

ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

**THE STATUS OF PREPARATION, AVAILABILITY AND
UTILIZATION OF TEACHING MATERIALS IN UPPER
PRIMARY SCHOOLS BIOLOGY TEACHING: THE CASE OF
NORTH GONDAR ZONE, AMHARA**

REGIONAL STATE

BY



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**The Status of Preparation, Availability and Utilization of
Teaching Materials in Upper Primary Schools Biology
Teaching: The Case of North Gondar Zone , Amhara
Regional State**

By

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ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES
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Table of Contents

Contents	Pages
Acknowledgement-----	i
Table of contents-----	ii
List of tables-----	v
List of Acronyms -----	vi
Abstract -----	vii
CHAPTER ONE	
1. Introduction-----	1
1.1 Back Ground of the Study -----	1
1.2 Statement of the Problem-----	4
1.3 Objective of the Study-----	6
1.3.1 General Objective-----	6
1.3.2 Specific Objective-----	6
1.4 Research Questions -----	6
1.5 Significance of the Study-----	7
1.6 Delimitation of the Study-----	7
1.7 Limitation of the Study-----	7
1.8 Definition of Operational Terms-----	8
1.9 Organization of the Study-----	8
CHAPTER TWO	
2. Review of the Related Literatures-----	10
2.1 Definition of Instructional Materials-----	10
2.2 Classification/ Types of Instructional Materials-----	12
2.3 Characteristics of Good Instructional Materials -----	14
2.4 Importance of Instructional Materials-----	15
2.5 Biology Instruction and Instructional Materials-----	17
2.6 Principles for Effective use of Instructional Materials -----	22
2.6.1 Principle of Selection -----	22
2.6.2 Principle of Preparation -----	23
2.6.3 Principle of Physical Control -----	23
2.6.4 Principle of Proper Presentation -----	23
2.6.5 Principle of Response -----	24
2.6.6 Principle of Evaluation -----	24
2.7 Availability of Instructional Materials -----	24

2.7.1 Source of Instructional Materials -----	25
2.7.2 The Role of School Pedagogical Center -----	25
2.8 Preparation of Instructional Materials-----	26
2.9 Utilization of Instructional Materials -----	27
2.10 Factors Affecting Preparation, Availability and Utilization of Instructional Materials-----	30
CHAPTER THREE	
3. Methodology and Research Design-----	33
3.1 Design of the Study -----	33
3.2 Sources of Data-----	33
3.3 Population Size, Sample Size and Sampling Technique-----	33
3.4 Data Collection Instruments-----	35
3.4.1 Questionnaires -----	35
3.4.2 Interview-----	36
3.4.3 Observation Checklist-----	36
3.5 Pilot Testing of Instruments -----	37
3.6 Method of Data Analysis-----	37
CHAPTER FOUR	
4. Presentation, Analysis and Interpretation of the Data -----	38
4.1 Background Characteristics of Respondents -----	38
4.2 Preparation of Instructional Materials -----	40
4.2.1 The Role of the School Directors and SPC Coordinators on Producing Instructional Materials -----	42
4.3 Availability of Instructional Materials -----	43
4.4 Utilization of Instructional Materials -----	44
4.4.1 The Contribution of School Pedagogical Center in Facilitating Biology Teaching Learning Process -----	46
4.4.2 Sources of Instructional Materials -----	47
4.5 Factors Affecting the Preparation, Availability and Utilization of Instructional Materials -----	48
4.5.1 Availability of Guide Materials for Production and Utilization of IMs -----	51

4.5.2 Availability of Skilled School Pedagogical Coordinator -----	51
4.5.3 Budget Allocation for the Purpose of SPC -----	52
4.5.4 Teachers Attitude Towards Preparation Availability and Utilization of Biology Instructional Materials -----	53
4.5.5 Students Attitude Towards Biology Instructional Materials -----	55
CHAPTER FIVE	
5. Summary, Conclusions and Recommendations -----	58
5.1 Summary of Findings -----	58
5.2 Conclusion -----	60
5.3 Recommendations -----	62
Reference -----	64
Appendix (A-G)	

List of Tables

Contents	Pages
Table 2.1 IMs Suggested by Grade 7 and 8 Syllabuses -----	20
Table 3.1 List of schools, number of students, sample size by grade level and sex -----	35
Table 4.1: Background Characteristics of the Respondents -----	39
Table 4.2: Frequency of Preparation of Instructional Materials -----	40
Table 4.3: Assistance Made by School Director and SPC Coordinators in Producing Instructional Materials -----	42
Table 4.4: Level of utilization of IMs, as reported by Teachers and students -----	45
Table 4.5: The Contribution of School Pedagogical Center in Facilitating Biology Teaching Learning Process -----	47
Table 4.6: The Sources that Teachers Use to get IMS -----	48
Table 4.7 : Problems in Preparing and Using Instructional Materials ---	49
Table 4.8: Training Opportunity of Biology Teachers to produce and use of Instructional Materials -----	50
Table 4.9: Frequency and Percentage Distribution of Availability of Skilled School Pedagogical Center -----	52
Table 4.10: Budget Allocated for Sample Schools Pedagogical Center -----	53
Table 4.11: Teachers Attitude toward Instructional Materials -----	54
Table 4.12: The Responses of Students to the Attitude Describing Statement in Biology Instructional Materials ---	56

Acronyms

AREB	= Amhara Regional Education Bureau
AUBIMs	= Availability and Utilization of Biology Instructional Materials
BIMs	= Biology Instructional Materials
IMs	= Instructional Materials
MOE	= Ministry of Education
NETP	= New Education and Training Policy of Ethiopians
SPCs	= School Pedagogical Centers
TGE	= Transitional Government of Ethiopia
UBIMs	= Utilization of Biology Instructional Materials
UNESCO	= United Nations Educational, Scientific and Cultural Organizations

Abstract

The purpose of this study was to assess the status of preparation; availability and utilization of instructional materials in upper primary schools of North Gonder Zone. In order to carry out this study the study employed descriptive survey design. The study was conducted in randomly selected nine upper primary schools from three woredas in North Gonder Zone of Amhara Regional State. For this study woredas were identified using purposive sampling techniques. The source of data for this study were grade seven and eight biology syllabus, biology teachers, students, school directors, school pedagogical coordinators and school pedagogical centers. All biology teachers, SPC coordinators and directors from selected schools participated as source of data by available sampling technique. To select respondent students stratified sampling procedure and systematic random sampling technique was used. Accordingly 97 grade seven and 83 grade eight students were selected. To gather data from the respondents, questionnaire for teachers and students were used. To validate the data interview questions to directors and to SPC coordinators and also SPC observation were used. The data collected were analyzed using frequency counts and percentages and the qualitative data obtained were used to triangulate with quantitative data. Finding of the study indicates that the sample schools had a school pedagogical center. Majority of biology teachers did not frequently prepare and utilize instructional materials in their lessons. Moreover, there was very low support by school directors to the school pedagogical center. Due to insufficient budget, lack of skilled coordinators and lack of guide materials school pedagogical centers contributed less in supporting biology teaching. This study recommends that the concerned bodies should give emphasis to make learning more concrete, meaningful, dynamic, creative and problem solving by integrating adequate IMs in the teaching learning process.

models, specimen simulators, objects –those that allow physical involvement of learner; or abstract – those that allow imaginative involvement of learners with a minimum effect of physical involvement or sensory involvement (learning with written or spoken words). It is argued that instructional materials provide the learner with a wide variety of experiences such as: doing, drawing, reading, listening, observation, sketching, speaking, discussing, completing, reporting, researching, thinking and role playing.

In the education and training policy of Ethiopia (TGE, 1994), under the heading of educational support inputs, it has been stated “in order to promote the quality, relevant and expansion of education, due attention will be given to the supply, distribution and utilization of educational material, educational technology and facilities. This means the policy has recognized the importance of teaching materials as one part of the effort towards upgrading quality of education. Moreover according to the Amhara Education Bureau, the Education Sector Development Program (ESDP) III strategic plan (2005/06 – 2009/10) state that the over all objective of the text book and instructional materials component is to improve the quality and relevance of education in the region (AREB, 2006). This could be possible by increasing the quality of text books and instructional materials, upgrading of school library and laboratory facilities, developing efficient and effective text book and instructional material production distribution and utilization strategy.

The traditional method of learning which mainly relies on the experience of listening and reading limits the development of other experiences which in turn, are instrumental to further learning (Amare, 1999). A student centered approach, which is gaining currency, is unimaginable without the optimum use of instructional materials (Amare, 1998). The speaking – listening approach, the most common teaching method in Ethiopian schools inhibits active learning and encourages passive

learning, a syndrome that robs all feelings of students responsibility for their learning. It is argued that students' responsibility is positively correlated with the amount of invested mental effort, a prerequisite for learning. It goes with out saying that the higher the degree of responsibility a person feels the higher the performance in the area in which the person is responsible – in learning or in all other activities (Amare, 1998)

Dale (1969) has argued that instructional materials create access to the world of reality, enhancing understanding and enriching experiences. They also assist in making relationships between the real world and the symbolic world, what is pedagogically known as understanding. Words (written or spoken) lack the necessary dimensions to represent reality. Iconic or inactive representations, however, are very close to reality creating the access to it. It is a process of bringing the world in to the classroom and the classroom in to the world. Instructional materials are also known in compelling and retaining student attention (Heinich, etal, 1996). They add variety to the learning process inducing greater attention and understanding (Brown, 1985). Aggerwal (1996) also stated that instructional materials provide significant gain in information learning, retention and recalls, thinking and reasoning activity, interest, imagination, better assimilation and personal growth.

Regarding the availability of instructional materials Heinich etal, (1996) stated that “the majority of instructional materials used by teachers are ready made and available from the school, district or other easily accessible sources”.

In addition, Heinich etal, (1996) states that teachers have at least three options in obtaining instructional materials. Firstly, they use materials that are readily available in the school pedagogical center; similarly, teachers and students can have access to the local community resources by organizing field trips or by inviting resource persons to the class room

are very high in making learning more concrete and relevant. And instructional materials help to stimulate the interest of students, help them form correct concepts, develop their power of observation, extend their power of vision and economize their time and energy in learning.

For this matter, teachers in all levels in general and those of primary schools in particular are expected to prepare and use instructional materials to facilitate the teaching learning process. Many researchers' findings indicate that the quality of education in different regions of the country was affected by teachers lack of attitude towards instructional materials, inadequate training of teachers and school pedagogical center heads, shortage of budget and financial capacity of the school, lack of support from NGO's to the schools, absence of guide materials for school pedagogical centers and the inadequate provision of instructional materials from Zone and woreda educational support (Akalu 2001, Amare 1999, Brhane 1999). All these research works are done by considering the aforementioned common issues. However, based on the researcher's knowledge on this study area along with the opportunity he got in teaching of secondary school, there are other constraints which were not raised by the previous researchers that might affect in preparation and utilization instructional materials by teachers. This includes, unavailability, types and sources of instructional materials, self – inspiration of the teachers and commitment in preparing and using instructional materials, lack of support from primary school's coordinators to increase teachers' participation in preparing and using instructional materials and function of school pedagogical centers. Hence, the researcher has a conviction that the study will contribute in filling the existing gap.

1.3 Objective of the Study

1.3.1 General Objective

The General objective of this study was to assess the status of preparation, availability, and utilization of instructional material in upper primary schools of North Gonder Zone, Amhara regional state.

