

**ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES**

**THE IMPLEMENTATION OF BASIC INTEGRATED SCIENCE IN
SYLLABUS AND TEXTBOOK AT ADDIS ABABA PRIMARY
SCHOOL SECOND CYCLE**

BY

SOLOMON ASEGEDEW



**JULY, 2007
ADDIS ABABA**

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SCHOOL SECOND CYCLE**

**A THESIS SUBMITTED TO THE SCHOOL OF
GRADUATE STUDIES ADDIS ABABA UNIVERSITY**

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DEGREE OF MASTER OF ARTS IN CURRICULUM AND
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ACRONYMS

| | |
|---------|--|
| AAEB - | Addis Ababa Education Bureau |
| BESO - | Basic Education System overhaul |
| ETP - | Education Training Policy |
| ICDR - | Institute for Curriculum Development and Research |
| ICSU - | Inter-union Commission on Science Teaching |
| IER - | Institute of Educational Research |
| KTTC - | Kotebe Teacher Training College |
| MOE - | Ministry of Education |
| NGO - | Non Government Organization |
| TESO - | Teacher Education System Overhaul |
| UNESCO- | United Nation Educational Scientific and Cultural Organization |
| USAID - | United State Agency for international development |

ABSTRACT

The main objective of this study focuses on assessing the implementation of the integrated Science and its problems; preparation of the teaching-learning books and training of teachers. The sample of this study is consists of 39 school teachers taken from 5th and 6th grades; 10 Kotebe College instructors, 180 students and Science experts of the Addis Ababa City Government Educational Bureau and ICDR. The statistical tools used to analyze the collected documents are percentage and mean. The result of the analysis shows that the existence inadequate participation of teachers in the preparation of the Integrated Science text books and their syllabi. The way teachers are trained doesn't fit with the Curriculum. The contents of different science subjects in the integrated Science are not proportional and there is no substantial follow-up on its implementation. In general the overall performance is not satisfactory.

In this study what is thought to be possible solutions to the problems studied is that the Curriculum should thoroughly be examined and that every individual who is involved in the teaching-learning process should work in collaboration. Curriculum professionals, teachers, College teachers and those who are concerned should contribute their share to the teaching learning process. Their participation is also required in the preparation of the text books and Regional Educational Bureaus should also fulfill materials needed on time and adequately.

CHAPTER ONE

I. INTRODUCTION

1.1. Back Ground Of The Study

Curriculum integration has been under discussion and for the last half-century with a resurgence occurring over the past decade explosion of knowledge. The increase of state mandates related to myriad issues, fragmented teaching schedules, concerns, about curriculum relevancy, and lack of connections and relationships among disciplines have all been cited as reasons for a move towards an integrated curriculum (Jacobs 1989).

The term integration refers to coherence, unity, inter-relatedness and connectedness. Integration in an educational system provides some kind of coherence to the content discussed from course to course in program. On the contrary, when a subject covers several isolated and unrelated ideas, without relating them, it certainly contributes to fragmentation. For this very reason integration mainly focuses on the belief that experiences to be acquired from various areas in a classroom have to be arranged in such a way that unity among the various area are maintained, thereby substituting compartmentalization and fragmentation.

According to McNeil (1990), typical arrangements for facilitating integration include the following:

- Correlation-subjects keep their separate identities, but the concepts of one subject are related to the concepts of another (concepts of history and literature can be taught at the same time to reinforce each other).
- Integration of a tool subject-skills learned in one subject are used as tools in another field (mathematical concepts, are used in natural and social Sciences)
- Comprehensive problem solving: problem such as those of energy and conservation are predicted which requires acknowledgement of Science, Mathematics, and Philosophy to solve them.

With regard to the importance of integration in educational system, Deribsa Dufera (2004) stressed that integration focused on helping students to perceive the relations not only between ideas and processes within a single subject, but also among other subject and the world outside of school. Blenkin (1981) advocated teaching methods that are based on the needs, interest and ability of children. He advocated the use of well-graded learning materials and devices, which meet the needs of individual learners and those children, should be allowed to choose and organize their learning experiences.

Generally speaking, the introduction of integrated disciplines in the first cycle of primary education is a universally practiced and accepted direction that has been proved by research findings about its suitability to lower primary school students. Based on this fact the following countries, for example, have an extensive experience on integrated curriculum: India, Nepal, Japan, Malaysia, Korea (UNESCO, 1982). In the United states, the implementation of more holistic approaches and integrated curricula has been generally limited to the elementary school, although trends in the high school such as block scheduling (Beane, 1991) and higher education (Allen and Squires, 1977) have increased curriculum integration. Furthermore, a range of contemporary curriculum and learning theories such as the theory of brain based learning and the theory of multiple intelligence (Gardner, 1983) support integration.

Integrated curriculum promotes greater interrelation and cross fertilization of concepts between subjects. Teaching, therefore, centered on themes or issues that crossed subject boundaries (Jenkins, 1975). Integrated curriculum demands a particular style of teaching. Therefore, selection of the appropriate instructional strategies is very important for the achievement of desired objectives underlying the integrated curriculum.

Development of an integrated curriculum has to pass through a sequence of activities, from the design to the improvement of the curriculum. Improvement of the curriculum is possible if the curriculum is tried out. Stressing this Bathory in Arie (1979: 104) said that "it is essential to check empirically the instructional material, suggested teaching

methods, learning activities and learning equipment before they are used widely in the schools. What Bathory emphasized is that before the large-scale implementation of a new curriculum, one has to make certain that what are intended are effectively promoting learning.

Curriculum is a term characterized by fragmentation of ideas i.e. it has no agreed upon definition. As the result of this it was criticized on a number of facts. Among this as mentioned by Million (1955) it was academically oriented and the text books were unrelated to the experiences of the Ethiopian children (Million, 1955). Integration in its essence as one component of curriculum organization thus does not refer to the repetition of similar contents in different subjects. Nor it is to mean artificial relationship. It is rather identifying the area of natural linkage across the curriculum contents (ICDR, 2000)

1.2 Statement Of The Problem

The purpose of this study is to evaluate the implementation of basic Integrated Science Syllabus and text book at second cycle primary schools (Grades 5 and 6) and to identify factors affecting its implementation.

In general the implementation of basic Integrated Science Syllabus and text book in second cycle primary school curriculum development about curriculum integration affects the way that the curriculum is developed. Based on this fact, this study is going to look at the perception and understanding of those professionals in charge of the second cycle primary school curriculum development about curriculum integration and to understand the general practice of basic Integrated Science. Therefore, the study has attempted to answer the following research questions.

1. To what extent is the basic Integrated Science curriculum materials are integrated?
2. What are the rationales for integrating subjects?
3. What factors affect the implementation of basic Integrated Science Syllabus and text book?

1.3 Objectives Of The Study

The main objectives of this study are to identify problems associated with basic Integrated Science and to address some important solutions. In particular, the purposes of the study are:

- To identify how grade 5 and 6 basic Integrated Science curriculum materials are developed.
- To identify problems in preparing the Science Syllabus and textbook for integrated basic Science.
- To assess whether the textbooks are prepared on the basis of accepted criteria of integration?
- To assess the degree of implementation of Integrated Science.

1.4 Significance Of The Study

The findings of this research and the recommendations are very important for the MOE and Addis Ababa Educational Bureau curriculum experts to improve the curriculum at the national level as well as regional level. They can benefit from the study by using it as a clue to identifying the strengths and weaknesses in the existing curriculum materials and thereby to take corrective measures.

It helps as a spring board for other researchers to conduct further research.

1.5 Delimitation Of The Study

This study is delimited to 15 elementary schools of Addis Ababa city government. It is confined to grade 5 and 6 basic Integrated Science Syllabus and text book. Besides, the investigation of problems on the Syllabus and textbook implementation, this research work mainly focuses on the proper integration of different contents from different Science subjects (like Biology, Chemistry and Physics).The study is also limited particularly to government primary school.

1.6 Limitation of the Study

One serious limitation of the study was the difficulty of getting the necessary information from the Ministry of Education and getting permission from Addis Ababa Education Bureau to go out to collect data from the sample schools. And due to economic problem and lack of time the researcher couldn't look in depth different issues and other primary schools of second cycle.

1.7 Definition of terms

Curriculum integration: education that is organized in such away that it cuts across subject-matter lines, bringing together various aspects of the curriculum into meaning full association to focus upon broad areas of study.

Coherent Curricula - A curriculum that maintains visible Connection between purposes and everyday learning experiences there by making sense as a whole in which parts are unified and connected by that sense of the whole (Bean, 1998)

Interdisciplinary Model: A grouping of two or more subject-maters that are closely related to each other to form a wide field such as communications, general Science, social studies, environmental studies, and so on.

Second cycle primary school: Is the ladder of educational structure in the Ethiopia Education System which ranges from grade 5-8.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 The Concept of Curriculum Integration

The concept of integration in the field of curriculum can be used in two different ways: as a principle and as a type of curriculum organization. According to Tyler (1945:85) curriculum integration is defined as the horizontal relationship of various curricular contents in different subject areas. The concepts and skills in Mathematics should be developed in consideration of their application in Science and other fields at the same grade level. That is, the structure of knowledge and its application area are dissociated. It is a question of what types of concepts and skills can be learned by using these in other subjects. Subject boundaries are not to be eliminated. Thus, according to such people, integration is a principle of correlation across the curriculum.

On the other hand, integration, as opposed to the separate subject approach, is a method of developing a unified whole. According to McNiel (1990:180). Integration usually means applying organizational elements to an ever-widening variety of situations. Organization principles commonly in use call for increasing breadth of application and range of activities for fitting parts into larger and larger wholes.

Here, integration is not a principle but a process of establishing a total, not as a sum of parts but as a unified whole. Hence, integration is not like the union of two or more sets in which change in any aspect will not be seen in the resulting set, except in the number of elements. That is:

The term integration according to Pring in Peters (1980:127) refers to a unity of parts in which the parts are in some way transformed. A single grouping or adding of distinct objects or parts together would not necessarily create an integrated whole. There would

have to be some formal characteristic of the whole from which the parts gained some new identity, this characteristic belonging only to the whole.

This implies that either the parts or the whole possesses other different property depending on the process of forming integration. People like Beane and Wiggins prefer to use 'coherence' instead of 'integration', though there is no difference in meaning. To Beane (1994:3) a coherent curriculum is: One that holds together, that makes sense as a whole; and its parts, whatever they are, are unified and connected by that sense as a whole. It is not simply a collection of disparate parts or pieces of that accumulate in student experiences and on transcripts.

The wish to create a whole is not enough. There must be a connecting element to the parts and that is the integrative thread which can be a theme, way of learning or a social issue depending on the school of thought guiding the curriculum development simple collection of parts as they appear in the subjects is, however, a separate-subject approach to curriculum organization.

Furthermore, Taba (1962:299) used the term integration to show a product rather than a means. She said that integration also refers to what happens in the learner's personality (integrated behavior) since the purpose of curriculum integration is for the development of an all-rounded personality and there is no conceptual difference in understanding the term, objection hardly exists to Taba's definition. But an educational result should not be expected from vacuum.

Integration does not mean a fitting together of bits and pieces from different subjects but rather making use of the unique contribution of the individual subjects. The unit of curriculum is not so much a subject contribution of the individual subjects. The unit of curriculum is not so much a subject as an idea. Either the main topics, ideas, concepts, theories in single discipline may be used as the "integrating thread" or the methods of thought and work or type of enquiry may serve as the integrating thread. But when all is said and done it is the learner who achieves or does not achieve integration. Integration can be encouraged by the way the content and teaching /learning experiences are

presented, but in the learner him self must see and appreciate the relevant relationships, integration is up to him (George Bishop: 1985).

Content- based, integrated Curriculum requires a conceptual lens to draw thinking above the disciplines. The goal of an integrated curriculum Should be “integrated thinking seeing the patterns and connections of knowledge at a conceptual and transferable level of understanding topics and facts are critical tools in the development of integrated thinking. Units organized around a topical theme with out a conceptual focus; reflect “coordinated, multidisciplinary” rather than “integrated, interdisciplinary” design models. In coordinated, multidisciplinary model, facts and activities are coordinated to a specific topic of study but lack a conceptual lens to force thinking to the level of conceptual integration. The lack of a conceptual focus also leaves the disciplines operating in a multidisciplinary, independent fashion. They more or less “do their own thing” rather than work together (interdisciplinary) to develop the conceptual theme.

A major in creating interdisciplinary teams that include academic and the vocational areas is that they have traditionally approached their instruction is very different ways. It is difficult to find common ground when academic areas focus on content in instruction, and vocational areas focus more on the process, or “doing” side of the curriculum.

To maintain the integrity of both academic and vocational areas in the development of integrated programming, a concept-process model can work effectively. This curricular and instructional transition would require both areas to work to ward a higher standard.

A concept-process integrated curriculum model requires that academic and occupational areas identify the concepts that are associated with the topics taught in their respective courses. Interdisciplinary teaching teams, composed of both academic and occupational teachers, then look for common concepts. These concepts provide the “bridge” for building an integrated unit of study. Concepts that are developed through the content of an academic course are exemplified and contextualized in the occupational areas. Appropriate unit themes focus the study around a compatible topic of the study viewed

through a common conceptual lens. Other important concepts are taught as “topics” in the courses participating in the unit.

2.2 Ethiopian Context of Integrated Science

Ethiopia gives more attention to the provision of integrated education. And the Education and Training Policy of Ethiopia considers curriculum integration at the basic education level.

Ethiopia follows a new Education and Training Policy that is designed by endorsing the concepts and basic principles of curriculum integration. The Policy states the following.

- One of the aims of education is to strengthen the individuals and society’s problem solving capacity, ability and culture starting from basic education and at all level.
- Education helps man to improve, change as well as develop and conserve his environment for the purpose of an all rounded development by diffusing Science and technology into the society.

These two paragraphs of the policy emphasize two broad concepts, first, education should create new capacity, ability and culture for people through they could solve problems of any kind; Second an environment based development can be reached through holistic view or conceptual integration of knowledge offered in the curriculum.

There are also five sub-articles in the policy, which underline the concept of integration.

Article 2.2.4. reads as “To provide basic education and integrated knowledge at various levels of vocational training.”

Article 2.2.6 points out, “to make education, training and research be appropriately integrated with development by focusing research”.

Article 3.2.6 “States the comprehensive nation of integration that “Basic education will focus on literacy, numeric, environment, agriculture”.

Article 3.6.3 envisages that “coordinated curriculum development will be ensured so that students and trainees will acquire the necessary entrepreneurial and productive attitudes skills”.

Article 3.6.7 extends the scopes of integration of school subjects to that of traditional education by stating, “Traditional education will be improved and developed by being integrated with modern education”.

To sum up the Education and Training Policy of Ethiopia has sufficiently provided for concepts of integration in the lower primary curriculum with its appropriate instructional methodology. Problem solving approach is emphasized in the teacher training as well as in the instructional process in the schools (ICDR, 1999).

2.3 Models of Curriculum Integration

Over the past decade, several models of curriculum integration have evolved a review of the literature revealed that far more curriculum integration occurs at the lower levels of education than at the high school and College levels. The emerging trend is for elementary school to build interdisciplinary curricula around themes, where as in high schools and Colleges integrated curricula are more likely to be based around problems.

Curriculum integration can exist in various forms or types and in various degrees. There can be integration within a single subject or across many subjects. There can also be different aspects of integration such as subject integration: integration of school learning with social life, or domain integration etc. Several models curriculum integration at a primary level of education is practiced in different countries. Prominent among them are:

1. The interdisciplinary model
2. Theme- based education model.
3. Problem based model.

The focus of each of the above forms of integrations in the environment and real-life experiences. The three forms however, are not mutually exclusive. Since the content of

integrated curriculum is focused on environment and real life experiences of the learners some elements of one form are often contained in the other form of integration (ICDR 1999).

2.3.1. Interdisciplinary Model

This is seen as a grouping of two or more subject-matters that are closely related to each other to form a wide field such as communications, general Science, social studies, environmental studies, and so on(ICDR, 1999).

2.3.2 Theme Based Education Model

This form of integration is the most widely used form. The unique features of this form of curriculum integration lie in the use of themes or projects as centers of organizing learning experiences and in the use of a large block of time. In this approach to integration, knowledge skills, and experiences from more than two subject areas are integrated. Advantages of this model are that teachers can still identify with a given discipline, it is easier to connect the curriculum with national standards and state frameworks, and students are able to make connections among objectives from various disciplines. There could be a tendency, however, for a given themes and/or key concept to have little relationship with a specific discipline, causing the tendency for teachers to engage students in shallow or irrelevant learning (ICDR, 1999).

