211 pgs is not possible. he just uses the main points often. I follow the book, but I make my own notes as I set it out in my weekly and annual lesson plans. But I must say some of the material is beyond the scope of the Ss.

You see in the book they use Amharic words, but it is better to use, the English word, because we can't understand the word used in Amharic., so we usually use the glossary and then give the Ss the English word. (Most of the terminology has been changed to indigenise it and make it more Ethiopian, but the Ts are finding it difficult and use the English term instead.)

Xxx

11:05 Now keep quite and take your Maths books out.

Class is boisterous, The teacher asks them to keep quite, slamming the rubber tube on his desk. I ask myself again, does he use it on the children? (Ts attitude)

Yesterday we did.....

Here the sign is +, that is correct.

11:14 Explaining and asking Ss, they are answering. He puts up 4 examples on the board. He asks a small girl in front and she gives the correct answer.(GB)

There is enough room for the teacher to move around while teaching.

11:18 The Ts is still explaining with examples on the board.

He puts a sum on the board and asks the Ss to do it as he had explained previously: 9+__= 18. So if you take the answer 18 and –8 from it you should get the number for the blank.

11:20 Do you have questions? Write what is on the board, while I correct yesterday's H.W. He says this and puts up more exercises for the Ss to do off the board. This could be a tactic to see that they do not disturb.(Ts attitude) The Ss are asked to do the work on the board while he personally corrects work.

11:25 He is now seated at his desk and he asks one Ss to bring him books to correct, one by one. He does stand up and gets books himself and goes back and sits down. He continues correcting.

Sports outside, and so it is very noisy.

11:30 The boy 'who doesn't write' is not writing, he is playing with a small piece of paper.

Oh! dear the teacher, came up to me and asked if I wanted him to do anything else. He is still correcting books. So was that all a show put on for my benefit, I doubt it, there was nothing out of the ordinary as far as I could tell.

11:35 He gets up and corrects a book. There is a little girl asking and taking books to the teacher to be corrected.

the little boy is not doing anything when she asks him for his book he does not answer, he pays no attention to her. He is still playing by himself with a paper. he is not sullen or morose. He is now sharpening his pencil and he has his exercise book open.

11:38 Any more uncorrected books asks the teacher. He comes towards the boy and says: You said you would write, right? The boy says yes- his neighbour says, he is sharpening his pencil. the teacher moves away. Still the boy does nothing. He has perfected the art of getting off without doing work, and in a large class he can easily get lost and the teacher cannot pay him more attention.(Ss attitude)

11:40 Now listen, says the teacher, we need to relax a bit right. O.K. I know you like jokes, so I'm going to tell you one. Once upon a time when I was teaching Grade 1, it was English and was teaching the children: Stand Up, Go, Good morning.

I asked a Ss what is Good morning, he said tea leaves because it is a name brand.

Class laughs.

11:45 Another story ensues and class continues. He is talking and waving around his rubber tube and hits his table with it for silence. He is making use of his class time. (Ts attitude) Now I want one of you to come out and tell a story.

Naod, the monitor goes out and tells them a joke about a "ferengie and an abesha."

Class over.

3. School C:

10:15 The class started with 'Ten Green Bottles'. Then the Ss were asked to gather their thoughts.

10:20 What were you asked to do yesterday for Homework?

The Ss answer that they looked at the signs +, -, =.

Teacher calls on boys and girls alike to answer. (GB) Selamawith, Mekonen.

(She calls on Mekonen again, she favours him, he's probably a good student).

Between 8 and 7 what sign do we put, Ok Tigist , you answer.(GB) Yes, we put the + sign. Don't answer without putting your hand out. So when we put the +sign what is the answer. *The class chorıses- 15!*

10:25 O.K, who will read the second question, Mekonen?

3__9, that is what it says. What sign do we use? Those of you who say (–) put your hands up. Now those of you who say (+) put your hands up. It's ok put your hands up. O.K Meseret, Hanna, Mathios, Elaine. Don't worry, Hanniye, you too stand up.(GB), Mathios you too stand up.

So now these Ss say it should be (-), why do you say so? We have 3__9, if we put a (-) sign can we subtract? Children chorus, NO!

So we can't, who can tell me the reason? Why, O.K Tigist you answer.(GB) *She does.*

Very good, give her a clap.(GB) So we can't subtract a big number from a small number. Therefore between 3 and 9 we have to put the (+) sign.

Do you understand, Elenie, do you, you Mathios(GB)? Masresha, you Hanniye? From a small number we can't subtract a bigger number.

So we have 3+9, who can give me the answer.12 very good.

10:28 Mekonen (F) do we have any more? Yes, 18__9.What sign do we use and what is the answer? Yes, we can use both. Who is going to give me the answer, Don't worry, boy answers(GB). Is it right, Mekonen?(F) O.K clap. Those who are sure stick to there answer you see, and in Maths there is just one correct answer.(1)

What does question #4 say, Muluken (GB)?

18__6, we can use both the signs in this case.

10:30 Do we have anymore? Yes says Mekonen and answers. T says, Mekonen can the others get a chance too. But he goes on to answer.

Lots of hands go up, the boy sitting next to me hasn't said a word. He said he was not there the previous day.

10:35 *Corrections over. Class work is put on the board.*

Problem is written out. The teacher then says: O.K put your pencils down and listen/ look at the black board.

Teacher reads out the problem, explains it to the Ss and asks them to copy it in their exercise books. Be careful with your handwriting, quickly do it and show me.

10:40 *Mekonen gets called again to the front of the class.(F) He didn't get the answer right. There are others who have gone up. Only one has got the correct answer.*

10:42 *Two Ss have got it now. She calls out,* Rahel, she gets a clap and Bekalu as well.(GB) both girls. *She actually gives them the stickers I have taken, the Ss are thrilled.*

10:45 Many of you have got the answers, but you must follow the instructions if you want to get a sticker.

O.K, I'm going to give you H.W now. Quickly copy it down, neatly. It is a similar problem to the one we just did. Write fast now, Mulunesh, you are disturbing.

Teacher I can't see!

Teacher she is disturbing.

Teacher what does it say?

Teacher reads out the problem for them and says it is for H.W.

Problem: *From the 14 eggs that Aberash(GB) bought, she fried 6 for breakfast. How many eggs does she have left?*

10:50 The bell goes!

Xxx

10:50 The bell goes, now it is the Science period.

Fold your hands and sit properly. Your thought towards me. We are going to do science now. Before we go to the main topic of the day, let's sing a song about science:

Science, Science, my medicine
I am happy with my health

When I wash my hands and have my breakfast

I saw science in my dreams last night

Science, science is my medicine.

Teacher is animated and sings along with the Ss.

O.k. children what does science teach us, you see we even sang about it. Before we go into our main topic of the day, can you just tell me what we sang about? Rahel (GB) can you tell me?

About, cleanliness, Yes very good, give her a clap. You see in the song it says, we wash our hands and have our breakfast. So science teaches us about cleanliness, the environment, (about the food we eat, says a Ss and she encourages him by saying very

good) and today we will be learning about Measuring things. She writes the title on the board.

11:00 What does it mean to measure, before I tell you why don't you tell me about what you think? What are your thoughts on this subject?

A Ss answers that it is the means of knowing what something measures. She encourages the Ss by saying very good, do all of you think the same?

Everything around us has a tendency of differing, one of the tendencies that makes things different is length. As one could be more than the other. Now there are instruments that can measure these differences. We have traditional measuring instruments or we can also call them cultural modes of measurement.(1) We are first going to discuss traditional forms of measurement and then we will go on to modern forms of measurement.

What are traditional forms of measure? We have done this in Grade 1 as well. So what are they? We have done this before.

11:04 O.K Alemnesh(GB), O.K you can't then Hanna: Irmija'a, yes you are right.(1), Now you remember don't you. O.K Meseret, kende, very good. Anything else? A boy volunteers, and the teacher says, follow instructions, don't answer without being asked, O.K.(GB) Medhanit, you, sinzzir(1).

These traditional measures like sinzzir, kend, irmija'a, these are traditional or cultural forms of measure. O.K now we are going to look at each one.

So what we call sinzzir (she demonstrates) It is the distance found from the middle finger up to the thumb. I will repeat it....

She has enough room to move around, so she does and asks the class to show/calls on one Ss to go to the front of the class a demonstrate. *Twedros you try, (GB) look at me, from your middle finger to your thumb. What is it called?* Class chorus sinzzir!

O.K the next one is a kend. Can you show me your *kirn* (elbow)? Come out and show me; Medhanit (girl), don't shout at me, I know your names so I'll call you. Asmelash (boy) you come out and show me.(GB) Say it aloud, give him a clap.

Who is going to show me an irmija'a, ME! ME! No don't say Me Me; Besa, is going to show us. (GB)Besa goes to the front of the class and demonstrates.

11:10 So now what are these forms of measurement, they are traditional forms of measuring things. People used this form in the past.

So let me ask you, is everybody's, sinzzir the same, NO NO, Mathios don't disturb(GB)? O.K Tigist you give me the answer, is everybody's sinzzir the same?(GB)

No one person is small and another is big so, a person's hand span can be small or big. See mine is quite small, Tigist (GB) you show me yours. Now is Tigist and my hand the same size. Tigist's finger is very long so it is longer than mine. So it is not equal, and in the same way the kend is also different. When we have tall people, there footsteps are long right, chorusing of yes and no! So you see children ,because everybody's sinzzir, kend, irmija'a are not equal, it can't give us the same measure. Can it, chorus NO! BUT people have used this form of measuring. This form of measure was used before. If we want the exact measure of a thing we have modern methods of measuring.

Ok so now we have seen that there are traditional forms of measuring length. We also have traditional forms of measuring weight. We have both traditional and modern.

Traditional methods of measuring weight is the palms of our hands. Listen Ss. Meskerem shhh.(GB)

She uses 2 stones to demonstrate, these two stones I can see the difference in weight by putting them in the palms of my hands. I can feel which one is heavier and which is lighter, now the one in the right palm is heavier. The one in the left is lighter. So what kind of measurement is this, Ss answer, traditional.

O.K come here Mekonen(GB)and (F), tell us which is heavier? The one on the right! Yes, the one on the right is heavier, so both of us say right. Now let us see Bezuayhu (boy) (GB) you come and measure this in the palms of your hand too, keep this one in your right hand. So which one is heavier, the one on the right. So you see all three of us have the same answer. So you see Ss this is traditional forms of measuring, Mathios(GB) put your hand down.