1.3.2 Specific Objective

In line with the above general objective, the specific objective of the study includes:

1. To describe the extent to which biology instructional materials are available in upper primary schools.
2. To evaluate whether biology teachers use instructional material in teaching.
3. Examine the degree to which biology teachers and students prepare instructional materials.
4. To examine the biology teachers and students attitude towards preparation, availability and utilization of instructional materials
5. To identify major factors affect preparation, availability and utilization of Biology instructional materials.

1.4 Research Questions

Therefore, to attain the goal of the study, the researcher has the following research questions:

1. To what extent biology instructional materials are available in upper primary schools?
2. How often do biology teachers use instructional materials?
3. Do biology teachers and students produce teaching materials for biology teaching?

4. Do biology teachers and students have favorable attitude towards preparation and utilization of instructional materials?
5. What factors do affect the availability, preparation and utilization of instructional materials?

1.5 Significance of the Study

The study is significant for the reason that it focuses on the preparation, availability, and utilization of instructional materials has not given much attention in all levels of schools in general and primary schools in particular. Hence it will help for the compilation of information on the status and degree of the problem in primary schools.

It gives some insight about attitude and interest of teachers and students towards IMs. It may provide suggestions to concerned officials, teachers, school directors, school pedagogical centers coordinators and the community at large, for finding out remedies to those actual problems affecting the preparation and utilization of instructional materials. The study may also contribute knowledge on the study of problems affecting the preparation and utilization of instructional materials in Ethiopian primary schools and can serve as a source of information for further and comprehensive nation wide study.

1.6 Delimitation of the Study

The study was conducted in North Gonder zone upper primary schools of Amhara region. To be manageable nine upper primary schools of three woredas were selected so that it would be delimited biology subject to only grade 7 and 8 of upper primary schools.

1.7 Limitation of the Study

The introduction of new modular type of masters degree program starting from the very beginning at the Addis Ababa university at large, at the school of Graduate studies particularly have created time pressure as

later was budgeted short periods of time for the research work which is unusual and initial program to the university. Besides, as the student researcher, was being in class for one course and hand-in-hand starting the research work, he found it difficult.

1.8 Definition of Operational Terms

Attitude: refers to feelings of likes or dislikes of Biology teachers and students towards Biology instructional materials.

Instructional materials: refers to all forms of materials with which students and teachers interact for the purpose of teaching learning process.

Utilization: refers to the extent to which biology teachers and students use Biology instructional materials in the teaching learning process

Factor: a cause or determiner that underlines and influences performance

Preparation: is a very significant part of IMs work in a pedagogical center. And it means for our case producing IMs for effective teaching learning of biology.

Availability: refers to the presence of IMs in the pedagogical center of the upper primary schools and the accessibility of IMs for biology teachers and students.

Upper Primary school: an educational institution that gives service of teaching – learning process for the upper grades (7-8) of the 2nd cycle of the primary school.

1.9 Organization of the Study

The study was organized in to five chapters. The first chapter contains the back ground of the study, statement of the problems, objectives of the study, significance of the study, delimitation of the study, organization of the study and definition of operational terms: Chapter

two deals the review of related literature: Chapter three deals with research methodology and design: Chapter four presents data analysis and interpretation. The final chapter contains summary of findings, conclusion and recommendations of the study. At the end, relevant information that re used in this study have been annexed in the appendices.

CHAPTER TWO

2. Review of the Related Literatures

2.1 Definition of Instructional Materials

According to Heinich, et.al (1996), there is still a wide variation in the terminology used by educators in relation to the term instructional materials. The most common terms include audio visual materials, instructional media, instructional materials, instructional technology, teaching materials, learning resources, educational communication and teaching aids (Amare 1999). The concept of instructional materials, though expressed in different words by different educators, denotes the same meaning in the literature.

Instructional materials have been defined in different ways. The term refers to all materials that are used by the teacher and students for the purpose of teaching and learning. Joof (1995) cited in Medayese (2010), explaine that “the concept of instructional materials have gone through several evolutionary stages from the simple aids, instructional technology, media to communication and educational technology”. This however, tells us that instructional materials are not just objects or equipments used during the teaching-learning process, but those objects improvised by the teacher to make conceptual abstraction more concrete and practical to the learners. Instructional materials are the relevant materials utilized by a teacher during instructional process for the purpose of making the contents of the instruction more practical and less vague. In this connection, Orakwe states the following.

“... Instructional media today are very gradually finding their ways in to the classrooms where modern and versatile teachers are exploring new ways of transferring learning to the younger generation the use of prints, visual and audios or various combination of these trios make up all we have in instructional media. Instructional media therefore are the information

dissemination devices made up of prints, radio picture including films, movies, photographs, etc, used in the class room for an easy transfer of learning” (Orakwe, 2000).

Instructional materials are all sorts of physical means used to carry instructional contents, that means knowledge, skills and attitudes from various sources to the students’ and they aim at realizing a set of instructional objectives (Heinich et al, 1996). According to Locatis and Atkinson (1984), instructional materials are the means for transmitting or delivering messages. Instructional media include such things as printed materials, display materials like teacher made diagrams, charts and maps, models and specimens, projected materials, audio materials like radio programs and audio tapes; combination of sound and films like TV broad, casts video tapes and motion pictures; and programmed materials like the computer (Locatis and Atkinson, 1984).

Instructional materials are required by all teachers, for effective teaching learning process and to realize various objectives of teaching (Yadave, 1995). They relate to all forms of materials with which students and teachers interact for the purpose teaching and learning. To this point it is stated in Amare (1999) as: “Instructional materials are instruments with which a teacher teaches and from which students learn”

Brown (1969) contends the view that instructional materials are devices which present a body of information and largely self supporting rather than supplementary in teaching and learning process (Brown, 1969). According to Schram (1977), instructional materials are nothing but are the media of communication used for teaching and learning. Burton, Good, Dale, Kinder, James Mekown and Roberts all cited in Aggrawal (1996) respectively define instructional materials in five manners. Instructional materials are those sensory objects or images which initiate or stimulate and reinforce learning. And secondly, IMs are those aids which help in completing the triangular process of learning i.e. motivation, classification and stimulation. IMs are those device by the

use of which communication of ideas between persons and groups in various teaching learning is helped and they can be used to make the learning experience more concrete, more realistic and more dynamic are the third and fourth definitions. Finally, the fifth one is, IMs are supplementary devices by which the teacher through the utilization of more than one sensory channel is able to clarify, establish and correlate concepts; interpretations and appreciations

In general, the above definition indicates that IMs are very essential to improve the quality of primary education. The concept of each definition indicates that IMs give life to the teaching-learning process. In other words, concrete, vivid, dynamic, effective and meaning full learning can be achieved or gained by incorporating and using IMs in the teaching-learning process.

2.2 Classification/ Types of Instructional Materials

Different types of instructional materials are available to be used in teaching any subject effectively. However, it is not all topics that require the same type and quantity of materials. As far as educational instructions is concerned, these materials could be purchased, locally made or improvised, imported from other countries when necessary for the effective instructional delivery (Medayese, 2010).

Notable criteria abound in literature on the taxonomical bases of instructional media. Such criteria for classifying instructional materials include the degree of expertise /technical skills needed for production, nature of materials, physiological parameter or sensory modality, whether or not projection is involved, place the material is produced, and miscellaneous characteristics.

Different educators have tried to classify instructional materials in to different groups. For instance, Yadave (1995), are classified audio aids, visual aids, audio visual aids and activity aids. Audio aids, in this type of

aids fall the instructional materials like radio, tape recorder etc. This type of aids help the process of learning as they help the learner to acquire knowledge through his auditory senses; visual aids, this type of aids are very common visual aids which include charts, pictures, models, film strips, black boards, bulleting boards and magnetic boards. These materials help the learner to acquire the learning experiences through his visual senses; audio visual aids, these are sensory aids which help to make teaching concrete, effective and interesting. Examples of this type of instructional materials are television, motion picture, video film, living objects etc. By use of these aids we provide the learner an opportunity to utilize both his auditory and visual senses for gaining the desired learning experiences; and Activity aids which include excursions and visits, exhibitions experimentation in the laboratory and workshop.

Besides, for Schram (1977), instructional materials are categorized in to big media and little media. Big media include computer, television, and sound films. Little media on the other include radio, film strips, graphic, audio cassettes and various visuals. Moreover, Amare (1999:53) also classifies instructional materials in to concrete and abstract. According to him, concrete instructional materials allow physical involvement of learners and abstract ones allow imaginative involvement of learners with a minimum effect of physical involvement or sensory involvement. For instance, concrete instructional materials include real objects, models, specimens, simulators etc; and abstract instructional materials include written or spoken words (Ibid).

However, Aggrawal, (1996), classified instructional materials as audio, visual and audio visual materials. Audio materials include radio, language laboratories, and tape and disc recordings. These enable learners to improve their listening skills. In this case Amare (1999:54) indicated that IMs provide the learners with a wide verity of experiences,

Furthermore, they should be according to the mental level of the students and motivate the learners (Aggrawal, 1996).

2.4 Importance of Instructional Materials

Instructional materials assist teachers to facilitate the way to achieve the expected goals of teaching, and improve the results of instruction. Instructional materials make the teaching learning process interesting and more meaningful as we are required to make the use of our senses.

As yadave (1995)elaborates the importance of instructional materials. Accordingly, teacher can win the interest and attention of the pupils by making use of instructional materials. IMs are effective motivating agents and help to bring clarity to the subject matter. They save time and energy of the students and teachers and make learning more effective and durable. Proper use of instructional materials helps to develop in the pupils, scientific attitudes and provide them with training in scientific method. They provide permanent and effective learning.

Heinich, et.al (1996), on their part assert that the main value of instructional materials is to improve the balance between concrete and abstract learning experience. Similarly, Medyassee (2010) points out that every individual has the tendency to forget, proper use of instructional materials helps to retain more concept permanently. According to him, students can learn better when they are motivated properly through different instructional materials and instructional materials develop the proper image when the students see, hear, taste and smell properly. In addition, Instructional materials create the environment of interest for the students and provide direct experience to the students.

The importance of instructional materials can be summarized as under in the words of Edgar Dale (1969) "because audio visual materials supply concrete basis for conceptual thinking, they give rise to meaningful concepts enriched by meaningful association; hence they offer the best antidote for the disease of verbalism".

Instructional materials help the student to relate the class room instruction with the outside world. In addition to these, Amare (1999,) pointed that instructional materials provide the learner with many experiences such as doing, drawing, reading, observing, sketching, computing, discussing and speaking. This indicates that instructional materials make the students to be actively involved in learning rather than being passive learners.

On summarizing the importance of instructional materials in teaching learning process, Dale, cited in Amare (1999), has indicated that instructional materials, when properly designed and applied in the teaching-learning process, can have the following pedagogical advantages instructional materials are, stimulate the learners interest, facilitate active learning, encourage creative thinking and effect student skill development, over come the limitations of time and space, concretize abstract experience and create the access to invisible realities are also advantages of pedagogical IMs. Besides, teach and entertain, relate theory with practice make learning more functional by increasing retention and encourage responsibility.

Aggawal (1996) states that instructional materials provide significant gains in informational learning retention and recall, thinking and reasoning, activity, interest, imagination, better assimilation and personal growth and development.