2.3.3 Problem Based Model

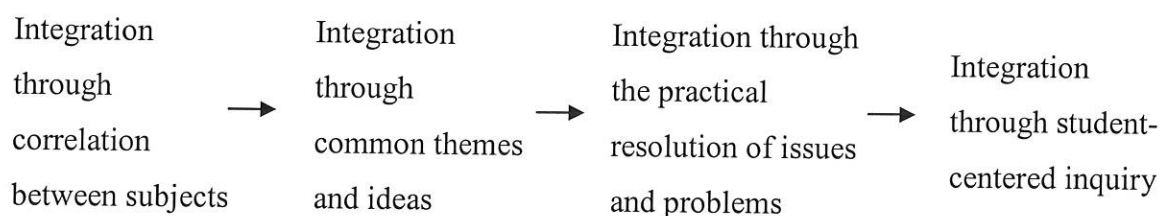
This model places technology education at the care of the curriculum. Since we live in a highly technology society and technology is a human endeavor, this a natural way to design the curriculum. With a technological problem at the center, disciplines lend their support in helping to solve a problem. An example problem might be to determine how the waste produced in a community could be turned into an asset.

In this instance, the social studies class can address the role of local government in collecting and disposing of waste; in Science the emphasis could be on reducing materials to their basic elements and recombine them and in mathematics one could study measurement, area, volume, and so forth, in technology education. The focus might be on the various technologies used to separate waste into categories as well as the

transformation of waste into usable materials. An advantage of this model of integration is that it offers high potential for the identification of relevant, highly motivating problems. On the other hand, a disadvantage of this model is the difficulty of assuring that state frame works, and/or national standards are fully addressed in a given grade level (ICDR, 1999).

2.3.4 The four stages of curriculum integration

Nolan and Brown (1989) developed a continuum for curriculum integration in the late 1980's. They suggested that forms of integration can be shown on a continuum, ranging from a subject-centered model, where integration occurs through the correlation of subject aims and content, to a model where students' interests and concerns determine the focus of an integrated studies programme.



Integrated Curriculum and Teaching Continuum (adapted from Brown & Nolan, 1989)

2.4 Meanings and Descriptions of Integrated Curriculum

According to Odharo (1996), "Integration is easier to describe than to define. The concept of curriculum integration is very predominantly in terms of specific objectives designed to be achieved through schooling. Moreover, there are numerous factors and curriculum elements that affect the meaning, the type, and the process of curriculum integration. In fact, a description is preferred to the attribute and components that help us to form a broader picture of its meanings." He also states some examples of descriptions of integration as follows:

Integration usually means applying organizational elements to an ever-widening of situations. Organizing principles commonly in use call for increasing breadth of application and range of activities for fitting parts into larger and larger wholes. Some times the learners' problems and interests serve the frame work for organizing within

which knowledge from main fields can be brought together. Similarly methods from different fields of knowledge. The subject concepts, but as ideas that have relevance to practical problem” (Odharo, 1980). A basic definition is offered by Humphreys (1996). As he stated that “An integration study is one in which children broadly explore knowledge in various subjects related to certain aspects of their environment”.

In keeping with this thematic definition, Shoemaker (1989) defines and integrated curriculum as education that is organized in such a way that it cuts aspects of the curriculum into meaningful association and teaching in a holistic way and reflects the real world, which is interactive. Within this frame work there are varied levels of integration, as illustrated by Palmer (1991:59) practices are:

- Developing cross-curriculum objectives within a given curriculum guide.
- Developing model lesson that includes cross-curricular activities and assessments.
- Developing enrichment or enhancement activities with across- curricular focus including suggestions for cross-curricular “contacts” following each objective.
- Developing assessment activities that are cross- curricular in nature.
- Including sample planning in all curriculum guides.

Another term that is often used synonymously with integrated curriculum is interdisciplinary curriculum. Interdisciplinary curriculum is defined in the dictionary of education as a curriculum organization which cuts across subject matter lines to focus upon comprehensive life problems or broad based areas of study that brings together the various segments of the curriculum into meaningful association “(Good1973).

The similarity between this definition and those of integrated curriculum is clear. Jacobs (1989) defines interdisciplinary as “knowledge view and curricular approach that consciously applies methodology and language from more than one discipline to examine a central theme, issue, problem, topic or experience”. This view is supported by Evertt (1991) who defines interdisciplinary curriculum as one that “combines several school subjects into one active project since that is how children encounter subjects in the real world- combined in one activity.”

These definitions support the view that integrated curriculum is an educational approach that prepares belief among those who support curriculum integration that schools must look at education as an approach that prepares children for life long learning. There is a strong belief among those who support curriculum integration that schools must look at education as a process for developing abilities required by life in the twenty-first century, rather than discrete, departmentalized subject matter. In general, all of the definitions of integration of integrated curriculum or interdisciplinary curriculum include: A combination of subjects, an emphasis on projects, Sources that go beyond textbooks, Relationships among concepts, thematic units as organizing principles, Flexible schedules and Flexible students groupings

As Henry (1958) stated that the integrative needs of society involve primarily the presence of social harmony and unity. The achievement and maintenance of this harmony and unity must be accomplished in the face of disintegrative forces such as these:

- i. Technological developments encouraging population movements which result in mixed and fluid communities of groups of individuals largely strangers to each other.
- ii. Conflicts between traditions, myths, and morals on one hand and Science on the other.
- iii. Weakening of the influence of traditional social institutions, such as the church and family.
- iv. Political and social barriers which perpetuate or generate severe competition and antagonism among groups and nations.
- v. Conflicts among class and the self or class interests against those of the large group.

2.4.1 Theoretical Context of Curriculum Integration

If curriculum is perceived as a plan for the learning experiences that young people encounter under the direction of the school. Its purpose is to provide a vehicle for ordering and directing those experiences. This process of providing the vehicle and keeping it running smoothly is known as curriculum development (Derebsa, 2004).

The development of curriculum involves decision-making activities. Unfortunately, however, no single universally accepted theory has been developed to guide the action. Thus, there are many theories, concepts or basis of knowledge that guide the way we

think, the system of education we design and how we organize our actions. Based on this fact, various scholars have described their own bases of organizing or designing a curriculum. Some of them stress on the content to be taught, others on the needs and interests of the learners, and still others stress on the current social problems.

Consequently, four main types of curriculum designs or development are distinguished; namely,

- 1) The subject centered design
- 2) The learner centered design
- 3) The problem centered design
- 4) The broad-field design.

Here it is obvious that actually, it is seldom, if ever, possible to find any one of the different types operating in pure form in a given school. To this end Hilda Taba stated that, the important thing is whether the structure or way of organization the curriculum permits instruction and activities needed to serve the objective of the school, and not how it can be classified (Taba, 1945).

Integration in its essence as a type of curriculum organization, thus, does not mean the repetition of similar contents in different subjects. Nor it is to mean artificial relationship. It is rather identifying the area of natural linkage across the curriculum contents (ICDR, 2000). "Family" for example, can be used to teach arithmetic computation (in Mathematics), vocabularies (in Language), income of a family (in Social Science), hygiene of a family (in Natural Science) and the like.

At this juncture it should be noted that integration should not be regarded only as either/or matter, an alternative to or substitute for subject or disciplinary based teaching (Deaden, 1990). That is, they should not be regarded as opposites; rather, they are correlative and complementary. This is because; for one thing, the meaning of the one is partly dependent upon its association with the other. And secondly both analysis and synthesis are integral to the process of learning and thinking (Ausubel, 1967). Thus we should think of integration within disciplinary based instruction and the vice versa.

The rationale for organizing the curriculum in either of the four types in general and even in one of the two types of an integrated form of curriculum organization described by Ingram (1974) in particular is contested. Views of the rationale are influenced by: what is thought to be the nature of learning and teaching, the changing relevance of the curriculum for the different age groups, the range of attitudes towards the types of curriculum organization, etc. To this end there are two divergent theoretical positions reflecting the two epistemologies.

2.4.2 The Need to Integrate Subject Matter in Organizing Curriculum

Jewish educators Bieler, (1986); Lukinsky, (1978); and Zeldin, (1992) are motivated to foster curriculum integration for both academic and ideological reasons. Such integration offers several potential academic benefits:

- 1) Curriculum integration fosters the on going reinforcement of skills and information learned in one area of study when utilized in another area.
- 2) Curriculum integration provides students a richer academic experience by broadening the context and applicability of information and skills that are learned.
- 3) Curriculum integration maximizes the utilization of learning time by “borrowing” from one area to support another. This is particularly important in Jewish day schools where educators face time pressures in all curricular areas.

In advocating for the integrated approach at the level, Ahier and Ross (1995) say as Derebsa Dufera (2004) stated that the primary school teachers often refer to the education of young children as holistic or integrated. They consider themselves to be educating “the whole person” and their own relationship with individual children as a central aspect of this.

In relations to this there are a variety of evidence which suggest many primary school teacher still see the personal relationship which they have with individual children not just as a means of establishing control and increasing motivation but also as means by

which education itself takes place. Curriculum workers should concern themselves with the problem of integrating the subject matter. Integration in the context of a curriculum construction concept means the blending, fusion, or unification of disciplines.

The integrated approach enhances holistic learning for individual development self fulfillment. It also makes sense, as the learners understand fully the existing interrelationship between them and the social and physical world (UNESCO 2005).

Ambaye (1999) stated that it is obvious that the content of a certain subject is relevant to the degree of its relevance to fulfill social, pedagogical and educational demands stipulated on the policy guidelines of a given country. The integration of such contents from various areas in school subjects is very crucial if the need is really to develop the necessary ground in Science and above all meet the main target which is linking the teaching of the subject with the day to day activities of the students.

To put it differently, such integration plays a very important role in making education a supportive tool for developing traditional technology as well as for incorporating the new innovative demands of the current Ethiopian curriculum. As to the harmony of contents to Syllabus objectives it could be observed that the contents of this particular subject agree with the Syllabus objectives.

Another important point is to see whether the contents are relevant to student's experience and environment. Regarding this idea UNESCO (2005) suggested that "students would find their school learning more meaningful and would thus be able to directly apply it to life, if the problem they studied in school were in fact similar to those they face out of school "Regarding the content of the subject concerned, hence, one can safely conclude that at a design level the content is relatively in harmony with the intents of the NETP guidelines on contents evaluation save some revisions which might be required with "thematic and integrated" approaches in prospect.

2.4.3 Integrated Curriculum Implementation

The implementation of Curriculum integration has several common elements. One factor is that curriculum integration takes time. Common planning time is needed to allow

teachers to select themes, explore resources, discuss student learning styles and needs, and coordinate teaching schedules. Broad strands, such as community, change, or systems have been found to be effective thematic organizers (Shoemaker 1991).

Palmer (1991) suggests that teachers and curriculum supervisors work together to identify common goals, objectives, skills, and themes. From these lists, the teachers work together is to find appropriate connections to content areas. For example, research skills may be a part of Science, Mathematics, Music, Language, Arts, and Social Studies. From this discussion, teachers devise plans for teaching. Any plan takes time, empowered teachers, flexible schedules, and teams whose members are able to work together (Brandt 1991). Just as curriculum integration changes the way instruction looks, it may also lead to a change in assessment strategies. As students are involved in "real" tasks, teachers find that they need to design performance assessments that give a true picture of student understanding of concepts.

When beginning an implementation plan, Jacob (1991) experience has led to identify four steps that are integral to success. They are:

1. Conduct action research to learn about current resources and best practices.
2. Develop a proposal for integration.
3. Implement and monitor the pilot program, with continual assessment of students and the program.
4. Adopt a program and continue to assess.

2.5 Curriculum Integration and Educational Purpose

Curriculum integration is introduced into schools for all sorts of reasons and such variety of justification is understandable in view of the wide range of possibilities open to the teacher. There are occasions, however, when the real reason for its introduction can not be justified in educational terms and in such circumstances teachers often use it without really knowing what they are doing (Esland, 1971).

Integration is important that the teacher should be capable of deciding the degree and type of integration that will be of greatest educational benefits to his pupils on any particular occasion (Ingram, 1979:90).

2.5.1 Curriculum Integration and the Pupil

Integration, then, is a pupil-centered activity. Its basic purpose is not to present to the world an impressively coherent curriculum but to help pupils to develop the ability integrate knowledge for themselves and enable them through such a process, to find meaning in what they learn. Three aspects of integrated teaching are cause for concern from the point of view of its personal orientation.

Firstly, one of the principal tenets of integrative education is that the child should learn for himself. Self-directed learning is one of the concomitants of integrative teaching. The development of the capacity to learn stems from the intention to teach as much as from the motivation to learn. This is particularly so in the case of integrated teaching with its emphasis on choice and its penetration to the deep structures of knowledge.

Secondly, self-directed learning can place a very large measure of responsibility on the child for his own learning. All children don't possess in equal measure either the capacity or the motivation to fulfill this responsibility. Some may find it too heavy a burden and in such cases the teacher must act vicariously to ensure the growth of confidence and independence.

Thirdly, it is frequently stated that while integrated work is suitable for the average or below average child. Subject studies are more appropriate for able children (Jones, 1975). This view point has many doubtful implications.

It implies that integrated work is easy and not sufficiently taxing for bright child, a point of view challenged by Nicholls (1973). It implies that there are two kind of knowledge, two ways of knowing, one for the bright and one for the dull.

2.5.2 Curriculum Integration and the Teacher

Some teachers do not like integration and see it as a threat to their subject or to the ways in which they have traditionally conducted their classes. Others do not like subjects and view integration as a sort of educational panacea. The first group is most strongly concentrated in the secondary school, the second in the primary school. Integration and subjects are thus to some extent institutionalized in primary and secondary education. In recent years, however, integration has been increasingly introduced into secondary schools (Pring, 1971) and for many teachers may be a source of anxiety and insecurity.

Such uncertainty stems not just from fear of loss of authority and prestige but from the difficulty that practically all teachers encounter in contributing to interdisciplinary courses involving relatively unfamiliar areas of knowledge. This difficulty increases as one progresses from the comparative simplicity of an infant school programme to the undoubted complexity of the secondary school curriculum. The global perspective is comparatively easy at a simple level and probably also at a very advanced level, but, at the intermediate level of academic work in school, both the comprehensiveness of the general practitioner and the profundity of the specialist are something of disadvantage.

This has implications for both in-service and pre-service teacher education. The threat of innovation is considerably reduced by sympathetic understanding and provision of appropriate informational and educational services. Teachers should not be expected to participate teaching schemes that are unfamiliar to them without the support of some kind of in-service training. This can be provided by colleagues in the school, by teachers' centers or by local Colleges.

Training in integrated work should also play a significant part in pre-service teacher education. As might be expected it has for many years been a feature of the training of infant and primary school teachers, though its position in courses is very much determined by the professional attitudes predominant in individual institutions. The problem is probably most severe at the graduate level and consideration is being given to the possibility of introducing degrees in interdisciplinary studies (Doyal, 1974). Perhaps

this will assist in developing in subject departments of universities an awareness of their role in teacher education, though its immediate implications for integrated work in schools remains to be seen (Ingram, 1979).

2.6 Integration in Curriculum Planning

In curriculum organization we can manipulate four elements or aspects:

- a. There must be agreements on objectives;
- b. There must be selection of a set of experiences likely to achieve these objectives;
- c. There must be organization of the experiences to achieve the greatest progress in regard to the objectives;
- d. Finally, there must be evaluation to determine the extent to which the previous decisions are well advised. Each of these aspects of curriculum construction has been used as a basis for promoting integration. (Nelson. B. Henry: 1958).

In the context of our integrated curriculum, involved every thing the students needed and wanted to know and do in order to make sense of themselves and the world around them. It involved addressing students' personal and social concerns. Content involved answering question about those concerns. Content involved learning how to acquire new knowledge.

In each of our units we integrated the content. Integrating the content helped facilitate the realization of our goals.

- Develop a curriculum that gives students and teachers deeper understanding of content.
- Make connection between school and the out side world.
- Guide students in learning process.
- Encourage students to accept responsibilities.
- Help students to learn to work effectively with adversity of people.
- Encourage students to make risks and learn from their mistakes
- Assist students in becoming effective problem solvers.
- Enable students to discover that learning can be fun.

2.7 Integrated Science for Primary Schools

As Ingram (1979) has shown Integrated Science for primary schools may not be relevant for secondary schools. Beside, the extent of integration may vary. For example, Integrated Science for primary schools could be re-combination of several subjects (Biology, Chemistry, Earth Science and physics) into single subject (Integrated Science).