I think you are tired now!

No we are not! We aren't.

I thought you were tired, sit down Mathios!

11:15 O.K why don't we talk about Modern methods now? She writes the title on the board.

O.K just put your hands in the air and shake it around now, shake, shake. Now you got some air right.(Ts Attitude) Now you will listen to me right. Good class. It's a bit hot that's why you are feeling tired.

What are modern methods of measuring things? O.K who can tell me, calls on a boy(GB). He answers, she asks the class, is he right ,Class chorus, yes!

She has brought and shows the class a tape measure, but she also tells them that there are different types of tape measures. If we measure anything we get the exact measure for it, the same measure.

She asks where it is used? O.K put your hands out and answer. Mathios please sit down.(GB) I think you get tired and that's why you stand up! You will disturb the others, so don't do it O.K (Ts attitude). O.K I want to ask someone who hasn't answered.

It is used in the market.(girl) (GB)

It is found in Tharakore (gives the name of a village), Teacher smiles and then says, "Don't worry, but that is not quite the answer." She tells the class but she asks them not to laugh.

Michael (GB) what do you think, when they are working on the roads.

Mesfin and Selamawit give the correct answer- when carpenters and masons build houses, tailors. So, what do tailors measure- they are called to the front of the class to demonstrate,(GB) Mesfin is asked to measure what a tailor would measure.

The two Ss are demonstrating Height and waist and how to measure it. She asks them if it can be done with a kend or sinzzir and the Ss chorus NO!

So how tall is she, Selamawit is 1 m. and 16 cms. tall. O.K now measure her waist. Mesfin says it is 55cms. So all the time she talks, she says we can't use traditional for this.

What is a modern method of measuring weight, a girl answers correctly and says, a balance.(GB)

So what are modern methods of measuring height and weight.

11:20 Traditional measures only give us an estimated/ guess as to the correct height, BUT as you see, a tape measure gives us the exact measure.

In the same way we can measure weight to give us an exact measure. She says this is a model of a pair of scales. She uses a pair of scales that she has brought from the resource centre. She says we are going to see which stone is heavier. Again she uses this and demonstrates in front of the class, all the time repeating and explaining and calling on Ss to answer.(Ts attitude) She says look closely which one is heavier. O.K let me change the stones. So now which one is heavier? She demonstrates for all to see and then calls on a Ss to demonstrate, Mekonen, (F)

11:25 The teacher is concluding.

So children what are the different ways we can measure things?

She calls on girls and boys(Mesfin and Tigist) (GB)

Modern and Traditional forms of measurement. Yes, very good.

The boy next to me Tewedros has been sitting very quietly without participating in class.

11:35 The teacher makes use of class time, she asks the students to sing.

One Ss goes to the toilet

Singing continues.

Xxx

English

11:35 She starts with a song. This one goes like-

Good morning, Good morning

O.K now children ,sit properly and listen, (all this takes place in English as it is the English period.)

She repeats "a box ` about 25 times or even more.

Everybody say, Samuel(GB) say:

a box, a bag, a pencil, a pen, a ruler, a rubber

a rubber and a ruler a box and a bag

11:40 This row only

a ruler Say it again, now this row, say it again everybody, very good.

11:43 She has the things in her hand, she holds it up and gets the class to repeat.

11:44 Zeada, stand up, repeat, very good. She calls on 2 boys and 2 girls.(GB)

11:45 The choral repetition was SPEAKING now it is time for READING

She calls on a student to read out a pen gets them to repeat the letters and say it out loud:

4 times

spells 2 times

asks individuals

3 girls(GB)

11: 50 1 girl gets it wrong, she is asked to look, spell out and repeat.

WRITING: open your exercise books and you are going to write now.

She gets the Ss to sing in the middle of her lesson, class is once more attentive and alive(Ts attitude)

Gets them to write the letters c, d, a.

She draws lines on the board and writes the letters in.

11:59 Ss are asked to write. T goes around the class checking on the class. Those in front and those who participate get the attention of the teacher.(Ts attitude) Twedros next to

me has not been called upon even once. Today is his first day so she is letting him find his feet, she tells me this, therefore she is conscious of having ignored him, on purpose.

12:01 Teacher goes around the class correcting, I will look at all your books tomorrow, write two more lines for H.W.

12:05 She has a few minutes extra so she gets the class to sing. She asks the Ss to leave quietly after class is over. (I find that she makes very good use of class time)

The class is made of cement blockettes.

There are a row of windows on one side of the class.

Chalk board, no posters or charts.

9mts by 6mts is the size of the class.

The period time is 40 minutes. A bell heralds the beginning of the next class.

4. School A

Teacher: Mulumebet Mengistu
DATE: 21-09-01

This school is not following the MOE policy on **self- contained classes.** They have a separate teacher for each subject. Therefore my observation was limited to Science being taught in Grade 2. They are still following the old textbook.

This is a private school, run by Missionaries. It is an all girls school. This school belongs to a socio economic level that is quite high. The obvious picture of Ss in clean

uniforms with pristine white shirts with well-combed hair, even on a Friday states the obvious.

The Ss exercise books are larger--100 page books. Ss use pencils to write in their exercise books. They write by skipping a line, this is for the teacher to have space to correct. The Ss are asked to write from the margin to the end of the line, neatness in handwriting is adhered to.

There are only 2 Ss to a desk and there are 3 isles, so the teacher can walk freely around the class, giving individual attention to the Ss.

The class is divided into groups- Green, Red, Yellow, Blue. When teaching the teacher calls on the various groups to answer and this creates team work.

9:10 Teacher takes attendance, Ss say answer, present.

As Ss says, Miss (in this school they refer to the teacher as MISS) the sun is coming in this way. The teacher pulls the curtain, this class has curtains, (Socio economic conditions) and she tells the class to be quiet.

She says, take your Science ex-books out.

9:15 What are traditional measures?

Teacher draws a pencil on the board and explains:

- one is longer than the other.
- (class is listening to her very attentively)

`We can guess measurements. When we go to the villages ,they use estimations. That is because they don't know how to count, those who have not gone to school, that is.`

Asks for examples of other traditional measures.

Students put up hands and give the correct answer, looks like they have done this topic before.(in a lower class).

She uses her *kende* and demonstrates, she calls a student and demonstrates again asking the student to use her *kende* too.

She goes on to say: "When your parents talk about their *gabbi* or *nethella*, and they want to measure it, they usually say that it is three *kende*."

9:20 Ss are measuring the blackboard using kend. There is pin drop silence in the class(Ss attitude). The are experimenting and demonstrating in the front of the class using *irmija'a* and *sinzzir* too.

9:25 Experiments with demonstrations are still going on. Ss are being called at random, front and back of class, from the different `colour groups`.

The teacher goes on: we have used all 4 traditional methods of estimating as to what the size of something is.

She now starts writing on the board. She puts 7 lines on the board.

9:30 Ss are copying notes off the board, while the teacher goes around the class and corrects and checks to see that the handwriting is clear, neat and legible. She tells them not to make their page look like poetry. (<u>This shows me that the Ss take so much care in making their ex-books look nice that they go as far as to make it look like poetry all symmetrically written.)</u> (Ss attitude)

9:35 Teacher is circulating around the class. Have you finished, O.K. Ss read what you have finished, Hurry up! Her voice is quiet and there is pin drop silence in class.(Ts attitude) (Ss attitude).

The notes put on the board are the teacher's own notes.

9:40 When Ss finish their copying(copious copying down of notes they put their pencils down and fold their arms and sit quietly. This seems to be the norm.

9:42 Now put down your pencils and look at me. She goes on to explain again in the form of conclusion. she demonstrates length again as revision.

Your group is GREEN right, O.K you answer. O.K now how about the RED group, Yes, YELLOW now.

9:45 I will talk about MODERN methods of measuring things next week. You see when we go to villages, they use estimating. As they don't know how to count, those who haven't gone to school. But we use modern methods. This can be interpreted as being the case in most of rural Ethiopia where people are not educated and there fore still use traditional methods of measuring things. It doesn't mean that it is wrong. But we find that the textbook is telling Ss that this form of knowledge is still in existence.

9:46 One Ss stands up and tells the Ts that there is another traditional measure that was not discussed and that she had heard her grandma use it. The teacher listens carefully and attentively and explains the terminology.

9:50 Ss are asked if they have any questions and then class ends.

I am told that the class time is 30 minutes only. It is an all day school and Ss have many different periods during the day.

The teacher comes over to talk to me.....

Appendix D

SCHOOL SUMMARIES

School D

This is an urban school found in the capital city, Addis Ababa. The school itself is an old building dating over a hundred years, as a result of which, no renovations or enlargements to classrooms can take place. This physical handicap is no excuse though, to the filling up of classes with an unprecedented number of students. The school has a certain amount of autonomy from the government because fees are collected, as a result a maximum number of students are put into a class, that is to say, the more students in a class the more fees collected by the administration. The money collected helps in the day to day running of the school.

The school serves a population that belongs to a poorer section of the society. To a casual bystander this would manifest itself in the form of the lack of clean clothes that the children are wearing –shoes without socks, torn trousers and shirts. As Martha Wright puts it: "...to Western eyes [this] could be overwhelming: the small thin, children dressed in little more than rags, ..., with only broken pencils, a blackboard they can barely see, no textbooks and only a few thin copybooks" (2001, p.61). Their exercise books were of a good quality bought by them selves, not donated by some aid organisation, albeit, thin (50 pages), this factor of itself was evidence enough to suggest that these children were here to gain some form of education.

The grade 2 class that I observed had 90 students in it. The class was 8mts by 10mts, found at the end of a very dark corridor. On entering the class one was greeted by

two large windows that were left open for fresh air and light. The Ss were sitting together like sardines in a can with their bags on their backs at all times as there was no room for them to put their bags. As Wright put it: "crowds of them packed on to broken desks..." (p.61). The lack of shelves in the class, for very obvious reasons, was because every inch of space available was used to seat a child. The obvious number of students in this class creates the obvious problems that one might expect from an over crowded class. The lack of space in the class for the teacher to walk around in, makes it difficult for the teacher to give students individual attention, so much so that one side of the class is doing what it likes while the teacher is on the other side, physically unable to come to this side of the class. In my class observation I note that:

10:08 Teacher tries to creep between desks, to correct exercise books.