John M. in Aggawal (1996), also enumerates five main reasons to underscore and justify the use of instructional materials for better

teaching and learning is to teach something more thoroughly so that the children may retain the subject matter taught and to teach quickly, this will result in covering more ground in a given time and thus gives a better chance of “getting through the syllabus”. More over, it is as a means of integrating a number of separate pieces or work already learned by other means and as a means of bringing with experience and understanding of learners something which is new to them. This often includes the presentation to learners, in a simplified form, of matters which can be appreciated fully only by adults.

As Bozimo (2002), states the importance of instructional materials lies on the fact that abstract ideas, data or information expressed are translated or reflected in forms of instructional materials and resources. The implication of using instructional materials can be summarized: they can be used to explain our points, reduce abstraction, create reality and simplify events and use of sense organs in attempt to learn, you must appeal to the sense organs of sight, hearing, touch, feeling and tasting systematically designed materials provide you with this opportunity.

Interest arousing departure from boring and unusual mode of presentation creates attention and generates interest, encourages active participation, their use can lead to the beginning of learners' development of exploratory and inquisitive nature of the child and pace learning you can use them to meet the learner's individual learning capability that is moving at their own pace too(Ibid).

2.5 Biology Instruction and Instructional Materials

The biological science curriculum study (BSCS) asserts that students come to science classroom with many misconceptions to correct for proper scientific learning to progress. Schools should base instructional materials on the fundamental scientific concepts and principles, which serve align students understanding with current knowledge and teach

them to monitor and control their own thought processes to facilitate learning (BSCS, 1973).

According to Biological science studies (BSCS, 1973), students of teachers who most closely followed their 5E instructional model engage, explore, explain, elaborate and evaluate achieved a high rate at success. Biology teacher who take the time to provide instructional materials and options that take in to account the different ways of receive and express knowledge, are more likely to their students succeed. Biology class room should be providing a variety of a video, visual and print in put methods depending on students need. Allow students the flexibility to communicate their knowledge in ways that displays their true learning.

Bolic (2003) identified a good relationship between effective teaching and using of instructional materials. He argued that "... while some educators have been fascinated by the potential of instructional materials to enhance teaching and learning, teachers lagged behind in using instructional materials during teaching and learning.

Instructional materials are integral components of teaching learning situations; it is not just to supplement learning but to complement its process. It then shows that, if there must be an effective teaching learning activity, utilization of instructional materials will be necessary (Ibid).

For the successful teaching of any biological lesson, the selection and use of appropriate instructional materials is one of the basic requirements of the teacher. Biology lessons deal with all living things, collection of facts and human life and the relation between them. And all the biological phenomena and features can not be brought in to class rooms in their concrete form. Thus such facts and information can be brought to the attention of learners, through their reduced and simplified representation in terms of models, charts, living specimens, pictures,

diagrams as well as field observation Yadav(1995). The most obvious reason for the use of instructional materials in teaching biology, is that they are the means through which students increase their understanding in the class rooms.

Yadav (1995), pointed out that; the teaching materials are required by a biology teacher, like teachers of other subjects, for effective teaching of the subject and to realize various objectives of teaching biology. Instructional materials help the teacher to communicate with his students in a more desirable and effective way. Effective communication requires a mastery of managerial skills of handling various instructional materials like audio aids, visual aids, audio visual aids, and activity aids.

Properly selected and utilized instructional materials help the biology teacher to communicate ideas, build students curiosity, reinforce experience and to make Biology teaching learning meaningful and pleasant (Ibid)

In general speaking, instructional materials promote students mental activity and create abilities, influence the effectiveness of teacher and students activity and also help students to keep the most important ideas of certain subject matter to memory.

Table 2.1 IMS Suggested by Grade 7 and 8 Syllabuses

Grade	Unit	Suggested IMS
7	1	Chart on branches of biology, bulletin board articles from news papers and magazines chart of a list of values,
	2	Microscope, charts on parts of microscopes glass slides, cover, slips charts, models, onion Iodine charts of animal and plant cells, charts of different types of tissues of plant and animals, charts or models of organs of plants and animals preserved specimens of organs of plants and animals
	3	Prepared slides of chlorella and spirogyra, paramecia culture, prepared slide, microscope, prepared slide of euglena, chart of the different types of bacteria, books of journals with related articles and charts
	4	Quadrates, aquarium, terrarium, charts of food chain, food web and pyramid of numbers
	5	Charts of green algae and other algae, microscope, prepared slides of volvox, spirogyra and other algae, Algae suspension from pond, charts of fungi, charts of mosses, preserved specimens of mushrooms, prepared slides of yeast and molds, preserved specimens of lichens collected moss specimens, fern plant grown in pot, preserved fern specimens, chart of fern
	6	Chart of house fly, preserved housefly specimens chart of mosquito, preserved mosquito specimens readers or articles on locust invasion, chart and preserved specimens of some social insects, chart of honey bee, preserved specimens of honey bee, charts and samples of both traditional and modern beehives
	7	Chart of the human skeleton, model of skeleton, preserved bones of mammals (sheep, cow) posters, magazines, charts showing smooth and stripped muscles, chart of food stuffs, starch powder, iodine solution, glucose, benedicts solution million's reagent test tubes, oil, paper, charts of colorific values of foods charts of age of a person VS amount of food needed, chart of deficiency diseases, chart of the digestive system model of the digestive system, charts of respiratory system of humans, lung model, fresh lungs of slaughtered sheep or goat, preserved lungs of sheep or goat, fresh heart of sheep or cow for dissection, chart or model of heart, chart of circulations process, statistical data on circulatory health, reading materials on circulation and health

Grade	Unit	Suggested IMS
8	1	Eye model, eye specimens from cattle, eye heart, a diagram for discerning the blind spot ear model, chart of human ear, charts showing taste buds and taste areas of the tongue, sweet substances like sugar, lemon, and vinegar, chart of olfactory cells, charts of skins that shows the receipts, charts of neurons brain, spinal cord, model of brain, articles from magazines, news paper, chart of the endocrine system charts of the male and female reproductive system video films, video films on HIV/AIDS
	2	Specimens of plants affected by insects and worms, prepared microscope slides that show bacteria and fungi's charts of the life cycles of these parasites, preserved specimens of ascaris and tapeworm, prepared slide of amoeba, health posters, video films, meat, fruits, vegetable, salt vinegar autoclave, small sand filter
	3	Specimens from angiosperms, specimens from flowering plants hand lens, charts that show cross sections of stems, charts and models of a flower, flower specimens, Hand lens, seed specimen's, preserved of seeds that show the different stages of germination, specimens of storage organs, charts of storage organs
	4	Charts that show the process of photo synthesis, seedlings growing in pots, Herbaceous plants such as bean or pea, microscope slides, cover slips, potted plant, dark paper, paper clips iodine solution, alcohol, beaker, test tubes, burners
	5	Pictures, specimens of types of soil, specimens from desert plants, pictures of desert animals, chart of the water cycle booklets, posters, photographs, articles from periodicals and films show (if available) on pollution and population explosion
	6	Scheme or chart that shows classification by Aristotle, charts of models of animals that show homologous structures collected and preserved specimens of plants and animals

Source Grade 7 and 8 syllabuses

2.6 Principles for Effective use of Instructional Materials

Instructional materials should be used properly to make teaching more effective. Teaching can become more effective if such aids are used widely, but the use of such aids can not provide a guarantee of good teaching. Yadav(1995), proposes the following points' as important for proper use of instructional materials. Accordingly, instructional materials should be woven with the class room teaching and these materials should be used only to supplement whilst making use of any instructional material an effort be made that instructional materials being used in any class are in conformity with the intellectual level of students and harmonized with the previous experience of the students.

In addition, the teacher should use an instructional material only he/she is quite sure about handling a specific instructional material. Instructional materials should be closely related to pupils' experience. (Yadav, 1995)

According to Aggrawal (1994,) principles in the use of instructional materials are arranged in the following way:

2.6.1. Principle of Selection:

Instructional materials prove effective only when they suit the teaching objectives and unique characteristics of the special group of learners. According to Aggrawal (1996), the following points may be kept in view in this regard:

- They should suit the age level, grade level and other characteristics of the learner.
- They should have specific educational value besides being interesting and motivating.

- They should be the true representation of the real things
- They should help in the realization of desired learning outcomes.

2.6.2 Principle of Preparation:

This principle requires the following points:

- As far as possible, locally available materials should be used in the preparation of instructional material.
- The teachers should receive some training in the preparation of instructional materials.
- The teachers themselves should prepare some of the materials.
- Students may be associated in the preparation of instructional materials.

2.6.3. Principle of Physical Control

This principle relates to the arrangement of keeping instructional materials safely and also facilitates their lending to the teachers for use

2.6.4. Principle of Proper Presentation

This principle implies the following points:

- Teachers should carefully visualize the use of instructional materials before their actual presentation
- They should fully acquaint themselves with the use and manipulation of the instructional materials to be shown in the class room
- Adequate care should be taken to handle an aid in such a way as no damage is done to it

- The instructional material should be displayed properly so that all the students are able to see it, observe it and derive maximum benefit out of it
- As far as possible, distraction of all kinds should be eliminated so that full attention may be paid to the aids

2.6.5. Principle of Response

This principle demands that the teachers guide the students to respond actively to the instructional materials (audio visual) stimuli so that they derive the maximum benefit in learning.

2.6.6. Principle of Evaluation.

This principle stipulates that there should be continuous evaluation of both the instructional materials and accompanying techniques in the light of the realization of the desired objectives.

2.7 Availability of Instructional Materials

Regarding the availability of instructional materials Heinich et al, (1996, 45-46) stated that “the majority of instructional materials used by teachers are ready made and available from the school, district or other easily accessible sources”.

In addition, Heinich et al, (1996) states that teachers have at least three options in obtaining instructional materials. Firstly, they use materials that are readily available in the school pedagogical center; similarly, teachers and students can have access to the local community resources by organizing field trips or by inviting resource persons to the class room to share their experiences. Secondly, when the materials obtained are only partly relevant to the subject of study, then they can be modified or adapted by the teachers to meet their specific objectives. If both of the above options do not work, then the third alternative may be to produce

new materials. This can be done by teachers and school pedagogical center personnel who have the main responsibility on material production using locally available resources.

In the Ethiopian context, Amare (1999) suggested that most instructional materials need to be prepared by teachers, students and media personnel. In general, the availability of suitable materials, their appropriate selection, preparation and utilization is extremely important to have success in teaching learning process.

2.7.1 Source of Instructional Materials

As different educators pointed out, IMS can be found in different sources. "In the first place, materials for learning can be found almost everywhere" (Clark and Star, 1996). There are local, state, national and international sources of free and in expensive materials.

As Heinich et al, (1996) indicated that, public libraries some times make video tapes, filmstrips and prints available. Different agencies of state and federal governments make IMs available in schools for the improvement of quality of education. In addition, the federal government is the main sources of free and in expensive materials. According to these scholars, the majority of IMs used by teachers and trainers are ready made and available from different sources: schools, pedagogical centers, school library districts, company collections and other easily accessible sources.

Thus primary schools in general and teachers in particular should pay attention to all these possible sources to find and collect the required instructional materials.

2.7.2 The Role of School Pedagogical Center

In schools of any level, instructional materials could be kept in pedagogical centers, laboratories, libraries, in the classrooms. According

to Amare (2000) these are resource centers that enrich the teaching – learning processes and above all that enhance student-learning. Availability and appropriate functioning of these centers to some extent suggests extending student opportunities for using them and improving their learning.