As Eshetu (2001) cited that from d'Arbon in Cohen (1971), following extensive review of the literature summarized what integration of Science in this way:

Integration, when applied to Science courses, means that the course is devised and presented in such way that students gain the concept of the fundamental unity of Science, the commonality of approach to problems of scientific nature, and are helped to gain an understanding of the role and function of Science in their every day life, and the world in which they live.

An integration of Science course eliminates the repetition of subjects from various Sciences and does not recognize the traditional subject boundaries when presenting topics of themes.

The 1968 congress on the integration of Science teaching held in Droujba, near Varna by inter-union commission on Science Teaching (ICSU), has given the following conclusions on the purpose and the meaning of Integrated Science:

1. The teaching of Integrated Science contributes to wards general education, emphasis, the fundamental unity of Science and leads to wards an under standing of the place of Science in contemporary society. It avoids unnecessary repetitions and permits the introduction of intermediate disciplines.
2. A course of Integrated Science should emphasis the importance of observation for increased understanding of the environment: it should introduce pupils to logical thinking and scientific method.
3. As it may be necessary in an integrated course to omit some details it is essential that the content of the course should be judiciously chosen. It must be carefully complied by collaboration between the different teachers and other specialists.

2.7.1 Text Books and the Integrated Curriculum

Integrating elements of different subject matters is another important approach to learning. An integrated curriculum requires a combination of subjects for holistic learning. One of the frequently desired as well as fashionable, teaching methodologies is that of the integrated curriculum, for example combining mathematics with social studies or Science with language, or building construction with ethics. It can be very difficult to integrate subjects however, because teachers, who are among the most important players in curriculum reform and interpretation, have generally been trained to teach subjects separately, and may become quite agitated and disorientated if the subject boundaries are not respected. Teachers may express discomfort at dealing with such a subject because they do not know enough about it. This is where the text book writer can bring an information a cross the spectrum. (UNESCO, 2005)

Despite the reservation of many teachers an integrated approach to teaching and learning can be an enriching experience both for the teacher and for the pupils. Rather than trying to integrate every subjects, it may be best to begin by introducing some integrated curriculum for two or three hours each week, whilst maintains the separate subject format most of the time. The text book writer must keep in mind that it is the teacher who implements the curriculum, and so the text book must b teacher friendly.

Many text books are written with emphasis on their specific subjects and no connection between that subject and another. The text book writer needs to know that for young children, especially, knowledge is knowledge children do not see it as isolated subjects. (Ambaye 1999)

2.7.2 Coherence and Integration of Content

According to UNESCO (1981) there are four factors seem to be essential to achieve harmonious integration of educational actions:

1. Focusing on ultimate goals common to the entire education system

2. A structure providing for interaction and communication between the various educational sub-systems.
3. A unifying frame work
4. A mechanism for adjusting and regulating the various educational sub-systems.

Focusing on ultimate common goals in achieved in the curriculum first at the level of educational policy and subsequently in its implementation; it is the curriculum, too, which must provide the unifying frame work, both for the content and for methods; once again it is mainly to the curriculum that one will have to look for the feed back mechanisms and mutual adjustments of the educational sub-systems which are necessary if education is to be coherent. Curriculum and the content of education are thus at the center of integrations but are not the only elements of integration with out suitable structure and a real policy of adjusting to common ultimate goals, all is vain.

In order to achieve integration and coherence it is therefore essential to define a common overall educational policy and to focus all the aspects of education on aims Laid down in accordance with the over all policy. In this connection, the various educational agencies will, of course, have their own particular functions but these will be specific. Contributions to achieving common aims and will be consistent with each other as they will stem from a harmonious break down of the overall educational effort. The education system's degree centralization, laid down in the educational policy, will determine the level at which this common overall policy will be defined and co-ordinated.

In a highly centralized system, the responsibility for overall policy and co-ordination will rest with the state, in a highly decentralized system, it will lie with the local authorities, and in this case it will be essential to create a co-ordinating body ensuring coherence between the educational actions undertaken in the various local sub-systems.

Integration basing real career issues major social and professional problems; i.e. knowledge and skills be selected and integrated to form a theme whose main attribute is "expected Competence". As in pedagogic, for instance, core themes could be curriculum and instruction each of which embrace the social basis of education, utility technology, educational theories and models of transferring knowledge effectively etc.

Such endeavor towards integration shouldn't however be simply a methodological challenge but rather an integrative framework promoting and enhancing sense of purpose to the learner, hence philosophical as well. (Ambaye1999)

During the integration effort, consideration should be made to create a 'symbiosis' between the experiential approach which contends on curriculum exposing learners to extensive experimentation with their environment and the systematic instructional philosophy which adheres to setting predetermined goals and creating sequences of activities so as to acquire survival skills.(ICDR,1999)

2.7.3 Benefits of Integrated Teaching

A school district in Michigan created integration plans for thematic units, based on the ideas of Howard Gardner about multiple intelligences, in a yearlong pilot program. The results of the program included "sustained enthusiasm" from the staff, parents, and students, increased attendance rates, and improvement in standardized test scores, "especially from students with the poorest test results" (Duhnphy, 2005).

Flowers, Mertens, & Mulhall(1999) identify five important outcomes and findings of their experiences withinterdisciplinary teaching and planning: common planning time is vital, schools that team have a more positive work climate, parental contact is more frequent, teachers report a higher job satisfaction, and student achievement scores in schools that team are higher than those that do not team.

Additionally, Pumerantz & Galanto(1972) find that interdisciplinary teaching allows for students to, "Proceed at a pace commensurate with their interests, skills, and experiences".

Integrated instruction helps teachers better utilize instructional time and look deeper into subjects through a variety of content-specific lens. Another benefit of integrated instruction is that teachers can better differentiate instruction to individual student needs. Integrated instruction also allows for authentic assessment (Barton and Smith, 2000).

A final benefit of interdisciplinary teaching is that students have a chance to work with multiple sources of information, thus ensuring they are receiving a more inclusive perspective than they would from consulting one textbook (Wood, 1997).

2.7.4 Criticisms and Shortcomings of Integrated Teaching Methods

Scholars that advocate for curriculum integration argue that the topics studied should originate with students and their teachers, and not from district-imposed curriculum packages. This raises the important issue of accountability (Stevenson, 1998). As school districts often have decision-making panels that consist of stakeholders such as teachers, parents, and students, curriculum integration may take away their agency to make curricular choices. In addition to issues of local control, truly integrated curriculum may not prepare students for the high-stakes tests that have become a reality for public schools in America in the wake of the No Child Left Behind Act. Finally, there is also concern that integrated teaching discounts the value of deep subject-specific knowledge, which is essential for specialization in areas such as medicine, law, and engineering (Gatewood, 1998).

Thematic units can also fall short of teaching in-depth content to students. Often a theme, such as apples, is used to link unrelated subjects, with little deference to students' prior knowledge or interests. This superficial coverage of a topic can give students the wrong idea about school, perhaps missing the idea of curriculum integration in the first place (Barton & Smith, 2000). Thematic units can contain pointless busywork and activities created solely to create a link to a theme; for example, the alphabetizing of state capitals in a social studies unit, attempting to integrate it with language arts (Brophy & Alleman, 1991).

2.7.5 Factors influencing curriculum implementation

As Abara Husen (2004) stated that a number of factors can be mentioned as facilitating or hindering the implementation of a given curriculum, method of teaching or any other educational activities.

a. The nature of the curriculum

The nature of the curriculum itself, its design, the way it is communicated to the user and the like can facilitate or hinder its implementation. According to Walker and his partner (1986:67) most educators and citizens seem to think that if only they had a clear idea of the ends they were seeking and their priorities among them, our curriculum problems could be posed in a straight forward way and solutions sought through routine systematic methods. The users, particularly teachers; involvement in the curriculum development to include their interest, and philosophy is considered by many as potential factors for successful curriculum implementation.

b. Lack of adequate personal support

The curriculum development process is continuous that extends from design to implementation stage. Through out all these process the involvement of personnel's is essential. Ornstein and Hunkins (1998:295) Zaltman and his associates in Fullan and Pomfret (1997:374) have all indicated the need to create a communication channel. To these author the communication channel has to be two directional from curriculum planner to the implementer and vice versa. So continuous follow up and assistance to teachers regarding the implementation of curriculum in schools is expected from the curriculum planners.

c. Teachers related factors

Teachers are the most important link in any chain of educational innovation. As teachers are the backbones of the whole education program their training becomes the focal point and a vital factor affecting the quality of education. It seems because of that Agrawal (1996), and Hawe (1979) in similar ways summarized their views of teacher's education by maintaining that; teacher training is the first essential thing for implementation. And there is no conceivable way in which curriculum implementation can be divorced from the process teacher education.

CHAPTER- 3

RESEARCH DESIGN AND METHODOLOGY

The principal aim of this study was to investigate the implementation of basic Integrated Science Syllabus and text book. To realize the aim of the study a descriptive survey involving both qualitative and quantitative methods was used.

3.1. Subject of the Study

The subjects of this study were grade 5 and 6 Science teachers, Kotebe Teachers training College Science teachers, Science panel experts in ICDR and the head, Addis Ababa Educational Bureau Science experts and students in 15 Government primary schools that exist in five sub-cities of Addis Ababa city government.

Grade 5 and 6 basic Integrated Science curriculum material (syllabus, student's text book and teacher's guide) are selected since the implementation of the new primary education curriculum. Addis Ababa region primary schools were selected, because the researcher was not able to go far due to his job obligations.

3.2 Sampling techniques

In the study purposive sampling technique was used to reach at the representative sub-cities and schools. This is commonly used sampling technique to get the desired information. From 5 sub-cities who are relatively far from the center of the city. These sub-cities were Addis Ketema, Arada, Kirkos, Yeka and Gulele.

From each Sub-city three government primary schools were selected, totally 15 government primary schools were included. These schools are Entoto Amba, Dil betgil, and Tsehay Chora from Gulele Sub-city. FinFine, Urael and Misrak Goh from Kirkos Sub-city. Misrk Ber No.1, Wondirad and Kokebe Tisbah from Yeka Sub-city. Eshet, Yekatit 23 and Umer Semeter from Addis ketema Sub-city. Ethiopia Tikdem, Arbegnoch and Minilik from Arada Sub-city.

From these schools a total of 39 teachers were selected by using purposive sampling and 30 classes were selected from grade 5 and 6 from each sampled classes, 6 students were selected by purposive and random sampling techniques. The selection criteria was their classroom achievement two from higher, two from medium and two from lower achievers.

3.3 Data Gathering Instruments

To obtain adequate information four types of data collecting instruments were used in this study. These were questionnaires, interview, focus group discussion and document analysis

3.3.1 Questionnaires

The questionnaires items were made to address the extent of the integration and coherence across purpose, contents and methodology. Two kinds of questionnaires were prepared for primary school teachers and for Kotebe Teachers Training College Science teachers.

The questionnaires for second cycle primary school Science teachers were administered in Amharic as it was assumed that the teachers understand and respond better to questions in Amharic than in English. But for Kotebe College teachers most of the questions were open ended with English language.

The questionnaires for both the second cycle primary teachers and Kotebe College Science teacher's questions were aimed at discovering what training the teachers had in terms of solving the problem of curriculum implementation of basic Integrated Science Syllabus and text book.

3.3.2 Interview

This instrument was employed to collect data from curriculum experts in ICDR and Science experts at Addis Ababa Education Bureau Curriculum Department. The interview items were structured questions in relation to a new curriculum. In the interview two curriculum experts and head of ICDR and three curriculum experts from Addis Ababa Education Bureau were involved.

3.3.3 Document analysis

To determine the extent to which elaborate and significance of contents and periods, which conform to the basic Integrated Science, occur in the course, in the Syllabus and the text book of the course were made to pinpoint the important elements of basic Integrated Science education. Besides this, the analysis helped the researcher to analyze the items of contents which related with the given periods and which content is taken from the three Science subjects. (See appendix F)

3.3.4 Focus group discussion

In the focus group discussion, only students from grade 5 and 6 were involved. The focus group discussion with students was started by using probing questions to check the effectiveness of the implementation of basic integrated text book and syllabus. (See appendix E)

3.4 Tryout of instrument

The strategy used for pre-testing the instrument was to present the draft instrument for experienced people in Addis Ababa Educational Bureau curriculum department and to primary school teachers. Primarily the draft instrument was given to two department heads at Addis Ababa Educational Bureau with a background of MA degree in curriculum and instruction and was commented on. Then the questionnaire was distributed to 10 teachers teaching Basic Integrated Science in grade 5 and 6 at Arada Sub-city in two schools, which are Atse Naod and Yalem Birhan schools

Teachers' questionnaire was tested for clarity, directions it contains and for the information that it can draw from the teachers. During the field trial it was found that 7 teachers returned the questionnaire without responding to the open ended part. However, during the discussion held with those teachers who were not responding on the aforementioned part no significant reason was given as to why they did not respond. Few teachers said that it would have been convenient to respond if the questions had alternative choices. Depending on this suggestions, the researcher is replaced the open ended part of the questionnaire by alternative choice using more rating scale.

3.5 Data Gathering Procedures

Before getting into data gathering the Instruments were tried out. This has decreased the problem which existed in the previous questionnaire. In addition, the teachers are enabled to present their ideas with a clear approach and in simplified form.

Regarding information gathering in the schools, after showing the letter sent from Addis Ababa University and asks permission, with the cooperation rendered from Department and Unit leaders, convincing teachers they have filled the questionnaires. Questionnaire was disseminated and collected by the two assistants.

With regard to the Focused Group Discussion held with students, including the 5th and 6th grade students and Assistants, using the student's discussion questions, it has become possible to collect useful ideas.

Similar to the question rendered to the schools, the questionnaire prepared for Kotebe College of education was open ended. This response is achieved from the questionnaire gathered from the departments.

From the discussion held with Addis Ababa Education Bureau Curriculum Department, Science Experts, and ICDR Science Education Experts and Department Heads. Based on the good discussions held, and the questions raised, it has become possible to collect ideas which are relevant to the research. The other additional point is with regard to the whole contents, it is made possible to integrate subjects proportionally from each subject, and the distribution of class schedules is done with the document analysis applied.

3.6 Data analysis techniques

The data is analyzed quantitatively and qualitatively. The discussion held with Addis Ababa Bureau and ICDR Science Experts, and its head, and with students was qualitative. This method enables to get much and relevant information and to do effective

document analysis. The Data analysis technique used for School teachers and Kotebe College teachers was questionnaire which is quantitative.

With regard to the response gathered from teachers is presented in number, percentage and is also calculated with mean. The general response of the teachers shows the attitude / stand each teacher has on each question. It is also attempted to express what the result mean when it is expressed in figure.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

In this chapter the response of students, teachers and experts are presented and discussed. Following each presentation, the results will be analyzed and interpreted. It is a fact that the implementation of a new curriculum requires the readiness of teachers and their capability of the subject mastery as well as pedagogical skills demanded by the curriculum.

4.1 Teachers participation on the implementation of Integrated Science

Table-1 Teachers related factors

Scales: very high=5, high=4, medium=3, low=2, and very low=1

| 1 | Response on teachers training | | Respondents (N=39) | | | | | Mean |
|-----|---|-----|--------------------|-------|--------|-------|-------|------|
| | | | 5 | 4 | 3 | 2 | 1 | |
| 1.1 | How much useful is the knowledge you have got from the pre-service training? | No. | 24 | 8 | 7 | | | 4.44 |
| | | % | 61.54 | 20.51 | 17.95 | | | |
| 1.2 | Have you got any in-service training about Integrated Science? if yes ,how much you benefited from it? | No. | | 3 | 5 | 10 | 21 | 1.74 |
| | | % | | 7.69 | 12.825 | 25.64 | 53.85 | |
| 1.3 | How much you are aware of Integrated Science based on pre-service and on job training? | No. | 4 | 6 | 18 | 9 | 2 | 3.03 |
| | | % | 10.26 | 15.38 | 46.15 | 23.08 | 5.13 | |
| 1.4 | Did you take any awareness creation training on the newly developed Integrated Science teaching materials? if yes how much You benefited from it? | No. | 4 | 5 | 5 | 10 | 15 | 2.31 |
| | | % | 10.26 | 12.82 | 12.82 | 25.64 | 38.46 | |
| 1.5 | To what extent is the field you were trained being related with the subject you are teaching? | No. | 7 | 6 | 10 | 10 | 6 | 2.95 |
| | | % | 17.94 | 15.39 | 25.64 | 25.64 | 15.39 | |

As it can be seen from the data presented in table 1, the knowledge they obtained from the pre-service training (before integration) was found to be useful for most teachers (4.44 mean values) so as to implement the Integrated Science subject. On the contrary the mean value (1.74) for item 1.2 depicts that though they took in-service training on Integrated Science they benefited from it very little. In addition to this after they took the

training they are assigned to teach not the Integrated Science but rather to teach either of the three Science subjects for grades 7 and 8 based on their performance.