The teachers' only hope of having some sort of discipline in the class is by having monitors:

1. [Monitors: there are 3: 1 girl and 2 boys, they are bigger than the others in the class and are also faster at copying notes from the board. <u>They are very active, maintaining discipline.</u> This is done by hitting the other students on the head with a knuckled fist]
2. [**T:** moves to the other end of the class]

T: I want to see what you are copying (the 4 pts she has put on the board).

3. **11:15 T:** [Rubs the board.]

T: keep quiet, listen and look at what I am writing on the board.

[The monitor is at work maintaining discipline in the class. He hits a student on the head with his knuckled hand.]

4. **11:30** [Correction going on. Monitors are disciplining the Ss, who are certainly louder now.]

Monitors: Keep quiet, (rudely) 'Shut up"!

There is a visible lack of control in the class. The class is too crowded for there to be any kind of order:

1.[Teacher tells the Ss to study what they have in their books, but nobody listens to her, they are doing their own individual private work, talking to each other and showing each other some interesting thing they have in their bags, that they have brought from home.]

2. **10:20** The monitors are very active. The bell goes for recess and there is total mayhem in trying to get out.

3.**11:45** The bell goes for lunch. There is absolute mayhem, as they leave for lunch.

T: stands by the door and tries to send them out in an orderly fashion. She even carries one to help him out of class. (This goes to show that the Ss can't even get out of class, it is so full.)

She needs the help of monitors to maintain discipline in the class. This shows the "power" the monitors have, for there is no other way of controlling such large classes, they are just too large for the teacher to handle:

[There is total chaos then.]

T:Monitors, help me out.

[The monitors spring into action and slap a few kids.]

T: No don't do that! (She tells me later that she doesn't like this, which gave me the impression that it was a pretty common practice; mainly to have some sort of order in the class for learning to take place.)

The class does look impossible to control, but what is fascinating is that the teacher is not shouting, she is talking slowly. This shows that she is not perturbed by the fact that there are so many in the class; she is going about her business--her style of teaching. She knows that she will be able to gain the students attention soon, and she does:

2. **11:20** [The class is silently doing their work, the teacher is correcting the work.]

Ss: have their hands up when they finish

Ss: Finished.

T: I will come.

2. **11:25** [Corrections are going on, of the 10 problems the teacher put on the board. The class is relatively silent.]

When she explains a point, like in all the schools that I observed, I noticed that there is often a repetition of the same piece of information, followed immediately by a Question and Answer session. The repetitive, question and answer system is a modified rote system used often for the senseless regurgitation of information drummed into the Ss

willing minds. The students are very vocal and enthusiastic when answering these questions that are asked:

3:10 [She asks questions. Ss are answering.]

T: Don't shout, just put your hands up and answer.

[Class participation to answer questions is very abundant. She asks TRUE or FALSE questions.]

T: Why is it false? You, ask him, what is the correct answer?

You answer her, very good, give him a clap.

[Ss answer, she encourages them to ask each other questions. She asks a question again. Ss are very enthusiastic to answer].

T: Don't shout all together, put your hands up and answer. Stand and answer."

[The Ss obey].

This form of rote learning does not benefit all the students, but only a few. Those who participate get the attention of the teacher and get called upon to answer and take part in class activities. Those who are less active tend to get forgotten . In true African fashion, in these large classes, it is a question of survival of the fittest!

In this particular class that I was observing I noticed that one little girl happened to be the only one in the class who could read with any clarity:

[The teacher stands behind her and gives her encouragement by prompting. She gets a clap when she has finished.]

The others in the class were still struggling:

[Another Ss comes out, and the reading goes on.]

2:59 [The Ss are getting restless, and are beginning to disturb. This is mainly due to the fact that those coming out to read don't really know how to and so it is becoming boring and the children are getting fed up...](this makes the teacher change her tactics.)

The teacher I find is very active, constantly changing her teaching style, in response to the feed back she is getting from the class. This is mainly to gain the attention of the Ss, in order to maintain an atmosphere where learning can take place. This teacher is pushed to the limit, owing to the size of the class. Another point to consider would be that it is only the first week of school; supposedly when the weeks roll by the student population for Grade 2 could easily climb to 120 in the class that now holds 90 students.

[The teacher asks the Ss to get ready to come to the board]

T: class keep quiet. (Here the teacher is using a tactic to get the class to keep quiet, by asking them to come and do problems on the board. They seem to enjoy this.) [Lots of hands are up and there is a lot of enthusiasm to get to the board.]

Ss: "ME," "ME," "TEACHER," "TEACHER."

T: [calls on one to come to the board and when the Ss is right]

T: clap for this Ss.

This is a teaching system developed by the teacher to keep the class under control, a true time killer, it would seem to the casual observer but in actuality it is a useful technique, as Wright put it: " While this may at first appear inordinately repetitive, it provides teacher modelling of basic decoding techniques, as well as opportunities fro feedback and correction which some students clearly need"(2001,p.69).

The versatility of this teacher is shown again when she finds that:

[Ss have lost interest and are doing there own thing, talking amongst themselves.]

T: You are not listening to me, I think I had better stand here. (She comes to the front and centre of the class from the right side, which is where she stands most of the time because that is the little space she has in the class.)

Yet again, the teacher tries to gain the attention of her large class. (She changes her voice and talks to Ss. She is talking loud and clear.)

T: [asks Ss to ask questions and they do.]

Ss: [A boy puts up his hand,]

T: (she asks him to) stand up and speak up.

She then goes on to explain using actions and sounds. She is animated, when telling the children how exactly to chase flies off their faces, she uses onomatopoeia. She uses a very common sound in the language that relates to the chasing of flies(Ishshsh!). Here we see that she, very naturally, is able to bring in references from the children's own home environment and culture, using language and actions that they are familiar with, in order for her to explain a point in " Personal Hygiene," which was the lesson being taught.

[The intonation of her voice changes.]

2:25 T: Is the point clear? Are there any more questions? [She is very encouraging.]

The way in which she changes her voice and talks to the children is typical of how one addresses and talks to a group of children mainly to give advice. Traditionally,

knowledge was transmitted orally through story telling and this system has been adopted by this teacher. She is following a trend that I have often observed being used to talk to children at home when trying to calm them and also when trying to teach them something.

Another point that I noticed and is worth mentioning in this class is the lack of gender bias in this class:

T: YOU give me the answer.(uses YOU for masculine)

Ss: I am a girl.

T: O.K then, go on answer the question. (The fact that the teacher thought nothing at all of this shows me that there is no gender bias.)

On doing a simple tallying of the number of times the teacher called on girls and boys respectively, I came out with: girls-5 times followed closely by boys- 4 times. Both sexes got the same kind of encouragement from the teacher:

1. **T:** Very good, now give her a clap. She has done well.

2. **T:** O.K Bisrat that is the correct answer, give him a clap.

Using her own style and initiative, I observed a teacher, do her best under the circumstances. As for the students, it is noticeable that in a very large class, only a very few benefit from the system; the rest are carried along, only to become one among the many ill-fated, who populate the continent of Africa.

School C

This school was situated about 20 kms. out of the capital city, Addis Ababa. As I walked to get to the school, I had to cross a stream that had swollen and resembled a river the last time I had gone there when I interviewed the Grade 2 Science teacher.

The hills in the distance, covered in yellow Maskel daisies presented a picturesque background for the school. It is a typical rural school, with long ,single floored buildings made of cement blocks and corrugated iron roofs. The classes are big, with windows on one side of the class. There are no pictures on the walls and the desks and benches are old.

There are 53 Ss in the class. The class size is relatively small compared to the others that I observed. The class has two isles and plenty of room for the teacher to walk around. This enables the teacher to pay more attention to Ss as she can walk around the class and look at Ss work individually. Due to the comparative "small" class, the teacher knows the Ss by name.

This also led to my observing that the teacher called on one student in particular which led me to believe that this was the only class in which I observed some sort of "favouritism."

10:40 Mekonen gets called again to the front of the class.

I would like to look at this "favouritism" from a positive perspective. This goes to show that the teacher has contact with individual students and is able to form interpersonal relations with them. I also saw that this child was naturally curios and asked relevant questions in class and got to answers much faster than his classmates. He had a

genuine interest in learning and the teacher encouraged this often by calling upon him and at times telling him to give the other students a chance too. I am well aware that other students in class may not participate as much because they know that Mekonen is the one who is going to answer anyway and therefore this could hinder them from putting much effort into answering and taking an interest in class.

Calling on students to answer is a major part of the teaching/learning process in this school. A simple tallying of how many times the teacher calls on students (within the time limit of three periods of forty minutes each), shows that there is a gender bias in favour of the girls in this class. The teacher called on girls to answer or participate in the class 29 times when compared to the boys, which was only 19 times. Another interesting factor that showed this gender bias was that, when she called on some of the girls ,the teacher actually used endearments:

What sign do we use? Those of you who say (–) put your hands up. Now those of you who say (+) put your hands up. It's ok put your hands up. O.K Masresh, Hanna, Mathios, Elenie. Don't worry, Hanniye, you too stand up. Mathios you too stand up. (Hanniye, is a form of endearment with a name , in this case Hanna.)

When being strict with students, I observed that she called on the boys more than she did the girls. A tallying up of this fact showed that in the course of a 40 minute period, the teacher called on two boys and one girl.

So let me ask you, is everybody's, *sinzzir* the same? NO! NO! chorus the class, Mathios don't disturb, says the teacher. Now you answer....(Mathios got called on twice)

Another interesting factor that pointed to gender bias in this class was when the teacher gave the students some work to be done, the problem that was put on the board for the students to work out used a female as the proponent:

Teacher reads out the problem for them and says it is for H.W.

Problem: From the 14 eggs that Aberash bought in the market, she fried 6 for breakfast. How many eggs does she have left?

10:50 The bell goes!

From this problem that was put on the board, we can also see that it has been written in such a way that the students will have no difficulty in relating to the fact that eggs are usually bought from the market place. In a rural setting it is not uncommon to have the market place as the centre of activity and this point is quite clear from the answers the students give to a question the teacher asks:

She has brought and shows the class a tape measure.

She asks where it is used?

It is used in the market.(girl)

It is found in Tarakori.(Gives the name of a village centre).

We can see here that the immediate environment of the students plays an important role in the classroom and the teacher is encouraging it further by relating the information she is delivering to the students home environment.

As the lesson mainly discusses "Traditional and Modern Methods of Measuring," we find the teacher introduces traditional forms of measure as measures that are not exact, but were conventional in the past:

11:10 So now what are these forms of measurement, they are traditional forms of measuring things. People used this form in the past.