The term “pedagogical center” is used as the name of an institutional unit that coordinated a number of media related services for students and teachers. Other terms that relate to the pedagogical center are; learning resources center, instructional material center, educational media center and instructional resources center (Carlton and Erickson, 1968). In these centers, school pedagogical coordinators, teachers and students can produce, collect and preserve instructional materials for teaching learning process. Regarding this issue, Hany and Ulmer (1970) argued that if there are extensive media resources available in the schools, greater flexibility can be built in the teaching learning process in terms of providing independent learning; of allowing individual pupils to work on special projects. In addition to the above educators, Heinich et al (1996:18) pointed out those school pedagogical centers are special units with in a school where a wide variety of media are produce, housed, and distributed from.

From these educators, it is possible to understand that the only presence of pedagogical center in schools doesn't contribute a lot to initiate both teachers and students to improve the quality of students learning but school pedagogical center should be require adequate instructional materials, committed and qualified coordinators.

2.8 Preparation of Instructional Materials

According to Heinich et al (1996), teachers have at least three options in obtaining instructional materials chosen for lesson when the selected materials are readily available, then they would be adopted or used as

they are, and this will save much resources and hence should be teachers' first choice. In addition to this, the teacher and students can also have access to the local resources by organizing field trips or by inviting resource persons to the class room to share their experiences and expertise with the students. Paradoxically, when the materials obtained are only partly relevant to the subject of the study, then they can be modified or adapted to meet the specific objectives. If both of the options dose not work, then the third alternative may be to produce new materials.

To summarize, preparation of all types of instructional materials calls for both ingenuity and good judgment, students and teachers should always be alert to new possibilities in the preparation of instructional materials. Despite the fact that the wise of these aids, the teacher will gain security and the pupils will have greater and richer opportunities for learning.

2.9 Utilization of Instructional Materials

Instructional materials are required by Biology teachers, like teachers of others subjects, for the effective teaching of the subject and to realize various objectives of teaching Biology. Furthermore, instructional materials help the teacher to communicate with their students in more desirable and effective way. The utilization of instructional materials can bring an effective relationship between the real world and symbolic world (Clark 1983: Walklin, 1982). That is, they have the power to bring the outside world in to the classroom and the class room in to the outside world.

On the other hand, educators such as Romiszowski (1970) and Hopper (1971, assumed that the purpose of instructional materials was to supplement teachers activities. That is why it was referred to as teaching or instructional aid (Hopper, 1971). More recently, however, educators have recognized that instructional materials have a power to make the

learner active, creative, responsive and independent. This however, will be materialized only to the extent that the teachers are competent to use the teaching materials effectively and to discriminate wisely in their choice of science activity in a given situation.

The principal requirements of today's education are practice oriented, day to day use of classroom knowledge and maximization of independent learning (Arrends 1994, Hall, 1995). Therefore, educators like Heinich et.al (1996), Warkhun (2001) and Collins (1996) have strongly advocated the utilization of instructional materials in the class room for successful achievement of instructional objectives and the development of learners mental thought. Hence, in the modern paradigm of teaching, the utilization of instructional materials seems to be necessary due to a rapid increase in the sources of information and the variety, quantity and quality of instructional materials (media). This invites students to learn from different media rather than limiting themselves to the teachers and class room text books solely (silberman, 1996: Amera, 2003).

This implies that the introduction of fast and accurate instructional technologies have initiated good opportunity and access to utilize instructional materials efficiently and effectively.

In addition, due to the paradigm shift of the teaching learning process, the utilization of instructional materials has become critically important. Supporting this notion, Amare (2001), silberman (1996) and collins (1996) noted that currently there is a move from a teacher to student centered approach instruction. Amare (2000) further contended that "the present era is characterized by what is called the student centered model of education; an androgenic technique"

Teheranian et.al (1997 Cited in Amera (2008), a proper utilization of teaching materials has the potential to produce the best learning. This is because instructional materials have the qualities which predominantly

influence the sense of sight. They further noted the teaching materials promote students attention and interest, which may not be attained through the common "chalk and talk" type of teaching. Moreover, Dale (1969) pointed out that the critical and systematic utilization of IMS in the teaching learning process play a great role, and enables teachers to attain the ultimate goal of liberal education-the development of independent learner who needs less assistance from the teacher. This indicates that the proper use of instructional materials gives freedom to learners in their learning and helps them not to expect every thing from their teachers

According to Kinder (1989:59) the effective utilization of IMS increases the quality of education and enables teachers and students to achieve educational goals. The proper use of IMS gives great values in the teaching learning process (Aggrawal, 1996:154). However, on the contrary, inappropriate utilization of IMS can do more harms than good to the teaching learning activities (Betsate, 2000:36). He added that in appropriate utilization could take any of these forms: under use, or misuse of media these will eventually restrict students learning.

To sum up, the concept of the utilization of IMs can be summarized on these two ideas; the proper and inappropriate utilization of IMs. The proper use of IMs provides several advantages in teaching learning process: It improves quality of primary education by enhancing active learning approach, decreases the dependency of learners on their teachers and provides learners freedom in their learning, provides concrete and meaningful learning experiences by involving all senses of the learners, and enables both teachers and learners achieve educational goals and objectives. On other hand, the reverse may be true if IMs are not used properly by teachers and students.

2.10 Factors Affecting Preparation, Availability and Utilization of Instructional Materials

A number of researchers and educators noted different factors that influencing the preparation, availability, and utilization of IMs. These factors are discussed here under.

2.10.1. Teachers Professional Knowledge and Technical Know how

Since educational communication and technology is a fairly new area of importance in education especially in developing communities, it is a lightly technical field, and to understand how it can affect the instructional delivery. Firstly, one has to understand the operational functionality of the resource kits. As much as materials differ in terms of technical components, design and set up, they also differ in terms of functionality. Some are multi dimensional; capable of various functions such as giving logical out comes, and manipulating information Medyessa (2010) and Aggrawal(1996).

Without the teacher who is knowledgeable enough, instructional materials cannot create change and progress. Teachers knowledge have a great impact on the effective application of instructional materials, this is because the teacher uses need to understand the sequential presentation of instructional gadgets so as to suit the interests of the learners and it appropriateness with instructional tasks (Ema, 2006).

2.10.2 Environmental Factor

Part of the application of instructional materials process is the target population for whom the materials are to be used and the setting or vicinity where the learning should takes place, the degree of satisfaction

derived by children in respect to comfort ability of environment of that learning situation is a great deal.

2.10.3. Financial Constraints

This factor seems to be the handicap why most educational institutions are unable to acquire relevant teaching equipments and materials. It has also adversely affected the quantity and quality of materials and these products students and teachers will lack the opportunity to learn and use new techniques in the field. There are sophisticated instructional materials that can make learning easier and faster such as computer aided programs, but lack of funds has effects on its importation and use in schools. The unsatisfactory funding for teacher education programs stands as one of the major factors working against effective implementation of the program.

The consequence of the under funding of this sector are immediate; for example, it results in the inability to purchase instructional materials to effectively prepare pre-service teachers like computers, text books, laboratory equipments, audio visual aids, slides, video clips, enough chairs and desks in class rooms to keep students from having a stand to receive lectures to mention a few.

2.10.4. Time Constraints

Time, is also a serious problem or factors that impede the effective use of instructional materials in effective instructional delivery in the class, because in most cases the time, that is allotted for a subject on the time table might not be enough for the teachers to present his contents along side with effective use of the materials which will affect the whole some delivery of the content.

2.10.5. Poor Maintenance Culture

Materials available for the effective instructional delivery are poorly handled by both teachers and some school authority. Schools are affected by non availability of resource room for the proper keeping of both the locally manufactured and the commercially purchased instructional materials, there by limiting its use as at the time needed. Many of the teachers use materials occasionally with out the proper upkeep of the materials after used for the future reference.

CHAPTER THREE

3. Research Design and Methodology

3.1 Design of the Study

The purpose of this study was to assess the status of preparation availability and utilization of instructional materials in biology teaching in grade seven and eight primary schools of some selected woredas in North Gonder Zone of Amhara region. To realize this objective, descriptive survey design was used. The use of this design was well supported by Best and Kahan (2005), when they said descriptive survey design is appropriate to describe conditions that exist, opinions that are held, process that are going on, trends that are developing and also to assess the opinions of large sample size. It was intended with the assumption that it could help to get a description of current status of preparation, availability and utilization of teaching materials in upper primary schools biology teaching.

3.2 Sources of Data

In this study, data were gathered from primary and secondary sources. Primary data were collected from school pedagogical center, school directors, school pedagogical center coordinators, Biology teachers and grade seven and eight students. Secondary source of data includes relevant documents such as syllabus of grade seven and eight biology were used to support the findings of the study.

3.3 Population Size, Sample Size and Sampling Technique

Currently, there are 11 zones in Amhara Region and this research was under taken in North Gonder Zone of Amhara Regional State. The researcher selected North Gonder Zone as sample area of this study,

because the researcher has work experience in that zone. In this zone there were 299 upper primary schools in twenty woredas and three administrative towns. For this study three woredas namely Alefa, Dembia and Takussa were selected using purposive sampling techniques. The decision to employ purposive sampling for selecting these woredas was made based on convenience of the researcher in terms of time, cost and access of transportation to collect the required data. Regarding this, Babbie (1973) advised that the researcher can select his samples based on his own knowledge of the population, convenience, and nature of his research aim.

In selected woredas there were 34 upper primary schools. From these schools nine schools were selected using random sampling technique.

As far as the respondents of the study were concerned, the respondents who participated in this study were four types. The total number of respondents included in the study was 32 biology teachers, 180 students, 9 SPC coordinators and 9 directors. Totally 230 respondents participated in this study. A stratified random sampling technique was used for selecting students' representatives for the study. In order to get stratified sample, students were classified by grade levels and by sex. Therefore, 62 male and 35 female totally 97 students from 1928 grade seven and, 54 male and 29 female total 83 students from 1672 grade eight students' were randomly selected. Since the number of biology teachers, SPC coordinators and school directors were limited all were included in the study using available sampling.

Table 3.1 List of schools, number of students, sample size by grade level and sex

Sample schools	No of students by grade			Sample size by grade			Sample size by sex					
							7		8		Total	
	7	8	Total	7	8	Total	M	F	M	F	M	F
Denglber	269	207	476	13	10	23	7	6	9	1	16	7
Atuga	95	65	160	5	3	8	2	3	1	2	3	5
Asedemariam	271	180	451	14	9	23	10	4	6	3	16	7
Delgi	267	225	492	14	11	25	11	3	7	4	18	7
Salig	209	298	507	10	15	25	6	4	9	6	15	10
Kolladuba	310	317	627	15	16	31	8	7	9	7	17	14
Shahura	317	248	565	16	12	28	11	5	8	4	19	9
Chohayte	76	54	130	4	3	7	2	2	2	1	4	3
Gamauber	114	78	192	6	4	10	5	1	3	1	8	2
Total	1928	1672	3600	97	83	180	62	35	54	29	180	

3.4 Data Collection Instruments

To secure reliable and adequate information, selection of appropriate data collection instrument is essential. Therefore, this study mainly employed questionnaires, interviews and observation instruments.

3.4.1 Questionnaires

A questionnaire is an enquiry form of data gathering instrument which respondents answer to the questions provided or respond to statements in writing and used to get factual information (Best and Kahn, 2005). So, the researcher used questionnaire for similar cases. This study uses questionnaires for both teachers and students. Teachers' questionnaire include mainly close-ended with few open-ended and consists of 30 items. The contents basically aimed at exploring preparation, availability and utilization of instructional materials in teaching biology at grade seven and eight. There were items related to the extent that teachers use IMS, directors and SPC coordinators role in producing IMs, source of IMs, attitude of teachers towards IMs, and factors affecting preparation,

availability and utilization of instructional materials. In this study a total of 32 biology teachers were included and all 32 (100%) were returned.