When the respondents were asked why this paradox has happened they reported that the primary and important factors for our assignment were teaching grade 7 and 8 educational level in diploma and simply to minimize scarcity of teachers.

The other point raised by respondents when interviewed was that although several in-service trainings on different issues have been offered all the time the participants from school or Sub-city were those staff members who are not appropriate for training or do not have any professional background about the training such as a cluster school center leaders or pedagogical center heads in addition to this these bodies who have been the only participants of the in-service training supposed to transfer it crowd not did it due to the usual reasons lack of budget.

Regarding, the issue an interview was made with a senior Science expert of the regional education Bureau, the experts has said that the most series problem in most of the Science departments as observed during their supervision is that shortage of qualified subject teachers. Moreover, as the result of the problem a number of teachers are assigned to teach in their minor field of training as well as in the field in which they did not trained such as teaching Integrated Science. In order to minimize the problem as suggested by the expert, in-service training on how to teach the Integrated Science must be given especially for those Science teachers who were trained the old curriculum.

In line with the problem, as can be seen from the table 1 most, of the respondents below average (2.95) indicated that the subject and pedagogical knowledge they got during their pre-service training is completely unrelated to teaching Integrated Science. Therefore as they explained the provisions of in-service training on how to teach Integrated Science has great importance and contributes a lot to the success of the education system.

Similarly, the mean value (2.31) shows that majority of respondents conformed that the knowledge we gained from the critic of the newly revised instructional materials (text book and teachers guide) was very little. Moreover, they explained that no practical

training has been given in the field so far, but usually the in-service trainings focus on the comparison between the old and the new instructional materials. Due to this they did not have much knowledge about the Integrated Science and how to teach it.

Table-2 Teachers response on the objectives of the newly integrated syllabus

| 2 | The objectives of the newly Integrated Science Syllabus are | | Respondents(N=39) | | | | | Mean |
|-----|---|-----|-------------------|-------|-------|-------|-------|------|
| | | | 5 | 4 | 3 | 2 | 1 | |
| 2.1 | Related to the contents of the text | No. | 16 | 14 | 8 | 1 | | 4.15 |
| | | % | 41.03 | 35.90 | 20.51 | 2.56 | | |
| 2.2 | Appropriate to the stage of mental development (grade level) of the pupils | No. | 11 | 23 | 5 | | | 4.15 |
| | | % | 28.21 | 58.97 | 12.82 | | | |
| 2.3 | Appear to be practical | No. | 2 | 7 | 11 | 13 | 6 | 2.64 |
| | | % | 5.13 | 17.95 | 28.21 | 33.33 | 15.38 | |
| 2.4 | Encouraging the students for future learning competence | No. | 13 | 14 | 10 | 2 | | 3.97 |
| | | % | 33.33 | 35.90 | 25.64 | 5.13 | | |
| 2.5 | Balanced among areas of knowledge, skill and attitude | No. | 11 | 18 | 8 | 2 | | 3.97 |
| | | % | 28.21 | 46.15 | 20.51 | 5.13 | | |
| 2.6 | Designed in accordance with the level of teacher's professional competence. | No. | 14 | 16 | 8 | 1 | | 4.10 |
| | | % | 35.90 | 41.03 | 20.51 | 2.56 | | |

As can be seen from table-2 to the item which requires to rate regarding the relationship between the objectives and the contents of the newly Integrated Science syllables; out of the total 39 respondents 30 (76.93%) rated positively i.e. the objectives and the contents of the newly Integrated Science Syllabus as strongly related to one another.

Regarding table-2 similarly the respondents 34(87.18%) rated for the appropriateness of the objectives of the Integrated Science Syllabus to the age-level or mental development of the pupils to be very high or high.

Regarding the very essential characteristic i.e. practicability objectives of the Syllabus in item 2.3 of table-2 about half 19(48.71%) of the respondents have rated to be low or very low. On the other hand only 9(22.08%) of the total respondents rated high and very high. From the points discussed above we can clearly understand that the practicability of the objectives stated in the Syllabus is under question.

Furthermore, to the open-ended item no 7.9 which asks to mention difficulties in the teaching of Integrated Science, majority of the respondents or above average ascertained that whatever the objectives stated are beautiful and attractive they are noting unless and otherwise they are practical. They further suggested that practicability of the objectives requires the collaborative effort among all the concerned bodies of the education system and the fulfillment of all the necessary human and material support.

On the other hand with regard to item numbers 2.4 (nature of the objectives for encouraging students future competence), 2.5 (Balance of the stated objectives among knowledge, skill and attitude) and 2.6 (nature of the objectives to the level of teachers professional competence) in all the three cases above 27 (70%) of the respondents rated to be very high and high. In other words, the objectives of the Syllabus are stated in such a way that they: (a) encourage students for their future competence, (b) keep balance between knowledge, skill and attitude areas and (c) are appropriate to the level of teachers professional competence.

In addition to the above difficulty of objectives majority of the respondents explained that out of the basic curricular materials (syllabus, teachers guide and student text) they have got only the students text book in which they can not find any objective of teaching Integrated Science thus with the absence of the objectives how one can think of their practicality.

However, an interview made on the issue raised above with the higher experts of ICDR, they explained that it is essential that at least the specific objectives should be incorporated under each unit of the student's text book. And this approach has been started in the recently revised text books from 9-12 grade levels. This can help teachers in preparing their daily lesson plan properly. However, the experts said, much efforts need to be made realizing the objectives in practice.

Table-3 Teachers response on the nature of the contents

| 3 | The contents of the newly Integrated Science subject are | Respondents (N=39) | | | | | | |
|------|---|--------------------|-------|-------|-------|-------|-------|------|
| | | 5 | 4 | 3 | 2 | 1 | Mean | |
| 3.1 | Related to the objectives stated | No. | 20 | 17 | 2 | | | 4.46 |
| | | % | 51.28 | 43.59 | 5.13 | | | |
| 3.2 | Appear to be up to date | No. | 6 | 6 | 12 | 8 | 7 | 2.89 |
| | | % | 15.39 | 15.39 | 30.76 | 20.51 | 17.95 | |
| 3.3 | Stated with appropriate terms and in a very vivid manner | No. | 9 | 11 | 16 | 3 | | 3.67 |
| | | % | 23.08 | 28.21 | 41.02 | 7.69 | | |
| 3.4 | Appropriate to the knowledge and practical experience of the pupil | No. | 5 | 11 | 10 | 10 | 3 | 3.13 |
| | | % | 11.82 | 28.21 | 25.64 | 25.64 | 7.69 | |
| 3.5 | Consists of practical skills that are planned to prepare the students to practical fields that can be applied to their local environment. | No. | 3 | 13 | 9 | 12 | 2 | 3.08 |
| | | % | 7.69 | 33.33 | 23.08 | 30.77 | 5.13 | |
| 3.6 | Consists of relevant and clear examples, graphs, maps and charts. | No. | 13 | 17 | 7 | 1 | 1 | 4.03 |
| | | % | 33.33 | 43.60 | 17.95 | 2.56 | 2.56 | |
| 3.7 | Are sufficient in quantity to the grade level | No. | 19 | 14 | 4 | 2 | | 4.28 |
| | | % | 48.71 | 35.90 | 10.26 | 5.13 | | |
| 3.8 | Different parts of Science subject are unified and integrated in an appropriate balance | No. | | 10 | 9 | 15 | 5 | 2.62 |
| | | % | | 25.64 | 23.08 | 38.46 | 12.82 | |
| 3.9 | Students to apply theory into practice | No. | 2 | 11 | 10 | 13 | 3 | 2.90 |
| | | % | 5.13 | 28.21 | 25.64 | 33.33 | 7.69 | |
| 3.10 | Are gender sensitive | No. | 14 | 16 | 5 | 4 | | 4.03 |
| | | % | 35.89 | 41.03 | 12.82 | 10.26 | | |
| 3.11 | Are presented with appropriate and sufficient time | No. | 11 | 8 | 11 | 9 | | 3.54 |
| | | % | 28.21 | 20.51 | 28.21 | 23.07 | | |
| 3.12 | Are appropriate in terms of vertical organization | No. | 7 | 6 | 9 | 15 | 2 | 2.95 |
| | | % | 17.95 | 15.38 | 23.08 | 38.46 | 5.13 | |
| 3.13 | Are appropriate in terms of horizontal organization | No. | 5 | 7 | 9 | 14 | 4 | 2.87 |
| | | % | 12.82 | 17.95 | 23.08 | 35.90 | 10.25 | |
| 3.14 | Are arranged and organized from simple to complex | No. | 8 | 13 | 17 | 1 | | 3.72 |
| | | % | 20.51 | 33.33 | 43.60 | 2.56 | | |
| 3.15 | Are organized and presented with appropriate and clear language | No. | 7 | 8 | 11 | 13 | | 3.23 |
| | | % | 17.95 | 20.51 | 28.21 | 33.33 | | |

The finding indicates that 37 teachers (98.87%) describe the content of the text book as being in harmony with the objective the text book. Furthermore they said that it has taken the objective into consideration. However, it is realized that 2 teachers (5.13%) have labeled the content's congruency with the objective as medium.

Regarding timeliness of the content the general response is 2.89 mean. This shows that the result is to be less than the average. Related with the majority of teachers being trained with the oldest curriculum, and had taught with the previous books, and comparing the previous books with the new ones, they have realized that there is the non-existence of new and timely matters. Despite the change of places in the titles', narrowing that which is wide and some times vice versa and changing few pictures and questions, what is included as timely affairs is about HIV/AIDS, gender, Civic and road safety. But since it is Science, it would be problem to categorize it as timely. When new scientific development appears, the book has to be amended accordingly.

It is indicated that the clarity of how the content's are written, its capability of measuring talent of the students, its considering/measuring the students surrounding objective condition, life skill, and the amount of the content, the mean lies in between (3.08-4.28). Many of the respondents agreed that the measurement is above average that is higher and more than higher.

With regard to the question which measures how balanced and integrated the different Science lessons presented ,many of the teachers answered as it is above average that is, 10 persons (25.64%), and for that which is below an average is, 20 persons(51.28%) and 9 persons (23.08%) have responded as it is average. In general the mean is 2.62. From the given many response with respect to how balanced the contents are set, the contents doesn't incorporate some part from each Science subject, in balanced form. To realize this further, it would be better to look at the Integrated Science textbook contents which is expressed in the appendix-F prepared for grade 5 and 6 students.

As many respondents pointed out, the mean for the capability of compatibility of theory to practice is 2.90. This means 13 (33.34%) respondents said above average, 16 respondents (41.02%) below average, and 10 (25.64%) average. This indicates that many individuals response fail below average indicates that the text book is not written in a way that it integrates theory with practice. This would entail the subject to objectively focus on practice. From the response given by teachers it is realized that, no time is given to perform practical activity and that nothing is done in laboratory and have ascribed this as the major prevalent problem.

Regarding gender contribution the mean is 4.03. This indicates that the text book gives great emphasis to the issue of gender. Moreover related to this, as can be realized from the interview held with the Science expert of Addis Ababa Educational Bureau, one among the problems the text book has the issue of gender. Since gender is identified as one of the timely and major problems, those topics related to women's rights and practices, are given great emphasis. It has been attempted to make them clear of the misleading (abusing) attitudes of practice and from the expressions in the sentences.

In addition from the discussion held with the students, the researcher have realized that the support given to female students by NGO's and some schools like providing tutorial program for female students on Saturday has now a days reduced. But, they have also expressed the increase in participation of female student's in girls club in different schools. The emphasis given on gender in the whole content can be cited as the main reason that contributed to the increase in number of the active participation of female students.

With the regard to the compatibility of the content with the time allotted for it was rated, 19 teachers (48.72%) above average, while 9 teachers (23.08%) below average. The mean result is 3.54. This shows that the time allotted per week to Science subjects is sufficient. Moreover, from the discussion held with the students, and from the amount of time allotted in the Syllabus which the researcher used as supporting document the result is as follows.

Students' perception concerning the basic Integrated Science

The focus group discussion of students regarding their perception is summarized as follows:

The time allotted for basic Integrated Science subject for grade 5 and 6 is 4 periods per week. But, no time is given for laboratory and Radio lesson programme, and teachers are doing these with their willingness in free time. Many classes are missed due to teachers having meeting. Classes that are arranged to compensate the missed classes aren't the same as the ones given in the regular schedule.

From the discussion held with Addis Ababa City Government Education Bureau Experts, the period per week is 4, for both grades 5 and 6 and it is allotted 135 periods for grade 5 and 136 periods for grade 6 in a year. However, when the schedule stated in the Syllabus is made practical problems are countered.

Finally, what can be concluded from this is that the time allotted to teach the content is enough and that we started to make it practical, the schedule set for the different practical activities and for the content at some points to large and few at the others. Lack of time to arrange make-up classes, to enable students hear Radio programme, and to give sufficient time to supporting situations done out of the class

With regard to the interrelatedness of the vertical and horizontal relationship of the content, the finding reveals, below the mean, the general mean is 2.95 of the vertical while the horizontal is 2.87. What can be seen from both is majority of the respondents incline to the lowest and very lowest. What can be realized from this is the existence of great problem in the Integrated Science text books. Nonetheless, vertical relationship is greater than horizontal relationship.

As can be realized from this in the Integrated Science text books, there is problem with the horizontal and vertical relationship. What can be perceived from the mean average is

the fact that vertical relationship is better than horizontal relationship. Moreover, as the 5th and 6th grade detailed content arrangement of the Integrated Science goes from simple to complex, the response gained from teacher's shows a general mean of 3.72 is above average. Therefore, the fact that the content of the textbook moves from simple to complex, resulted as high and above, and is agreed by many teachers. Such advancement helps student's knowledge to develop gradually.

Regarding to the appropriateness and clarity of the language by which the Integrated Science text books are written, many respondents show that it has a mean of 3.2. This shows that many respondents agree with the average result which indicates the existence of the problem.

The response extracted from student's focus group discussion was:

- Lack of understanding many words and the books do not have glossary of terms, by which they could refer to those unknown words. Regarding this, Addis Ababa Educational Bureau Science subjects' experts, admit the existence of problem since many words are scientific. The language problem is created due to the direct translation of these words from English to Amharic language, since it is the second language of the translators and is hard to translate for them. Hence, as they said, the great problem is created because the medium of instruction is not in English

Table-4 Application of teachers' on teaching methodology

| 4 | The methods suggested in the Integrated Science | | Respondents (N=39) | | | | | Mean |
|-----|--|-----|--------------------|-------|-------|-------|-------|------|
| | | | 5 | 4 | 3 | 2 | 1 | |
| 4.1 | Appear to be appropriate to each of the unit | No. | 6 | 8 | 11 | 13 | 1 | 3.13 |
| | | % | 15.39 | 20.51 | 28.21 | 33.33 | 2.56 | |
| 4.2 | Enable to teach through active participation of students | No. | 6 | 7 | 11 | 13 | 2 | 3.05 |
| | | % | 15.39 | 17.94 | 28.21 | 33.33 | 5.13 | |
| 4.3 | Appear to be relevant to each of the objectives and contents | No. | 14 | 13 | 11 | 1 | | 4.03 |
| | | % | 35.90 | 33.33 | 28.21 | 2.56 | | |
| 4.4 | Emphasize on problem solving approach | No. | 5 | 9 | 3 | 15 | 7 | 2.74 |
| | | % | 12.82 | 23.08 | 7.69 | 38.46 | 17.95 | |
| 4.5 | Student centered and helpful for group work | No. | 4 | 9 | 11 | 10 | 5 | 2.92 |
| | | % | 10.26 | 23.07 | 28.21 | 25.64 | 12.82 | |

| | | | | | | | | |
|------|---|-----|-------|-------|-------|-------|-------|------|
| 4.6 | Can be easily applied by teachers | No. | 9 | 11 | 10 | 6 | 3 | 2.51 |
| | | % | 23.08 | 28.21 | 25.64 | 15.38 | 7.69 | |
| 4.7 | Suggest teaching aids for every content in the units | No. | 7 | 7 | 8 | 11 | 6 | 2.95 |
| | | % | 17.95 | 17.95 | 20.51 | 28.21 | 15.38 | |
| 4.8 | Suggest the incorporation of Science process skills | No. | 2 | 7 | 9 | 8 | 13 | 2.41 |
| | | % | 5.13 | 17.95 | 23.08 | 20.51 | 33.33 | |
| 4.9 | Suggest how to integrate and use concepts and methods from related subject areas. | No. | 3 | 6 | 9 | 13 | 8 | 2.56 |
| | | % | 7.69 | 15.39 | 23.08 | 33.33 | 20.51 | |
| 4.10 | Methods designed based on teacher's teaching capacity. | No. | 3 | 6 | 15 | 8 | 7 | 2.74 |
| | | % | 7.69 | 15.39 | 38.46 | 20.51 | 17.95 | |

As can be realized from the table-4, with regard to method of learning and teaching simultaneously, result of appropriateness of the methods to the title, the chosen titles ability to develop student participation, and their relatedness with the content is (3.05-4.03) above average. This means that one can realize the inefficiency of the mentioned methods in the table.