So let me ask you, is everybody's, sinzzir the same, NO! NO! chorus the class, Mathios don't disturb? O.K Tigist you give me the answer, is everybody's sinzzir the same?

No one person is small and another is big so, a person's hand span can be small or big. See mine is quite small, Tigist you show me yours. Now is Tigist and my hand the same size. Tigist's finger is very long so it is longer than mine. So it is not equal, and in the same way the kend is also different. When we have tall people, there footsteps are long right, chorusing of yes and no! So you see children ,because everybody's sinzzir, kend, irmija'a are not equal, it can't give us the same measure. Can it, chorus NO! BUT people have used this form of measuring. This form of measure was used before. If we want the exact measure of a thing we have modern methods of measuring.

I felt that this class that I observed was at an advantage because of the quality of teaching taking place. I found the teacher to be engaging and truly interacting with her students, showing a genuine rapport with them:

She has place to move around, so she does and asks the class to show/calls on one Ss to go to the front of the class and demonstrate. Thewedros you try, look at me, from your middle finger to your thumb. What is it called? Class chorus- 'sinzzir"!

The teacher was conscious of the attention span of the students and had activities that diverted their attention and improved their concentration when she got back to the main topic:

> She gets the Ss to sing in the middle of her lesson, class is once more attentive and alive.
>
> O.K just put your hands in the air and shake it around now, shake, shake. Now you got some air right? Now you will listen to me right? Good class! It's a bit hot that's why you are feeling tired.

This was one of the only schools in which the teacher used material from the Resource Centre. Every school is required to have a Resource Centre which boasts of Teaching Aids that the teachers and students produce. These Teaching Aids could be in the form of posters, charts, pictures, models and other material that could be used in a classroom:

> In the same way we can measure weight to give us an exact measure. She uses a pair of scales that she has brought from the Resource Centre. Again she uses this and demonstrates in front of the class.

I also found that this teacher made very good use of class time, she had the students sing, when she found a few minutes to spare between classes or at the end of class:

12:05 She has a few minutes extra so she gets the class to sing. She asks the Ss to leave quietly after class is over.

After having watched this class in progress, I came away with the feeling that the children actually learned something. This feeling was certainly perpetuated by the teacher. Her ability to control and teach a "large" class, (but small when compared to others in the city), paying attention to the students and having them follow what she was teaching. On the whole this was an interesting class to follow.

Belay Zeleke

This school is found in the urban centre of Addis Ababa. Like some of the other schools I visited, this school too enjoys a certain amount of autonomy in the functioning of the school and the paying of fees. This school would easily fit in the lower middle-class strata of society. The Ss are all in uniform and they all have nicely covered exercise books and also text books. The handwriting in the Ss looks better and neater than that other schools I observed.

School B, as the name suggests, has both primary and junior secondary education. On entering the school compound, my first impression was of buildings crowded together, to make the best use of space. This is a typical example where functionality rather than aesthetics plays a role.

The Grade 2 class that I observed had an aisle in the middle about 80cms wide and wooden desks where three students would sit to a bench. There were 51 students in this class. The class was long by normal standards, 10m by 5m. There was a chalkboard in the front of the room. One side of the class had windows, giving onto the Volley Ball

court outside. This of course, creates a lot of noise, and it is impossible to hear the teacher and the students get thoroughly distracted. The class had no posters or charts. It was a white washed class. I was later informed that all the self-contained classes ha charts on the wall, which were in the Resource Centre, as it was the beginning of the school year.

This Grade 2 class that I observed had a male teacher, so the first thing that jumped into my mind was "Gender Bias'. How does he treat the girls in his class?

Having done a simple nominal count of the number of times a girl or boy was the centre of attention, I found that the girls were called upon 12 times and the boys 8 times. So I could easily say that there was gender bias in favour of the girls. I found the girls in the class to be more assertive and more active than the boys:

1. The biggest girl in class tells the Ss to keep quiet, write, don't disturb.
2. **9:16** The bigger girl comes and knocks two girls on the head. I can't see protests one, you are covering me says the other.

Even though she is not the Monitor of the class, she takes it upon herself to take on the role of Monitor. There is another little girl too, in the class, who takes it upon herself to become the teacher's little helper:

11:35 He gets up and corrects a book. There is a little girl asking and taking books to the teacher to be corrected.

It was interesting to note that when teaching, the teacher made a visible effort to relate what the children were learning to their everyday life and environment:

1. If I touch my eyes with chalk on them, I can loose my sight,(he uses an example from what he has at hand and what the Ss will grasp quickly). Then no TV, I can't read or write he continues.

This example, in a way, gives the reader an idea of the socio-economic level of the students found in the class. They have TVs at home and here we see the ability of the teacher to draw up examples and relate it to the students' home life.

2. The teacher is still walking around the class and tells a Ss' Now you see, you are rubbing your eyes'. Yes, well, it is not only to write about in your books you have to put it into practice too.

Here again we see the teacher rendering the lesson more practical for the students to relate to. He also draws on examples from the environment that the students would be familiar with and would have no difficulty in relating to the concept being presented:

Didn't we say we have to take care of our eyes, too much bright light is not good. We have to be careful - especially when things are being welded.

As the day's teaching continued, I observed the English lesson in progress. Here, once again, I noted that the teacher tried to make the students understand what he was saying as he reverted to Amharic to explain the use of "have."

Tholosa has a stick. Tholosa has a dog, Tholosa has a ruler.

The woman has a pen. The girl has a flower.

Now look at the book and we will repeat it once more.

It would have been good to see he teacher ask the students to give their own examples; to see if they had really grasped the concept of "have." This of course, would have called for a whole new system in the teaching methodology: an interactive one. This form of teaching is virtually non-existent, even in the slightest degree, in any of the schools that I was fortunate enough to observe. Instead, there is a steadfast adherence to a system of rote learning that was painfully evident in this class. The whole English lesson was rendered through this system:

10:10 Touch the table ,the book, the desk. Come here, Stand up, sit down, stand up. Go to the window, go to the table, go to the desk, go and touch the table.

(VERY MUCH LIKE ORDERING A DOG AROUND - MOST OF THE INSTRUCTIONS WERE LIKE THAT.)

Calls a girl to come and read: HAS. Repeat, HAS, repeat SHE HAS, repeat HE HAS.

This senseless repetition of words is seen in the form of continuous chanting:

He says H, A,S =Has. He says, say it after me. Naod has a pen. Naod has a ruler.

HAS, HAS, Naod has a ruler.

Says you: and gives Naod a book, the Ss who is asked answers Naod has a book.

The Ts asks the class to repeat after the Ss who just answered and they chorus, "Naod has a book."

Teacher says: Stand up and answer, Naod has a pencil and the class choruses after the Ss, Naod has a pencil.

Now the Ts says, Naod, HE. class chorus HE, Ts: He HAS. Class HE HAS. HE HAS A PENCIL. He has a ruler.

Repeat after me:

HE has – the man has

She has – the woman has

It has... and it goes on and on!

The teacher does move around the class supervising the students to some extent. As there is only one aisle in the class, the teacher is able to walk around, talking and checking on student's books:

9:28 Ts walks around looking at the Ss books and says 'write fast'.

9:43 How many of you have finished, please write fast, write fast.

The Ts goes around and looks at the children's books. He says use your pens to write because you might loose some if you use pencils as it rubs off easily.

But this does not prove to be the case all the time, as the teacher sits down and gets the students to bring their books up for correction:

11:25 He is now seated at his desk and he asks one Ss to bring him books to correct, one by one. He does stand up and gets books himself and goes back and sits down. He continues correcting.

This proves to be the best way of keeping the class under control (50 students). Another system used in all the schools I observed, was to put up work on the board for the students to do:

> **11:20** Do you have questions? Write what is on the board, while I correct yesterdays' H.W. He says this and puts up more exercises for the Ss to do off the board. (This could be a tactic to see that they do not disturb). The Ss are asked to do the work on the board while he personally corrects their work.

But unfortunately we also find that, with a lack of individual attention, there are a lot of children who get left behind, students like, Iyob Tadesse who slip through the system:

> A little boy is not doing anything, when asked for his book he does not answer, he pays no attention. He is still playing by himself with a paper. He is not sullen or morose. He is now sharpening his pencil and he has his exercise book open.
>
> **11:38** Any more uncorrected books asks the teacher. He comes towards the boy and says: You said you would write, right? The boy says yes- his neighbour says, he is sharpening his pencil. The teacher moves away. Still the boy does nothing.

Iyob Tadesse has perfected the art of getting off without doing work, and in a large class he can easily get lost and the teacher cannot pay him more attention. The teacher in this case has not caught on that this little boy may have bad eyesight and needs

to wear glasses. The "large class size" has now manifested itself by jeopardizing "health," and therefore, the ability to learn in the case of Iyob Tadesse!

This teacher too, like the others that I observed, had a way of using up class time effectively. He made an attempt at telling jokes, preferring that to singing!:

11:40 Now listen, says the teacher, we need to relax a bit right? O.K I know you like jokes, so I'm going to tell you one. Last year when I was teaching Grade 1, it was English and was teaching the children: Stand Up! Go! Good morning!....

I asked a student what is "Good morning"? He said: "tea leaves' because it is a name brand.

Class laughs.

11:45 Another story ensues and class continues.

Another element that could be taken into account is that there is evidence that corporal punishment is employed to control large classes. I did not actually see it happen, but there was evidence to suggest it:

1. He is talking and waving around his rubber tube and hits his table with it for silence.
2. **10:17** Writes words on the board, Ss are lively and the teacher turns around and picks up his rubber tube.(Does he ever use it on the Ss, I don't know?)
3. **11:05** Now keep quite and take your Maths books out.

Class is boisterous; the teacher asks them to keep quite, slamming the rubber tube on his desk. (Again I ask myself, does he use it on the children?)

Yet again I found this a very interesting class to observe as it has given me a lot of useful data that I can incorporate into my thesis study.

School A

The very first point that can be discussed in this paper is the socio-economic conditions of this school. This is a private all girls school run by missionaries. It is located in Addis Ababa and mainly serves the middle class and richer population of the capital. A picture of Ss in clean uniforms with pristine white shirts and well combed hair, even on a Friday, states the obvious.

The Ss exercise books are large, 100 paged exercise-books. Ss use pencils to write in their exercise books. They write by skipping a line, this is for the teacher to have space to correct. The Ss are asked to write starting from the margin to the end of the line, neatness in handwriting is adhered to.