Students' questionnaire consists of 14 items. It was prepared first in English and later translated in to Amharic language in order to make clear and to avoid some possible misunderstanding. The contents were mainly aimed at the students' reaction to preparation and utilization of instructional materials in teaching- learning of biology. There were items related to the production of teaching materials and their attitude towards instructional materials. The questionnaires were distributed to a total of 180 students and all 180(100%) were returned.

3.4.2 Interview

Interview gives the needed information orally and face to face. Moreover, interview is important to find out what is or on some one else mind (Best and Kahn, 2005). Gubrium and Holstein (2001), also state that interview is a useful instrument to generate useful and often crucial information. Thus, with this assumption interview was used as a data gathering instrument for this study. For this study semi-structured interview schedule consists of 8 items were prepared on issues related to the preparation, utilization and major factors that affect preparation and utilization of IMs. It was conducted to each school pedagogical coordinators and directors.

3.4.3 Observation Checklist

For this study, observation cheek list consisting of 8 items was prepared to find out the availability of pedagogical center rooms, biology curricular materials, borrowing list, guide material, arrangement of instructional materials in SPC and types of instructional materials.

3.5 Pilot Testing of Instruments

After developing the data gathering instruments, pilot testing was conducted. The purpose of pilot test is to ensure whether the questionnaire is free from vague and irrelevant item. Thus, Esseydeber non-sample primary school was selected and the instruments were tested. Further more, participants of the pilot test were informed about the objectives of the study and how to fill, and give feedback regarding the relevance of the question items, its length and layout. Based on the suggestion forwarded, necessary corrections were made before they were administrated to the subject of the study.

3.6 Method of Data Analysis

The data analysis concerned both for qualitative and quantitative approaches were employed. All the data that were gathered from questionnaires were tallied, tabulate, analyzed and interpreted using percentage. On the other hand, the information obtained from interview and observation was qualitatively described in words.

CHAPTER FOUR

4. Presentation, Analysis and Interpretation of the Data

The objective of this study was to assess the status of preparation, availability and utilization of instructional materials in biology in grade seven and eight primary schools of some selected woredas in North Gonder zone. To this effect, this chapter deals with the presentation, analysis and interpretation of the data collected using various instruments. The chapter is organized in to five main sections. First, back ground characteristics of the respondents were discussed, followed by the items which focus on preparation, availability, utilization and those factors influencing preparation, availability and utilization in upper primary schools.

4.1 Background Characteristics of Respondents

The main source of the data for this study were biology teachers, grade 7 and 8 students, school pedagogical coordinators and school directors. Identifying the background characteristics of the respondents was very important in the analysis and discussion of the data for it tells from whom the data was collected.

Table 4.1: Background Characteristics of the Respondents

Variable	Category	Respondents							
		Teachers		Directors		SPC coordinators		Students	
		N	%	N	%	N	%	N	%
Sex	Male	20	62.5	9	100	9	100	116	64.4
	female	12	37.5	-	-	-	-	64	35.6
Age	20-30	25	78.1	5	55.6	5	55.6	-	-
	31-40	7	21.9	2	22.2	3	33.3	-	-
	41-50	-	-	2	22.2	1	11.1	-	-
Qualification	TTI	4	12.5	-	-	3	33.3	-	-
	Diploma	22	68.7	6	66.7	5	55.6	-	-
	Degree	6	18.8	3	33.3	1	11.1	-	-
Years of experience	1-10	22	68.7	3	33.3	7	77.8	-	-
	11-20	7	21.9	4	44.4	2	22.2	-	-
	21-30	3	9.4	2	22.2	-	-	-	-

As it can be seen from Table 4.1, about 62.5% teachers, 100% of Directors, 100% of SPC coordinators and 116(64.4%) of students were males, only 37.7% of teachers and 64(35.6%) of students were females. Regarding their age the majority of respondents, namely 78.1% of teachers, 55.6% Directors and 55.6% SPC coordinators were between 20-30 years of age. Furthermore, 21.9% teachers, 22.2% of the school directors and 33.3% of SPC coordinators were between 31-40 years. The rest were between 41 and 50 years.

Pertaining to their qualification, 68.7% of teachers, 66.7% directors and 55.6% SPC coordinators had diploma, 18.8% of teachers and 33.3% Directors and 11.1% SPC coordinators had degree. In addition 12.5%

and 33.3% of teachers and SPC coordinators had TTI (certificate) respectively. Regarding their work experience, 68.7% teachers 33%3 Directors and 77.8 SPC- coordinators had between 1-10 years of service, whereas 21.9 of teachers and 44.4% directors and 22.2% SPC coordinators had between 11 and 20 years of service. The remaining 9.4% of teachers 22.2% school directors had work experience ranging from 21 to 30 years.

4.2 Preparation of Instructional Materials

According to Heinich etal (1996). The available materials can modified and produced in a better way of IMs preparation.

Instructional materials are prepared by various community members of the school. Students and teachers usually participate in preparation of IMs in the SPC. Therefore, the following table shows the frequency of IMs preparation.

Table 4.2: Frequency of Preparation of Instructional Materials

No	Item	Choice	Teachers		Students	
			Frq.	%	Frq.	%
1	Do you prepare teaching materials for biology instruction?	yes	29	90.6	32	17.8
		No	3	9.4	148	82.2
2	How often do you participate in the preparation of IMs?	Always	3	9.4	-	-
		Sometimes	26	81.2	-	-
		Never	3	9.4	-	-
3	How often do you assign students to produce teaching materials to help them learn by doing?	Always	2	6.3	-	-
		Sometimes	28	87.5	-	-
		Never	2	6.3	-	-

Table 4.2 shows that 29(90.6%) of the teacher and 32(17.8%) of student respondents pointed out that they prepare teaching materials for biology instruction. On the other hand 3(9.4%) and 148(82.2%) of students replied that they did not prepare teaching materials for biology teaching.

As indicated in Table 4.2 item 2, the majority of the respondents, 26(81.2%) have responded that they sometimes prepare instructional materials and 3(9.4%) of them reported that they have never prepared IMs. The remaining 3(9.4%) of teachers reported that they always prepare instructional materials in their lesson. Hence, the results in Table 4.2 tell us that the majority of the respondents agreed that they do not frequently prepare instructional materials in their lesson.

In addition to this, interview was conducted to school pedagogical center coordinators, regarding teachers' level of preparation of instructional materials. According to Ato Tadesse (one of the coordinators) said that:

“Teachers have commitment and self initiation in preparing IMs for the teaching learning process” (25/04/2003 E.C)

Also as shown in Table 4.2 item 3 above clearly shows that out of 32 teacher respondents, 28(87.5%) of them replied that they ‘sometimes’ assign their students to produce IMs. On the other hand, 2(6.3%) of the respondents answered that they always assign their students to prepare IMs to help them learn through learning by doing. Out of the total teacher respondents 2(6.3%) of them replied that they never assign their students to prepare IMs. From the above Table discussions, it appears that biology teachers in the sample schools have not given attention to the benefits obtained from production of IMs.

4.2.1 The Role of the School Directors and School Pedagogical Center Coordinators on Producing Instructional Materials

A school pedagogical center requires a well competent coordinator so as to support greatly the realization of educational objectives. At the same time the school pedagogical center coordinator is expected to help teachers in producing and using IMs in teaching learning process where as directors are expected to give more emphasis in financing and furnishing the SPC. This is possible if and only if when the school directors and SPC coordinators have higher cooperation in producing instructional materials.

Table 4.3: Assistance Made by School Director and SPC Coordinators in Producing Instructional Materials

No	Item	Teacher respondents							
		Very high		High		Low		Very low	
		N	%	N	%	N	%	N	%
4	To what extent do school directors help you in producing IMs?	-	-	5	15.6	19	59.4	8	25
5	How do you rate the cooperation of school pedagogical center coordinators for the producing of IMs?	2	6.3	1	3.1	21	65.6	8	25

As indicated in table 4.3, out of 32 teachers 59.4% of them revealed that the support and encouragement given to the production of instructional materials on the part of school directors was low. And again, of the total respondents, 8(25%) of them answered that it is very low. Only few teachers 5(15.6%) of the total respondents responded that it is high.

Regarding this point, Ato Abebe SPC coordinator's said:

"The role of the school director in supporting the SPC is passive, especially in allocating budget timely and providing important materials". (28/04/2003 E.C)

It is noticeably observable from Table 4.3 item 5, above most teachers about 21(65.6%) responded that the cooperation of school pedagogical center coordinators in the production of IMs was low, while 8(25%) of the respondents indicated the cooperation of school pedagogical coordinator, were very low and 1(3.1%) of teacher respondents and 'High'. In similar manner, the researcher has observed that the overall nature of the school pedagogical center, arrangement of instructional materials, level of utilization and production were not satisfactory, similarly, school directors were asked how they assigning pedagogical coordinators; and they put the following criteria:- Good handwriting, drawing ability and interest.

However most of SPC coordinators were assigned to that position not based on training or competency. This results indicates in sufficient school pedagogical coordinators cooperation in producing biology instructional materials

4.3 Availability of Instructional Materials

As several literature and research findings indicated, the availability of media resources in schools is a very important factor for quality of education in general and initiate teachers, SPC coordinators and students in preparing and using IMs in the teaching learning process in particular. This is because SPCs are the main sources of IMs at school level.

During the observation of the sample schools, it was found that all the observed primary schools have school pedagogical center. However, there were many disparities among these pedagogical centers. Hence,

seven of the schools' pedagogical centers did not give the expected service to the teaching learning process. However, there was a satisfactory amount of service in two from the observed schools. In all cases there were scarcities of equipments to produce instructional materials. It was also observed that some of the SPCs lacked adequate space, since the rooms were small. However, there are also some other centers with enough space to do the pedagogical activities effectively if there are committed to do so.

Moreover, during the time of observation, the researcher tried to check match between the availability of IMs, with the syllabus designed for grade 7 and 8 student materials. As a result, the researcher has seen that there is a mismatch between the need of IMs in the syllabus and the actually available materials in the school pedagogical center. The most common instructional materials found in the schools pedagogical center are charts, models, pictures and diagrams. (see the attached appendix F)

4.4 Utilization of Instructional Materials

Educators like Heinich etal (1996), Wakshun (2001) have strongly advocated the utilization of IMs in class room for successful achievement of instructional objective and the development of learners mental thought. Kinder (1989) on his part, stated that the effective utilization of IMs increases the quality of education and enables teachers and students to achieve educational goals.

Respondents were also asked whether they utilize IMs for biology teaching or not. The following table depicts their response:

Table 4.4: Level of utilization of IMs, as reported by Teachers and students

No	Item	Choice	Teacher		Students	
			Frq	%	Frq	%
7	Did you use locally available materials for the purpose of biology instructions	Yes	24	75	-	-
		No	8	25	-	-
8	Frequency of utilization of IMs?	Always	2	6.2	7	3.8
		Sometimes	22	68.8	163	90.6
		Never	8	25	10	5.6
9	Do teachers evaluation on utilization of IMs strong enough?	Yes	9	28.1	-	-
		No	23	71.9	-	-

The majority of the respondents 24(75%) responded that, they use locally available materials during biology lessons. On the other hand 8(25%) of the respondents answered that they did not use teaching materials while teaching biology. According to Amare (1999) instructional materials makes instruction concrete and relevant for students, which in turn allows then to construct meaning by piecing to gather bits of information. More over instructional materials provide a more direct form of experience to facilitate learning, seeing, doing and trying.