With regard to the methods conduciveness in solving problem, their being student oriented, simple to be practical, and their comfortableness for teaching materials, the teachers response of the methods ability to accommodate all the mentioned is low.

With regard to the result of the mentioned methods in the table capability to teach the a subject in its simple form in integrations with Science, subjects, is 21 persons (53.84%) responded as it is below average and low 9 out 39 individuals (23.08%) responded that it is average which indicates the methods conduciveness for Science.

Hence, one can realize the problems encountered with the methods and their insufficiency. The problems have become more serious from the discussion held with students.

Responses of teaching methods from the focus group discussion held with the students

The major teaching methods with the teachers focus on in their teaching integrated with Science are: Lecture method, Discussion, Question and Answer.

Nonetheless, when the above mentioned methods contribution to make the Science subjects more realizable, is compared to the contribution that other subjects have, it is low. For example, demonstration, group and individual work, observation, field trip...etc

Table-5 Appropriateness on evaluation methods

| 5 | The evaluation methods and questions given for assessment activities in Integrated Science | Respondents (N=39) | | | | | Mean | |
|-----|--|--------------------|-------|-------|-------|-------|-------|------|
| | | 5 | 4 | 3 | 2 | 1 | | |
| 5.1 | Are related to the objectives and contents | No. | 2 | 10 | 16 | 8 | 3 | 3.00 |
| | | % | 5.13 | 25.64 | 41.03 | 20.51 | 7.69 | |
| 5.2 | Reflect appropriate balance in all the instructional contents | No. | 9 | 15 | 14 | 1 | | 4.08 |
| | | % | 23.08 | 38.46 | 35.90 | 2.56 | | |
| 5.3 | Are appropriately selected to assess each of the unit | No. | 7 | 7 | 11 | 11 | 3 | 3.10 |
| | | % | 17.95 | 17.95 | 28.21 | 28.21 | 7.68 | |
| 5.4 | Are in variety of ways and in variety of contexts | No. | 6 | 10 | 13 | 8 | 2 | 3.26 |
| | | % | 15.39 | 25.64 | 33.33 | 20.51 | 5.13 | |
| 5.5 | Appear to be appropriate in reflecting both theory and practice | No. | 4 | 8 | 8 | 12 | 7 | 2.74 |
| | | % | 10.26 | 20.51 | 20.51 | 30.77 | 17.95 | |
| 5.6 | Are useful in enabling students to apply knowledge into practice | No. | 3 | 5 | 10 | 9 | 12 | 2.44 |
| | | % | 7.69 | 12.82 | 25.64 | 23.08 | 30.77 | |
| 5.7 | Reflect instructional activities both from in and outside of the classroom | No. | 3 | 5 | 19 | 9 | 3 | 2.82 |
| | | % | 7.69 | 12.82 | 48.72 | 23.08 | 7.69 | |
| 5.8 | Provide opportunity for students to work in group | No. | 3 | 7 | 13 | 9 | 7 | 3.08 |
| | | % | 7.69 | 17.95 | 33.33 | 23.08 | 17.95 | |
| 5.9 | Are helpful to develop the students skill of problem solving | No. | 6 | 10 | 13 | 8 | 2 | 3.59 |
| | | % | 15.39 | 25.64 | 33.33 | 20.51 | 5.13 | |

Capability of the questions in Integrated Science text books, as can be realized from the response gathered, by many, analyzing and measuring correspond with the objective and content. They are also set sufficiently and appropriately. Nevertheless, the questions are unable to incorporate theory with practice which is indicated with general response of 2.74. Hence, the mentioned result shows the majority of the respondents replay being low.

Practicing the integrated Science in laboratories

The result of the focus group discussion indicates that students do not practice the Integrated Science in laboratories; don't exercise it in groups and at home. Moreover, as

they said the teachers don't incorporate it in the exams and if they do so, teachers examine them only with the brief explanation the students have, without doing sufficient exercise.

Response of Addis Ababa Education Bureau Science Experts indicates that recording evaluation and criticism teaches great problem don't use, consecutive evaluations and don't evaluate students getting goods results by enabling them to do the few exercise incorporated in the books. As they saw in their supervision is they from the response given and the discussion held, in general, the questions don't incorporate theory integrated with practice.

It can be seen from the finding that the capability, of the questions to make the Science skill practical is low. As it is known, Science subject is not supported by practice, it can be materialized. As the responses indicate, the questions not being practice oriented, has made low the student's problem solving capability.

Table-6 Teachers response on instructional materials and teaching aids in Integrated Science

| 6 | The instructional materials and teaching aids in Integrated Science | | Respondents (N=39) | | | | | Mean |
|-----|--|-----|--------------------|-------|-------|-------|-------|------|
| | | | 5 | 4 | 3 | 2 | 1 | |
| 6.1 | Are durable both for the teacher and students | No. | 7 | 19 | 10 | 3 | | 3.77 |
| | | % | 17.95 | 48.72 | 25.64 | 7.69 | | |
| 6.2 | Are attractive and easy to handle | No. | 7 | 8 | 14 | 8 | 2 | 3.51 |
| | | % | 17.95 | 20.51 | 35.90 | 20.51 | 5.13 | |
| 6.3 | Are adequate in number both for teacher and the students | No. | | 3 | 16 | 14 | 6 | 2.41 |
| | | % | | 7.69 | 41.03 | 35.90 | 15.38 | |
| 6.4 | The suggested teaching aids are appropriate to the instructional content | No. | 7 | 11 | 11 | 8 | 2 | 3.33 |
| | | % | 17.94 | 28.21 | 28.21 | 20.51 | 5.13 | |
| 6.5 | The suggested teaching aids are easy to prepare and apply | No. | 4 | 13 | 20 | 2 | | 3.49 |
| | | % | 10.26 | 33.33 | 51.28 | 5.13 | | |
| 6.6 | The suggested teaching aids can be easily made by the local materials | No. | 2 | 10 | 11 | 15 | 2 | 2.82 |
| | | % | 2.56 | 25.64 | 28.21 | 38.46 | 5.13 | |
| 6.7 | The suggested teaching aids are available in the school laboratory | No. | 2 | 5 | 11 | 15 | 6 | 2.54 |
| | | % | 5.13 | 12.82 | 28.21 | 38.46 | 15.38 | |

The response of many teachers, and the discussion held with students, indicate that the following measurement which are in the table are: the teaching learning text books and the supportive materials are held properly, they can be give services for longer time, can be attractive, are easy to handle and since the contents are related with the supportive materials they can be used easily. With regard to the preparation of the text book sufficiently, the problem of making all supportive materials from things that are simply found in the surrounding material for Integrated Science in the libraries the response which is indicated on item no, 7.9 in the questionnaire, the respondents faced many problems , these problems are:

- Laboratories do not exist in many schools and these that don't acquire the necessary materials.
- The problem of producing supportive instrument since many of them is related with the materials in the laboratory apparatus.
- Unavailability of text books in many schools.

Table-7 Data obtained from teachers on the process of integrating Integrated Science text book

| 7 | The nature and process of integrating the Integrated Science text book | Respondents (N=39) | | | | | | |
|-----|--|--------------------|-------|-------|-------|-------|-------|------|
| | | | 5 | 4 | 3 | 2 | 1 | Mean |
| 7.1 | Invites teachers during Syllabus revision and text book development | No. | | 2 | 6 | 8 | 23 | 1.67 |
| | | % | | 5.13 | 15.38 | 20.51 | 58.98 | |
| 7.2 | Appropriately organized and integrated equally from Biology, Chemistry and Physics | No. | 2 | 5 | 5 | 19 | 8 | 1.82 |
| | | % | 5.13 | 12.82 | 12.82 | 48.72 | 20.51 | |
| 7.3 | Each of the contents (units) are presented by integrating the three subjects | No. | | 4 | 6 | 21 | 8 | 2.15 |
| | | % | | 10.26 | 15.38 | 53.85 | 20.51 | |
| 7.4 | The importance the concepts of Integrated Science text book related with the training you took | No. | 6 | 17 | 7 | 7 | 2 | 3.46 |
| | | % | 15.38 | 43.59 | 17.95 | 17.95 | 5.13 | |
| 7.5 | Are the lay out comfortable for learning process | No. | 2 | 7 | 6 | 16 | 8 | 2.46 |
| | | % | 5.13 | 17.95 | 15.38 | 41.03 | 20.51 | |
| 7.6 | Are well organized the Integrated Science syllabus, teacher guide and text book | No. | | 5 | 11 | 15 | 8 | 2.23 |
| | | % | | 12.82 | 28.21 | 38.46 | 20.51 | |

With regard to the integration of Science text books the participation of teachers in the preparation of the Syllabus formulation and the improvement and criticism of text books is supported by 31 out of 39 respondents (79.49%) as below average and 2 (5.13%) as above average and 6 (15.38%) as medium.

As can be perceived from the majority of the respondents, most of the teachers didn't get the chance but few of them have got the chance to participate on the preparation of the Syllabus and text book.

4.2 The view of experts and document analysis on regarding the curriculum integration

Response of Addis Ababa Education Bureau Science Experts

Those teachers involved in the writing of the Integrated Science books are those that hold degree one teacher from each of the three Science subjects, totally three senior Secondary teachers. A 5th and 6th grade Integrated Science teacher who gives feed back and with the Bureau's Science education experts, but the work of criticism is done by at least two Science teachers from each Sub-city are participating for two days. Nonetheless, this according to them can't be said sufficient and satisfactory.

Response of interview with ICDR Science Experts and the head

While explaining the condition during the time of Syllabus design, those regions that have experts will send their experts on their behalf, and those that do not have experts on each subject send Secondary school teachers or supervisor of the Education Bureau, or representatives of the Education Bureau. They have also expressed the low participation of teachers on preparation of curriculum materials.

That which can be perceived from the responses given with regard to the table-7 which is presented in item No. 7.2 for the question whether Biology, Chemistry, Physics education contents are presented in balanced form since they are many, the response 1.82 mean tells that they are unbalanced .Related to this, for your realization as to how they are balanced, (see appendix-F)

As can be realized from this table and the response of the teachers, the content of Biology is more and their depth is seen vividly. This can easily justify its being unbalanced. Regarding the question of whether the three Sciences are presented in integration, response of the majority, 29 respondents (74.36%) is below average. This shows their inclining to the lower and very lowest yardsticks. Moreover regarding the question stated on no. 7.7 which asks the degree of integration of the Science books, the majority responded as they are not integrated and are presented in their separate form. The other is, while looking at the content of the Science education, each chapter is conglomerated from the three Science subjects. They are either presented separately or two subjects are incorporated in one chapter. There doesn't exist any chapter in the two classes, which incorporate all the three chapters.

While examining the knowledge the teachers gained from the training, with respect to the concepts incorporated in the Science text books, with regard to their appropriateness or compatibility many teachers responded to them as above average. This shows the teachers being highly supported with the knowledge gained from the training.

Nevertheless, regarding the layout of the text book, the reply that many teachers gave shows that is below average, and the mean is 2.46. The result tells the poor preparation of the text book in the teaching process. Related with this, as can be perceived from the discussion held with the Addis Ababa Education Bureau experts, while preparing the text books, they said that they were not attractive just as a News paper, because they don't have any training about layout and they were prepared with the previous style they knew. But, since they are trained now, they believe their bringing about change and told the Environmental Science text books from grade 1-4 being prepared after the training and they are showing changes.

With regard to the degree of compatibility of the preparation of the Integrated Science books with the Curriculum Materials, students have answered they don't getting them in schools sufficiently and in their complete form and not arriving on time. Hence the

possibility of getting the three curriculum materials in unison is to make in-depth realization of them, is small. Nonetheless, their response tells the existence of problem.

4.3 Responses of KTTC Science instructors on integration science course

Table-8 Response of Teachers of Kotebe Teaches College on integration Science course

| Item | Respondents | | | |
|--|-------------|-----|----|-------|
| | | Yes | No | Total |
| Do you believe that the content of Science courses in your College prospected teachers of second cycle primary level is well integrated? | No. | 2 | 8 | 10 |
| | % | 20 | 80 | 100 |

As can be realized from the response of the Kotebe Colleges Science teachers, 8 respondents (80%) replied as it is not well integrated and the few, 2 teachers (20%) accepted the integration. Moreover, those teachers that do not accept its integration have given their reasons. Which are as follows:

1. Syllabus of the Integrated Science subject and the curriculum development of the Science subject which is being given in the College are not interlaced.
2. The non-existence of integration training course given to the teachers of the College and the trainings not being done frontally by Education Bureau of Addis Ababa and ICDR Science Experts.
3. Lack of responsibility continuous follow up and economic problem

Therefore, what can be generalized is that the contents of the Science courses in the College don't integrated as required. Ingram (1979) has shown the extent of integration as may vary. Integrated Science for primary schools could be re-combination of several subjects (Biology, Chemistry, Earth Science and Physics) into single subject (Integrated Science).

Regarding the integration of the Integrated Science course given by the College teachers with the student text and teachers guide the teacher's response can be realized from the following table.

Table-9 Teachers response on Integrated Science teaching materials and the course given in KTTC

| Item | Respondents | | | |
|---|-------------|-----|----|-------|
| | | Yes | No | Total |
| Is the Science course given in the College integrated with the text book and teaches guide? | No. | 4 | 6 | 10 |
| | % | 40 | 60 | 100 |

Of those teachers that admit the integration their response for the degree of integration is presented as follows.

Table-10 Teachers response on the degree of integration between Science teaching material and the course given in KTTC

| Item | Respondents | | | | | |
|---|-------------|----------|------------|-----------|------------|-------|
| | | Strongly | Moderately | Very less | Not at all | total |
| How much is the degree of integration of the course given in the College with the text book and the teachers guide? | No. | | 2 | 2 | | 10 |
| | % | | 20 | 20 | | 100 |

The finding reveals that 4 teachers (40%) responded that it is integrated, out of this teachers 2(20%) agree with its being moderately 2(20%) agree very less and 6 teachers (60%) admit the Integrated Science course given in the College not being integrated with those Science text books that are means for the teaching learning process in different schools.

Hence, it can be concluded from the above is that the problem with the design of the College's curriculum either by the College or by ICDR. In general this problem has laid

on impact on those teachers that are being trained or in the teaching learning process. In the literature that is why Palmer (1991) suggests that teachers and curriculum supervisors work together to identify common goals, objectives, skills and themes. On the other hand regarding the time allotted for Science course, with respect to the sufficiency compatibility of the content to its practicum; the response the teachers gave is expressed in the following table.

Table-11 Teachers response on time allotted for contents and its practicum

| Item | Respondent | | | |
|---|------------|-----|-----|-------|
| | | Yes | No | total |
| Is the time allotted for the content of the course compatible to its practicum? | No. | | 10 | 10 |
| | % | | 100 | 100 |

Regarding the issue of concern on hand when the teachers are asked to which the time allotment is more their response had been.

Table-12 Teachers response on which the time allotment

| Item | Respondent | |
|--|------------|-----|
| | No. | % |
| a. the time given for subject area courses is much better than the methodology area course /practicum/ | | |
| b. the time given for the methodology area course /practicum/ is much better than subject area courses | 10 | 100 |
| c. the time allotted for both is not sufficient. | | |

From the response gained what can be realized is, 10 respondents (100%) admit that the time which is given to teach the content of the course is not compatible with the time given to practicum. This tells that the time allotted for practicum is more.