There are only two Ss to a desk and there are three isles, so the teacher can walk freely around the class, giving individual attention to the Ss. The class is large and has been freshly painted. There are large windows on one side of the class with curtains:

A Ss says, Miss (in this school they refer to the teacher as MISS) the sun is coming in this way.

The teacher pulls the curtain and she tells the class to be quiet.

The class is divided into groups- Green, Red, Yellow, Blue. When teaching the teacher calls on the various groups to answer and this creates team work:

Your group is GREEN right, O.K you answer. O.K now how about the RED group, Yes, YELLOW now.

This school is not following the Ministry of Education (MOE) policy on **self-contained classes.** They have a separate teacher for each subject. Therefore my observation was limited to Science being taught in Grade 2. They are still following the old textbook from last year. The first chapter of this book introduces a lesson on "Traditional and Modern Methods of Measurement"; therefore, it is not hard to pick out the cultural nuances from the textbook and notes put on the board for the Ss to copy, we find that the textbook is telling Ss that traditional forms of knowledge are still in existence. In most of rural Ethiopia where people are not educated they still use traditional methods of measuring things.

It was also interesting to note that at the point of delivery the Ts used language and examples from the Ss own home environment , bringing in a familiarity that was not foreign to the Ss:

> She uses her *kende* and demonstrates, she calls a student and demonstrates again asking the student to use her *kende* to measure the T's desk.
>
> She goes on to say: `When your parents talk about their *gabbi* or *nethella*, and they want to measure it, they usually say that it is 3 *kende*, right?

9: 20 Students are measuring the blackboard using their *kende.*

In this class, I was able to observe genuine student/teacher interaction. This too I can attribute to the Socio-economic conditions of the school, because the Ss stand a better chance of having a one-on-one conversation with the teacher. A student volunteered additional information based on the subject being discussed. They are able to demonstrate respect for the teacher at the same time they express their opinions freely and engage in conversations with the teacher. Here we find a classic example for Paulo

Freire's empathy over the "banking system" of education where children are seen as the passive depositories of knowledge. To avoid this, students have to act as producers of knowledge and not only consumers. "When students bring to the classroom what they already know, and are acknowledged as knowers, the classroom becomes an interactive environment for knowledge production which engages both the student and the teacher." (Kreiser and Semali,1996).This is clearly seen in this classroom:

9:46 One Ss stands up and tells the Ts that there is another traditional measure that was not discussed and that she had heard her grandma use it. The teacher listens carefully and attentively and explains the terminology.

9:50 Ss are asked if they have any questions and then class ends.

The Ss are conscientious about their work, regardless of whether or not they had a visitor in class.

9:30 *Ss are copying notes off the board, while the teacher goes around the class and corrects and checks to see that the handwriting is clear, neat and legible. She tells them not to make their page look like poetry.* This shows me that the Ss take so much care in making their exercise-books look nice that they go as far as to make it look like poetry, all symmetrically written.

9:40 When Ss finish their copying (copious copying down of notes) they put their pencils down and fold their arms and sit quietly.(This seems to be the norm.) There is pin drop silence in the class.

Just as I was beginning to wonder if these kids ever acted like kids, the teacher comes over to talk to me and the class turns into a class full of noisy, rambunctious 8-year olds!

APPENDIX E

Interviews with teachers

Ato Teshome 1st interview

School D

He showed me the Yearly Lesson Plan.

4 weeks in a month and each week contains a weekly lesson plan, with page numbers and paragraphs indicated. All the topics are given.

When we teach how do you think we support our lessons. We use CHARTS.

CHARTS:

The charts that I saw were attractive, coloured, relevant. Made in India. They are displayed on the walls that cover the room that is called the laboratory. These

Charts are used by the teachers to augment their teaching in the class. There are other models too that are used.

All this material is stored in the lab.

The students are then tested in class by giving class work and homework.

Are the students asked questions that are taken directly from the textbook?

First we teach them and then we ask them the questions orally for which we get the students to give us the answers. Then they are asked to do the exercises contained in the book directly in their notebooks.

Later on the same exercises are presented to the students by changing around the wording a little, in Home Work form.

Are these same questions used for exams?

Yes, there are 5 different question types that are used in exams. They are;

True False, for example if we have 30 questions on the exam: it is the teacher who uses his discretion when he/she prepares the questions he decides how many of them will be in TRUE and FALSE form, as he knows his students.

Next it is Multiple choice: here again it is the teacher who decides how many questions will take this form.

Match the Following, Fill in the Blanks, and Answer the following Questions.

Are the exams given on a monthly basis or by Semester?

We have to test them at least once a month, sometimes just a single chapter sometimes 2 or even 3 chapters are covered and we test them on it.

In grade 2 the students are tested at least 10 times or more during a Semester. It is the average of these ten or more that are taken. So the final exam is not all that difficult. They are tested on a weekly basis.

Do teachers pick and choose what they want to teach and what they want to omit?

The TEACHERS GUIDE guides the teacher, he combines the information found in the book and the guide, he choose what he thinks is very important for the students and he teaches, other things he covers very briefly.

Does the teacher refer to other books?

This lab is the reference library, there are different books. The teacher uses everything he can put his hands on if he thinks it will help the students.

So do the teachers actually refer and use other sources?

It depends on the teacher.

The material that is used as reference material is supplied by the Ministry of education and material from old curriculum. As the subject is science it is fact that is presented and facts remain the same and do not change.

As reference books we have some that were donated by the British Council and we use that. There is also a lot of material that is taken from Social Science, mainly because the material that is used helps students.

How about with practical experiments, when students are asked to plant etc? Do you use other material to cover the topic?

Yes, absolutely, for example we ask students to plant in tins and then they are given credit and points for it at the end of the year. I encourage the students to do this because it helps their morale.

You are going to get marks for this work. You will get credit for this work. At times for tests and at the end of the semester. In a way it is also motivational because for those who have done it, it is bonus marks and for those who have not done anything it encourages them and it makes them do it.

We try a lot to see that students do practical work by using material found in the environment around them. For e.g. when the book says 'types of grain', the teacher takes or brings samples and shows the students, thereby letting the students touch and feel the grain and try out the necessary experiments. Apart from this, students are also asked to

bring stuff from home, especially for science, social studies . We take them on fieldtrips when it can be arranged, this past year we took them to the Addis Ababa University to the Natural History Museum. Students look, listen and learn and write down, they come away with an experience that is not only significant for Elementary but will last them even up to University and beyond. they become familiar with things and it won't seem new to them anymore.

We also take them on fieldtrips to the nearby mountains, with the teachers from science and social science. And they are able to see for themselves the fauna and flora and therefore they can relate this to what they have in their books.

They have also been to Metrology, to visit; especially because Science and Social Science is intertwined, they gather a lot of information. So theses are things that we try but it is difficult to go to the various industries to visit because the kids are too young and if they touch things it could be dangerous.

Physics and Chemistry have problems as we can't get the materials. But things like Zinc Oxide, things that we can find we get it and show the students. (He takes out a tube of ointment and shows it to me) We tell them what the uses are and we relate it to the studies that they are doing.

We have a few chemicals that we use to show the students just for them to have an idea of what it looks like.

When we teach children about colours we mix colours to form others and then show it to the students, in fact we use it for the various teaching aids that we make here. We do not buy colours we make our colours. We use things that we can find around us, things that can be found easily and cheaply. We buy things that we can't get, otherwise

we make most of our teaching aids- this is how we show the students, Science an Social science a lot of it is like this.

Are the students curious do they ask questions or do they just listen , does the teacher answer the questions, is there participation

What are teacher's guide says is that we should `wake the students to see that they participate, we do try. But the students, out of fear out of the difficulty level of the subject, tend not to participate, but we do try- ask questions, don't be afraid. After the teacher has finished after he has given them the main points, if they have questions they can ask., from these questions the teacher can go directly into the subject and begin a discussion. After that if there is something that has not been covered, the teacher throws them a question, especially if the teacher can see that they have not grasped the main points he asks the students questions again. Here you answer, girl-boy, and we have class participation in this way.

What do students do when they come across words like "oxygen" and `nitrogen`, what do they say. well students ask, what is it and how does it function. For e.g. air, `oxygen`, `nitrogen`, Co2. It is difficult to show `nitrogen`. oxygen and Co2 are easy to show, by telling them about their own breathing. Burnt air, from within the home, especially when we are cooking, smoke comes out in the form of Co2. we can also get clean fresh air when we go among trees. If they are able to grasp these it seems to be enough because our children are not naturally curious, they don't get into things deeply. Not as children anyway, but as adults yeah maybe! It depends on their background and home conditions, I don't mean to say that their brains don't work it is just the

circumstances. Sometimes very tiny kids ask very deep questions. It is up to the teacher then to satisfy the student's curiosity, by talking to others if need be. By inviting guest speakers etc.

The teacher can ask others for info. he/she can also invite other guests and ask them to talk. He can also ask others who know more than him.
Sometimes at assembly time when students are given advice, they are given it with science in mind. In this fashion we try to see that the children develop.
What can be done is tried and what can't, we try other means of trying to solve the problem.

Sometimes we write letters to the editor of newspapers or ask the radio or even the TV, to provide us with answers. If the teacher has no way of answering they try the media, the students are asked to compose their questions and it is sent to the media, especially to Radio School and apparently we are going to get TV school broadcasts too.

- There are times when parent participation is asked for in the books, how do you get parents to participate in their children's schooling ?

Now the situation is thus, if the parents themselves are educated then they help their kids, but those who are not educated, it is a different story, as the children themselves don't ask their parents for help as the parents don't answer.
We meet parents at meetings and when students are doing poorly. We then advice them to get help for their children, from older brothers and sisters, or neighbours. So when

your children ask you questions have a resource you can turn to. So that the enthusiasm of the child to learn is high. That is the way in which we guide even the parents.

- When you use teaching aids in the class are the students allowed to manipulate them?

For example if the lesson is on flowers ,as you know there are different kinds of flowers, so we show them that and the teacher teaches. Then, students are asked to bring their own examples from around their houses. When they do that we, see that they dissect the plant and see what is inside and what the flower is made up of., but we limit ourselves to time constraints. We ask them to do it at home and in their own time as class time is not enough.

- So how long is the science class in this 'self contained system'?

The period is 45 minutes long and they have science 5 times a week.
We also use a tape recorder and give students lessons recorded from the radio. Students listen and then answer questions, for about 15 minutes. Students have to follow the instructions and answer the questions that are being asked, first orally and later as the teacher has the written form of the questions, the students can write down the answers too.