So, Biology teachers who do not frequently use instructional materials during instruction are forced to use lecture method of teaching and they can not initiate students to make self-confident. Along with this, they can not promote students activity and their creative ability.

In table 4.4 item, 8 above 22 (68.8%) teachers have responded that 'some' times utilize instructional materials. On the other hand 8(25%) of

teacher respondents answered that they never utilize instructional materials in their lesson

As can be depicted from table 4.4 above 163 (90.6%) of the respondents students reported that teachers 'sometimes' utilize biology instructional materials. And 10(5.6%) stated 'never' utilize biology instructional materials, which implies that teachers focused on traditional teaching learning process that is teacher centered "talk chalk method". Only 7(3.5%) of the respondents reported that they always utilize biology instructional materials. Particularly one SPC coordinators Ato Brhanu stated that:

Biology teachers' frequency of utilization for instructional materials is rare or small extent (6/5/2003 E.C)

From the results above it is observed that the majority of the teachers and students agreed that teachers did not frequently utilize instructional materials.

The results of table 4.4 item 9 indicate that the majority of respondents 23 (71.9%) replied that even though it is included in the teachers' evaluation criteria, it is not strong enough for effective use of IMs. On the other hand, only 9 (28.1%) of the respondents indicate that teachers evaluation of IMs utilization is strong enough.

4.4.1 The Contribution of School Pedagogical Center in Facilitating Biology Teaching Learning Process

In school of any level, instructional materials are kept in pedagogical centers which are resource centers that enrich the teaching learning process and enhance student learning. According to Brown et al (1977) educational media centers are regarded as places where students pursue a full variety of learning experience

Table 4.5: The Contribution of School Pedagogical Center in Facilitating Biology Teaching Learning Process

No	Item	Choice	Teacher	
			F	%
10	How do you evaluate the contribution of SPC in facilitating biology teaching?	Very high	18	56.3
		High	10	31.3
		Medium	4	12.5
		low	-	-
		Very low	-	-

As indicated in table 4.5, the majority of teacher respondents 18(56.3%) of the sample schools have responded that the contribution of school pedagogical centers in facilitating teaching- learning process was very high, while 10(31.3) of teachers said that the SPC contribution was high. Further more, 4(12.5%) of teachers responded that the contribution of school pedagogical center in facilitating teaching learning process was medium.

Concerning the contribution of school pedagogical centers in facilitating the teaching learning process, all SPC coordinators were interviewed and all of them believe that the SPC have a positive contribution to their teaching learning process.

4.4.2 Sources of Instructional Materials

According to Heinch et al (1996), the sources of IMS can be SPCs, libraries, the community, public libraries, museums, government and non government organizations, publishing houses etc thus the school in general and teachers and SPC coordinators in particular are expected to pay attention to different sources to display IMs and use them in the teaching learning process. In line with this issue, teachers were asked to

respond on the sources of IMs that they were using in the teaching learning process. And the data collected from those teachers are organized in Table.4.6.

Table 4.6: The Sources that Teachers Use to get IMS

No	Item	Alternative	Teacher respondents	
			Freq.	%
11	Where do you obtain the IMs required in the teaching learning process?	From school library	8	25
		From other near by schools	4	12.5
		From school pedagogical center	20	62.5
		From community	-	-

As it is observed in Table 4.6, out of the total number of teachers, 20(62.5% of them responded that they used the SPC as a source, and 8(25%) and 4(12.5%) of the teachers said that they obtain the IMs from the school library and from the near by schools.

4.5 Factors Affecting the Preparation, Availability and Utilization of Instructional Materials

To explore major factors influence preparation, availability and utilization of instructional materials in teaching biology at upper primary school level, questions regarding training opportunity, availability of guide materials, availability of skilled pedagogical center coordinators, budget allocation, teachers and students attitude and other related factors were posed to the respondents. The response will be presented as follows:

Table 4.7 :Problems in Preparing and Using Instructional Materials

No	Item	Choice	Teacher respondents	
			Freq.	%
12	Have you faced problem in preparing IMs?	Yes	27	84.4
		No	5	15.6
13	If your answer No 12 is yes, which of the following do you think following do you think to be major problem in your school?	In adequate training	8	25
		Lack of time and equipment	4	12.5
		Lack of teacher interest	3	9.4
		Lack of financial and material support	17	53.1
		Problem of manipulation IMS	-	-

As depicted in table 4.7 most of the teachers 27(84.4) responded that they face problems in preparing and utilizing instructional materials on the other hand, only 5(15.6%) of teachers have replied that they did not face any problem in preparing and using instructional materials. According to Table 4.7, most teachers agreed that they face problems in preparing and using IMS. Similarly, the interview made to the SPC coordinators indicate that the major problems in preparing and using IMs are lack of necessary equipments, lack of adequate budget, lack of adequate training and experienced man power and lack of teachers and directions commitment towards the production of IMs.

Table 4.7 item, 13 reveals that 17(53.1%) of the teacher respondents responded that lack of financial and material support is the first major problem in preparing and using instructional materials. Similarly 8(25%)

teachers responded that in adequacy of training to be the major problems. On the other hand, only 4(12.5) and 3(9.4%) of teachers answered that lack of time and teachers interest to be the major problems respectively. Hence, it is obvious that lack of financial and material support and inadequacy of training are the most serious problems encountered for the low performance of school pedagogical centers, while lack of time and lack of teacher’s interest are the other serious problems in preparing and using instructional materials

According to the result of the interview with the school directors, the availability of IMs, in SPC, the finance allocation for SPC, teachers’ attitude towards IMs, teachers knowledge and skill on the preparation and utilization of instructional materials have a negative impact in the teaching learning process.

Table 4.8: Training Opportunity of Biology Teachers to produce and use of Instructional Materials

No	Item	Choice	Teacher respondents	
			Freq.	%
14	Have you taken any training on how to produce and utilize biology IMs?	Yes	5	15.6
		No	27	84.4

As show in table 4.8, 27 (84.4%) of the respondents answered that, they did not took training to produce and use of instructional materials. These respondents can’t be competent enough to disseminate their information to their students during instruction. Lack of training on how to produce and use of instructional materials bring a problem of understanding of the subject matter easily on the part of the student

On the other hand, 5(15.6%) of biology teachers responded that they participated in training. This information indicates that the respondents taken training on how to produce and using instructional materials, knowing how to produce and using teaching materials, is very important for any teacher to disseminate the information to their students

4.5.1 Availability of Guide Materials for Production and Utilization of IMs

Media related guide materials would help teachers to develop their knowledge and skills in preparation and utilization of instructional materials. In this regard an attempt was made to obtain evidences whether or not the targets SPC have got such guide material.

All teachers responded that no guide material on how to produce and use of instructional materials at pedagogical center. Even all the directors and SPC coordinators confirmed that there is absence of guide materials in their respective SPC. Further more, the researcher observed that there was absence of guide material in the school pedagogical centers.

4.5.2 Availability of Skilled School Pedagogical Coordinator

School pedagogical center coordinators are required to give a lot of services to teachers and students. However, to accomplish all the expected services the coordinator should trained in material preparation and utilization

Table 4.9: Frequency and Percentage Distribution of Availability of Skilled School Pedagogical Center.

No	Item	Choise	Teacher respondents	
			Freq.	%
15	Is there trained school pedagogical center coordinator in your school	Yes	9	28.1
		No	23	71.9

According table 4.9 out of the total number of teacher 23(71.9%) of the respondents answered that there is no skilled SPC coordinators, whereas 9(28.1%) biology teachers replied that yes. Therefore from the finding of this study it is possible to say lack of trained school pedagogical center coordinator affects the preparation of necessary instructional materials in the school pedagogical centers.

4.5.3 Budget Allocation for the Purpose of SPC

The production of instructional materials requires adequate budget allocation to the activities performed in the school pedagogical centers. In this regard the data were gathered from SPC coordinators and school directors through interview.

Table 4.10: Budget Allocated for Sample Schools Pedagogical Center

No	Name of sample school	Budget allocated for each school pedagogical center (2003 E C)
1	Shahura	600
2	Gamauber	550
3	Astedemariam	765
4	Denglber	700
5	Atuga	400
6	Deligi	650
7	Kolladuba	520
8	Salige	800
9	Chohayte	450

According to the interview with the school directors and school pedagogical coordinators most of the respondents indicated that the allocated budget for their schools was insufficient.

4.5.4 Teachers Attitude Towards Preparation Availability and Utilization of Biology Instructional Materials

The attitude of teachers in the educational system has an impact on the preparation and utilization of instructional materials. For instance, Erkyhun et. al cited Tilahun (1999:80) indicated that teachers with positive attitude towards instructional media were found to show better mean scores in producing, borrowing and utilizing instructional materials than those with low attitude. This, teachers' attitude towards, instructional materials plays a great role in utilizing the materials. To this end, great efforts should be done in developing a favorable attitude towards instructional materials for it determines the effective use of the instructional materials.

Teachers were asked to rate the statements that are intended to measure the extent of opinion towards instructional materials. The rating scale was constructed in the form of likert scale. Teachers were given five options to select ranging from strongly agree up to strongly disagree 6 favorable and 6 unfavorable totally 12 item opinion statements were used as a measuring device.

The responses of teachers to the attitude describing statements are illustrated in table below

Table 4.11: Teachers Attitude toward Instructional Materials

No	Item	Scale					
		Agree		Undecided		Disagree	
		N	%	N	%	N	%
1	Biology IMs are good supplement to teaching learning process	28	87.5	4	12.5	-	-
2	UBIMs simplifies the difficulty of biology teaching	24	75	3	9.4	5	15.6
3	BIMs stimulates student interest	28	87.5	4	12.5	-	-
4	Biology IMs are little use in regular class room	11	34.4	6	18.8	15	46.8
5	I am happy that my teaching is supported by IMs	30	93.8	2	6.3	-	-
6	BIMs provide a more direct form of experience to facilitate veering, seeing, doing and trying	28	87.5	4	12.5	-	-
7	Peoples can best learn with out UBIMs	8	25	-	-	24	75
8	UBIMs do not bring change in the achievement of student	7	21.9	5	15.6	20	62.5
9	Preparing BIMs is wasteful of my free time	9	28.1	8	25	15	46.9
10	Taking training on UBIMs discourage my confidence	-	-	6	18.8	26	81.2
11	BIMs do not facilitate active learning method	1	3.1	1	3.1	30	93.8
12	IMs help the teacher in capturing the attention of his students	28	87.5	2	6.3	2	6.3

As shown in item 1 Table 4.11, the respondents agreed (87.5%) on the issue “biology IMs are good supplement to teaching learning”. So, majority of the respondents had an agreement on the item.

As item two of the same table depicts that majority of the respondents agreed (75%), on the issue where as 15.6 percent disagreed to the issue.

With regard to item 3 of Table 4.11, majority (87.5%) of the respondents agreed on the issue where as item 4 of this table indicates that 46.8 percent disagreed and 34.4 percent agreed on the issue.

To item five of Table 4.11, the respondents’ responses indicated that 93.8% agreed on the issue. And as item six of the same table shows 87.5 % of respondents agreed on the idea of the item.