The response given by many teachers with regard to how Integrated Science subject is being supported by the practical activity in the laboratory is presented in the following table.

Table-13 Teachers response on laboratory activities

| Item | Respondents | | | | | | |
|--|-------------|-----------|------|----------|-----|----------|-------|
| | | Very high | high | moderate | low | Very low | total |
| How much is the Integrated Science supported by laboratory activities. | No | | | 3 | 3 | 4 | 10 |
| | % | | | 30 | 30 | 40 | 100 |

What is perceived from this response is, many respondents accept the school's not giving the necessary consideration for laboratory activities, because there is no scheduled time which is allotted to practice in the laboratory and that teacher gives laboratory session making use of the few spare time that they are left with. To alleviate this problem TESO designed the new curriculum by professionals of ministry of Education and with the Kotebe College teachers, which they believe it would be a solution for practical problem. Among those problems the respondents stated in teacher's questionnaires no.6a, few are:

- Regarding evaluation and criticism 75% of the time in allotted for continuous assessment is done in the class by giving class work, group work and different exercises to students. While 25% is left to give final exam. This is done to make active learning practical.
- There doesn't exist laboratory manual
- At the time of practicum, each teacher is evaluated and given result with the subject that one teaches.

For example all teachers don't evaluate the prospective teacher in unison the 5th and 6th grade Integrated Science subjects. Rather, a Chemistry teachers is evaluated while giving 7th and 8th grade Chemistry classes.

At the end respondents gives the following solution for those problems on the integration.

- The new curriculum must be designed by revising the different contents properly.
- Laboratory activities, manuals and period allotted for it is important.
- Proper follow up and integration work with the whole stockholders is needed.

4.4 Data collected from bureau expert about the curriculum development

Response on interview held with three Science experts of Addis Ababa Education Bureau indicates that curriculum design is done under the supervision of ICDR. Experts of Addis Ababa Education Bureau, just as other regional Bureau experts, are sent to ICDR and given chance to discuss with the Syllabus designed by ICDR. Regarding the integration of the content of each subject, and concerning issues of different regions raise disagreement (misunderstanding) among them, and many useful comments are raised, though they do not incorporate them as they are in their recommendations. More or less what the ICDR forwarded is ratified as it is and their discussion as they said is not given consideration. This tells teachers participation in Syllabus design is very less.

On the other side with regard to the question as to what level the Integrated Science subjects are successfully integrated, the teacher's response was as follows.

Table-14 Addis Ababa Educational Bureau Science expert's response on how well integrated the Science curriculum materials

| No | Items | Respondents | | | |
|----|---|-------------|----------|----------------|--|
| | | Acceptable | Moderate | Not Acceptable | |
| 1 | The Balance in stating Objective | No | 2 | 1 | |
| | | % | 66.67 | 33.33 | |
| 2 | The Balance in the amount of the Contents taken | No | | 3 | |
| | | % | | 100 | |
| 3 | Emphasis given for Vertical and horizontal relationships | No | 1 | 2 | |
| | | % | 33.33 | 66.67 | |
| 4 | Appropriateness of the contents in reflecting the real life of the society. | No | 1 | 2 | |
| | | % | 33.33 | 66.67 | |
| 5 | Appropriateness of the Contents to the grade level being studied. | No | 2 | 1 | |
| | | % | 66.67 | 33.33 | |
| 6 | The effort made in making the contents and methods to be learner centered | No | | 3 | |
| | | % | | 100 | |
| 7 | The effort made in preparing the learner to be problem solver. | No | | 3 | |
| | | % | | 100 | |

As can be perceived from the response, the usefulness and compatibility of the contents is good and is accepted. Nonetheless, the balance of each content is on average. As the respondents admit there is disparity of content which as they found in their supervision has increased the number of Biology and Chemistry teachers. Moreover as they said, Physics teachers are few, the problem of Integrated Science teachers will be covered by those Integrated Science graduates of the Kotebe Teachers College. And also this few number of graduate teachers are placed in remote areas. On those places when there is scarcity of teachers and the teachers are given 7th and 8th grade linear subject since they are diploma holders. Though this problem can not be alleviated within a day.

What we realize from this is, either those teachers that are trained with the previous curriculum, on those that are recruited with respect to the major subject they were taking, or those that have interest to teach Biology are hired as Biology teachers. In general the number of Biology teachers is many, and the content is not integrated in accordance with the respective subject.

Moreover, as can be perceived from the discussion held, as the respondents indicated the attempt to prepare the text book is student center oriented that make use of vertical and horizontal relationship is moderate. As the experts expressed, the attempt made to enable students become problem solvers, is minimum and it requires exerting the effort of all stakeholders in addition to the experts getting special training. How ever, as it is stated in the literature ICDR (1999) several model of the curriculum integration is focused on the environment and the real life experiences of the learners.

Moreover, with respect to time allotted to teach integrated subject responses of teachers indicate to be sufficient in general, but is not compatible when it is seen from the perspective of each subject. More time is rendered for some subject and small others.

In addition, with regard to the question about the problems encountered in making practical the Syllabus of Integrated Science and the solution forwarded and the experts expressed the problems were:

- Lack of trained teachers and training on job about integration
- Lack of laboratories with their equipments in many schools
- Large class size
- Insufficient teachers participation on text book preparation
- Lack of latest reference book in library.

Citing the aforementioned problems as the experts have told about the preparation of the text books and as it is stated in the literature ICDR(1999) integration is not only to be achieved in the design of the curriculum but also in its implementation. Also as the experts said, after Syllabus is brought from ICDR, pertinent to the regions prevailing situation. To make the Syllabus practical, manuscripts are prepared within 15-20 days by Biology, Chemistry and Physics experts, one Science teacher from primary school and three Science teachers are selected from high school. The first draft is reviewed and criticized by 20-40 teachers selected from ten sub-cities; the text book will be published. And two days training is given for few teachers of each Sub-city and for those heads of the centre of the cluster school.

If problems are encountered with the book, questionnaires are prepared and distributed to incorporate comments that will be given, so that they would help in the further improvement of the book. If there exist major concept misconception, letter that expresses as to how the mistake should be corrected is sent. If scarcity of the book existed it will be corrected at the moment of reprint.

During our discussion the problem that we came across during the improvement of the text books are:

- Low participation of teachers, and the per diem paid
- Payment for the preparation of the text book which was done on page basis, or by the agreement prepared for commission writers. The payment is now changed with payment by giving per diem. Which as the experts forwarded, has forced many to lose their interest to write. Moreover, the writers themselves have expressed the low amount of payment and the insufficient attention given for the issue of concern, and as they said, it can be reason for the problem.

More or less the solutions for the aforementioned problems are the following: -

- Fulfillment of laboratory and laboratory equipment
- Decreasing the number of students in a class
- Giving different trainings for teachers
- Fulfilling teaching-learning facilities
- Teachers should participate in the preparation of text books and preparation of syllabus.

In general, from the discussion held with Science experts of the Addis Ababa Education Bureau, regarding the implementation of Integrated Science text books one can realize the existence problems

Response on the interview held with ICDR Experts and head

From the interview held with Science experts first and latter with the Department head, with regard to the preparation and revision of the Syllabus and of those that are going to participate, in the preparation of the text book, their response in general was similar to that which was replied by the experts of Addis Ababa Education Bureau. According, to their response, except the curriculum which is prepared by policy makers, the Syllabus is done by different education experts from various regions, by those few, teachers represented from the regions and by supervisors of the Education Bureau.

With regard to the question raised, for teacher's participation in the preparation of the Integrated Science syllabus, those regions that do not have their own experts represent and send one expert each, otherwise in addition to the experts, teachers don't participate in the preparation.

The mandate of ICDR during the preparation of the textbook is from grade 9-12. Those books of grades 1-8 are prepared at region level. The ICDR prepare those books from 9-12th grade with auction. The printing press that won the auction will make the preparation by commission writer including the editing. But ICRD inspects the books corresponding with, the syllabus. Nonetheless, the mandate for the preparation of grades 1-8 books is the regions. Except, Addis Ababa and Oromia Educational Bureau other region text books the books are written by commission writers. However, as they said Oromia and Addis Ababa Educational Bureau experts make the paper work by few teachers and as they believe the number of writer will increase.

However, with regard to the objectives and content of the text book when they are asked whether the contents taken from each subject is proportional they have explained different countries experience of using curriculum integration model and as they add our country also use Inter disciplinary model .

Nonetheless they have said that the contents aren't incorporated proportionally from each type of subject. The reason can be attributed to the trainees being unable to properly address it to others and because awareness of the issue hasn't reached at large due to lack of training. By integration we mean selecting and putting together those titles that have got difference in subject and due to lack of realizing the meaning of the concept, the problem has been create. To realizing this as it is stated in (UNESCO: 1982:14) stated that grouping two or more subjects into abroad field does not necessary result in integration of the curriculum unless knowledge and skills are organized and studied as united theme. As they said, because expert of the different Bureau's are suspicious about the integration having the assumption that, the conglomeration of the subjects would create lay off, great attention was not given.

Hence, as we can perceive from what have been explained, the contents were previously taken randomly not taking into consideration whether they are conducive or not for the integration, in addition they have also overlooked, the minimum learning competence. After words, when the books are revised and amended and the Syllabus prepared, since it is done based on the previous work it has become the root cause of the problem.

For their response which tells that the integration is appropriate, when they are asked which subject has the highest involvement, from the discussion and the interview held with them, Biology has gained more attention than Physics.

Related with this, the above result only traces those titles that are included in the text book. Nonetheless if we look at how those are included in each chapter, the subjects integrated in each chapter may not be more than two; which as they admit are only incorporated in few chapters. This is a great problem and justifies the book; not being integrated appropriately.

With regard to cross cutting issues (HIV/AIDS, civic, water, road safety, gender etc) efforts made to incorporate the newly Integrated Science syllabus, respondents reply was the problems being incorporated in the syllabus, and have also explained their relevance.

Practical implementation of these current issues differs according to the regions objective condition. For instance, considering the Addis Ababa issues like road safety is highly expressed. In Afar region too malaria is given great attention, and is incorporated in the text book at large.

What can be perceived from this is though the Syllabus is designed from a centre; pertinent to the prevailing condition in each region, current issues are included in the preparation of Integrated Science text books by the region.

Finally, with regard to the major problems encountered respondents have pointed out the following.

- Incompatibility of the curriculum with the teachers training.
- They are left with integration work. Therefore, in their discussion, they have agreed to alleviate these problems.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

The focus of this study is to evaluate the implementation of basic Integrated Science Syllabus and text book in the sample schools of Addis Ababa city government. Accordingly, the following basic question was raised to be answered.

1. To what extent is the basic Integrated Science curriculum materials are integrated?
2. What are the rationales for integrating subjects?
3. What factors affect the implementation of basic Integrated Science Syllabus and text book?
4. Do text books prepared fulfill the integrated criteria?

To this effect 180 students (from grades 5 and 6), 39 primary school Integrated Science teachers, three Addis Ababa Educational Bureau Curriculum Department Science Experts, two ICDR Science experts and the head were involved. The data were collected from 15 sample schools from five sub-cities.

The data gathering instruments were questionnaire, interview, focus group discussion and document analysis.

The data obtained were analyzed using statistical tools such as percentage and mean. And the analysis of the data has revealed the following findings.

- Most teachers are teaching in the way they are trained but the educational policy is quite different from their training. So that in order to teach basic Integrated Science, special training is important for them. On the other hand the working/applied texts are new but teacher were not trained and taught with their previous knowledge.

- According to most teachers response the text objective and content were fit with students' standard and knowledge skills. In addition it was good (can fit) to teachers ability and can make behavioral change on students out look.
- The content objective can fit in very good for the general knowledge development of students. The word choice and technique of writing were clear; also it was good preparation for student's life skills.

In addition the textbook examples, graphs, pictures and tables were clear, however, the content were not balanced in terms of all Science parts. So that the ability of joining theory and practice was very less. On the other hand contents of vertical and horizontal relationship were a little bit clear but the content process from simple to complex was intermediately clear.

- According to teacher's response teaching and learning methods of the text book for each topic was available. The integration of objective and students participation was intermediate, though the ability of problem solving and student centered approach in order to teach Science in simply and balanced way was less. This shows that the least opportunity of teachers using additional tactic to teach in simple way.
- According to the most respondents over average respondents agreement points on the condition of measurement and evaluation objective and contents were present in suitable way and available at the end of the topic. In terms of amount it was presented in enough situations and available for group activities in order to improve skills abilities.
- According to the most respondent's agreement over average responses as follows. The prepared text books can use for long time and they were interested and suitable for holdings. The informed teaching material were suitable to content's

and simply applied for use, however, text books were not available in enough amount in the schools and the mentioned teaching materials did not easily found from surrounds and impossible to prepare them in addition to these there were no enough integrated teaching materials in laboratory.

- During the improvement Syllabus only few had got chance to criticize and improving but the majority couldn't get chance. According to the most teachers response the three parts of Science subjects were not integrated in the balance way. In addition to this the three Sciences were not presented in integrated way in each unit.

The above idea understood from the given responses, however, according to the most teacher response the concept of Integrated Science text books could not be understood during the training time and at the time of text development. In addition the text book layout and way of writing were suitable but integrating work of text books were not done properly.

Generally as understood from the teachers responses few teachers were trained in new Integrated Science and assigned out of what they trained that mean they taught linear types of lesson in grade 7 and 8 by giving priority for their most favorite subject. Even the newly trained teachers were trained in the College not trained in integrated way rather than in separation. Based upon this for the present questionnaire according to the most teachers responses they trained them in a separated way not in integrate. Even the trainer themselves knew nothing and they were not trained in such way. TESO program funding of USAID were not designed the curriculum in well integrated approaches. On this program no emphasis for the integration and practical application of laboratory activities. In addition to this no integration works between Addis Ababa education bureau Science experts, KTTC Science teachers, ICDR Science experts, school teachers and TESO during the curriculum design. This was the cause for the created probe but now ministry of education is preparing the program to train Colleges teachers, however, according to Addis Ababa education bureau Science expert responding, there were a condition that the

College teachers were invited for curriculum designing but as previous experience an individual preferred by being paid in pages or as commission writers, however, this way was changed and the payment was less. That is why the participation of College teachers became less. In addition to this, in the similar way from Addis Ababa education bureau with ICDR Science expert interviewed was taken place according to his opinion the case of integrated subjects, during the Syllabus design and text improvement the less participation of teacher, this also because of the less payment and the problem became high. Lastly there were problems during the Syllabus design on the content selection.

5.2. CONCLUSION

1. The most teachers are teaching in old curriculum or in their old training and didn't get in service training.
2. According to the most respondents the content selection has problem and not integrated. The horizontal and vertical relation was not properly arranged.
3. The language of the text book has many problems and their meaning distributed.
4. The technique of teaching Science was not practical simply and the teacher not applied student centered way of teaching
5. On the measurement and evaluation to concede theory and practice in order to develop student's Science skill, it was very less.
6. In the text, there are shortage of mentioned teaching materials and not many laboratories in school.
7. The most teachers did not participate in Syllabus design and improvement of the text book.
8. The Integrated Science text book was not balanced in all Science lessons and not contained suitable integration in each unit.
9. The teacher's education College curriculum was not integrated and it was given in separately.
10. Teachers and bureau's experts were not trained for Integrated Science subjects.
11. The syllabus, teacher's guide and students texts integration were very less and these books were not available an arrived to the teachers in time

12. Because of less budget for Syllabus design create a problem in participation of teachers.
13. In Colleges and schools less time is given for Science subject and this create problem that not to complete the lesson in time

5.3. RECOMMENDATION

1. It is good if the curriculum planner should identify the societal problem before developing the integral curriculum of primary school and College.
2. The new curriculum must be revised by the participation of educational experts, teachers and other concerning bodies on the living condition of the learners.
3. During the design of Syllabus the content selection must be based upon minimum learning competence and all subjects should be balanced and integrated in each unit rather than magnifying single subject.
4. All teachers must be trained on the revised text book and old curriculum trained teachers should teach according to the new curriculum.
5. Addis Ababa city government Educational Bureau should control and supervise the Integrated Sciences subjects by fulfilling the followings.
 - In-service training and short term training for Science teacher.
 - Laboratories and its apparatus for the implementation of practical activities, pedagogical center and libraries.
 - Enough curriculum material (syllabus, student's text book and teachers guide and other manuals) for each school on time.
 - Teachers transfer must be treated in proper way based on their qualification and according to their service year.
 - The lesson should be completed on the scheduled time and must be researched in order to solve the problem.
6. Text books should be evaluated continuously and must be available for radio lesson program and translation of Science words to be clear and simple.
7. Necessary budget should be assigned in all schools on time.
8. The training teachers are given should be integrated with the preparation of text book. The contents in the book must be conducive to integration.