- Do the teachers have to complete the entire text book from cover to cover?

Within the school year, yes, it has to be complete. but there are unavoidable circumstances sometimes like Revolutions or student strikes at the university when all schools close down too etc, but then again it does not really matter because the same thing is repeated in a higher class as the topics ascend in an order of difficulty. (When Ts are sick they have to make up for the missed classes.)

- So the topics are interrelated from one grade to the next?

Yes, they are not much different. In the first cycle (there are 4 cycles: from 1-4, 5-8 is another cycle and 9and 10 is it's own cycle 11 and 12 are the classes that get the students ready for University. So most of the time lessons and topics are related to each other. From classes 1-6, students learn in their own language from seven they begin in English. Especially in Addis Ababa, they do it in the international language, but in other provinces they continue in their own languages. This is a question of policy, there is nothing that can be done.

- So from 1-6 they do it in the mother tongue?

Yes, this is what happens, but in Addis Ababa, everything is in Amharic and all the books are written in Amharic. from 1-6. For 7 and 8 it is in English. So what has been cycled is that from 1-4 they are interrelated, they are all self contained.5-6 are not self contained classes, each subject has a separate teacher. What a student has already done, in grade 6 in Amharic, he gets it again the very same thing in English, in Grade 8. He has already

done it in his own language and now he gets it again in English, so he develops both the language and the subject.

- What has impressed me here is the way in which traditional knowledge is used in the text especially the use of language, like traditional and modern etc.

Yes, and this is reflected in higher grades too, and when we teach we make sure that the students are introduced to the subjects that they will be coming across in higher grades. This itself they get the same topics, in higher grades.

- These examples given in the text, using batteries, it is O.k. for Addis but how about students in the villages?

We use what we have, we do have examples of beakers and cylinders we have the stuff here, but when we don't we have to improvise. For example you can take a tin can and put numbers on it and show a measuring jug. We could also use a glass tumbler and write the numbers on paper and paste it on the glass to show them how to measure liquids. We use the materials that we find around us. Well as for trying to find batteries in the village, this is the main reason for having a Centrals lab for all our teaching Aids.

- Why for example have they used examples of non traditional things in the book, what is the use:

It is possible, that the reason is given in the teachers book. you are right it shouldn't be there. it is just to show that things can be made from the material that is found around us. To show that they can make things out of paper and from other different things. Just to say that you can make different things from different material without going into them making things from iron or other such substances, it is easier for them to use paper to make simple things. From there children could get ideas of doing it with mud, wood and then metal, so this is the initiation., this is the aim of this chapter. This is the aim that is given in the teachers guide. Each topic has a given aim in the teachers book, this is what is aimed at the student's learning etc.

For example this is the yearly lesson plan. The main topics are given, about the environment and environmental problems. Students will find out about their environment. They will find out about the living things and the non living things around them They will learn about the weather conditions. They will learn about the problems that are faced by the environment around them. These are the aims of the chapter. So now what is the methodology that the teacher has to use in the classroom. He lectures/talks , has a question and answer session with the students and then asks them what haven't you understood, what is the problem? What can you add to this discussion?

The students are then given notes as this is how the teacher supports what he has taught. it is in this fashion that the teacher joins the topic with what he has just taught. He takes out a map of Addis Ababa and shows the students, the rivers, and then uses a magnifying glass and says this is what you have in the water, the problems. Then how does he finalise this with the students, he gives the students CW. and HW and checks their work. this is given to the office and is approved by the department head. Then it

passes on to the vice principle and if there is a problem he notes it down or puts a reminder and says this is how it has to be done. This is checked over and then becomes practical. If the teacher can't do a practical experiment he can say he is going to use another system to do it.

- What is nice is that , they use examples from the milieu. For example polluted water ....

Yes, precisely, they do. We can also talk about water found in Addis Ababa. Does it have problems. How do they get water. How can we check to see if it has problems? We bring the water and check it with a magnifying glass. For those schools that are bigger and are in abetter position, they use a microscope. With a microscope. the children check for themselves. Even in the villages where there are no instruments the teachers have to try and do with what they have. They can use the bottom of a bottle to magnify and see things. You see the teacher has to be able to show these things to the students.

- What I found interesting here is that in the Chapter on "Plants Around Us', the examples that are given are all taken from the milieu, but when we talk about animals, look they mention fishes and use fish that I haven't seen or heard of.

Yes, that's true, after the teacher has said that the world has thousands of different fish, the teacher then can show, the pictures in the book and say these are some of them. But as for bringing examples to class it is practically impossible. Yet Ss are encouraged to bring small fish in bottles from rivers and streams and we can show them how to take care of these fishes. We of course use charts to show the inner parts that make up the fish.

- Do you do this with frogs too?

You mean practically, no we do not, but we use a lot of drawings to show the students.

- How about when you are talking of lice, and mosquitoes?

Then we really don't have to show the students, as they already know what theses insects look like. Anyway it is not at all difficult to get these insects anyway.

- About tapeworms...

Tapeworms we use pictures, and we also say have you observed when children are defecating around toilets, have you seen the parts of a tapeworm.

- How about butterflies and birds?

Well, this is the reason for taking them to the museum. We try to take them to the museum. We also try to use pictures and charts.

- For example, how do you talk about animals and birds of other countries?

Well we do tell them that they are not found in our country, they are found elsewhere, like for example, kangaroos. But we tell them what the classification is. You would be surprised the students bring so much on their own. Now for example look at this chart with all these alcoholic beverages. Well in grade 5 students are discussing the effects of alcohol on the body and the brain. There is no use to just say drinking is bad, we have to show them and tell them these drinks are bad and theses are harmless, soft drinks. As much as possible we try to make the lessons practical. It is only when it is impossible that we use notes and just lecture.

The teachers guide does tell us to use other forms and methods, but you know we work all day, in government schools they work only half a day. This is bad for the Ss as they become road boys bad thieves when they have nothing else to do. Where as in our school we work seven periods, we are busy and so are the students. They are paying

students they are not Ss who learn for free so they put in an effort. We as teachers as we have to render a service, we are pretty serious about our teaching job. We do not leave out anything by saying it is something that the Ss already know.

- How many Ss do you have in a class?

At the present moment we are saying that it would be good if it doesn't go more than 50 or 60. Even in government schools, that is what the policy says, but this is not seen in practical terms. So we have about 90 to 120 at a given time in the classes, in the government schools, that is. Here in our school, in grade 8 that is our oldest class we have about 90 Ss. This school by the way, the building is over 100 years old and so we can't actually do any repairs or try to enlarge any of our classrooms because it is protected as a museum.

- How about in Grade 2, how many Ss do you have there?

As it is just one class, as many as the class can carry, if it is 90 then 90. Maximum from 50 –70 is what we aim for.

- Is it one teacher who is in the class?

For all five subjects it is one teacher. There are gaps, though so that the teacher can have a break, like sports or music in-between the periods. This too was a proposition put forward by the teachers of this school because the Ministry policy does not say this, they want the one same teacher to do all 8 subjects and just go out at break time. If the teacher wants to do environmental studies then he/she can take the Ss and go out and teach and later bring the students back to class.

It is up to the teacher to be creative and see that the Ss do not fatigue or get board, he/she has to use her own initiative. If the teacher wants to just lecture all five periods and stare

at the Ss then he can do so. Even the guide says be creative, for example, they can use drama. They also have music and they have to be creative. This is what we are pushing for. We have not been heard as yet, but this is the stance we are taking, as we think it is too much for one teacher. We are all saying that self-contained is bad. The Ministry of course says it is effective, it is the policy and they believe that it is effective.(As it is political it is difficult. We have talked and talked but to no avail. The government says it has to be practical. Is it just this yea?, No it has been a while since it started. It has to be put into practice, says the govt. We say it is a bad policy . this method is not good. But it is a policy, it is the state that has decreed it so you will be going against a policy and this could bring about other problems. That is why last year Addis Ababa University went on strike. So we still have the same problem and you can never say it might just continue. If it is changed o.k. if not we have to try our best and the teachers have to do their best and the parents too, if there is a strong administration then we can change things. If the administration says I am going to follow exactly as the government says then there is nothing that can be done. But if the admin is on your side and says you use your own initiative then you can modify things. This can be tried.

Interview with Mulumebet Mengistu

School A:

Date: 21/09/01

Can I use your name or use a pseudo name?

Yes, you can use my name.

.....I can not ignore it by saying it does not exist because, it does and it is being made use of too.

...From the middle finger to the elbow,

- Is it the same thing that is there in Grades 1, 2 and 3- is it the same subject that you deal with and it becomes difficult as it progresses? Or are the topics different?

Grade 2 and Grade 3 we can say are completely different as we go into Chemical properties in grade 3.

Grade 1 and 2 have similar topics that are dealt with, but in 3 it differs, they go into real science.

- Mulumebet are you aware that now Science has been integrated into Social Science?

Yes, in grade 3 the book itself says Social science.

- Do you use a teachers guide and do you make your own notes?

Yes, I use the teacher's guide and I do my own notes, I do follow the outline in the teacher's guide, but I also prepare my own notes, because you don't copy it exactly as it is in the book.

- Do you refer to other books?

Well, not exactly...

- Is it because everything is in the teacher's guide, is what is in the teachers guide adequate?

Well, I could say it is enough, but it is also preferable to have other books to refer to. It is the time factor, you see we try to finish the book by the end of the year so we try and stick to what is in the book.

- What do you think about the transliteration in the textbook?

We use both terms and teach. We use pictures to show Ss what we are talking about. We explain where these are found. So you see we use both terms interchangeably and teach

- Can you give me a sample of your tests?

Sure.

Sendek Gelaneh

School: B

Date: 20-09-01

The teacher comes over to me and chats with me.

Because of the number of the Ss it is practically impossible to control, to teach, to correct books. So we have told all this to the Teacher's Association, but they are unwilling to do anything.

Q: Are there trained teachers who could teach in order to reduce the class size?

Of course, but you see, it is not a government school so you see they pay and to get the money they take more Ss. for economical Ss. That is the problem. It is not the government that pays, it is the parents that pay.

We can't fail Ss, this too we are against, we have taken it up with the board. Even if some Ss can't read or write. That is wrong; this too we have complained about to the Teacher's Association. We have to get the policy changed.

He is of the opinion that the subject matter is too much. He also thinks that the self contained classes are too much work for one teacher and they have made this known to the Minister too, but to no avail.