As shown in item seven of table 4.11, majority (75%) of the respondents disagreed to the issue where as item eight of the same table indicates that 62.5% of the respondents disagreed on the idea of the item.

In regard to item nine Table 4.11, majority (46.9%) of the respondents disagreed where as 28.1% agreed on the issue. When we come to item ten of this table majority (81.2%) of the respondents disagreed on the items idea.

With regard to item eleven of this table majority (93.8%) of the respondents disagreed on the issue as IMs do not facilitate active learning method.

The last item of table 4.11 indicates that the majority (87.5%) of the respondents agreed on the issue.

4.5.5 Students Attitude Towards Biology Instructional Materials

Students were asked to rate statements that are intended to assess the extent of opinion toward biology IMS. The rating scale was constructed

in the form of Likert scale students were given five alternatives to select ranging from strongly agree to strongly disagree. Five favorable and five unfavorable totally 10 item opinion statements were used as measuring device. The responses of students to the attitude describing statements are summarized in Table 4.12.

Table 4.12: The Responses of Students to the Attitude Describing Statement in Biology Instructional Materials

No	Statement	Scale					
		Agree		Undecided		Disagree	
		N	%	N	%	N	%
1	I really dislike biology	7	3.9	7	3.9	166	92.2
2	I hate biology instructional materials	32	17.8	16	8.9	132	73.3
3	Using biology instructional materials making learning enjoyable	148	82.2	16	8.9	16	8.9
4	Using biology instructional materials waste valuable time	29	16.1	38	21.1	113	62.8
5	Using biology instructional materials help me to be more actively participate in the practical activities	162	90	9	5	9	5
6	I like using biology IMS because they help us to visualize concepts and principles by observation	171	95	-	-	9	5
7	I always pleased when biology class comes to using biology instructional materials	151	83.9	14	7.8	15	8.3
8	We can best learn with out using biology instructional materials	28	15.6	35	19.4	117	65
9	Using biology instructional materials help me to stimulate and maintain interest in biology	168	93.3	7	3.9	5	2.8
10	I can not see much value on biology subject	4	2.2	14	7.8	162	90

With regard to item 1 Table 4.12 indicates that majority, (92.2 percent) of the respondents disagreed on the issue whereas item two of this table, majority (73.3 percent) of the respondents disagreed on the idea of the item.

As shown in item three of Table 4.12, majority (82.2%) of the respondents agreed on the issue. And item four of the same table indicates that majority (62.8 percent) of the respondents disagreed the idea whereas 21.1 percent of respondents undecided on it.

When considering item five of Table 4.12, majority (90 percent) of the respondents agreed on the issue where as item six of this table shows that majority (95 percent) of the respondents agreed on the issue.

In regard to item seven of Table 4.12, majority (83.9 percent) of the respondents agreed on the idea of the given item. The eighth item of this table also shows that majority (65 percent) of the respondents disagreed on the issue where as 19.4% of the respondents undecided on the issue.

As item nine of table 4.12, majority (93.3 %) of the respondents agreed on the issue. The last item of this table indicates also majority (90%) of the respondents disagreed on the issue.

CHAPTER FIVE

5. Summary, Conclusions and Recommendations

This chapter summarizes the major findings of the study and drawn conclusion on the basis of the findings. At the end, recommendations that are thought to address the problems are forwarded.

5.1 Summary

The purpose of this study was to assess the preparation, availability and utilization of teaching materials in biology teaching in selected primary schools of North Gonder in Amhara Reign. To this end, data were collected from a total 230 respondents as well as from secondary sources. Data collection tools were questionnaires, interview and observation. The following basic research questions were set:

1. To what extent biology instructional materials are available in upper primary schools?
2. How often do biology teachers use instructional materials?
3. Do biology teachers and students produce teaching materials for biology teaching?
4. Do biology teachers and students have favorable attitude towards preparation, availability and utilization of instructional materials?
5. What factors do affect the preparation, availability and utilization of instructional materials?

Finally data were analyzed using frequency counts and percentages and the qualitative data obtained through interview and observation were triangulated with the quantitative data. The analysis of the data resulted in the following major findings:

1. The study revealed that all the observed schools have pedagogical centers although they are not well equipped with the necessary materials.
2. In the study, it was also found out that majority of biology teachers used SPC as a source of teaching material
3. The study indicated that majority of biology teachers did not frequently prepare and utilize instructional materials in their teaching.
4. In the study, it was found out that there was shortage of Instructional materials to be used for teaching.
5. The study disclosed that majority of biology teachers did not assign their students in producing of instructional materials.
6. It was found out that the majority of the biology teachers showed that the support and encouragement provided by school directors for the production of IMs is in the sample schools of North Gonder zone is low.
7. The study indicates that the SPC coordinators' cooperation to the biology teacher to produce their own IMs was low.
8. The study indicated that all the biology teachers rated that the contribution of SPC to their teaching was high.
9. It was found out that the annual budget allocated for the school pedagogical centers activity was insufficient.
10. The study revealed that the guide materials in all sample schools of SPC was not available

11. The biology teachers and SPC coordinators have not taken a training on how to produce and utilize instructional materials
12. The study disclosed that teachers and students of the sample schools had a favorable attitude towards the instructional materials
13. The study indicated that there is a mismatch between the need of IMs in the syllabus (Grade 7 and 8) and the actual available materials in the schools pedagogical centers.
14. The study showed that the major problems in producing and using IMs are lack of financial and material support, inadequate training, lack of time and equipment and lack of teacher interest respectively.

5.2 Conclusion

Based on the Major Findings of the study, the following conclusions are drawn:

1. The availability of SPC in upper primary school is very important input for the quality of education in general and to initiate teachers, SPC coordinators and students in preparing, borrowing and consumption of IMs in particular. Since SPCs are the main sources of IMs at school level. Regarding to this idea, the study indicated that all the observed schools have SPC and Majority of the teachers use teaching materials from it. However, it is concluded that though there is availability of SPC and utilization of teaching materials by the teachers its frequency is rare or/ and sometimes, as a result, there is an inadequate preparation and utilization of teaching materials

2. Pertaining to the cooperation of school directors and SPC coordinators activities expected of them regarding instructional materials were not sufficiently implemented. Hence, it can be concluded that school pedagogical center were not well facilitated and surrendered the necessary support by the school directors and SPC coordinators
3. As to the involvement of students in producing of IMS, the result of the study indicated that biology teachers don't coordinate students to participate in the work of SPC so, depending on the result of the study it can be concluded that there is no any involvement of students in producing IMs in the SPC which is supported by the teachers.
4. Regarding teachers and students attitude the result indicated that teachers and students have favorable attitude towards IMs. Thus, it can be concluded that lack of interest is not a major problem in producing and utilization instructional material.
5. As to the unification of syllabus and SPC, the major findings show that the IMS listed down in the syllabus in Grade 7 and 8 and the available teaching materials in the SPC are mismatched. Hence, it can be concluded that there is a gap between the teaching material referred in the syllabus and the available ones in the SPC.
6. The other major findings as result indicated that there is no guide material in school pedagogical center on how to prepare and utilize IMs in all the sampled schools. Thus, it can be concluded that there is a problem of guide materials of SPC in North Gondar of upper primary schools.

7. At last, the study indicated that the major problems in producing and using IMS are lack of financial and material support, in adequate training, lack of time and equipment and lack of teacher interest respectively. Thus, it is possible to conclude that these factors can affect the biology teaching learning process.

5.3 Recommendations-

Based on the major findings of the study, the following recommendation are forwarded

- The findings of the study revealed that schools have the problem of inadequate preparation and utilization of teaching materials in Biology. Besides the result of the finding adds that majority of the teachers use SPC as only source of IMs. The department heads and SPC coordinators in collaboration with biology teachers should plan and work for IMs preparation in addition to the utilization of the available once.
- The study revealed that the directors' emphasis of cooperation is given less and there is no more involvement of students in the production of IMs in the school's pedagogical center using time scheduled. Therefore, school directors should work a lot in helping of SPC and initiate the teachers to make their students participate in pedagogical center having a club of interested students in the art of picturing.
- Without sources of raw materials and reasonable amount of budget allocated to the school pedagogical center it is difficult to make effective teaching process. Concerning the provision of financial and material support to SPCs, the result of the study shows that

there was no significant support. So the teachers and the principal of the school should generate school income by writing a project to the nearby NGOs and to the local community.

- The study indicated that there is a gap between the ordered lists of teaching materials in the syllabus to be used by the teachers in classroom and they apply having their lesson plans. Therefore, the biology teachers should go beyond the usual use of these materials from SPCs because the result implied that there is a mismatching of the teaching materials written in the syllabus and the teachers carry out in the class room.
- School administrators should make effort in providing instructional materials by buying model IMs and monitor teachers in process of teaching and learning how far they are exercising or **using IMs in class.**
- Finally, it is recommended that the cluster and school based supervisors and department heads with collaboration of the school principal should give emphasis to make students learning more concrete, meaningful, dynamic, creative and problem solving by integrating adequate IMs in the teaching learning process.

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Appendix A
Addis Ababa University
College of Education
Department of Curriculum and Teachers
Professional Development Studies
A questionnaire to be filled by biology teachers

The main purpose of this questionnaire is to gather relevant information about the availability, preparation and utilization of instructional materials for Biology teaching at the second cycle of some selected primary schools in North Gonder Zone of Amhara regional state. The information you provide will be only for the research purpose. Hence, you are kindly requested to fill out this questionnaire, genuinely and responsibly. Truthfulness of the response give contributes a lot to the study. No need of writing your name

Thank you for your cooperation

Part I. Background Information

Direction: please fill in the blank space with the right response

1. Name of the school _____
2. Sex _____
3. Age _____
4. Educational qualification _____
5. Years of experience in teaching _____
6. Grade level you teach _____

Direction: the question given below is followed by possible alternative responses. Please indicate your responses by selecting the appropriate

A. Yes

B. No

15. If your response for question number '7' is yes when (specify the _____ year),
how many times and how long did you take the training? _____

16. Do you have guide material in your school on how to prepare and use
of instructional materials?

A. Yes

B. No

17. Is there trained school pedagogical center coordinator in your school?

A. yes

B. No

18. In general, if you have any additional idea and suggestion regarding to
availability, preparation and utilization of instructional materials and
problems related to this, please specify here _____

Part VI. Likert Attitude Scale

Direction: Below are given a list of items about biology instructional materials. Read each statement carefully and show the number of your choice that best represents your response by putting a tick mark (✓) on the space provided

Use the following scoring key

Strongly agree	5
Agree	4
Undecided	3
Disagree	2
Strongly disagree	1

Remember: UBIMS: Utilization of Biology instructional materials

BIMS: Biology instructional materials

No	Statement	5	4	3	2	1
1	Biology IMS are good supplement to teachings learning process					
2	UBIMS simplifies the difficulty of biology teaching					
3	BIMS stimulates students interest					
4	Biology IMS are little use in regular class room					
5	I am happy that my teaching is supported by IMS					
6	BIMS provide a more direct form of experience to facilitate hearing, seeing, doing and trying					
7	Pupils can best learn with out UBIMS					
8	UBIMS do not bring change in the achievement of students					
9	Preparing BIMS is wasteful of my free time					
10	Taking training on UBIMS increased my confidence					
11	BIMS do not facilitate active leaning method					
12	IMS help the teacher in capturing the attention of his students					

Appendix -B

Addis Ababa University

Department of Curriculum and

Teachers Professional Development Studies

A questionnaire to be filled by students

Part: I Basic Information

Please fill in the blank space with right responses

1. Name of the school _____
2. Sex _____
3. Grade level _____
4. Section _____

Part II

Direction: Below are given a list of items about Biology instructional materials (BIMS) Read each statement carefully and show your choice that best represents your level of agreement by putting a tick mark (✓).