9. Those that teach and that hold the responsibility of heading starting from kebele education desk up to top, should work in integration for the improvement of the education.

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Appendix-A

በአዲስ አበባ ዩንቨርሲቲ
የድህረ ምረቃ ት/ቤት የስነ-ትምህርት ኮሌጅ
የካሪኩለምና የመምህራን ሙያ ማሻሻያ የትምህርት ክፍል

ለ5ኛና 6ኛ ክፍል ለተቀናጀ የሳይንስ ትምህርት መምህራን የቀረበ መጠይቅ

የዚህ መጠይቅ አላማ የ5ኛና 6ኛ ክፍል የተቀናጀ የሳይንስ ትምህርት መርህ ግብር/ሲላቦስ ምን ያህል በተግባር ላይ እንደዋለ ለማጥናት ሲሆን የጥናቱም ውጤት በካሪኩለምና የመምህራን ሙያ ማሻሻያ የትምህርት ክፍል የኤም ኤ ዲግሪ ማሟያ ወረቀት ለማዘጋጀት የሚውል ሲሆን በተጨማሪም በመፅሀፉ ውስጥ ያጋጠሙ ችግሮችን ለይቶ ለማውጣትና ለወደፊትም በዚህ ዙሪያ ለሚደረጉ የመፅሀፍት ማሻሻል ስራ ይረዳል ተብሎ ይታሰባል።

ስለዚህ እርስዎ ይህንን መጠይቅ በነፃ ስሜት ትክክለኛውን ሁኔታ በመሙላት ለጥናቱ የራስዎ የሆነ አስተዋፅኦ ያደረጉ ዘንድ በማክበር እንጠይቃለሁ። በትክክለኛ ምርጫ ላይ የ "✓" ምልክት ያድርጉ።

ክፍል አንድ

1.1 የት/ቤቱ ስም -----

1.2 ክ/ከተማ -----

1.3 የታ

1.3.1 ወንድ

1.2.3 ሴት

1.4 የት/ደረጃ

1.4.1 12 + /መ.ተቋም/

1.4.2 12 + 2 / ዲፕሎማ /

1.4.3 12 + 3

1.4.4 12 + 4 /ዲግሪ/

1.4.5 በሌላ / የተለየ ፕሮግራም

- 1.5 የሰለጠኑበት የትምህርት ዓይነት -----
- 1.6 በአሁኑ ሰዓት የሚያስተምሩት የትምህርት አይነት -----
- 1.7 የአገልግሎት ዘመን በመምህርነት ----- ዓመት
- 1.8 በሳምንት የሚያስተምሩት ክፍል ጊዜ ብዛት -----
ክፍል ሁለት

1. በተቀናጀ ሳይንስ /የ5ኛና 6ኛ ክፍል /መፅሀፍትን ለሚያስተምሩ መምህራን በቅድመ ስልጠናና በስራ ላይ ስልጠና በተመለከተ ቀጥሎ በተዘረዘሩት ጥያቄዎች ላይ መልስ ይሆናል በሚሉት /በሚስማሙበት ላይ/ የሚከተለውን ፊትንግ እስኬል በመጠቀም በቁጥሮቹ ትይዩ የ "√" ምልክት በማድረግ ይመልሱ።

ፊትንግ እስኬል

- 5=በጣም ከፍተኛ 4= ከፍተኛ 3= መካከለኛ
- 2= ዝቅተኛ 1= በጣም ዝቅተኛ

| ተ.ቁ | የመምህራንን አሰላጣጠን ሁኔታ በተመለከተ የቀረበ | 5 | 4 | 3 | 2 | 1 | አስተያየት |
|-----|---|---|---|---|---|---|--------|
| 1.1 | በቅድመ ስልጠና(pre-service training) ወቅት ያገኙት አውቀት አሁን እያስተማሩ ላሉት ሙያዊ ተልእኮ ስኬታማነት ምን ያህል ጠቀሜታ አለው? | | | | | | |
| 1.2 | በስራ ላይ እያሉ የተቀናጀ ሳይንስን በተመለከተ ሙያዊ ስልጠና አግኝተው ከሆነ ምን ያህል ተጠቅመዋል? | | | | | | |
| 1.3 | በቅድመ ስልጠና ወይም በስራ ላይ ባገኙት ሙያዊ ስልጠና ጋር ተያይዞ አሁን ለሚያስተምሩት የተቀናጀ ሳይንስ ያለው ግንዛቤ ምን ያህል ነው? | | | | | | |
| 1.4 | የተዘጋጁትን የተቀናጀ ሳይንስ መፅሀፍት በተመለከተ ያገኙት ስልጠና ካለ ምን ያህል ተጠቃሚ ሆነዋል? | | | | | | |
| 1.5 | የሰለጠኑበት የትምህርት ዓይነትና አሁን እያስተማሩ ያሉት የትምህርት ዓይነት ምን ያህል የተጣጣሙ ናቸው? | | | | | | |

2.በተቀናጀ ሳይንስ መርህ ግብር እና መፅሀፍት ውስጥ የትምህርቱን ዓላማዎችን በተመለከተ ቀጥሎ በተዘረዘሩት ጥያቄዎች ላይ መልስ ይሆናል በሚሉት /በሚስማሙበት ላይ/ የሚከተለውን ፊትንግ እስኬል በመጠቀም በቁጥሮቹ ትይዩ የ ”√” ምልክት በማድረግ ይመልሱ።

ፊትንግ እስኬል

5=በጣም ከፍተኛ

4= ከፍተኛ

3= መካከለኛ

2= ዝቅተኛ

1= በጣም ዝቅተኛ

| ተ.ቁ | በተቀናጀ ሳይንስ ትምህርት መርህ ግብር ውስጥ የተቀመጡትን ዓላማዎች በተመለከተ የቀረበ | 5 | 4 | 3 | 2 | 1 | አስተያየት |
|-----|--|---|---|---|---|---|--------|
| 2.1 | በመርህ ግብር ውስጥ የተቀመጡት ዓላማዎች በመፅሀፉ ውስጥ ካሉት ይዘቶች ጋር ምን ያህል ተጠጥመዋል? | | | | | | |
| 2.2 | ዓላማዎቹ ከተማሪው የክፍል ደረጃ ጋር ያላቸው ተመጠጠኝነት /ተገቢነት/ | | | | | | |
| 2.3 | የተነደፉት ዓላማዎች ምን ያህል ተግባራዊ ናቸው ? | | | | | | |
| 2.4 | የተነደፉት ዓላማዎች ተማሪውን በቀጣይነት የመማር ፍላጎቱን የማዳበር አቅም | | | | | | |
| 2.5 | ዓላማዎቹ እውቀትን፣ ክህሎትንና የአመለካከት ለውጥን ምን ያህል ያገናዘቡ ናቸው? | | | | | | |
| 2.6 | የትምህርቱ ዓላማዎች ምን ያህል የመምህራንን ችሎታ በሚያገናዝብ መልኩ ተነድፏል? | | | | | | |

3.በተቀናጀ ሳይንስ መርሀ ግብር እና መፅሀፍት ውስጥ የትምህርቱን ይዘቶች በተመለከተ ቀጥሎ በተዘረዘሩት ጥያቄዎች ላይ መልስ ይሆናል በሚሉት /በሚስማሙበት ላይ/ የሚከተለውን ፊትንግ እስኬል በመጠቀም በቁጥሮቹ ትይዩ የ "✓" ምልክት በማድረግ ይመልሱ::

ፊትንግ እስኬል

5=በጣም ከፍተኛ

4= ከፍተኛ

3= መካከለኛ

2= ዝቅተኛ

1= በጣም ዝቅተኛ

| ተ.ቁ | የተቀናጀ የሳይንስ ትምህርት ይዘቶችን በተመለከተ | 5 | 4 | 3 | 2 | 1 | አስተያየት |
|------|--|---|---|---|---|---|--------|
| 3.1 | የትምህርቱ ይዘቶች ከዓላማዎቹ ጋር በተገናዘቡና በተጣጣመ መልኩ የመጻፋቸው ሁኔታ | | | | | | |
| 3.2 | የይዘቶቹ ወቅታዊነት | | | | | | |
| 3.3 | የይዘቶቹ አፃፃፍ የቃላትና ፅንሰ ሀሳብ አጠቃቀምና ግልፅነት | | | | | | |
| 3.4 | ይዘቶቹ የተማሪዎቹን አእምሮአዊ ችሎታና ልምድ የመመጠኑ ሁኔታ | | | | | | |
| 3.5 | ይዘቶቹ ምን ያህል የተማሪውን የአካባቢ ሁኔታና የሂደት ክህሎቱን እንዲያገናዝብ ተደርገው ተዘጋጅተዋል? | | | | | | |
| 3.6 | በመፅሀፉ ውስጥ የተጠቀሱት ምሳሌዎች፣ ግራፎች፣ ስዕሎች፣ ሰንጠረዥ ወዘተ... ያላቸው ግልፅነትና ተገቢነት | | | | | | |
| 3.7 | ከብዛት አንፃር ይዘቶቹ ምን ያህል በቂ ናቸው? | | | | | | |
| 3.8 | የተለያዩ የትምህርት ዓይነቶች ምን ያህል ሚዛናዊ በሆነ መልኩ ተዋህደው ቀርበዋል? | | | | | | |
| 3.9 | ንድፈ ሃሳብንና ተግባርን የማጣጣም ብቃቱ | | | | | | |
| 3.10 | የጾታ ተዋፅኦን በተመለከተ ያለው ሚዛናዊነት | | | | | | |
| 3.11 | ለእያንዳንዱ ይዘት የተሰጠው ክፍለ ጊዜ ተመጣጣኝነት | | | | | | |
| 3.12 | የይዘቱ አምዳዊ /vertical/ እና አግድማዊ /horizontal/ ተያያዥነቱና ተከታታይነቱ | | | | | | |
| 3.13 | ከቀላል ወደ ከባድ እና ቀጥታዊ ግንኙነታቸውና ተከታታይነታቸው | | | | | | |
| 3.14 | ከቋንቋ አንፃር የተቀናጀ ሳይንስ የተፃፈበት ቋንቋ ያለው አግባብነትና ግልፅነት | | | | | | |

4.በተቀናጀ ሳይንስ መርህ ግብር እና መፅሀፍት ውስጥ የትምህርቱን የመማር ማስተማር ስልቶችን ቀጥሎ በተዘረዘሩት ጥያቄዎች ላይ መልስ ይሆናል በሚሉት /በሚስማሙበት ላይ/ የሚከተለውን ፊትን ስለሌል በመጠቀም በቁጥሮቹ ትይዩ የ "√" ምልክት በማድረግ ይመልሱ።

ፊትን ስለሌል

5=በጣም ከፍተኛ

4= ከፍተኛ

3= መካከለኛ

2= ዝቅተኛ

1= በጣም ዝቅተኛ

| ተ.ቁ | የተቀናጀ ሳይንስ መፅሀፍት ውስጥ የተጠቀሱ የመማር ማስተማር ስልቶችን በተመለከተ | 5 | 4 | 3 | 2 | 1 | አስተያየት |
|------|---|---|---|---|---|---|--------|
| 4.1 | ለእያንዳንዱ ርዕስ የተጠቀሙት የማስተማር ስልቶች ተገቢነት | | | | | | |
| 4.2 | የተጠቀሙት ስልቶች የተማሪውን ተሳትፎ የማሳልበት ብቁነት | | | | | | |
| 4.3 | ስልቶቹ ከአላማውና ከይዘቶቹ ጋር ያላቸው ተዛማጅነት | | | | | | |
| 4.4 | ስልቶቹ በችግር ፈቺ መርሆዎች ላይ ያተኮሩ መሆናቸው | | | | | | |
| 4.5 | ስልቶቹ ተማሪ ተኮር የቡድን ስራን የሚያሳለብቱ መሆናቸው | | | | | | |
| 4.6 | ስልቶቹ በመምህራን በቀላሉ ተግባራዊ የመሆን ብቃታቸው | | | | | | |
| 4.7 | በመማር ማስተማሩ ሂደት ቀላል የማስተማሪያ መርጃ ዘዴዎችን መጠቀም እንዲያስችል ሆነው መዘጋጀታቸው | | | | | | |
| 4.8 | የሳይንስ ትምህርቶችን በቀላሉ ለማስተማር የላቸው ጠቀሜታ | | | | | | |
| 4.9 | የተለያዩ ትምህርቶችን በቀላሉ በማቀናጀት ለማስተማር ያላቸው ብቃት | | | | | | |
| 4.10 | ስልቶቹን ለመጠቀም የተለየ ስልጠና የማያስፈልገው መሆኑ | | | | | | |

5.በተቀናጀ ሳይንስ መርህ ግብር እና መፅሀፍት ውስጥ በትምህርቱ ላይ ምዘናና ግምገማን በተመለከተ ቀጥሎ በተዘረዘሩት ጥያቄዎች ላይ መልስ ይሆናል በሚሉት /በሚስማሙበት ላይ/ የሚከተለውን ፊትን ስኬት በመጠቀም በቁጥሮቹ ትይዩ የ ”√” ምልክት በማድረግ ይመልሱ።

ፊትን ስኬት

5=በጣም ከፍተኛ

4= ከፍተኛ

3= መካከለኛ

2= ዝቅተኛ

1= በጣም ዝቅተኛ

| ተ.ቁ | የተቀናጀ የሳይንስ ትምህርትን ምዘናና ግምገማ በተመለከተ | 5 | 4 | 3 | 2 | 1 | አስተያየት |
|-----|--|---|---|---|---|---|--------|
| 5.1 | ከዓላማውና ከይዘቱ ጋር ምን ያህል ተጠጥሞ ቀርቧል? | | | | | | |
| 5.2 | በእያንዳንዱ ርዕስ መጨረሻ ላይ የምዘናና ግምገማ ጥያቄዎች በምን ያህል ቀርበዋል? | | | | | | |
| 5.3 | በእያንዳንዱ ርዕስ ማብቂያ የተጠቀሙት የምዘናና ግምገማ ስልቶች ተገቢነት | | | | | | |
| 5.4 | ለምዘናና ግምገማ የቀረቡት ጥያቄዎች ከመጠን አንጻር ብቁነታቸው | | | | | | |
| 5.5 | ለምዘናና ግምገማ የቀረቡት ጥያቄዎች ንድፈ ሀሳብንና ተግባርን በምን ያህል ያካተቱ ናቸው? | | | | | | |
| 5.6 | የተጠቀሱት ጥያቄዎች ምን ያህል የሳይንስ ክህሎትን በተግባር እንዲውል ተደርጎ ተቀምጦአል? | | | | | | |
| 5.7 | በክፍል ውስጥና ከክፍል ውጭ የሚሰሩ ተግባራትን ምን ያህል አካቷል? | | | | | | |
| 5.8 | የቡድን ስራን የማጎልበት አቅማቸው | | | | | | |

6.በተቀናጀ ሳይንስ መርህ ግብር እና መፅሀፍት ውስጥ የትምህርቱን የማስተማሪያ መርጃ መሳሪያዎችን በተመለከተ ቀጥሎ በተዘረዘሩት ጥያቄዎች ላይ መልስ ይሆናል በሚሉት /በሚስማሙበት ላይ/ የሚከተለውን ፊትን እስከል በመጠቀም በቁጥሮቹ ትይዩ የ "√" ምልክት በማድረግ ይመልሱ።

ፊትን እስከል

5=በጣም ከፍተኛ

4= ከፍተኛ

3= መካከለኛ

2= ዝቅተኛ

1= በጣም ዝቅተኛ

| ተ.ቁ | የተቀናጀ ሳይንስ ትምህርት የማስተማሪያ መርጃ መሳሪያዎችን በተመለከተ | 5 | 4 | 3 | 2 | 1 | አስተያየት |
|-----|--|---|---|---|---|---|--------|
| 6.1 | የተዘጋጁት መፅሀፍት ረዘም ላለ ጊዜ አገልግሎት ሊሰጡ የሚችሉ መሆናቸው | | | | | | |
| 6.2 | የመፅሀፉ መስብህነት/attractiveness/ እና ለአያያዝ ያላቸው አመቺነት | | | | | | |
| 6.3 | የመፅሀፉ በብዙትና በበቂ ሁኔታ የመገኘት ሁኔታቸው | | | | | | |
| 6.4 | በመፅሀፉ ውስጥ የተጠቀሙት የመርጃ መሳሪያዎች ክርእስ/ክይዘቱ ጋር ያላቸው አግባብነት | | | | | | |
| 6.5 | የተጠቀሱት መርጃ መሳሪያዎች በቀላሉ በጥቅም ላይ ሊውሉ የሚስችል አቅማቸው | | | | | | |
| 6.6 | የተጠቀሱትን መርጃ መሳሪያዎች በቀላሉ ከአካባቢ ከሚገኙ ነገሮች አዘጋጅቶ ለማቅረብ የሚያስችል መሆኑ | | | | | | |
| 6.7 | ለተቀናጀ ሳይንስ የሚሆኑ የመርጃ መሳሪያዎች በቤተ-ሰብ የመገኘታቸው ሁኔታ ጋር ባገናዘበ መልኩ የተደረገ ዝግጅት | | | | | | |