Q: When you teach the text, do you do what you want to do or do you follow what is in the Ts Guide?

The material is too much he says, he chooses and makes his own notes and teaches as doing 211 pgs is not possible. he just uses the main points often. I follow the book, but I make my own notes as I set it out in my weekly and annual lesson plans. But I must say some of the material is beyond the scope of the Ss.

You see in the book they use Amharic words, but it is better to use, the English word, because we can't understand the word used in Amharic., so we usually use the glossary and then give the Ss the English word. (Most of the terminology has been changed to indigenise it and make it more Ethiopian, but the Ts are finding it difficult and use the English term instead.)

Beletu Gebre

School: C

We began by discussing the teacher's guide.

You see here it says, how we measure length and how we measure weight. In the T's Guide, it tells how we should teach it to the Ss. The aim of why we are doing it is given too.

- For example, when you give the Ss exercise, do you take it out of the book or do you do them yourself?

Here we have a guide with a topic: Measuring things, I prepare notes myself. Traditional methods of measuring and modern methods of measuring. I first explain traditional methods of measuring things., for example sinzzir, I ask the Ss to measure their note books black board etc.

- So what do you say, do you tell them that the meters are better?

Yes, you see the meter is defined by law but the other is only an estimation of the actual measure, because your sinzzir and my sinzzir are not the same, but meters give the exact measure.(1)

- Elsewhere in the text are there references made to cultural subjects?

Yes, there are for example, food. This too we can classify as traditional and modern/Western for e.g. ice cream? (1) I tell the Ss that this is traditional and this is modern when I teach, I explain it to them. I also take examples and show them and I ask Ss to bring stuff too, for example plants are the most common example.

Therefore, we cover the things that are found around us (1).animals and plants. WE ask the Ss to bring what they can. What we can't get we show them the picture and they are able to see the similarities and differences., how many legs the have.

For example, here is a picture of a woman bounding grain, (the image is clearly cultural the use of a *mookecha*): (1) it is to explain to the Ss that the woman got her strength by eating the right foods.

- Do you get the Ss to do practical experiments?(RptQ)

Yes, exactly as we are told in the teachers guide we ask the Ss to bring a tin and we ask them to put soil in it and plant something, and the whole class is the full of plants. We do everything we are asked to. Only if it is too difficult do we leave it.

- Oh, does that mean you choose what you want to teach, you take the main points out yourself? (RptQ)

Yes, I am the one who decides what is important, I just don't teach everything! What I think is important for the Ss in this class is what I use. What is tough I do not encumber them with it as I know I can always give it to them at a higher level in more detail.

- So how exactly do you teach something, do you put it on the board?(RptQ)

O.k., I pick a topic from the book, I add or subtract, if I think it is too difficult for them I simplify it and explain it to them first, then, I put it down in note form. Just a little as they are still in grade 2 they don't know how to write very well yet.

- Therefore, the notes that you give them and the notes found in the book are not word for word? (RptQ)

No, what I give them is certainly not word for word out of the book.

- How about your questions for the test?

Well, every month they have a test. You see they have questions here in their book, I give this to them as homework and class work, from the book. Their tests come out of this, it is not word for word but the ideas discussed are the same.

- What types of questions do you give the Ss? (RptQ)

there are five kinds of questions: T&F, Match, Questions, Choose and Fill in the Blanks. I don't give them the same questions I look at the portion and see what I can give them.

- So how are the exams given?(RptQ)

Every month I test them out of 10 and as each Semester has 5 months, 3x10 is for questions and answers and then for the 5^{th} it is to see how the are keeping their exercise books, homework. the other 60 marks I get them to do an exam.

- Some experiments, if they are too difficult what do you do?

We use teaching aids if we find that it is too difficult to explain, we use illustrations.

- Do you make your own Teaching Aids?

Yes, I do.

- Do Ss ask questions in class? (RptQ) (Ss attitude)

A very few of them do. They are small, all in all they don't ask, just a few of them do. I do say, have you got questions, have you understood everything? Nowadays they don't ask. Before they used to ask. I had to always be ready to answer, I had to know the book. Now Ss are not like that. Very few do, those who have support from home usually do.

- Oh, is there a lot of parent participation then?

Yes, there are some who get help from their parents. These are the Ss who ask questions those who have parental support.(Ss attitude)

- When you prepare your notes, where do you get your material from, the Ministry or the A.A University? (RptQ.)?

If I can get info from other teachers who have done grade 2 before, the teachers guide is a great help too, I put it all together and write up my own notes.

- When you teach do you find that you repeat yourself in higher grades? (RptQ)

Yes, it is repetitive, what they have seen in grade one, there is a lot of it in grade 2 too, but it progresses with the order of difficulty.

- Do you yourself, find that you give them more at the end of the year, do you find that you make it a little more difficult as you progress?

Now you see, the Ss have just started with the alphabet so at the beginning we do just a little bit, the notes are short. As they get older we too increase the workload. you see the first Semester and the Second Semester are not the same, its more and more.

- Do you take questions directly from the text for the tests?

No I change that, they do the same questions for homework and class work but, I explain the questions to them and give them other examples that are similar too.

- Do you have to do the book from cover to cover? (RptQ)

It says so, the curriculum says so, but it is the teachers choice. If it is difficult for the Ss I don't force them to finish it.

- Do you introduce anything from out side the text?

Only if it is a similar subject.

- Ok for example, I can see an ostrich here. do you ever bring in other information and say you know in other places there are other kinds of birds...?

You see I do do that, if I get pictures I do tell them these are birds and plants found in other parts of the world. But most of it is from the environment around here.

- How about these examples from the book about these big fishes, I don't think Ss know the names, but things like this tortoise for example I think they are more familiar with, right?

Yes, I do explain to them from where for example we get tapeworm and how we get it, by eating raw meat.

- As I see it you do give more importance to things that are more cultural?(I)

Yes, we do give importance to cultural things. Traditional dress, food, this we make sure that they know very well.

- As we saw earlier, when we measure things using traditional and modern methods, do you say one is better than the other?

No, no, I don't say one is bad. You see it did serve its purpose at the time, when there was no metric system. For example time, it is cultural to say when the sun is right above your head it is 12 noon. Or to say when the cock crows in the morning. All these are have served their purpose at the time and so there is no way I can say that it is not correct or this is better. It is all cultural.(1)

- As I went through the book I came across a lot of stuff that was for Ss awareness, on personal hygiene.

Yes, that is correct, it does tell the Ss how to take care of themselves and their surroundings.

- Do you do the experiments given in the book with Ss?

Yes, we do we ask one to bring batteries, and another some wire or a small bulb and we do this experiment.

- That means you do do the experiments? Do you have a central place where you keep all this stuff?

Yes, those that we are able to do, we do. And we have it in store in our Central lab, we'll show you when you come to visit us.

- What is the use for example, of this paper mask? What exactly are the children learning?(RptQ)

Well, we teach them that they can make things out of paper, different objects can be made out of paper. We can make a lot of things out of paper or mud too, It's just to show

that you can make things from paper, and if you just give them the chance, children can surprise you. They'll make things that you haven't even thought of. (Ss attitude)

- How about in the countryside what are those children going to do if they can't find gum, for example?

Oh, there is gum, you can make it from flour and water and some trees have resin too.(1)

- Some town children have no idea what the country looks like...

Yes, well it is for the teacher to explain and say this is what our countryside looks like. That is when you should have field trips to show the Ss what a mountain is. we are lucky being in the country we can just ask the Ss to look out of the window while we teach them these things.

- Do you take the Ss outside on occasion6

Yes, we often do, because it is greater to teach them by practically showing them things rather than making them listen to lessons all the time. for example, this is a wind vane right, we have this in the Central lab and when we use this we take the Ss outside and show them how it works.

- This I think is repeated as the Ss go on to higher grades?

Absolutely, it is there till they finish school.

- How about these topics on pollution, are the Ss aware of it and do you make them aware of pollution?

The Ss are very aware of pollution around them as they see it themselves, so we teach them not to throw dirt or go to the toilet anywhere and everywhere.

- So do they put it into practice?

Well sometimes they do but they all very diligently listen and so the awareness is certainly there. We do tell them that first they have to keep themselves clean and then their house and then their surroundings.

- Thank you very much.
- You are most welcome.

Ayenath

School E[3]
(interview with an elementary school teacher on the teaching of science.)

- So the teacher has notes? The notes are then put on the blackboard and the Ss copy it down. Is it from these notes that the questions for the tests are taken?

Yes, it is from these very notes that the test questions are made. But after the teacher has written the notes, he discusses it using teaching aids, he clarifies it for the Ss.

- These teaching Aids that you mention, does the teacher prepare it himself?

There are some that he prepares himself and some that the Ss are asked to bring from their milieu.(1) Or we can also get it from the Resource Centre, where we have all our teaching aids, that is if it is big and the teacher can't get make it himself then he gets it out of the Central, and uses it is class.

Or, for example from the environment- when he teaches about plants, he brings a plant to class and shows the students how the roots hold the soil, etc. (1) Or, he can do practical experiments by asking Ss to bring their own plants in tins and asking them to plant their

[3] I interviewed a teacher from this school but did not conduct classroom observations.

plants. (1) Then the Ss are asked to bring their finished product in about 3 to 4 weeks, in this way the Ss has become the Central that is the Ss is involved physically with the production of a teaching aid.

In this way the teacher uses the teaching aids. After a three week interval the teacher gives a class test- a ten question class test. On each given topic too there are a lot of questions that are given and these questions are done in class or as homework and then corrected.(testing) From these questions the Ss get there tests, not in the same form though, if these questions were used as True and False they are then used in Match the Following, they come in different forms by changing the wording a little bit.

- Does the teacher choose what he is going to teach in order of importance or does he have to finish the whole book? (teaching method)

The teacher has to put out an annual lesson plan. He divides the topics for all the weeks in the year, for the first semester, for the second semester. After he has done this, he sees to it that the Ss learn everything he has said he would teach. But, if the teacher thinks this is not that important then, it is the teacher's job to squeeze it out.

- So he is actually obliged to teach it all?

No, it is a teacher's job to be able to discern what is important and what isn't, and sift through. He can also shorten things that he thinks are not all that important. So in other words they do learn everything.

- Where does the teacher go to get reference books on methodology and teaching and teaching materials--to Addis Ababa University, or Ministry of education?(teaching method)

We had a library from which we could get some reference materials, but on the whole all we use is our teaching aids that we have in the Central lab, if we can't find it we ask the Central lab coordinator to guide us in what to use.