Use the following scoring key

- | | |
|-------------------|----------------------|
| 5- Strongly agree | 3- Undecided |
| 4- Agree | 2- Disagree |
| | 1- Strongly disagree |

APPENDIX - B

አዲስ አበባ ዩኒቨርሲቲ

የካሪኩለምና የመምህራን ሙያ ዕድገት ጥናት ትምህርት ክፍል

የድህረ ምረቃ ፕሮግራም

በተማሪ የሚሞላ መጠይቅ

ክፍል አንድ፡ መሠረታዊ መረጃዎች

1. የትምህርት ቤቱ ስም _____ 3. የክፍል ደረጃ _____

2. ጾታ _____ 4. ሴክሽን _____

ክፍል ሁለት

ትዕዛዝ፡ ከዚህ በታች ዝንባሌን የሚጠይቁ ዓረፍተ ነገሮች ቀርበዋል። በያንዳንዱ ጥያቄ የእናንተን መስማማትና አለመስማማት የሚያመለክቱ አማራጮች ተሰጥተዋል። በመሆኑም ጥያቄው በማንበብ በይበልጥ የምትስማሙበትን ምርጫ በአረፍተ ነገሩ ፊት ለፊት በተሰጠው ክፍት ቦታ ላይ ይህን (✓) ምልክት በመጠቀም አመልክቱ።

በጣም እስማማለሁ - 5

ለመወሰን እቸገራለሁ - 3

እስማማለሁ - 4

አልስማማም - 2

በጭራሽ አልስማማም - 1

ተ.ቁ	ዐረፍተ ነገር	5	4	3	2	1
1	የስነ ህይወት ትምህርትን በጣም እወደዋለሁ					
2	የስነ ህይወት መርጃ መሣሪያ አልወድም					
3	የስነ ህይወት መርጃ መሣሪያ መጠቀም ደስተኛ ያደርገኛል					
4	የስነ ህይወት መርጃ መሣሪያ መጠቀም የመማሪያ ጊዜ ያባክናል					
5	የስነ ህይወት መርጃ መሣሪያ በተግባር ስራ ይበልጥ እንድሳተፍ ያደርገኛል					
6	የስነ ህይወት መርጃ መሣሪያ መጠቀምን እወዳለሁ፤ ምክንያቱም የትምህርቴን ፅንሰ ሀሳብና ስልቱን በማየት					

	መገንዘብ ስለሚያስችለን					
7	የስነ ህይወት ትምህርት ሁል ጊዜ በመርጃ መሣሪያ ተደግፎ ሲቀርብ እደሰታለሁ					
8	ያለመርጃ መሣሪያ በደንብ መማር እችላለሁ					
9	የስነ-ህይወት መርጃ መሣሪያዎችን በመጠቀም ለትምህርቱ ያለኝን ፍላጎት በቀጣይነት የማነሳሳት ባህሪን ይፈጥርልኛል					
10	የስነ ህይወት ትምህርት ጥቅም አይታየኝም					

ክፍል ሦስት

ከዚህ በታች ለቀረቡት ጥያቄዎች አማራጭ ላላቸው ትክክለኛውን መልስ በማክበብ እንዲሁም አማራጭ ለሌላቸው ደግሞ በተሰጠው ባዶ ቦታ መልሳችሁን ግለፁ፡፡

1. የስነ ህይወት መምህራችሁ እየሰራችሁ እንድትማሩባቸው የሚያገለግሉ የመርጃ መሣሪያዎችን እንድትሰሩ ያደርጓችኋል?

ሀ. አዎ ለ. አይደለም

2. የስነ ህይወት መምህራችሁ የመማር ማስተማሩ ሂደትን ተግባራዊ በሆነ መልኩ ለመደገፍ ለምን ያክል ጊዜ መረጃ መሳሪያዎችን ይጠቀማሉ?

ሀ. ሁል ጊዜ ለ. አንዳንድ ጊዜ ሐ. አልፎ አልፎ
መ. በፍፁም አይጠቀሙም

3. የስነ ህይወት መማሪያ መፅሐፍ አለህ/ ሽ?

ሀ. አለኝ ለ. የለኝም

4. በተጨማሪ መግለፅ የምትፈልጉት ነገር ካለ ከዚህ በታች ባለ ክፍት ቦታ ግለፁ?

Appendix: C

Interview for school directors

Part: I personal information

1. Woreda _____
2. Name of the school _____
3. Sex _____
4. Age _____
5. Qualification _____
6. Years of experience as a principal _____

Part II: Open ended items

1. Do teachers prepare and use instructional materials in their lesson?
2. If your answer for question No_ 2 is No; why?
3. Who assign the school pedagogical coordinator and in what criteria?
4. How do you assess biology teacher commitment and self initiation in preparing and using instructional materials?
5. Does the provide incentive systems for teachers who prepare and use instructional materials in class room? If yes; what are the incentive systems?
6. How much budget do your schools allocate for the purpose of pedagogical center activities?
7. How do you evaluate the budget allocation and system of utilization in pedagogical center activities?
8. What major factors do you think would affect the availability, preparation and utilization of instructional materials?

Appendix – D

Interview for school pedagogical center coordinators

Part I basic personal information

1. Woreda _____
2. Name of the school _____
3. Sex _____
4. Age _____
5. Years of experience as a head of pedagogical center _____

Part II open ended items

1. How do you evaluate biology teachers commitment and self initiation in preparing and using instructional materials?
2. Do you have a guide material in your school on how to prepare and use instructional materials?
3. How do you evaluate the school principals' cooperation to the pedagogical center?
4. What are the main problems that biology teachers face in preparing and using instructional materials?
5. Do biology teachers use the available instructional materials in biology teaching?
6. How much budget does your school allocate for the purpose of pedagogical center activities?
7. How do you explain the contribution of school pedagogical center in facilitating the biology teaching learning process?
8. In general if you have any additional idea regarding to the availability, preparation and utilization of biology instructional materials, please specify here?

Appendix – E

Observation check list at school level

I. Observation at the school pedagogical center

1. Woreda _____ 2. Name of the school _____
3. Does the school have pedagogical center? _____
A. Yes B. No
4. Annual school pedagogical center budget for it's a activities _____
5. Is there a guide material for the production and use of IMS?
A. Yes _____ B. No _____
6. Arrangement of biology instructional in the school pedagogical center?
A. Poor B. Good C. Very good. D. Excellent
7. Availability of biology curricular materials in the school

Curricular materials	Grade	Available	Not available
Syllabuses	7		
	8		
Teacher Guides	7		
	8		
Student text book	7		
	8		

8. Record of frequency of biology teachers' instructional materials utilization in school pedagogical center (borrowing list)
A. Available B. Not available
9. Is there, daily and weekly follow up sheet for teachers in preparation of instructional materials?
A. Yes B. No
10. Types of biology instructional materials available at the school pedagogical center

No	Type	Teacher made	Student made	Purchased or donated	Quantity
1					
2					
3					
4					
5					
6					

11. Other observed variables _____

Appendix F

Grade and units		Required IMs by the syllabus	Shahura	Gomauber	Atede Marian	Denglber	Atuga	Delgi	Kolladuba	Salig	Chohayte
7	1	4	1	-	1	-	-	2	1	-	-
	2	14	2	3	1	-	4	2	1	3	1
	3	9	-	-	-	-	-	-	-	-	-
	4	6	-	2	2	1	2	3	-	1	2
	5	16	4	2	5	3	1	2	3	4	3
	6	10	-	-	1	-	2	-	1	-	-
	7	28	5	3	6	4	3	1	2	5	4
8	1	22	3	2	5	3	6	2	4	3	2
	2	15	-	-	-	-	1	-	-	1	-
	3	12	2	-	3	1	2	1	3	1	1
	4	12	-	1	-	-	2	1	-	-	-
	5	9	3	3	1	2	1	2	3	1	-
	6	4	2	1	-	3	2	-	2	1	3

Appendix G

Important values of the proper use of instructional materials

Important values of Instructional Materials	Illustration
Antidote to the disease of verbal instruction	They help to reduce verbalism. They help in giving clear concepts and thus help to bring accuracy in learning.
Best motivators	They are the best motivators; the more the students work with more interest and zeal, they are more attentive.
Clear images	Clear images are formed when we see, hear, touch, taste and smell as our experience are direct, concrete and more or less permanent. Learning through the senses becomes the most natural and consequently the easiest
Vicarious experiences	it is beyond doubt that the first-hand experience is the best type of educative experience but it is neither practicable nor desirable to provide such experience to pupil's substituted experiences may be provided under such conditions.
Variety	Mere chalk and talk do not help. Audio visual aids give variety and provide different tools in the hands of the teacher
Freedom	when instructional materials are employed, there's a great scope for children to move about, talk, laugh and comment up on.
Opportunities to handle and manipulate	Many visual aids offer opportunities to students to handle and manipulate things
Retention	Audio visual aids contribute to increased retention as they stimulate response of the whole organism to the situation in which learning takes place
Based on maxims of teaching	According to Aggarwal (1996), the use of audio visual aids enable the teacher to follow the maxims of teaching like concrete to abstract known to un known and learning by doing
Helpful in attracting attention	Attention is a true factor in any process of teaching and learning. Audio visual aids help the teacher in providing proper environment for capturing as well as sustaining the attention and interest of the students in the class room work

Helpful in fixing up new learning	What is gained in terms of learning needs to be fixed up in the minds of students'. Audio visual aids help in achieving this objectives by providing several activities, experiences and stimuli to the learners.
Realism	The use of audio visual aids provides a touch of reality to the learning situation
Saving of energy and time	A good deal of energy and time of both the teachers and students can be saved on account of the use of audio visual aids as most of the concepts and phenomena may be easily clarified, understand, and assimilated through their use
Vividness:	Instructional materials give vividness to the learning situation
Meeting individual difference	There are wide individual differences among learners some are ear oriented, some can be helped through visual demonstrations, while others learn better by doing. The use of variety of audio visual aids helps in meeting the needs of different types of students.
Encouragement to healthy classroom interaction	Audio visual aids, through their wide variety of stimuli, provision of active participation of the students, and vicarious experiences encourage healthy class room interaction for the effective realization of teaching learning objectives.
Spread of education on a mass scale	Audio visual aids like radio and television help in providing opportunities for education to people living in remote areas. They also help in promoting adult education
Promotion of scientific temper	In place of listening to facts students observe demonstrations and phenomena and thus cultivate scientific temper
Development of higher faculties	Verbalism promotes memorization. Use of audio- visual aids stirs the imagination, thinking process and reasoning power of the students, and calls for creativity and inventiveness and other higher mental activities on the parts of students and thus helps the development of higher faculties among the students
Reinforcement to learners	audio visual aids prove effective reinforces by increasing the probability of re-occurrence of the response associated with them and thus render valuable help in the teaching learning process

Sources Aggrawal 1996

DECLARATION

I here by declare that this thesis is my original work and has not been presented for a degree in any other university , and that all sources of material used for the thesis have been duly acknowledged.

Name: Hailay Gebreslassie

Signature: 

Date: April 2011

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

Name: Akalewoled Eshete (Assistant Professor)

Signature: 

Date: April 12, 2011

A