7.በተቀናጀ ሳይንስ መርህ ግብር እና መፅሀፍት ውስጥ የትምህርቱን ቅንጅታዊ ሂደት በተመለከተ ቀጥሎ በተዘረዘሩት ጥያቄዎች ላይ መልስ ይሆናል በሚሉት /በሚስማሙበት ላይ/ የሚከተለውን ፊትንግ እስኬል በመጠቀም በቁጥሮቹ ትይዩ የ ”√” ምልክት በማድረግ ይመልሱ።

ፊትንግ እስኬል

5=በጣም ከፍተኛ

4= ከፍተኛ

3= መካከለኛ

2= ዝቅተኛ

1= በጣም ዝቅተኛ

| ተ.ቁ | የተቀናጀ የሳይንስ መፅሀፍትን ቅንጅታዊ ሂደት በተመለከተ | 5 | 4 | 3 | 2 | 1 | አስተያየት |
|-----|---|---|---|---|---|---|--------|
| 7.1 | በተቀናጀ ሳይንስ መርህ ግብር ቀረፃ፣ በመፅሀፍ ማሻሻልና በመፅሀፍ መተቸት ላይ ያለዎት ተሳትፎ | | | | | | |
| 7.2 | በተቀናጀ የሳይንስ መፅሀፍ ውስጥ የባዮሎጂ፣ የኬሚስትሪና የፊዚክስ ትምህርት ይዘቶች ከብዛታቸው አንፃር ምን ያህል ሚዛናዊ በሆነ መልኩ ተቀናጅተዋል? | | | | | | |
| 7.3 | በእያንዳንዱ ምእራፍ ውስጥ ሦስቱም የሳይንስ ትምህርቶች ሳይነጣጠሉ የመቀናጅታቸው ሁኔታ | | | | | | |
| 7.4 | የተቀናጁ የሳይንስ መፅሀፍት ፅንሰሀሳቦች ካለዎት እውቀት አንፃር ሲታይ ያላቸው ክብደት | | | | | | |
| 7.5 | የተቀናጁት መፅሀፍት አፃፃፍ (lay out) በማስተማር ወቅት ያላቸው ምቹነት | | | | | | |
| 7.6 | የተቀናጁ የሳይንስ ትምህርት መርህ ግብር፣ የመምህሩ መምሪያና የተማሪው መማሪያ መፅሀፍት ያላቸው ቅንጅት | | | | | | |

በተቀናጀ የሳይንስ መፅሀፍት ላይ ቅንጅታዊ ሂደቱን በተመለከተ የቀረቡ ተጨማሪ ጥያቄዎች

7.7 የተቀናጁ የሳይንስ መፅሀፍቶች ምን ያህል ተቀናጅተዋል?

ሀ.መ.ሉ.በ.መ.ሉ ለ.በከፊል መ.አልተቀናጁም/በተናጠል ነው የተቀመጡት

7.8 በተራ ቁጥር 7.7 ለሚሰጡት መልስ ማብራሪያ ይስጧቸው -----

7.9 የተቀናጁ የሳይንስ ትምህርት በማስተማር ላይ የገጠሞትን ችግሮች ይዘርዝሩ-----

7.10 የተቀናጁ የሳይንስ ትምህርትን ለማስተማር መፍትሄ ይሆናል የሚሏቸውን

ይዘርዝሩ-----

Appendix-B

Questionnaire for Cotebe College Science teachers

Purpose of questionnaire

The purpose of this questionnaire is to collect some important data about the implementation and characteristics of the Integrated Science Syllabus and to give Suggestive ideas for further improvement. Hence you are kindly requested to give your genuine and frank Opinion on the basis of the following questions.

Thank you for your Cooperation in advance!

1. Do you believe that the contents of Science courses in your College prospected teachers of 2nd cycle primary level are well integrated?

- a) Yes
- b) No.

2. If your response for question no.1 is “no” please, write some of the difficulties which hinder to integrate the contents as desired.

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____

3. Do you ever try to examine the harmony or coherence between the Science courses being offer in College and the Science teaching materials (student text and teachers guide) used at the schools level?

- a) Yes, there is
- b) No, there is no

4. If your response for question no. 3 is “yes” to what extent are they coherent?
- a) Strongly
 - b) Moderately
 - c) Very less
 - d) Not at all
5. Do you believe that the time allotted for subject area courses and methodology area courses or practicum is reasonable / sufficient for both?
- a) Yes
 - b) No
6. If your response for question no. 5 is “no” then what will be the case?
- a) The time given for subject area courses is much better than methodology area courses/practicum.
 - b) The time given for methodology area courses /practicum is much better than subject area courses
 - c) The time allotted for both is not sufficient
7. How do you see the emphasis given for supporting the theoretical aspect of teaching Integrated Science courses with practical (Lab. experiments)?
- a) Very high
 - b) High
 - c) Moderate
 - d) Low
 - e) Very low

6.a) Finally, if you think that there are other defects or problems in the implementation of the Integrated Science teaching materials ,please mention them precisely.

1. _____
2. _____
3. _____
4. _____
5. _____

b) Write down possible solution to each of the defects or problems you mentioned above.

1. _____
2. _____
3. _____
4. _____
5. _____

Appendix-C

Interview based on paper for Addis Ababa Education Bureau Experts

Purpose of interview

The purpose of this interview is to collect some important data about the implementation and characteristics of the Integrated Science Syllabus and to give Suggestive ideas for further improvement. Hence you are kindly requested to give your genuine and frank Opinion on the basis of the following questions.

Thank you for your Cooperation in advance!

1. Being as an educational expert, did you ever participate in the design or revision of Science subject syllabi?

a) Yes b) no

2. If your answer for question no.1 is “yes” to what extent your suggestion or comments had been taken into account?

- a) All most all
- b) Partially
- c) Very few
- d) Totally forgotten

3. Do you believe that the task in integrating parts of Science subject at the primary level (2nd cycle) was well done and successful?

- a) Yes
- b) No

4. If your response for question no. 3 is yes, answer each of the following items by putting "√" mark of given rating scales

| No | Items | Acceptable | Moderate | Not Acceptable |
|-----|---|------------|----------|----------------|
| 4.1 | The Balance in stating Objective | | | |
| 4.2 | The Balance in the amount of the Contents taken | | | |
| 4.3 | Emphasis given for Vertical and horizontal relationships | | | |
| 4.4 | Appropriateness of the Contents in reflecting the exiting reality of the society. | | | |
| 4.5 | Appropriateness of the Contents to the grade level being studied. | | | |
| 4.6 | The effort made in making the contents and Methods to be learner Centered | | | |
| 4.7 | The effort made in preparing the learner to be problem solver. | | | |

5. Did you ever examine whether Science teachers can cover the subject by the time indicated in the academic calendar or not?

a) Yes

b) No

6.a) Finally, if you think that there are other defects or problems in the implementation of the Integrated Science teaching materials ,please mention them precisely.

1. _____

2. _____

3. _____
4. _____
5. _____

b) Write down possible solution to each of the defects or problems you mentioned above.

1. _____
2. _____
3. _____
4. _____
5. _____

Appendix-D

Interview for ICDR Science experts

Purpose of interview

The purpose of this interview is to collect some important data about the implementation and characteristics of the Integrated Science Syllabus and to give Suggestive ideas for further improvement. Hence you are kindly requested to give your genuine and frank Opinion on the basis of the following questions.

Thank you for your Cooperation in advance!

1. During design or revision of the Curriculum and syllabi of Science Subjects for the primary level, do you invite other bodies of the education sector and other professionals? If yes please least some of the participants?

- 1) _____
- 2) _____
- 3) _____
- 4) _____
- 5) _____

2. Do subject teachers taken part in the design or revision of the Science curricula or syllabi?

- a) Yes , they do
- b) No, they do that

3. Do you believe that there is balance among the objectives and the contents of parts of Science subjects in integrated seine?

- a) Yes
- b) No

4. If your response for question No. 3 is “No” , then

4.1 Indicate parts of the subject which highly emphasized_____

4.2 Indicate parts of the subject which are less emphasized_____

5. Do you believe that an effort made to incorporate the current issues of the society (like HIV, Saving, water, gender etc) in integrating the Science subjects?

a) Yes

b) No

6.a) Finally, if you think that there are other defects or problems in the implementation of the Integrated Science teaching materials ,please mention them precisely.

1. _____

2. _____

3. _____

4. _____

5. _____

b) Write down possible solution to each of the defects or problems you mentioned above.

1. _____

2. _____

3. _____

4. _____

5. _____

Appendix-E

ከተማሪዎች ጋር በተደረገ ውይይት የቀረቡ ጥያቄዎች/ questions for Students
focus group discussion /

1. በሳምንት የሳይንስ ትምህርት ክፍለ ጊዜ ብዛት ስንት ነው?
2. ለተግባር ትምህርትና ለፊደላዊ ትምህርት የተሰጠ አለ?ከሌለ እንዴት እንደምትማሩ አብራሩ አስረዱ::
3. በቤተ-ሙከራ፣ በትምህርት ማበልፀጊና በቤተ-መፅሀፍት አጠቃቀም ያሉ ችግሮች ምን ይመስላሉ::
4. ከመምህራኖቻችሁ ጋር በአካባቢያችሁ ትምህርታዊ ጉብኝት አድርጋችሁ ታውቃላችሁ?የተለያዩ የቡድን ስራዎችንስ ተሰራላችሁ?
5. የመማሪያ መፅሀፍት ለሁላችሁም በየግል ደርሷችኋል?
6. የምትማሩበት ስለ የማስተማሪያ ዘዴ በምን ላይ የተኩራል?
7. መምህራን የተቀናጀ የሳይንስ ትምህርትን በመርጃ መሳሪያ ያስተምሯችኋል?
8. ምዘናና ግምገማን በተመለከተ በተግባር የተደገፉ ፈተናዎችን ተወስዳላችሁ?
9. መፅሀፉ የተፃፈበት በተመለከተ የገጠማችሁ ችግር አለ?
10. ለሴቶች ተማሪዎች የተለየ የሚደረግ ድጋፍ አለ?የሴቶች ክብብስ አላችሁ?እንቅስቃሴው ምን ይመስላል?

Appendix F

Grade 5 Integrated Content with Related Science Subjects and Period Allotted

| Grade | Unit | Main topic | Period | Sub-Topic | Related / integrated subjects | | | |
|--------------|-------------------------------------|-----------------|--|----------------------------|-------------------------------|-----------|--------------------------|--|
| | | | | | Biology | Chemistry | Physics | |
| 5 | 1 | Substance | 8 | 1.1 Pure substance | | | | |
| | | | | 1.2 Mixture | | | | |
| | 2 | Air | 1 | 2.1 Composition of air | | | | |
| | | | | 2.2 Properties of air | | | | |
| | | | | 2.3 Importance of air | | | | |
| | | | | 2.4 The air we breath | | | | |
| | | | | 2.5 Mechanism of breathing | | | | |
| | | | | 2.6 Harmful practice | | | | |
| | | | | 3 | Water | 1 | 3.1 Composition of water | |
| | 6 | 3.2 Water cycle | | | | | | |
| | 3.3 Types of water | | | | | | | |
| | 3.4 Importance of water | | | | | | | |
| | 3.5 Erosion of water | | | | | | | |
| | 3.6 Pollution of water | | | | | | | |
| | 3.7 Water conservation | | | | | | | |
| | 3.8 Drought and famine | | | | | | | |
| | 3.9 Harmful practices towards water | | | | | | | |
| | 4 | Plants | 2 | | | | 4.1 Importance of plants | |
| | | | | 6 | 4.2 Soils and plants | | | |
| | | | | 4.3 Our forests | | | | |
| | 5 | Animals | 2 | 5.1 Insects | | | | |
| | | | | 8 | 5.2 Fishes | | | |
| | | | | 5.3 Amphibians | | | | |
| 5.4 Reptiles | | | | | | | | |
| 6 | Our body | 2 | 6.1 Excretion | | | | | |
| | | | 0 | 6.2 Food hygiene | | | | |
| | | | 6.3 Hygienic latrines | | | | | |
| | | | 6.4 food problem and our social responsibility | | | | | |
| | | | 6.5 HIV/AIDS | | | | | |

| | | | | | | | |
|--|---|--------|---|----------------------|--|--|--|
| | 7 | Energy | 2 | 7.1 Heat energy | | | |
| | | | 5 | 7.2 Energy from food | | | |
| | | | | 7.3 Force | | | |
| | | | | 7.4 Effects of force | | | |

Grade 6 Integrated Content with Related Science Subjects and Period Allotted

| Grade | U n i t | Main topic | P e r i o d | Sub-Topic | Related / integrated subjects | | |
|-------|------------------|--------------------------|----------------------------|---|-------------------------------|-----------|---------|
| | | | | | | | |
| 6 | 1 | Some important compounds | 10 | 1.1 oxides | Biology | Chemistry | Physics |
| | | | | 1.2 Acids | | | |
| | | | | 1.3 Bases | | | |
| | | | | 1.4 Salts | | | |
| | | | | 1.5 Uses of some important compounds | | | |
| | 2 | Air | 13 | 2.1 Air pollution | | | |
| | | | | 2.2 Effect of air | | | |
| | | | | 2.3 Prevention of air pollution | | | |
| | | | | 2.4 Air borne diseases | | | |
| | | | | 2.5 Prevention of air borne diseases | | | |
| | | | | 2.6 Group project :on important air borne diseases of the locality and methods used to prevent them | | | |
| | 3 | Water | 20 | 3.1 Properties of water | | | |
| | | | | 3.2 Clean water | | | |
| | | | | 3.3 Method of water purification | | | |
| | | | | 3.4 Water borne diseases | | | |
| | 4 | Plants | 24 | 4.1 Plants-like organisms | | | |
| | | | | 4.2 Mosses ferns | | | |
| | | | | 4.3 Reproduction in plants | | | |
| | | | | 4.4 Seeds and germination | | | |
| | | | | 4.5 Plants as food for human | | | |
| | | | | 4.6 Preparing vegetable garden at home and at school | | | |
| | | | | 4.7 Crop protection | | | |

| | | | | | | | |
|---|--------|----------|-----------------------|--|--|--|--|
| | 5 | Animals | 1 | 5.1 Birds and mammals | | | |
| | | | 3 | 5.2 Poultry at home and school | | | |
| | | | | 5.3 Wild life in Ethiopia | | | |
| | 6 | Our body | 2 | 6.1 The human nervous system | | | |
| | | | 6 | 6.2 The effects of alcohol and other drugs on the nervous system | | | |
| | | | | 6.3 Glands and hormones | | | |
| | | | | 6.4 Reproductive system in human | | | |
| | | | | 6.5 Reproductive health | | | |
| 7 | Energy | 3 | 7.1 Light energy | | | | |
| | | 0 | 7.2 Electrical Energy | | | | |

Appendix G
Sample Schools

| No | Kifle Ketema | Schools |
|----|--------------|------------------------|
| 1 | Gulele | 1.Entoto Amba |
| | | 2.Dil betigil |
| | | 3.Tsehay Chora |
| 2 | Kirkos | 1.FinFine |
| | | 2.Urael |
| | | 3.Misrak Goh |
| 3 | Yeka | 1.Misrak ber No.1 |
| | | 2. Wondirad |
| | | 3.Kokobe Tsibah |
| 4 | Addis Ketama | 1.Eshet |
| | | 2.Yekatit 23 |
| | | 3.Umer Semeter |
| 5 | Arada | 1.Ethiopia Tikdem No.1 |
| | | 2.Arbegnoch |
| | | 3.Minilik |

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This Thesis has been submitted for examination with my approval as university advisor.

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Signature:

Date of Submission