- Oh. so that means that each and every lab has a coordinator who knows about all the materials that he has in his possession etc?

Yes, we ask him when we want teaching AIDS, and he advises us on what to use.

- Some experiments that the Ss have to carry out are they integrated with what the Ss find around them?

Yes, we try to see that they do things at home, as I explained before.

- Ok, then, do teachers ask Ss orally or do they always write stuff on the board?

No, first he explains, then because he wants the Ss to pay attention to what he is saying, he asks them questions orally. (teaching method) You can always tell when a Ss is not concentrating, so in order to get the attention of that child, the teacher asks him a question.

Or, the teacher asks others too to wake them up and keep them on their toes.

So by doing this the teacher explains and then says, if there is anything that you have not understood you can ask me.

- Do the Ss actually ask when they have doubts, and don't understand something?(Ss attitude)

Yes, they are not shy, or self -conscious they do ask questions, when they don't understand. As it is just one teacher for all the subjects, there is no longer any shyness, it is like being parents. So even if they feel sick they say, I have a headache. There certainly is a bond that is created.

- When a teacher is teaching, does he progress with an order of difficulty when teaching, as he happens to handle all the classes from 1-4?(teaching method)

Of course, it is according to the level of the Ss that the Ts teach, they don't drop anything saying it will be too hard for the Ss. But she sees to it that they understand by using material from their milieu.(1) She uses material from the environment, because it is in this way that the Ss can understand, for example, if you go to some city schools and ask Ss who have never seen cattle, where do you get milk from? They will say from a bottle. So how do you explain something like that to Ss, the it is from an animal, so we could use a picture for example, you can't show them a picture of a bull and colour it green. It has to be a replica and say this is a bull or cow and they are black and white or brown and white etc.

- Ok, using the example of the cow you just used, how do teachers manage in village schools, for example when trying to teach Ss about aeroplanes?(1)

It is with pictures, as much as possible you have to demonstrate using pictures. Even if they haven't seen a real plane some might even get frightened just at the sound or sight of it, so the teacher has to try her best and explain using illustrations. That is the importance of teaching aids. If it is a thing that is not found in the environment, the teacher is obliged to use illustrations and explain to the Ss the existence of the thing. He has to find something similar.

- Sometimes, in the book it says ask your parents ..., is there any parent participation?

Now, there are some things that have to be learnt, for example- culture. The Ss have to know and learn and respect their culture.(1) For example, you can ask Ss from what cultural backgrounds they come, what kind of wedding songs do you have ask your

parents and come and then you can sing for us, in class. So when the others in the class listen to what these Ss are doing, they are very interested and they are also happy and in this way, they begin to understand that different languages have the same messages. In this way they learn that all languages are the same when used to give the meaning of the same thing, and what do they learn from this, that all languages are equal as they provide the same information.(1)

- Even in teaching science, for example you have both the meter and the kend given as instruments of measure, how does the teacher present this concept?(1)

If you notice, it does say, traditional and modern, so, when we explain traditional we do say that in the olden days this was what was used as a unit of measure, when they didn't know how to use meters. But now, even in the countryside, we find that people use meters and kilometres, for e.g. roads. We can show them a measuring tape that we take from the Central lab. We also show them how to use the 'sinzzir" and kend and we tell them that in the countryside, people use ropes to measure out land.

- How about other cultural references in the book?

Well, not a lot is found in the science. But in Social Studies, we have a lot of mention and just so Now in this new book that has come out which is called Social Science, it includes a lot of the social aspect of science making it even more culturally relevant. Social Science came in last year in the II Semester to be precise. It teaches about culture and monuments found in the country. It tells the Ss that they have to look after their cultural heritage as it has to be passed on for generations to come. They have to look after the monuments all this is taught from grade 1 and it broadens as it goes on to the higher levels.

- So when the Ministry of Education put this book out I am sure they thought it is relevant?

Yes, and you can get more info on it from the Curriculum and planning Dept if you like.

- Do the Ss participate in class? (Ss attitude)

Yes, they are asked to ask questions. They are told since you are taking Hw you better ask if you are not clear with some of the things you have learnt. There are some lazy ones who don't ask but the majority do.

- How many Ss do you have in each class, for example in grade 2 in your school, how many Ss do you have?

It is different in every school, in our school, we have about 60 not more than 65 to a class but as they year progresses it might come down to 50 last year I had 50 and that was great! But it differs in every school. You certainly have more than 50 in different classes.

- How long is one period? And how many subjects do Ss do during a school day?

Forty minutes. and they do about 3 subjects before the brake and 3 after so they have 6 periods in a day.

- They have their tests every 15 days out of 10 right?

Yes, (teaching method) they have tests out of 90 and 10 for class activity and participation and for books. So each Semester is out of a 100.

- They don't have a big test at the end of the Semester.

No, they don't. And we can't fail any Ss. If there are any weak Ss we have to put them all together and coach them on Saturday's and we are not paid for it. You see if it is grade two that we are looking at. We take the weakest from all six sections and we teach them, this is for them to be able to follow with the rest in the regular class.

The teachers divide the subjects and we teach them, it is for the Ss as we don't make any money. It is the new policy. (policy)

Appendix F

A Section of the Teacher's Guide, translated from Amharic.

Health

The key points of this topic

We say someone is healthy when his/her mental and physical state is not lacking in any form. We say "healthy" not only when a person is physically "perfect" but also when the person is mentally at peace and if the person is able to live in harmony with other people in his/her community.

There are many reasons that can cause people to be "unhealthy." The basic factors can arise from within our own bodies or from the environment in which we live, therefore we should know more about these causes and try to avoid them.

The effects of ill health are felt by all who come in contact directly or indirectly with the individual or a community. In a community every individual has a contribution to make, be it, economically or politically: the factory worker by manufacturing goods, the farmer by producing food for himself and others, the office worker by the work he/she does; all these people can serve their community only if they are in good health. If a person cannot work, he/she becomes a burden on society and therefore people have to take care of their health. Just as health is important, so is living together in a community.

A person who has strong ties with the community, is a person who is:

- Kind and respectful
- Helps others
- Respects the privacy of others
- Is conscientious about others feeling
- Has confidence
- Trustworthy
- Likes to work
- Helps to solve problems that arise

A person with qualities to the contrary of the above mentioned, is a person who is unkind, lazy, envious, and wastes time. As the person does not like community life, he/she is self-centred, a liar and is weak; these would be his/her main characteristics.

Preparation:

In order to teach this sub-heading, to the students:

- Prepare questions, drawn from their own personal experiences and relate this to the questions to be asked. For example, what problems would a person encounter if he/she fell ill.
- Prepare questions that would lead to a discussion on what a person should be like or do in order to have peaceful and fruitful community life along with parents, friends and teachers.

Teaching Aids:

- Use posters, charts, pictures or photographs showing a healthy person and a sick person.
- Use posters, charts, pictures or photographs depicting people from different walks of life going about their business.

Teaching Methods:

- Explain the topic, discuss the topic and have questions and answers on the topic.

Presentation of the lesson:

First give the title of the topic you will be presenting and then use the questions which would relate to their personal experiences and the questions that would lead to a discussion, which is to be encouraged using posters, charts, pictures or photographs to enhance the discussion.

Testing:

- Using oral questions, written questions and short quizzes.

Summing up

A person is healthy when he is healthy in body and mind and is able to lead a healthy community life. The person should look after his/her health and should form good relations in the community in which he/she lives by respecting, liking and helping the others in the community.

Personal hygiene

The key points of this topic:

A person can stay healthy by seeing to his/her personal and environmental cleanliness. This can be done by keeping the various parts of the body, like the face, body, teeth, hair, and clothes, clean by washing them regularly.

In order to keep our faces clean, we have to wash our faces daily. If we do so we can avoid common eye problems.

We should often wash our bodies with clean water and soap because the sweat and oil from our body sticks dust and dirt to it and this creates body odours.

Hair too has to be kept clean because the sweat can stick dirt and dust to our hair making it a breeding ground for lice. Lice can transmit diseases from sick people to healthy people. A person has dandruff because he/she does not look after her/his hair. There fore we must often wash our and comb it everyday.

On the whole we must clean our houses and clothes too to avoid them becoming the breeding grounds for lice and tics. We should keep our clothes clean by washing them and putting them out to dry in the sun and then iron and fold them too as it is pleasing to the eye and we also get rid of the dirt from the clothes. We should keep our whole bodies clean.

Cleanliness is not something that is reserved for one section of the society only, but it is for everybody to take heed and keep clean. If everybody takes personal responsibility to keep themselves and their environment clean, they will benefit from the cleanliness around them. One must realize that cleanliness begins with oneself!

Preparation:

- Asks the teachers' to collect or make material pertaining to the topic that is being introduced.

Teaching aids:

- Brain storm the students and elicit from them how we take care of our skin, eyes, moth, ears, face, and feet.

- Based on the students answers talk about the various diseases that can be caused by the lack of cleanliness. Use pictures, models and if possible films that relate to the topic. Explain and discuss these points with the students.
- Ask the students to prepare songs and poems relating to personal hygiene.
- Finally, the teacher should set an example of personal hygiene.

Testing

- Using oral questions, written questions and short quizzes.
- Follow up on the personal hygiene of the students.

Summing up

- Keeping our clothes clean and also our bodies, face, teeth, hair, feet, and ears etc. is of utmost importance.

APPENDIX F

Sample Translation of Test Paper

Grade 2 Monthly Science test: Test 1

I. Choose the correct answer:

1. Liquids are measured in: a. litres b. kilograms c. feet
2. If we don't keep our skin clean what types of things could we catch? A. itches b. diarrhoea c. coughs
3. A *gabbi* is measured in: (a) kilograms (b) *kende* (c) shadow
4. What part of the body helps us touch? (a) legs (b) hands (c) ears
5. 60 minutes: (a) is 1 hour (b) is 2 hours (c) is 1 day

II. Answer True or False:

6. All things have the same weight.
7. "When dawn breaks" (Metaphorical expression) means, it is morning.
8. Height can be measured in *sinzzir*.
9. An appointed time tells when to start and stop work.
10. Weight is measured in meters.

Test Written by:

Teachers: Ehite Tabor, Zegeyesh Assefa, Selamawit Bekele, Tejinesh Godo, Shewaye Deneke, Yihadega Tsehaye on 22/2/93 (Ethiopian Calendar).